Site Investigation Field Procedures Workplan

Smith Property
1102 W Atkinson Avenue
Milwaukee, Wisconsin

January 23, 2019
by METCO
WDNR File Reference #: 03-41-506431
PECFA Claim #: 53206-3021-02

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This document was prepared by:

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Staff Scientist

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January 23, 2019

WDNR BRRTS#: 03-41-506431
PECFA Claim #: 53206-3021-02

Thomas Smith
7504 N 90th Street
Milwaukee, WI 53224

Dear Mr. Smith,

Enclosed is our "Site Investigation Field Procedures Workplan" concerning the Smith Property site in Milwaukee, Wisconsin. This document outlines the procedures and the methods used to conduct such an investigation.

A copy of this workplan will be sent to the Wisconsin Department of Natural Resources for review.

We appreciate the opportunity to be of service to you on this project. Should you have any questions or require additional information, do not hesitate to contact our La Crosse office.

Sincerely,

Jason T. Powell
Staff Scientist

C: Andy Alles – WDNR

Site Investigation Field Procedures Workplan - METCO
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OBJECTIVES

Requirements of the WDNR

A Site Investigation is required by the Wisconsin Department of Natural Resources (WDNR) by authority of Section 292.11 of the Wisconsin Statutes. According to the WDNR, any soil that tests over 10 ppm Gasoline Range Organics (GRO) or Diesel Range Organics (DRO) requires an investigation. Any soil that tests over the Chapter NR720 Groundwater RCLs, Direct Contact RCLs, or Soil Saturation Values an investigation and possible remediation. Any groundwater that tests over the Preventive Action Limits (PAL) or Enforcement Standards (ES) for compounds listed in Chapter NR140 of the Wisconsin Statutes requires an investigation and possible remediation. For a further explanation of WDNR rules and regulations, see Appendix D.

Requirements of the PECFA Program

According to rules adopted in May 2006, the maximum allowable cost for an initial Site Investigation shall be no more than $20,000 unless pre-approved by PECFA. All consultant and commodity service costs must not exceed the PECFA Usual and Customary Charges.

Purpose of Document

This document briefly outlines all methods and procedures used by METCO personnel concerning "Site Investigations". These guidelines are strictly followed unless changed by managing personnel, site conditions, or project situations. All changes will be clearly noted.

All work conducted by METCO is undertaken in accordance with approved methods and regulations of the WDNR Bureau for Remediation and Redevelopment.

This document is site specific and will always be on-site during the project.

INTRODUCTION

Site Name

Smith Property

Site Address

1102 W Atkinson Avenue
Milwaukee, Wisconsin

Legal Description

SW ¼, NW ¼, Section 8, Township 7 North, Range 22 East, Milwaukee County

Contact or Client

Thomas Smith
7504 N 90th Street
Milwaukee, WI 53224
(414) 426-5980

WDNR Project Manager

Andy Alles
101 S Webster Avenue
Madison, WI 53707
(608) 261-8509

Consultant

METCO
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SITE BACKGROUND

Facility

The existing building was built in 1926 and operated as a gas/service station. Retail fuel sales occurred on the property until the late 1960s. Afterward, the property continued to operate as a service garage. Currently, the property is used as a service garage, car wash, and small retail shop.

On August 14, 2003, Shaw Environmental of Pewaukee, Wisconsin oversaw the removal of three 1,000-gallon leaded gasoline USTs. During the UST removal, one soil sample was collected from beneath the removed gasoline USTs and submitted for laboratory analysis (GRO). The laboratory results showed 450 ppm GRO. However, it should be noted that there is no documentation of the location from where this soil sample was collected or its depth. The petroleum contamination was subsequently reported to the WDNR, who then required that a site investigation be conducted.

Numerous other LUST, ERP, and Spill sites exist in the city of Milwaukee. The nearest known site is the Clare Central site (BRRTS# 02-41-549687), which is located approximately 250 feet to the southeast of the subject property. The Clare Central site is an investigation of Chlorinated solvents from a former metal degreasing facility. Currently it is not known if this site is impacting or being impacted by the Smith Property site.

A Phase 1 Environmental Site Assessment conducted for the Clare Central site in 2014 identified two nearby properties that formerly operated as dry-cleaning facilities. A dry-cleaning facility operated in the north side of the building at 1036 W Atkinson Avenue, approximately 75 feet to the east, from approximately 1952 through 1965. A dry-cleaning facility operated at 1101 W Atkinson Avenue, approximately 100 feet to the south, around 1970. To our knowledge, no environmental assessments or investigations have been conducted at either of these properties.

Potential Risks and Impacts

The subject property and surrounding properties are all served by the City of Milwaukee municipal water supply, which draws its potable water from Lake Michigan. There are no known private water supply wells in the area of the subject property.

METCO is not currently aware of any other impacts, receptors, risks, or local problems associated with the subject property.

SITE CONDITIONS

Topography

According to the USGS Hydrologic Atlas, Milwaukee is located in the southern portion of the Lake Michigan Basin. Present day landforms in this area were formed by continental glaciers, which advanced from the north and east scouring the bedrock surface and transporting rock debris in the ice. As the glaciers melted, this unconsolidated material was deposited on the bedrock surface. Kettle moraine deposits, which consist of permeable stratified sediments and till, exist in much of Milwaukee County. Glacial lake deposits of poorly permeable clay, silt, and sand occur along the shores of Lake Michigan.

The elevation of the site is approximately 720 feet above Mean Sea Level (MSL). See Appendix A for site location.

Geology

Native unconsolidated materials in this area generally consist of silt/clay with occasional lenses of sand to silty sand. The unconsolidated materials are underlain by limestone/dolomite bedrock at approximately 50 to 100 feet below ground surface.

Hydrology

The nearest surface water is the Milwaukee River, which exists approximately 6,200 feet to the north and northeast of the subject property.

Hydrogeology

Based on other nearby LUST sites, groundwater is expected to exist at approximately 5 to 10 feet below ground surface. Local groundwater flow is expected to be toward the east to southeast.

SCOPE OF WORK

Site Investigation

An investigation consists of collecting samples of soil and groundwater for analysis by a laboratory for compounds related to petroleum products. The WDNR requires that the investigation determine the degree and extent of contaminants in these mediums, which is commonly referred to as "defining the contaminant plume". Further background information will also be collected to assist in the investigation.

Geoprobe/Drilling Project

METCO has proposed a 2-3 day Geoprobe/Drilling Project. We propose approximately 10 Geoprobe borings to 10-15 feet with soil and groundwater sampling. The Geoprobe will be used to collect soil samples at various depths in order to determine the general extent of contaminants in the subsurface environment. We also propose up to 8 monitoring wells be installed on/off site.

The goal of the Geoprobe/Drilling Project is to complete the following:

1. Determine general subsurface geotechnical characteristics.
2. Determine the general extent of contaminants in soil and groundwater.
3. Install monitoring wells in an arrangement that fully defines the horizontal and vertical extent of groundwater contamination.
4. Develop the monitoring wells.
5. Collect at least two rounds of groundwater samples from the monitoring wells.
6. If conditions warrant, perform slug tests on at least one monitoring well.

This data will either completely define the extent of contamination or be used to guide any additional investigation, if required.

Report Preparation

The final report, prepared by METCO, will include background information, observations, procedures, methods, field data, laboratory analysis, site maps, data analysis, risk assessment, conclusions, and recommendations concerning all activities conducted for this project. This report will be submitted to the client and the WDNR for review and discussion.

METCO PROCEDURES AND METHODS

Geoprobe

The Geoprobe consists of a truck mounted, hydraulically driven unit that advances 1-inch diameter, 4 or 5-foot long, stainless steel rods into the subsurface. At desired depths, either a soil or water sample can be collected.

Continuous soil samples are collected using a Geoprobe macro-core or dual tube system, in which a 4-foot or 5-foot long, 1 to 2-inch diameter soil sampler is advanced to the sampling location. Soil samples are brought to the surface for analysis by either retracting the complete sampling assembly and retrieving the sample from a polycarbonate inner liner or retrieving the polycarbonate liner

from inside the rods using the dual-tube system. Groundwater samples are collected by installing a 1-inch diameter temporary well screen and casing into the soil boring with a 5 or 10 foot long slotted screen intersecting the watertable. Groundwater samples are collected from the boring by either using a small diameter bailer or using flexible polyethylene tubing and a peristaltic pump. The temporary well screen and casing is removed from the boring after sampling.

All Geoprobe borings are properly abandoned to ground level using bentonite clay and a surface seal.

Drilling

Drilling is conducted with a truck or track mounted Geoprobe auger drill rig. To penetrate any unconsolidated materials, work is conducted in accordance with ASTM D-1452 "Soil Investigation and Sampling by Auger Boring". If bedrock is encountered and cannot be penetrated with auger boring, an accepted air-rotary drilling procedure will be used.

Sampling unconsolidated materials is done using a Geoprobe as described above.

PID Screening

Each of the samples, for headspace analysis, are placed in a clean, clear, plastic Ziploc bag. These containers are to be filled ¼ full. All containers are the same size and filled to the same volume. The containers are then sealed.

Once collected and sealed, samples are shaken for 30 seconds to break apart soil clods. They are then allowed to establish headspace. The following table is used to determine headspace equilibration time.

Outside temperature	Time to establish headspace
• <40 deg. F	40 minutes
• 41-55 deg. F	20 minutes
• 56-69 deg. F	10 minutes
• >70 deg. F	5 minutes

To take readings, the PID probe is inserted into the plastic bag halfway between the sample and the highest meter response recorded. The samples are screened with a Rae Systems, Mini Rae Lite Meter equipped with a 10.6 eV lamp. Metered calibration is done at the beginning of each workday. Other notes taken are as follows:

1. Temperature and weather conditions.
2. Date of last factory calibration.
3. Field calibration gas used and concentration.
4. Date and time of last calibration.
5. Instrument gain setting.
6. Erratic instrument readings.
7. Cleaning or repairs performed in the field.
8. Sample moisture (saturated, wet, moist, damp, dry).
9. Petroleum odors or staining of samples.
10. Any instrument quenching.
11. Other relevant information.

Monitoring Wells

Groundwater monitoring well installations are completed under the direction of a METCO hydrogeologist and in accordance with Wisconsin Department of Natural Resources Chapter NR141, "Groundwater Monitoring Well Requirements." The monitoring wells are constructed of flush-threaded, two-inch inside diameter schedule 40 polyvinyl chloride (PVC) piping. Ten-foot well screens with 0.010-inch slots are installed approximately 5 to 6 feet into the watertable. A uniform washed sand is installed around the well screens to serve as a filter pack. Granular bentonite is used above the filter pack to provide a surface seal. Steel, locking protective well casings are cemented in at each well. Any variances from NR141 will be reported to the WDNR.

Each well is developed by alternately surging and purging with a clean polyethylene bailer for 20 to 30 minutes to remove fines from the well screen, after which ten well volumes are removed using a submersible pump.

Groundwater level measurements are obtained using an electronic water level indicator. All measurements are recorded to the nearest 0.01-foot. The probe is thoroughly washed between measurements.

At least two rounds of samples are collected using a bottom loading, disposable, polyethylene bailer and disposable polyethylene cord. Approximately four well volumes are purged from each well before collecting samples.

Depending on site conditions and groundwater sampling results, slug tests may

be conducted on two or three of the monitoring wells to determine hydrogeologic parameters (hydraulic conductivity, transmissivity, and flow velocity). During the slug test, groundwater in a monitoring well is displaced using a solid plastic slug, while water levels are recorded using a transducer and data logger. Water levels are recorded until the water level in the well returns to equilibrium. Slug test data is evaluated using the Bouwer and Rice method.

Well Elevation Survey

All wells are surveyed to the nearest 0.01-foot MSL by a qualified surveying company.

Sample Analysis

Environmental samples are collected to minimize both soil disturbance and exposure of the sample to the air.

Field observations such as soil characteristics, petroleum odors, product sheens, and staining associated with the samples are continuously noted throughout sampling.

The amount of sample taken, the size of the container used, and the type of sample preservation used, will depend on the laboratory contracted and for which parameters the soil samples are analyzed. See Appendix C for LUST Sample Guidelines.

All collected samples are stored in a cooler that maintains a temperature of, at most, 4 degrees Celsius. The coolers are accompanied by a complete chain of custody and are delivered to the laboratory within two days of sampling.

The WDNR document, "LUST Analytical and Quality Assurance Guidance, July 1993" is referenced in determining what parameters in which the soil and water samples will be analyzed, and the amount of duplicates/blanks required.

Quality Assurance/Quality Control/Waste Management

All drilling and sampling equipment advanced into the subsurface is cleaned between sampling locations. This consists of washing with a biodegradable Alconox solution and rinsing with potable water. Wash and rinse water are disposed of atop an isolated area of asphalt for evaporation or discharged into a local storm sewer.

Drill cuttings, field screened as being contaminated, are contained in 55-gallon DOT barrels, characterized, and properly disposed of by METCO and/or client.

Development and purge waters are contained in 55-gallon DOT barrels, characterized, and properly disposed of by METCO and/or the client. Disposal options will depend on the amount of water, type of contaminants, and concentration of contaminants. All wastewater contaminants and disposal activities are recorded with complete documentation submitted to the WDNR.

Variances

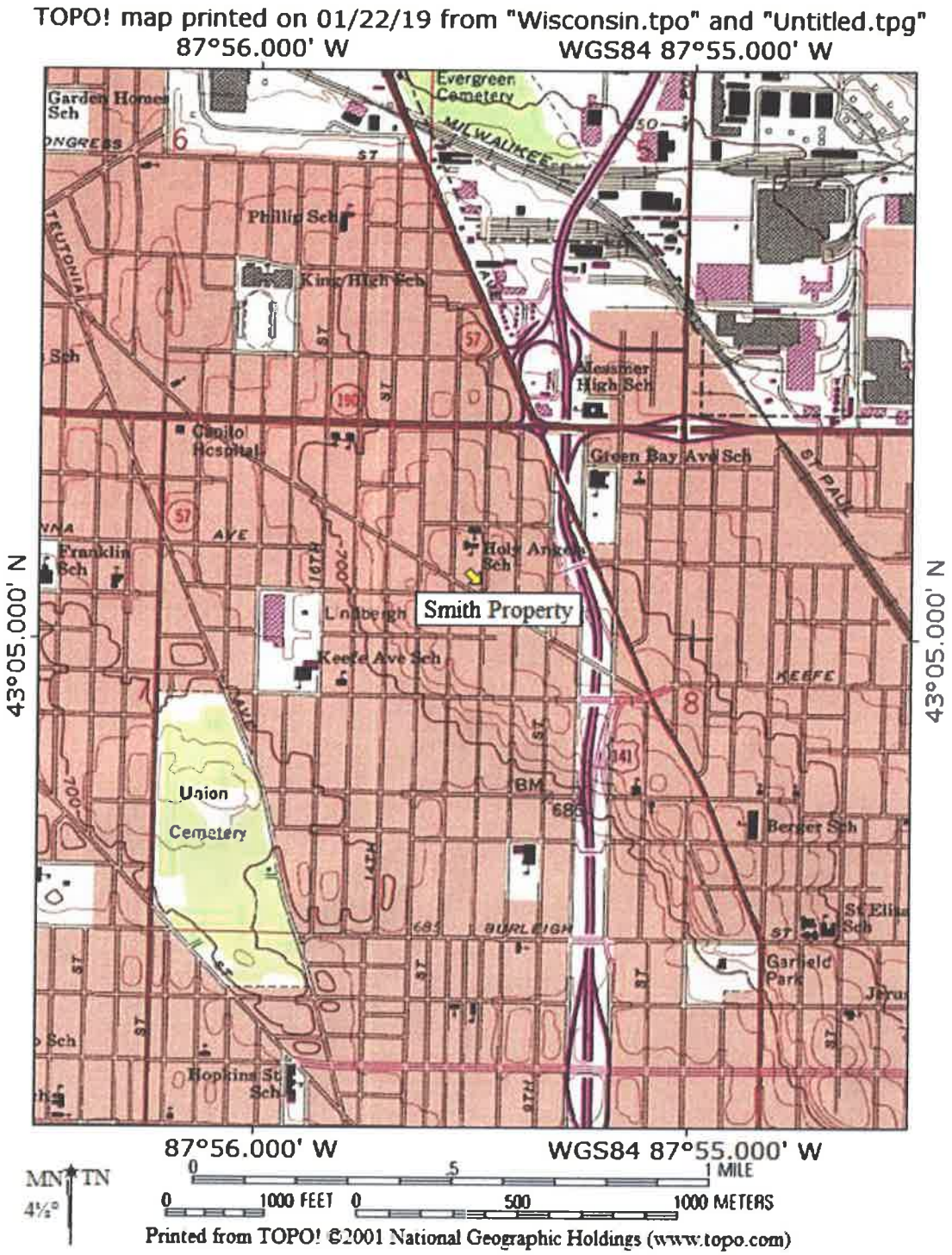
We are not aware of any variances needed at this time.

SCHEDULE FOR INVESTIGATION PROJECT

The following is a checklist of activities that have been, or will be completed, concerning the Site Investigation, along with an estimated time frame. A typical Site Investigation takes approximately 2 to 6 months. The investigation may take up to 12 months if bedrock or groundwater is contaminated.

1) METCO submits a Site Investigation Project proposal to client (done).
2) Proposal acceptance by client. METCO notifies the WDNR that a consultant has been contracted (done).
3) Client obtains PECFA Packet and Site Eligibility Letter from PECFA (done).
4) METCO submits a Site Investigation Field Procedures Workplan to client and WDNR for review and approval (1/23/19).
5) METCO conducts Geoprobe/Drilling Project (2-4 weeks). More than one field mobilization may be needed to complete project depending on complexity of the site and project (1 month to receive lab results).
6) METCO develops/surveys the installed monitoring wells and collects Round 1 groundwater samples for laboratory analysis (1 month to receive lab results).
7) METCO collects Round 2 groundwater samples for laboratory analysis (1 month to receive lab results).
8) METCO completes any additional work that is needed, such as slug tests (1 month).
9) METCO prepares a Site Investigation report that contains all collected data and submits to the client and WDNR (3-6 months).
10) If no further investigation work is required, METCO will apply for "site closure" with the WDNR. Upon closure, METCO will complete the PECFA Application and submit for reimbursement.
11) If further investigation and/or remediation is required METCO will provide further assistance.

APPENDIX A/SITE MAPS



B.1.a LOCATION MAP
CONTOUR INTERVAL 10 FEET
SMITH PROPERTY – MILWAUKEE, WI
SEAMLESS USGS TOPOGRAPHIC MAPS ON CD-ROM

B.I.b
DETAILED SITE MAP
SMITH PROPERTY

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Excellence through experience

MILWAUKEE,
WISCONSIN

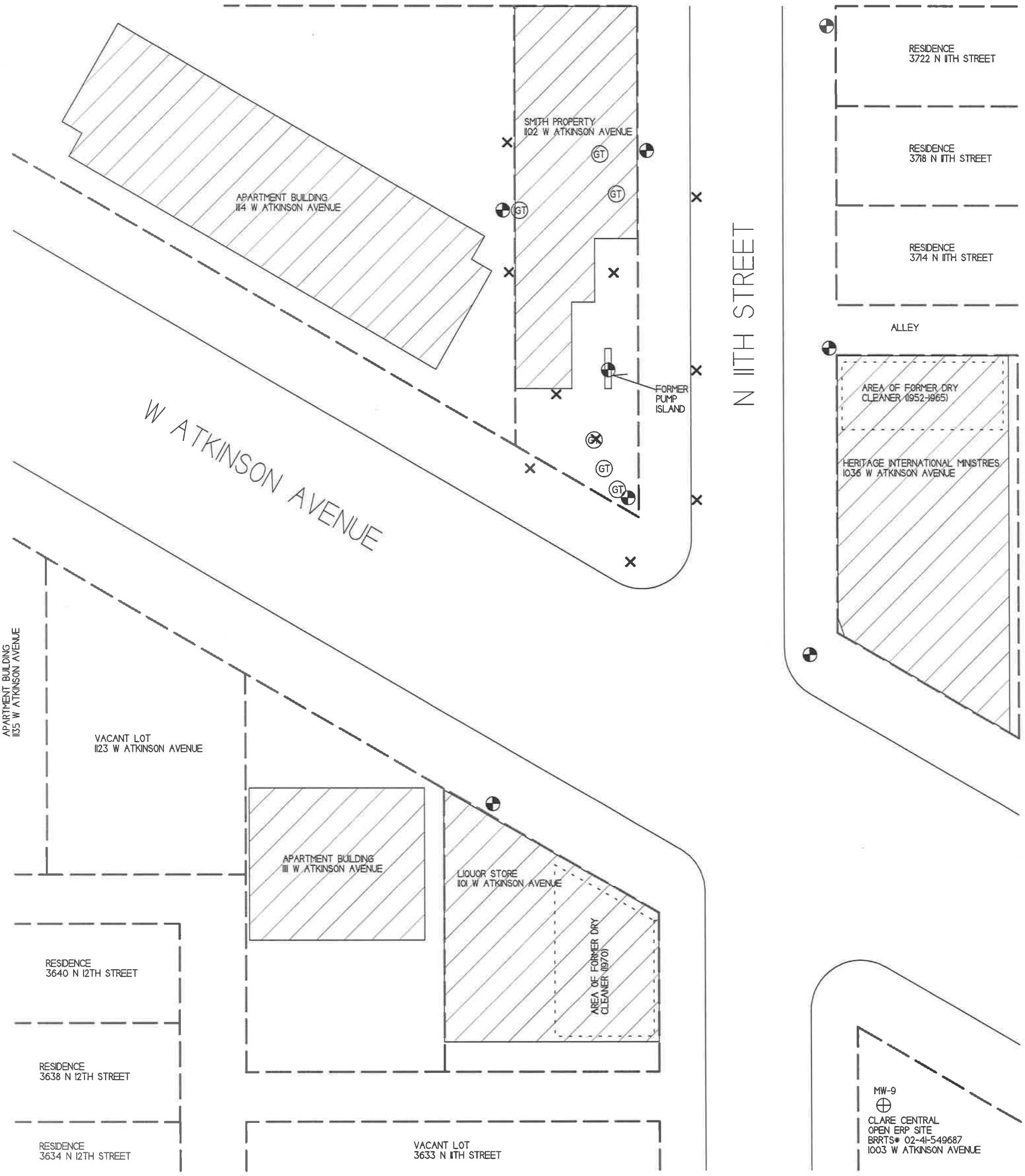
DRAWN BY: ED
DATE: 01/11/2019

NOTE: INFORMATION BASED ON AVAILABLE DATA ACTUAL CONDITIONS MAY DIFFER

SCALE:
1 INCH = 30 FEET
0 15 30

(GT) - FORMER GAS TANK LOCATION BASED ON 1950 SANBORN MAP
○ - UTILITY POLE
Ⓛ - STREET LIGHT
● - SEWER MAN HOLE
▦ - STORM DRAIN
✕ - PROPOSED GEOPROBE BORING LOCATION
◒ - PROPOSED MONITORING WELL LOCATION
⊕ - EXISTING MONITORING WELL LOCATION CLARE CENTRAL ERP SITE

- PROPERTY BOUNDARY
- WATER LINE
- SEWER LINE
- NATURAL GAS LINE
- BURIED ELECTRIC LINE
- OVERHEAD UTILITIES
- TELEPHONE/CABLE LINE



APPENDIX B/INVESTIGATION CHECKLIST

SITE INVESTIGATION CHECKLIST
Revised February 1992 PUBL-SW-115

This checklist was prepared by the Department of Natural Resources. It lists the necessary information to include in a site investigation report, for investigations conducted in accordance with guidelines prepared by the Emergency and Remedial Response Section, of the Bureau of Solid and Hazardous Waste Management, Wisconsin DNR. Sites include those where actions are conducted under the LUST, Spills and Environmental Repair programs. If some of this information is not submitted the report should clearly state why it is omitted. More complete information regarding site investigations is available in the Department's "Guidance on Conducting Environmental Response Actions".

The purpose of the site investigation is to 1) define the extent and degree of contamination and 2) to provide a basis for choosing a remedial action alternative. The narrative portion of the investigation report should clearly address these goals.

The Department strongly recommends that the site investigation report follow the sequence of information listed here. This will allow for a quick completeness check and more timely review of submittals. Incomplete reports will not be reviewed until all the necessary information has been received. The following information should be included in the site investigation, (as appropriate to each case):

I. INTRODUCTION/COVER LETTER

___ 1. Project title
___ 2. Purpose of report and desired department action
___ 3. Client(s)
___ 4. Author(s), with signatures
___ 5. Scope of Services
___ 6. Dates the work was performed
___ 7. Date of report
___ 8. Subcontractors employed by the consultant

II. GENERAL and BACKGROUND INFORMATION

1. General Information

A. Identify the owner/operator and/or person(s) responsible: (include all applicable)
___ 1. name
___ 2. address
___ 3. day phone number
___ 4. contact person (name)
___ 5. address
___ 6. phone number
___ 7. verification of ownership: photocopy of deed or exact legal description of property

B. Specify the site of contamination:
___ 1. name
___ 2. phone number
___ 3. specific location (street corner, miles from an intersection, etc)
___ a. legal address (street address if applicable, do not supply just a P.O. Box #)
___ b. location of impacted properties by latitude and longitude, to an accuracy of seconds, at a minimum (preferred method) or State Plane coordinate system
___ c. location of impacted properties by quarter, quarter, section, township, range, civil township, county, or other locational criteria if site(s) are not within the Public Land Survey system
___ 4. type of operation: gas station, tank farm, private residence, manufacturer, etc.

C. Site Location Maps
1. General Location Map
___ locate on a USGS topographic base map (include quadrangle name, series and scale)
___ locate on a plat map, if applicable

2. Local Base Map: the map must be drawn to scale and include the following items. Other features may also be needed:
___ a. bar scale
___ b. North arrow
___ c. legend
___ d. location of benchmark used
___ e. origin of horizontal grid system

3. Including Site Specific Features: more than one map may be appropriate, use the local map for the base map (These maps may be used for several purposes.)

- a. location of discharge on site or facility, for example, the location of (former) tank and pump islands and piping
- b. location of all buildings on site
- c. locations of public utilities, appropriately marked
- d. property boundaries
- e. location of all soil borings and wells (monitoring wells and potable wells)
- f. location of soil vapor points
- g. locations of where field screenings and lab confirmation samples were taken
- h. nearby/neighboring structures and private wells (within 1200 feet)
- i. any nearby surface waters (within map scale)
- j. roads and paved areas, and other access areas
- k. known and potential sources of contamination
- l. known and potential receptors
- m. limits of excavation

2. Site Background

A. General Site Information

1. site description, including features like:
   - number of tanks/containers
   - volume/size of tanks/containers
   - tank/container contents, past and present
   - tank/container age, installation dates
   - tank/container construction materials
   - presence and type of leak detection
   - presence and type of secondary containment
2. general site construction history
3. any past reports of spills, or other incidents
4. periods of nonoperation
5. proximity of sensitive sites such as schools, homes, private or public wells, etc.

B. Description of Discharge Incident

1. type of hazardous substances discharged, known or suspected (released, spilled, lost, etc.)
2. approximate amounts discharged
3. location of impact
4. dates of discharge
5. local problems associated with discharge, e.g. vapors in homes, well contamination, etc.
6. known receptors

C. Impacts

1. existing impacts to human health, safety, welfare and the environment
2. any impacts to adjacent or nearby buildings, wells or other structures
3. names and addresses of owners of adjacent properties, if those properties have been adversely impacted by the hazardous substance discharge

D. Past Activities, Monitoring and Testing

1. dates of site activities, duration and type and potential amounts of discharges
2. description of emergency actions taken and of interim actions taken, including dates
3. record of activities conducted at the site which had potential to cause contamination
4. inventory record system data
5. summary of monitoring results, including:
   - product monitoring records according to ILHR 10
   - groundwater monitoring
   - surface water monitoring
   - soil monitoring
   - sediment monitoring
   - atmospheric monitoring
6. records of testing, repair, removal or replacement, including dates
7. tank/container/line integrity testing
   - method
   - testing firm
   - dates
   - results

E. Hazardous Waste Generation

1. hazardous waste manifest
2. was hazardous waste ever generated or stored on site?

F. Description of Tank/Container and Soil Removal Activities

___ 1. description of soil conditions in the area of the tank/container excavation or in area of discharge
___ 2. volume of (contaminated) soils removed from the excavation
___ 3. location of stockpiled contaminated soils
___ 4. type of impermeable base for stockpiled soils
___ 5. type of impermeable cover for stockpiled soils
___ 6. if excavation was backfilled, what was used as fill?
___ 7. final deposition of soil excavated, where and how were they used? (daily cover, backfill on/off site, roasted, buried, etc.)
___ 8. condition of tanks, lines, pumps (corrosion, visible leaks, etc?)
___ 9. product (other than petroleum) or waste delivery or storage systems

G. Land Use Information

___ 1. current and past land uses of site and neighboring properties
___ 2. description of zoning of property and adjacent properties

3. Environmental Analysis

A. Site Historical Significance

___ 1. impacts or potential impacts to significant historical or archeological features due to any response activities or the discharge itself
___ 2. presence of buildings greater than 50 years old on or next to discharge site

B. Presence of "Sensitive" Environmental Receptors

___ 1. wildlife habitat
___ 2. state or federal threatened or endangered species
___ 3. sensitive or unique ecosystems or species
___ 4. areas of special natural resource interest
___ 5. other surface waters and wetlands, as appropriate

C. Geology (use maps as appropriate)

___ 1. geologic origin, nature and distribution of bedrock
___ 2. geologic origin, nature and distribution of overlying soils
___ 3. thicknesses of various strata (consolidated and unconsolidated)
___ 4. depth to bedrock
___ 5. geophysical characteristics
___ 6. soil types and texture
___ 7. soil descriptions to include:
___ - structure
___ - mottling
___ - voids
___ - layering
___ - lenses
___ - geologic origin
___ - Unified Soil System Classification
___ - grain size distribution, if applicable
___ - evidence of secondary permeability
___ - odor, if evident
___ - staining, if evident
___ 8. bedrock descriptions, if impacted:
___ - rock type
___ - grain size
___ - bedding thickness
___ - presence of fractures
___ - orientation of fractures
___ - sedimentary structures
___ - secondary porosity/solutional features
___ - other
___ 9. topography
___ 10. site hydrology, including
___ - intermittent and ephemeral streams,
___ - drain tile systems,
___ - surface waters
___ - wetlands
___ - location of floodway and floodplain (this may be best located on a site map)

D. Hydrogeology

___ 1. depth to water table
___ 2. flow directions, seasonal variations

___ 3. horizontal and vertical gradients
___ 4. hydraulic characteristics: (define as field test results or non-field estimates)
___ hydraulic conductivity, variation
___ transmissivity
___ storativity
___ 5. aquifer definition:
___ size
___ use
___ presence of aquitards
___ 6. local and regional recharge or discharge area(s)
___ 7. potentiometric surface
___ 8. location, seasonal variation of groundwater divides
___ 9. location and extent of perched groundwater
___ 10. local and regional groundwater quality
___ 11. hydraulic connection between aquifers
___ 12. saturated thickness of aquifer
___ 13. estimates of flow volume passing below the discharge site/facility (include calculations in the appendices)
___ 14. drillers logs which indicated any abnormal drilling difficulties
___ 15. isoconcentration maps
___ 16. other

III. RESULTS

1. Contaminant Migration Pathway and Receptor Assessment

A. Potential Vapor and Product Migration Pathways (include depth of burial and construction material)
___ 1. sewer lines
___ 2. storm sewers
___ 3. buried power cables
___ 4. buried telephone lines
___ 5. tile lines
___ 6. more permeable soil lenses
___ 7. water lines
___ 8. road beds
___ 9. foundations
___ 10. other

B. Potential Receptors of Contamination (description of impacts or potential impacts, if applicable)
___ 1. buildings on site
___ 2. neighboring basements/buildings
___ 3. nearby wells (locations must be provided on a map)
___ 4. nearby surface waters, including wetlands
___ 5. critical habitats
___ 6. endangered species
___ 7. outstanding resource waters
___ 8. exceptional resource waters
___ 9. sensitive or unique ecosystems
___ 10. other

C. Potential Health Impacts
___ 1. danger of explosion
___ 2. contaminated private wells
___ 3. contaminated public water supply wells
___ 4. exposure to vapors
___ 5. dermal exposure
___ 6. other

2. Sampling and Analysis Results (figures and tables should be used, but general trends and the overall evaluation should be in narrative form) Provide units of measurement for all results. Describe or provide the following information for each media impacted:

A. soil chemistry results, per parameter, per location
___ 1. field screening results with locations identified
___ 2. laboratory (confirmation) sample results with locations identified
___ 3. any indication of contamination of soils encountered (staining, odor, etc.)

B. groundwater sample results, per parameter, per well, over time
___ 1. laboratory results
___ 2. trends analysis

___ 3. compliance evaluation with NR 140 groundwater standards, if applicable

C. soil vapor results (define type of survey used)
___ 1. by parameter
___ 2. per location

D. sampling results from other media impacted by the discharge
___ 1. parameters
___ 2. locations

3. Sampling Methods Used (for each media impacted, lists provided for soil and groundwater only)

A. Soils:
___ 1. description of sample collection method
2. field screening or analytical instrument type used
___ lamp strength
___ calibration
___ operating procedure
___ 3. sample container
___ 4. temperature at which the sample was collected
___ 5. time allowed for PID or FID samples to achieve at least 70° F, and location

B. Groundwater
___ 1. method and instruments used to obtain sample
___ 2. any indication of contamination noticed in field
___ 3. whether the well was purged or not, why and how, and amount removed
___ 4. drilling method used
___ 5. monitoring well construction features
6. abandonment methods
___ a. boreholes
___ b. monitoring wells
___ c. excavations
___ 7. survey methods
___ 8. sample container size
___ 9. sample description
___ - turbid
___ - clear
___ - sheen
___ - free product
___ 10. other

C. Vapors/Ambient Air
___ 1. description of sample collection method
___ 2. field screening, if conducted
___ 3. sample container

4. Quality Control and Quality Assurance

A. General QA/QC (for all media impacted)
___ 1. name and address of laboratory
___ 2. laboratory certification number
3. number of blanks, with results:
___ - field blanks
___ - trip blanks
___ - lab spikes
___ - split samples
___ - replicate spikes
___ 4. name and training of person collecting the samples (including certification, if applicable)

B. Field Instrument Quality Control (for all media impacted)
___ 1. instrument make, model and lamp energy
2. limitations of field screening instruments
___ - temperature changes
___ - humidity changes
___ - other
___ 3. any repairs to the instrument
___ 4. field instrument calibration measures conducted
___ 5. time and frequency or schedule of field instrument calibration
___ 6. composition of the calibration gas used (calibration product ?)
___ 7. calibration curves used
___ 8. correction factor if one was used

___ 9. results of any calibration checks
___ 10. time of day and ambient temperature when calibrations, calibration curves or calibration checks were completed
___ 11. time and temperature that samples were equilibrated if the outside temperature is below 60°F at the time of field analysis

C. Field Sampling and Transportation Quality Control and Assurance (for all media impacted)
___ 1. sample type
___ 2. sample location and associated field and laboratory identification
___ 3. sampling technique used
___ 4. sampling techniques used to minimize exposure of samples to the atmosphere
___ 5. date and time of sampling
___ 6. field preservation performed
___ 7. date and time of preservation or extraction
___ 8. decontamination procedures used during the site investigation
___ 9. deviations from standard operating procedures
___ 10. shipping time and technique

D. Laboratory Receipt and Analysis (for all media impacted)
___ 1. chain of custody forms (4400-151)
___ 2. time and date of receipt of samples by the laboratory
___ 3. sample condition on receipt by the laboratory including
- the temperature of the samples and
- whether the samples were properly sealed
___ 4. time and date of analysis
___ 5. method of analysis
___ 6. laboratory detection limit
___ 7. sample results with units of measurement
___ 8. accuracy and precision of replicate spikes
___ 9. results or percent recovery of matrix spikes with every batch of samples not to exceed eight hours

5. Investigative Wastes (for all media impacted, to include but which is not limited to contaminated water from excavations, borings, purge water, rinse waters from decontamination procedures, extra sample)

___ A. analytical results (hazardous determination, if listed?)
___ B. ultimate disposal
___ C. other

IV. SUMMARY AND EVALUATION OF RESULTS (Analysis of Degree and Extent of Contamination)

___ 1. degree and extent of soil contamination
___ 2. degree and extent of groundwater contamination
___ 3. degree and extent of contamination of other media impacted
___ 4. known or potential impacts to receptors, such as water supply wells
___ 4. vapor migration potential
___ 5. impacts from seepage into basements, utility lines, surface waters
___ 6. difficulties experienced during the investigation
___ 7. unanticipated or questionable results
___ 8. details needing emphasis

V. CONCLUSIONS

___ source and type of release defined
___ soil and groundwater contamination adequately defined?
___ further study needed
___ further remediation needed
___ known or potential impacts from the release defined?
___ clean site, ready for case closure
___ other

VI. RECOMMENDATIONS

1. Investigation Incomplete
___ continued monitoring
___ additional investigation

2. Remedial Action Alternatives (provide description of alternatives) e.g.:
___ remediation method (to be) used for contaminated soil

___ soil removal, treatment and disposal
___ soil venting
___ product recovery
___ groundwater extraction and treatment
___ insitu biological treatment
___ other actions (define)

3. Other
___ work plans for further action
___ construction proposals for further action
___ pilot study, other treatability studies
___ schedules for further actions
___ required permits
___ air quality
___ wastewater discharge

VII. FIGURES

1. Site Maps
___ - location maps (regional and local)
___ - water table and/or potentiometric surface maps
___ - isoconcentration maps
___ - surface water depth maps
___ - bedrock and soil type and distribution maps
___ 2. Flow Cross Sections
___ 3. Extent of Contamination in Soil
___ 4. Extent of Contamination in Groundwater (Isoconcentration)
___ 5. Locations of Potential Receptors
___ 6. Geologic Cross-Sections
___ a. geologic setting
___ b. boring location
___ c. soil classification
___ d. analytical sampling
___ e. monitoring well locations
___ f. water table
___ g. extent of contaminant plume
___ h. concentrations at referenced date and point
___ i. sampling intervals (for soil and groundwater)
___ j. of excavation walls showing location of field screening and/or analytical results, as appropriate
___ 7. Photographs (NO black and white photocopies)

VIII. TABLES

___ 1. Groundwater Chemistry Results
___ 2. Soil Chemistry Results
___ 3. Analytical Methods Used
___ 4. Standards for Comparison and Compliance Determinations (Tables with compliance standards should be combined with analytical results for comparison)
___ 5. Geologic and Hydrogeologic Results
___ 6. Groundwater Elevations
___ 7. Screening Results
___ 8. Other

IX. APPENDICES (up to the author)

___ 1. Table giving data for compounds found, such as:
Chemical formula, Molecular weight, Ionic potential, Solubility,
Vapor pressure, Henry's Law Constant, Kow
___ 2. References used to support methods or provide standards methods, including previous reports
___ 3. All raw data
4. All documentation on forms: (DNR form number)
___ a. soil boring logs (4400-122)
___ b. monitoring well construction logs (4400-113A)
___ c. soil boring/well abandonment forms (3300-5B)
___ d. chain of custody forms
___ e. lab/chemistry results
___ f. groundwater monitoring well information form (4400-89)
___ g. monitoring well development form (4400-113B)
___ 5. Variances (for well construction, hazardous waste storage requirements, etc.)

___ 6. Well logs of all impacted wells and potentially impacted wells within 1200' of the discharge site (locate wells on a map)
___ 7. All calculations and assumptions
___ 8. Landfill receipts for disposed soil
___ 9. Regional hydrogeological information references used

Other information that may be needed includes:
- access
- public information plan
- health and safety plan

APPENDIX C/LUST SAMPLING GUIDELINES

Petroleum Substance Discharged	Analysis of Samples Collected for UST Tank Closure Assessments	Solid Waste Program Requirements for Soils to be landfilled[5]	Site Investigation, Pretreatment and Posttreatment Sample Analysis[11]
Regular Gasoline	GRO[2]	Free Liquids[6] GRO Benzene[7] Pb[7] Haz. Waste Deter.[8]	GRO VOC/PVOC[15] Pb[12]
Unleaded Gasoline; Grades 80 100, and 100 LL (Low Lead) Aviation Fuel	GRO[2]	Free Liquids[6] GRO Benzene[7] Pb[7] Haz. Waste Deter.[8]	GRO PVOC
Diesel; Jet Fuels; and No's 1, 2, and 4 Fuel Oil	DRO[3]	Free Liquids[6] DRO Benzene[7] Haz. Waste Deter.[8]	DRO[3] PVOC PAH[13 14]
Crude Oil; Lubricating Oils; No. 6 Fuel Oil	DRO[3]	Free Liquids[6] DRO Haz. Waste Deter.[8]	DRO[3] PAH[13 14]
Unknown Petroleum	GRO[7] and DRO[3 4]	Free Liquids[6] GRO and DRO Pb, Cd[7] Haz. Waste Deter.[8] CN[19] S[2 10]	GRO and DRO[3 4] VOC/PVOC[15] PAH[13 14] Pb, Cd[12]
Waste Oil	DRO[3]	Free Liquids[6] DRO Pb, Cd[7] Haz. Waste Deter.[8] CN[19] S[2 10]	DRO[3] VOC/PVOC[15] PAH[13 14] PCBs[16] Pb, Cd[12]

Abbreviations:

GRO - Gasoline Range Organics, Determined by the Wisconsin Modified GRO Method

DRO - Diesel Range Organics, Determined by the Wisconsin Modified DRO Method

VOC - Volatile Organic Compounds (See Section 11.1 for a list of VOC compounds)

PVOC - Petroleum Organic Compounds (See Section 11.2 for a list of PVOC compounds)

PAH - Polynuclear Aromatic Hydrocarbons (See Section 11.3 for a list of the PAH compounds)

PCBs - Polychlorinated Biphenyls

Pb - Lead

SYNERGY ENVIRONMENTAL LAB – Sample Bottle Requirements

TABLE 1
SAMPLE & PRESERVATION REQUIREMENTS FOR WATER and DRINKING WATER SAMPLES

Test	Original Sample Container	Preserved	Holding Time to Analysis
WET CHEMISTRY			
Alkalinity SM2320B/EPA 310.2	250 mL HDPE	4°C	14 days
Ammonia EPA 350.1	250 mL HDPE	4°C, pH<2 with H_2SO_4	28 days
BOD, cBOD SM5210B	500 ml HDPE	4°C	48 hrs.
COD EPA 410.4	500 ml HDPE	4°C, pH<2 with H_2SO_4	28 days
Chloride EPA 300.0/EPA 325.2	250 mL HDPE	4°C	28 days
Cyanide SW846 9012A/SM4500-CN-C	1000 mL HDPE	4°C, pH>12 with NaOH	14 days
Flashpoint SW846 1010	250 mL HDPE	4°C	28 days
Fluoride EPA 300.0	250 mL HDPE	4°C	28 days
Hardness SW846 6010B	250 mL HDPE	4°C, pH<2 with HNO_3	180 days
TKN EPA 351.2	1 Liter HDPE	4°C, pH<2 with H_2SO_4	28 days
Nitrate EPA 300.0	250 mL HDPE	4°C	48 hours
Nitrate+Nitrite EPA 300.0	250 mL HDPE	4°C, pH<2 with H_2SO_4	28 days
Nitrite EPA 300.0	250 mL HDPE	4°C	48 hours
Oil & Grease EPA 1664	1 Liter Glass	4°C, pH<2 with H_2SO_4	28 days
Organic Carbon SW846 9060/ EPA 415.1	40 ml Glass	4°C, pH<2 with H_2SO_4 or HCL	28 days
Phenol, Total EPA 420.1	1 Liter Glass	4°C, pH<2 with H_2SO_4	28 days
Phosphorus, Total EPA 365.3	250 mL HDPE	4°C, pH<2 with H_2SO_4	28 days
Sulfate EPA 300.0	250 mL HDPE	4°C	28 days
Total Dissolved Solids EPA 160.1	250 ml HDPE	4°C	7 days
Total Solids EPA 160.3	250 ml HDPE	4°C	7 days
Total Suspended Solids EPA 160.2	250 mL HDPE	4°C	7 days
METALS			
Metals	250 mL HDPE	4°C, pH<2 with HNO_3	6 months
Mercury SW8467470/EPA 245.1	250 mL HDPE	4°C, pH<2 with HNO_3	28 days
ORGANICS			
Semivolatiles SW846 8270C	1 Liter amber glass, collect 2 for one of the samples submitted .	4°C	7 days extr. 40 days following extr
PAH SW846 8270C	1 Liter amber glass, collect 2 for one of the samples submitted	4°C	7 days extr. 40 days following extr
PCB SW846 8082	1 Liter amber glass, collect 2 for one of the samples submitted.	4°C	7 days extr. 40 days following extr
DRO, Modified DNR Sep 95	1 Liter amber glass with Teflon lined cap	4°C, 5 mL 50% HCl	7 days extr. 40 days following extr
VOC'S SW846 8260B/EPA524.2	(3) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl, No Headspace	14 days
GRO/VOC	(4) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days
GRO, Modified DNR Sep 95	(2) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days
GRO/PVOC	(2) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days
PVOC	(2) 40 mL glass vials with Teflon lined septum caps	4°C, 0.5 mL 50% HCl prior to adding sample to jar	14 days

All samples are to be cooled to 4°C until tested.
HDPE = High Density Polyethylene.

SYNERGY ENVIRONMENTAL LAB – Sample Bottle Requirements

TABLE 2
SAMPLE & PRESERVATION REQUIREMENTS FOR SOIL SAMPLES

Test	Original Sample Container	Preserved	Holding Times from Date and Time of Collection			
			Solvent Addition	Shipping	Extraction	Analysis
METALS						
Metals	2 oz glass or soil cup	4°C	NA	NA	NA	180 days
Mercury SW846 7471	2 oz glass or soil cup	4°C	NA	NA	NA	28 days
Chromium Hexavalent SM3500-Cr	2 oz glass or soil cup	4°C	NA	NA	NA	24 hours
ORGANICS						
Any combinations of GRO, VOC, PVOC	1- tared VOC vial with 10 mls methanol, 13 grams of soil collected with syringe	4°C, 1:1 with methanol	Immediately	4 days	21 days	21 days
DRO, Modified	1- tared VOC vial, 13 grams of soil collected with syringe jar	4°C, Hexane	10 days	4 days	47 days	47 days
PAH, SW846 8270C	2 oz glass untared	4°C	NA	NA	14 days	40 days
Semivolatile SW846 8270C	2 oz glass untared	4°C	NA	NA	14 days	40 days
PCB SW846 8082	2 oz glass untared	4°C	NA	NA	14 days	40 days

All samples are to be cooled to 4°C until tested.

APPENDIX D/WDNR DOCUMENTS

RCL Quick Reference Table

March 2017

Contaminant	Not-To-Exceed D-C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	RCL-gw (mg/kg) DF=2
	Non - Industrial	Industrial	
Benzene	1.6	7.07	0.0051
Ethylbenzene	, 8.02	, 35.4	, 1.57
Toluene	,818.	,818.	, 1.1072
Xylenes	,260.	,260.	, 3.96
Methyl tert-Butyl Ether (MTBE)	, 63.8	,282.	, 0.027
Dichloroethane, 1,2- (DCA)	, 0.652	, 2.87	, 0.0028
Dibromoethane, 1,2-	, 0.05	, 0.221	2.82E-05
Trichloroethylene (TCE)	1.3	8.41	0.0036
Tetrachloroethylene (PCE)	1.33	145.	0.0045
Vinyl Chloride (VC)	0.067	2.08	0.0001
Dichloroethylene, 1,1- (DCE)	320.	1,190.	0.005
Dichloroethylene, 1,2-trans-	1,560.	1,850.	, 0.0626
Dichloroethylene, 1,2-cis-	,156.	2,340.	, 0.0412
Trichloroethane, 1,1,1-	,640.	,640.	, 0.1402
Carbon Tetrachloride	, 0.916	, 4.03	, 0.0039
Pentachlorophenol (PCP)	, 1.02	, 3.97	, 0.0028
Trimethylbenzene, 1,2,4-	,219.	,219.	, 1.382
Trimethylbenzene, 1,3,5-	,182.	,182.	
Naphthalene	5.52	24.1	0.6582
Benzo[a]pyrene	0.115	2.11	0.47
Acenaphthene	3,590.	45,200.	
Anthracene	17,900.	100,000.	,196.9492
Benz[a]anthracene	, 1.14	, 20.8	

Contaminant	Not-To-Exceed D-C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	RCL-gw (mg/kg) DF=2	Background Threshold Value (BTV) (mg/kg)
	Non - Industrial	Industrial		
Benzo(j)fluoranthene	, 0.424	, 1.76		
Benzo[b]fluoranthene	, 1.15	, 21.1	, 0.4793	
Benzo[k]fluoranthene	, 11.5	,211.		
Chrysene	,115.	2,110.	, 0.1446	
Dibenz[a,h]anthracene	, 0.115	, 2.11		
Dibenzo(a,e)pyrene	, 0.042	, 0.176		
Dimethylbenz(a)anthracene, 7,12-	4.59E-04	, 0.008		
Fluoranthene	2,390.	30,100.	, 88.8778	
Fluorene	2,390.	30,100.	, 14.8299	
Indeno[1,2,3-cd]pyrene	, 1.15	, 21.1		
Methylnaphthalene, 1-	, 17.6	, 72.7		
Methylnaphthalene, 2-	,239.	3,010.		
Nitropyrene, 4-	, 0.424	, 1.76		
Pyrene	1,790.	22,600.	, 54.5455	
Arsenic, Inorganic	, 0.677	3	0.584	8
Barium	15,300.	100,000.	,164.8	364
Beryllium and compounds	,156.	2,300.	, 6.32	
Cadmium (Diet)	, 71.1	,985.	, 0.752	1
Chromium(VI)	, 0.301	, 6.36	, 3.84	
Chromium, Total			360,000 if no Cr-VI	44
Lead and Compounds	,400.	,800.	,27.	52
Mercury (elemental)	, 3.13	, 3.13	, 0.208	
Selenium	,391.	5,840.	, 0.52	

NOTES:

1) This table of the most common compounds is intended to be a quick reference ONLY. It does not take into account cumulative effects as required in NR 700.

2) Values in this table are taken from the RCL spreadsheet which is periodically updated. PLEASE be sure to reference the RCL spreadsheet for the most current values.

Site-specific

Resident Screening Levels (RSL) for Soil

ca=Cancer, nc=Noncancer, ca* (Where nc SL < 100 x ca SL),
ca** (Where nc SL < 10 x ca SL), max=SL exceeds ceiling limit (see User's Guide), sat=SL exceeds csat,
Smax=Soil SL exceeds ceiling limit and has been substituted with the max value (see User's Guide).
Ssat=Soil inhalation SL exceeds csat and has been substituted with the csat

Chemical	GIABS	ABS	RBA	Volatilization Factor (m^3/kg)	Soil Saturation Concentration (mg/kg)	Particulate Emission Factor (m^3/kg)	Ingestion SL TR=1.0E-6 (mg/kg)	Dermal SL TR=1.0E-6 (mg/kg)	Inhalation SL TR=1.0E-6 (mg/kg)	Carcinogenic SL TR=1.0E-6 (mg/kg)
Benzene	1	-	1	5.10E+03	1.82E+03	1.56E+09	1.26E+01	-	1.84E+00	1.60E+00
Dibromoethane, 1,2-	1	-	1	1.25E+04	1.34E+03	1.56E+09	3.48E-01	-	5.84E-02	5.00E-02
Dichloroethane, 1,2-	1	-	1	6.60E+03	2.98E+03	1.56E+09	7.64E+00	-	7.13E-01	6.52E-01
Ethylbenzene	1	-	1	8.18E+03	4.80E+02	1.56E+09	6.32E+01	-	9.19E+00	8.02E+00
Lead and Compounds	1	-	1	-	-	1.56E+09	-	-	-	-
Methyl tert-Butyl Ether (MTBE)	1	-	1	7.08E+03	8.87E+03	1.56E+09	3.86E+02	-	7.64E+01	6.38E+01
Acenaphthene	1	0.13	1	2.03E+05	-	1.56E+09	-	-	-	-
Anthracene	1	0.13	1	7.56E+05	-	1.56E+09	-	-	-	-
Benz[a]anthracene	1	0.13	1	6.37E+06	-	1.56E+09	2.10E-01	6.29E-01	5.85E+01	1.57E-01
Benzo(j)fluoranthene	1	0.13	1	-	-	1.56E+09	5.79E-01	1.58E+00	3.98E+04	4.24E-01
Benzo[a]pyrene	1	0.13	1	-	-	1.56E+09	2.10E-02	6.29E-02	1.44E+03	1.57E-02
Benzo[b]fluoranthene	1	0.13	1	-	-	1.56E+09	2.10E-01	6.29E-01	1.44E+04	1.57E-01
Benzo[k]fluoranthene	1	0.13	1	-	-	1.56E+09	2.10E+00	6.29E+00	1.44E+04	1.57E+00
Chrysene	1	0.13	1	-	-	1.56E+09	2.10E+01	6.29E+01	1.44E+05	1.57E+01
Dibenz[a,h]anthracene	1	0.13	1	-	-	1.56E+09	2.10E-02	6.29E-02	1.32E+03	1.57E-02
Dibenzo(a,e)pyrene	1	0.13	1	-	-	1.56E+09	5.79E-02	1.58E-01	3.98E+03	4.24E-02
Dimethylbenz(a)anthracene, 7,12-	1	0.13	1	-	-	1.56E+09	6.13E-04	1.84E-03	2.23E+01	4.59E-04
Fluoranthene	1	0.13	1	-	-	1.56E+09	-	-	-	-
Fluorene	1	0.13	1	4.06E+05	-	1.56E+09	-	-	-	-
Indeno[1,2,3-cd]pyrene	1	0.13	1	-	-	1.56E+09	2.10E-01	6.29E-01	1.44E+04	1.57E-01
Methylnaphthalene, 1-	1	0.13	1	8.46E+04	3.94E+02	1.56E+09	2.40E+01	6.55E+01	-	1.76E+01
Methylnaphthalene, 2-	1	0.13	1	8.37E+04	-	1.56E+09	-	-	-	-
Naphthalene	1	0.13	1	6.69E+04	-	1.56E+09	-	-	5.52E+00	5.52E+00
Nitropyrene, 4-	1	0.13	1	-	-	1.56E+09	5.79E-01	1.58E+00	3.98E+04	4.24E-01
Pyrene	1	0.13	1	3.43E+06	-	1.56E+09	-	-	-	-
Toluene	1	-	1	6.19E+03	8.18E+02	1.56E+09	-	-	-	-
Trimethylbenzene, 1,2,4-	1	-	1	1.14E+04	2.19E+02	1.56E+09	-	-	-	-
Trimethylbenzene, 1,3,5-	1	-	1	9.54E+03	1.82E+02	1.56E+09	-	-	-	-
Xylenes	1	-	1	8.28E+03	2.60E+02	1.56E+09	-	-	-	-

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(22) "Wastewater and sludge storage or treatment lagoon" means a natural or man−made containment structure, constructed primarily of earthen materials for the treatment or storage of wastewater or sludge, which is not a land disposal system.

History: Cr. Register, September, 1985, No. 357, eff. 10−1−85; cr. (1m), am. (7), (17) and (18), Register, October, 1988, No. 394, eff. 11−1−88; am. (6), cr. (20h) and (20m), Register, March, 1994, No. 459, eff. 4−1−94; cr. (1s), (10e), (10s), (20k), r. and recr. (12), (13), Register, August, 1995, No. 476, eff. 9−1−95; cr. (14m), Register, October, 1996, No. 490, eff. 11−1−96; am. (20), Register, December, 1998, No. 516, eff. 1−1−99; correction in (9) made under s. 13.93 (2m) (b) 7., Stats., Register, April, 2001, No. 544; CR 02−134: cr. (1u), (1w), (1y) and (20s) Register June 2003 No. 570, eff. 7−1−03; correction in (20) made under s. 13.92 (4) (b) 6., Stats., Register January 2012 No. 673.

Subchapter II — Groundwater Quality Standards

NR 140.10 Public health related groundwater standards. The groundwater quality standards for substances of public health concern are listed in Table 1.

Note: For all substances that have carcinogenic, mutagenic or teratogenic properties or interactive effects, the preventive action limit is 10% of the enforcement standard. The preventive action limit is 20% of the enforcement standard for all other substances that are of public health concern. Enforcement standards and preventive action limits for additional substances will be added to Table 1 as recommendations are developed pursuant to ss. 160.07, 160.13 and 160.15, Stats.

Table 1
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter − except as noted)	Preventive Action Limit (micrograms per liter − except as noted)
Acetochlor	7	0.7
Acetochlor ethane sulfonic acid + oxanilic acid (Acetochlor − ESA + OXA)	230	46
Acetone	9 mg/l	1.8 mg/l
Alachlor	2	0.2
Alachlor ethane sulfonic acid (Alachlor − ESA)	20	4
Aldicarb	10	2
Aluminum	200	40
Ammonia (as N)	9.7 mg/l	0.97 mg/l
Antimony	6	1.2
Anthracene	3000	600
Arsenic	10	1
Asbestos	7 million fibers per liter (MFL)	0.7 MFL
Atrazine, total chlorinated residues	3[2]	0.3[2]
Bacteria, Total Coliform	0[3]	0[3]
Barium	2 milligrams/liter (mg/l)	0.4 mg/l
Bentazon	300	60
Benzene	5	0.5
Benzo(b)fluoranthene	0.2	0.02
Benzo(a)pyrene	0.2	0.02
Beryllium	4	0.4
Boron	1000	200
Bromodichloromethane	0.6	0.06
Bromoform	4.4	0.44
Bromomethane	10	1
Butylate	400	80
Cadmium	5	0.5
Carbaryl	40	4
Carbofuran	40	8
Carbon disulfide	1000	200
Carbon tetrachloride	5	0.5
Chloramben	150	30
Chlordane	2	0.2
Chlorodifluoromethane	7 mg/l	0.7 mg/l
Chloroethane	400	80
Chloroform	6	0.6
Chlorpyrifos	2	0.4
Chloromethane	30	3
Chromium (total)	100	10
Chrysene	0.2	0.02

Table 1 – Continued
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter – except as noted)	Preventive Action Limit (micrograms per liter – except as noted)
Cobalt	40	8
Copper	1300	130
Cyanazine	1	0.1
Cyanide, free[4]	200	40
Dacthal	70	14
1,2–Dibromoethane (EDB)	0.05	0.005
Dibromochloromethane	60	6
1,2–Dibromo–3–chloropropane (DBCP)	0.2	0.02
Dibutyl phthalate	1000	100
Dicamba	300	60
1,2–Dichlorobenzene	600	60
1,3–Dichlorobenzene	600	120
1,4–Dichlorobenzene	75	15
Dichlorodifluoromethane	1000	200
1,1–Dichloroethane	850	85
1,2–Dichloroethane	5	0.5
1,1–Dichloroethylene	7	0.7
1,2–Dichloroethylene (cis)	70	7
1,2–Dichloroethylene (trans)	100	20
2,4–Dichlorophenoxyacetic Acid (2,4–D)	70	7
1,2–Dichloropropane	5	0.5
1,3–Dichloropropene (cis/trans)	0.4	0.04
Di (2–ethylhexyl) phthalate	6	0.6
Dimethenamid/Dimethenamid–P	50	5
Dimethoate	2	0.4
2,4–Dinitrotoluene	0.05	0.005
2,6–Dinitrotoluene	0.05	0.005
Dinitrotoluene, Total Residues[5]	0.05	0.005
Dinoseb	7	1.4
1,4–Dioxane	3	0.3
Dioxin (2, 3, 7, 8–TCDD)	0.00003	0.000003
Endrin	2	0.4
EPTC	250	50
Ethylbenzene	700	140
Ethyl ether	1000	100
Ethylene glycol	14 mg/l	2.8 mg/l
Fluoranthene	400	80
Fluorene	400	80
Fluoride	4 mg/l	0.8 mg/l
Fluorotrichloromethane	3490	698
Formaldehyde	1000	100
Heptachlor	0.4	0.04
Heptachlor epoxide	0.2	0.02
Hexachlorobenzene	1	0.1
N–Hexane	600	120
Hydrogen sulfide	30	6
Lead	15	1.5
Lindane	0.2	0.02
Manganese	300	60
Mercury	2	0.2

Table 1 – Continued
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter – except as noted)	Preventive Action Limit (micrograms per liter – except as noted)
Methanol	5000	1000
Methoxychlor	40	4
Methylene chloride	5	0.5
Methyl ethyl ketone (MEK)	4 mg/l	0.8 mg/l
Methyl isobutyl ketone (MIBK)	500	50
Methyl tert–butyl ether (MTBE)	60	12
Metolachlor/s–Metolachlor	100	10
Metolachlor ethane sulfonic acid + oxanilic acid (Metolachlor – ESA + OXA)	1.3 mg/l	0.26 mg/l
Metribuzin	70	14
Molybdenum	40	8
Monochlorobenzene	100	20
Naphthalene	100	10
Nickel	100	20
Nitrate (as N)	10 mg/l	2 mg/l
Nitrate + Nitrite (as N)	10 mg/l	2 mg/l
Nitrite (as N)	1 mg/l	0.2 mg/l
N–Nitrosodiphenylamine	7	0.7
Pentachlorophenol (PCP)	1	0.1
Perchlorate	1	0.1
Phenol	2 mg/l	0.4 mg/l
Picloram	500	100
Polychlorinated biphenyls (PCBs)	0.03	0.003
Prometon	100	20
Propazine	10	2
Pyrene	250	50
Pyridine	10	2
Selenium	50	10
Silver	50	10
Simazine	4	0.4
Styrene	100	10
Tertiary Butyl Alcohol (TBA)	12	1.2
1,1,1,2–Tetrachloroethane	70	7
1,1,2,2–Tetrachloroethane	0.2	0.02
Tetrachloroethylene	5	0.5
Tetrahydrofuran	50	10
Thallium	2	0.4
Toluene	800	160
Toxaphene	3	0.3
1,2,4–Trichlorobenzene	70	14
1,1,1–Trichloroethane	200	40
1,1,2–Trichloroethane	5	0.5
Trichloroethylene (TCE)	5	0.5
2,4,5–Trichlorophenoxy–propionic acid (2,4,5–TP)	50	5
1,2,3–Trichloropropane	60	12
Trifluralin	7.5	0.75
Trimethylbenzenes (1,2,4– and 1,3,5– combined)	480	96
Vanadium	30	6

Table 1 – Continued
Public Health Groundwater Quality Standards

Substance[1]	Enforcement Standard (micrograms per liter – except as noted)	Preventive Action Limit (micrograms per liter – except as noted)
Vinyl chloride	0.2	0.02
Xylene[6]	2 mg/l	0.4 mg/l

[1] Appendix I contains Chemical Abstract Service (CAS) registry numbers, common synonyms and trade names for most substances listed in Table 1.

[2] Total chlorinated atrazine residues includes parent compound and the following metabolites of health concern: 2-chloro-4-amino-6-isopropylamino-s-triazine (formerly deethylatrazine), 2-chloro-4-amino-6-ethylamino-s-triazine (formerly deisopropylatrazine) and 2-chloro-4,6-diamino-s-triazine (formerly diaminoatrazine).

[3] Total coliform bacteria may not be present in any 100 ml sample using either the membrane filter (MF) technique, the presence-absence (P-A) coliform test, the minimal medium ONPG-MUG (MMO-MUG) test or not present in any 10 ml portion of the 10-tube multiple tube fermentation (MTF) technique.

[4] "Cyanide, free" refers to the simple cyanides (HCN, CN^-) and /or readily dissociable metal-cyanide complexes. Free cyanide is regulatorily equivalent to cyanide quantified by approved analytical methods for "amenable cyanide" or "available cyanide".

[5] Dinitrotoluene. Total Residues includes the dinitrotoluene (DNT) isomers: 2,3-DNT, 2,4-DNT, 2,5-DNT, 2,6-DNT, 3,4-DNT and 3,5-DNT.

[6] Xylene includes meta-, ortho-, and para-xylene combined.

History: Cr. Register, September, 1985, No. 357, eff. 10-1-85; am. table 1, Register, October, 1988, No. 394, eff. 11-1-88; am. table 1, Register, September, 1990, No. 417, eff. 10-1-90; am. Register, January, 1992, No. 433, eff. 2-1-92; am. Table 1, Register, March, 1994, No. 459, eff. 4-1-94; am. Table 1, Register, August, 1995, No. 476, eff. 9-1-95; am. Table 1, Register, December, 1998, No. 516, eff. 1-1-99; am. Table 1, boron, Register, December, 1998, No. 516, eff. 12-31-99; am. Table 1, Register, March, 2000, No. 531, eff. 4-1-00; CR 03-063: am Table 1, Register February 2004 No. 578, eff. 3-1-04; CR 02-095: am. Table 1, Register November 2006 No. 611, eff. 12-1-06; reprinted to correct errors in Table 1, Register January 2007 No. 613; CR 07-034: am. Table 1 Register January 2008 No. 625, eff. 2-1-08; CR 09-102: am. Table 1 Register December 2010 No. 660, eff. 1-1-11.

NR 140.12 Public welfare related groundwater standards. The groundwater quality standards for substances of public welfare concern are listed in Table 2.

Note: For each substance of public welfare concern, the preventive action limit is 50% of the established enforcement standard.

Table 2
Public Welfare Groundwater Quality Standards

Substance	Enforcement Standard (milligrams per liter – except as noted)	Preventive Action Limit (milligrams per liter – except as noted)
Chloride	250	125
Color	15 color units	7.5 color units
Foaming agents MBAS (Methylene-Blue Active Substances)	0.5	0.25
Iron	0.3	0.15
Manganese	0.05	0.025
Odor	3 (Threshold Odor No.)	1.5 (Threshold Odor No.)
Sulfate	250	125
Zinc	5	2.5

History: Cr. Register, September, 1985, No. 357, eff. 10-1-85; am. table 2, Register, October, 1990, No. 418, eff. 11-1-90; am. Table 2, Register, March, 1994, No. 459, eff. 4-1-94.

NR 140.14 Statistical procedures. (1) If a preventive action limit or an enforcement standard for a substance listed in Table 1 or 2, an alternative concentration limit issued in accordance with s. NR 140.28 or a preventive action limit for an indicator parameter established according to s. NR 140.20 (2) is attained or exceeded at a point of standards application:

(a) The owner or operator of the facility, practice or activity at which a standard is attained or exceeded shall notify the appropriate regulatory agency that a standard has been attained or exceeded; and

(b) The regulatory agency shall require a response in accordance with the rules promulgated under s. 160.21, Stats. No response shall be required if it is demonstrated to the satisfaction of the appropriate regulatory agency that a scientifically valid determination cannot be made that the preventive action limit or enforcement standard for a substance in Table 1 or 2 has been attained or exceeded based on consideration of sampling procedures or laboratory precision and accuracy, at a significance level of 0.05.

(2) The regulatory agency shall use one or more valid statistical procedures to determine if a change in the concentration of a substance has occurred. A significance level of 0.05 shall be used for all tests.

(3) In addition to sub. (2), the following applies when a preventive action limit or enforcement standard is equal to or less than the limit of quantitation:

(a) If a substance is not detected in a sample, the regulatory agency may not consider the preventive action limit or enforcement standard to have been attained or exceeded.

(b) If the preventive action limit or enforcement standard is less than the limit of detection, and the concentration of a substance is reported between the limit of detection and the limit of quantitation, the regulatory agency shall consider the preventive action limit or enforcement standard to be attained or exceeded only if:

1. The substance has been analytically confirmed to be present in the same sample using an equivalently sensitive analytical method or the same analytical method, and

2. The substance has been statistically confirmed to be present above the preventive action limit or enforcement standard, determined by an appropriate statistical test with sufficient samples at a significance level of 0.05.

(c) If the preventive action limit or enforcement standard is between the limit of detection and the limit of quantitation, the regulatory agency shall consider the preventive action limit or

APPENDIX E/PROJECT DOCUMENTS

Shaw Environmental & Infrastructure, Inc.
2835 N. Grandview Blvd., P.O. Box 90
Pewaukee, Wisconsin 53072-0090
(262) 549-6898
Fax: (262) 549-6938

FAX TRANSMISSION COVER SHEET

Date: 8-26-03

To: R & R Program Assistant

Fax: (414) 263-8483

Subject: Notification of Release

Sender: CHUCK ZIMNEY

YOU SHOULD RECEIVE (9) PAGES, INCLUDING THIS COVER SHEET. IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL (262) 549-6898.

Form 4400-225 and lab results attached for Smith Property in Milwaukee, WI

FID# 341081290
BRRTS#03-41-506
431

State of Wisconsin
Department of Natural Resources

Hazardous Substance Release Fax Notification (Non-Emergency Only)

Form 4400-225 (6/02) Page 1 of 2

Emergency Releases / Spills must be reported via the 24-hour Hotline: 1-800-943-0003

Notice: Hazardous substance discharges must be reported immediately according to the "Spills Law", s. 292.11 Wis. Stats. Section NR 706.05(1)(b), Wis. Adm. Code requires that hazardous substance discharges are to be reported by one of three methods: telephoning the Department (toll free Spill Hotline number above), telefaxing a report to the Department or visiting a Department office in person. If you choose to notify the Department by telefax, you should use this form to be sure that all necessary information is included. However use of this form is not mandatory. Under s. 292.99, Wis. Stats., the penalty for violating ch. 292 Wis. Stats., shall be no less than $10 nor more than $5000 for each violation. Each day of continued violation is a separate offense. It is not the Department's intention to use any personally identifiable information from this form for any purpose other than program administration. However, information submitted on this form may also be made available to requesters under Wisconsin's Open Records Law (ss. 19.31 – 19.39, Wis. Stats.).
Confirmatory laboratory data should be included with this form, to assist the DNR in processing this Hazardous Substance Release Notification.

Complete this form. TYPE or PRINT LEGIBLY. FAX it to the appropriate WDNR region (see next page) IMMEDIATELY upon discovery of a potential release from (check one):

- [X] Underground Petroleum Storage Tank System
- [ ] Aboveground Petroleum Storage Tank System
- [ ] Dry Cleaner Facility (DERP eligibility based on: ☐ Facility owner/operator ☐ Property owner of licensed facility
- [ ] Other - Describe:

TO WDNR, ATTN: R & R Program Assistant	(Area Code) FAX Number

1. Discharge reported by

Name	Firm	Date FAXed to WDNR
CHUCK ZIMNEY	SHAW ENVIRONMENTAL	8-26-03
Mailing Address 2835 N. Grandview Blvd Pewaukee, WI 53072		(Area Code) Telephone Number (262) 549-6898

2. Site Information

Name of site at which discharge occurred. Include local name of site/business, not responsible party name, unless a residence / vacant property

SMITH PROPERTY

Location: Include street address, not PO Box. If no street address, describe as precisely as possible, i.e., 1/4 mile NW of CTHs 60 & 123 on E side of CTH 60.

needs new FID

1102 W. Atkinson Avenue

Municipality (City, Village, Township) Specify municipality in which the site is located, not mailing address/city

MILWAUKEE

County:	Legal Description:
Milwaukee	SW 1/4, NW 1/4, Section 8, Tn 7N, Range 22 (E) W (circle one)

3. Responsible Party (RP) and/or RP Representative

Responsible Party Name: Business or owner name that is responsible for cleanup. If more than one, list all. Attach additional pages as necessary

THOMAS SMITH

Contact Person Name (if different)	Telephone Number
	414-365-2982

Mailing Address	City	State	ZIP Code
6170 W. PORT AVENUE	MILWAUKEE	WI	53223

4. Hazardous Substance Information

Identify hazardous substance discharged (check all that apply):

- [ ] Ammonia
- [ ] Arsenic
- [ ] Gasoline-Unleaded
- [ ] Herbicide
- [ ] PERC
- [ ] Pesticides

(Continued)

State of Wisconsin
Department of Natural Resources

Hazardous Substance Release Fax Notification
(Non-Emergency Only)

- ☐ Chlorinated Solvents
- ☐ PAH's
- ☐ Chromium
- ☐ Cyanide
- ☐ Diesel
- ☐ Fertilizer
- ☐ Fuel Oil
- ☐ Petroleum-Unknown Type
- ☐ Gasoline-Lead Unknown
- ☒ Gasoline-Leaded
- ☐ Hydraulic Fuel
- ☐ Hydrocarbon-Unknown Type
- ☐ Leachate
- ☐ MTBE-Methyl Tertiary Butyl Ether
- ☐ Mercury
- ☐ Metals (specify):
- ☐ Milk
- ☐ Oil & Grease
- ☐ Other (specify):
- ☐ PCB's
- ☐ RCRA Hazardous Waste
- ☐ SVOC (Semi-volatile Organic Compound)
- ☐ Solvent
- ☐ Stoddard Solvent
- ☐ Transformer Fluid
- ☐ Unknown
- ☐ VOC's
- ☐ Waste Oil

Impacts to the environment (enter "K" for known/confirmed or "P" for potential for all that apply)

- ___ Air Contamination
- ___ Co-contamination
- ___ Concrete/Asphalt
- ___ Contained/Recovered
- ___ Contamination Within 1 Meter of Bedrock
- ___ Contaminated Private Well
- ___ Contaminated Public Well
- ___ Contamination in Fractured Bedrock
- P Contamination in Row of Way
- ___ Direct Contact
- ___ Expanding Plume
- ___ Fire Explosion Threat
- ___ Free Product
- P Groundwater Contamination
- ___ Off-Site Contamination
- ___ Other
- ___ Sanitary Sewer Contamination
- K Soil Contamination
- ___ Storm Sewer Contamination
- ___ Surface Water Contamination
- ___ Within 100 ft of Private Well
- ___ Within 1000 ft of Public Well

Contamination was discovered as a result of:

☐ Tank closure assessment — Date

☒ Site assessment — Date 8-14-03

Other – Describe: _____ — Date

Lab results:

☐ Lab results will be faxed upon receipt

☒ Lab results are attached

Additional Comments: Include a brief description of immediate actions taken to halt the release and contain or cleanup hazardous substances that have been discharged.

TANKS & PIPING REMOVED 8-14-03

FAX numbers to report non-emergency releases in DNR's five regions are as follows:

Northeast Region (920-492-5859); Attention - RR Program Assistant:
Brown, Calumet, Door, Fond du Lac *(except City of Waupun - see South Central Region)*, Green Lake, Kewaunee, Manitowoc, Marinette, Marquette, Menominee, Oconto, Outagamie, Shawano, Waupaca, Waushara, Winnebago Counties

Northern Region (715-365-8932); Attention - RR Program Assistant:
Ashland, Barron, Bayfield, Burnett, Douglas, Forest, Florence, Iron, Langlade, Lincoln, Oneida, Polk, Price, Rusk, Sawyer, Taylor, Vilas, Washburn Counties

South Central Region (608-275-3338); Attention - RR Program Assistant:
Columbia, Crawford, Dane, Dodge, Fond du Lac *(City of Waupun only)*, Grant, Green, Iowa, Jefferson, Lafayette, Richland, Rock, Sauk Counties

Southeast Region (414-263-8483); Attention - RR Program Assistant:
Kenosha, Milwaukee, Ozaukee, Racine, Sheboygan, Walworth, Washington, Waukesha Counties

West Central Region (715-839-6076); Attention – RR Program Assistant:
Adams, Buffalo, Chippewa, Clark, Dunn, Eau Claire, Jackson, Juneau, LaCrosse, Marathon, Monroe, Pepin, Pierce, Portage, St. Croix, Trempealeau, Vernon, Wood Counties

EN CHEM INC.

Corporate Office & Laboratory
1241 Bellevue Street, Suite 9, Green Bay, WI 54302
920-469-2436, 800-7-ENCHEM, Fax: 920-469-8827
www.enchem.com

Analytical Report Number: 837763

Client : SHAW E & I

Project Name : THOMAS SMITH PROPERTY

Project Number : 680561

Lab Sample Number	Field ID	Matrix	Collection Date
837763-001	TANKS SAMPLE	SOIL	08/14/03
837763-002	TRIP BLANK	METHA	08/14/03

I certify that the data contained in this Final Report has been generated and reviewed in accordance with approved methods and Laboratory Standard Operating Procedure. Exceptions, if any, are discussed in the accompanying sample comments. Release of this final report is authorized by Laboratory management, as is verified by the following signature. Reported results shall not be reproduced, except in full, without the written approval of the lab. The sample results relate only to the analytes of interest tested.

Approval Signature

Date 8/26/03

En Chem Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Analytical Report Number: 837763

Client : SHAW E & I
Project Name : THOMAS SMITH PROPERTY
Project Number : 680561
Field ID : TANKS SAMPLE

Matrix Type : SOIL
Collection Date : 08/14/03
Report Date : 08/20/03
Lab Sample Number : 837763-001

INORGANICS

Test	Result	LOD	LOQ	EQL	Dil.	Units	Code	Analysis Date	Prep Method	Analysis Method
Percent Solids	88.0				1	%		08/15/03	SM 2540G M	SM 2540G M

GASOLINE RANGE ORGANICS

Prep Date: 08/19/03

Analyte	Result	LOD	LOQ	EQL	Dil.	Units	Code	Analysis Date	Prep Method	Analysis Method
Gasoline Range Organics	400			11	200	mg/kg		08/19/03	WI MOD GRO	WI MOD GRO
GRO Blank	< 2.5			2.5	50	mg/kg		08/19/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike	102			1.00	1	%Recov		08/19/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate	101			1.00	1	%Recov		08/19/03	WI MOD GRO	WI MOD GRO

En Chem Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Analytical Report Number: 837763

Client : SHAW E & I
Project Name : THOMAS SMITH PROPERTY
Project Number : 680561
Field ID : TRIP BLANK

Matrix Type : METHANOL
Collection Date : 08/14/03
Report Date : 08/20/03
Lab Sample Number : 837763-002

GASOLINE RANGE ORGANICS

Prep Date: 08/19/03

Analyte		Result	LOD	LOQ	EQL	Dil.	Units	Code	Analysis Date	Prep Method	Analysis Method
Gasoline Range Organics	<	2500			2500	50	ug/L		08/19/03	WI MOD GRO	WI MOD GRO
GRO Blank	<	50			50	1	ug/L		08/19/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike		102			1.00	1	%Recov		08/19/03	WI MOD GRO	WI MOD GRO
GRO Blank Spike Duplicate		101			1.00	1	%Recov		08/19/03	WI MOD GRO	WI MOD GRO

En Chem Inc.

1241 Bellevue Street
Green Bay, WI 54302
920-469-2436
800-7-ENCHEM
Fax: 920-469-8827

Lab Number	TestGroupID	Field ID	Comment
837763-001	GRO-S-ME	TANKS	Early and late eluting peaks were present outside the window of analysis.

En Chem Inc.

Analysis Summary by Laboratory

1241 Bellevue Street
Green Bay, WI 54302

1090 Kennedy Avenue
Kimberly, WI 54136

Test Group Name	837763-001	837763-002
GASOLINE RANGE ORGANICS	G	G
PERCENT SOLIDS	G	

Wisconsin Certification	
G = En Chem Green Bay	405132750 / DATCP: 105 000444
K = En Chem Kimberly	445134030
S = Subcontracted Analysis	

(Please Print Legibly)

Company Name: SHAW ENVIRONMENTAL

Branch or Location: Pewaukee, WI

Project Contact: Chuck Zinney

Telephone: 262-549-6898

Project Number: 680561

Project Name: THOMAS SMITH PROPERTY

Project State: WI

Sampled By (Print): Chuck Zinney

EN CHEM INC.

☐ 1241 Bellevue St., Suite 9, Green Bay, WI 54302, 920-469-2436, FAX 920-469-8827

☐ 525 Science Drive, Madison, WI 53711, 608-232-3300, FAX: 608-233-0502

CHAIN OF CUSTODY

92425

*Preservation Codes: A=None B=HCL C=H2SO4 D=HNO3 E=EnCore F=Methanol G=NaOH H = Sodium Bisulfate Solution I = Sodium Thiosulfate J = Other

FILTERED? (YES/NO): – | –

PRESERVATION (CODE)*: F | A

ANALYSES REQUESTED: GRO, Dry Wgt

TOTAL # OF BOTTLES SENT

Page ____ of ____

P.O. # ____ Quote # ____

Mail Report To: Chuck Zinney

Company: Shaw E & I

Address: 2835 N. Grandview Blvd, Pewaukee, WI 53072

Invoice To: Denise Dichristopher

Company:

Address:

Mail Invoice To:

Data Package Options - (please circle if requested)

- Sample Results Only (no QC)
- EPA Level II (Subject to Surcharge)
- EPA Level III (Subject to Surcharge)
- EPA Level IV (Subject to Surcharge)

Regulatory Program: UST, RCRA, SDWA, NPDES, CERCLA

Matrix Codes: W=Water, S=Soil, A=Air, C=Charcoal, B=Biota, SI=Sludge

LABORATORY ID (Lab Use Only)	FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	GRO	Dry Wgt							TOTAL # OF BOTTLES	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)
001	Tanks Sample	8/14/03	12:00	S	✓	✓							2	PID >1700	1-4 oz poly, 1-2 oz F
002	TRIP Blank	8/14/03	12:15	–	✓								1		1-2 oz F Blk

Rush Turnaround Time Requested (TAT) - Prelim

(Rush TAT subject to approval/surcharge)

Date Needed:

Transmit Prelim Rush Results by (circle):

Phone Fax E-Mail

Phone #:

Fax #:

E-Mail Address:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Chuck Zinney	8/14/03 17:30	[signature]	8/15/03 1000
[signature]	8/15/03	F Hague	8-15-03
F Hague	8-15-03 1530	Jason Ruland	8/15/03 1530

En Chem Project No.: 837763

Sample Receipt Temp.: ROI

Sample Receipt pH (Wet/Metals): N/A

Cooler Custody Seal: Present / Not Present

Intact / Not Intact

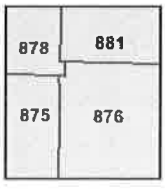
1950 Certified Sanborn Map

The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for this collection.

Certification # 62FA-4F0A-9332

Site Name:	1003 West Atkinson Avenue
Address:	1003 West Atkinson Avenue
City, ST, ZIP:	Milwaukee WI 53206
Client:	Sigma Env. Services, Inc.
EDR Inquiry:	3812735.3
Order Date:	12/17/2013 6:58:03 PM
Certification #	62FA-4F0A-9332
Copyright:	1950

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.



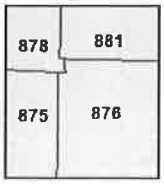
Volume 8, Sheet 875
Volume 8, Sheet 876
Volume 8, Sheet 878
Volume 8, Sheet 881

0 Feet 150 300 600

N

1968 Certified Sanborn Map

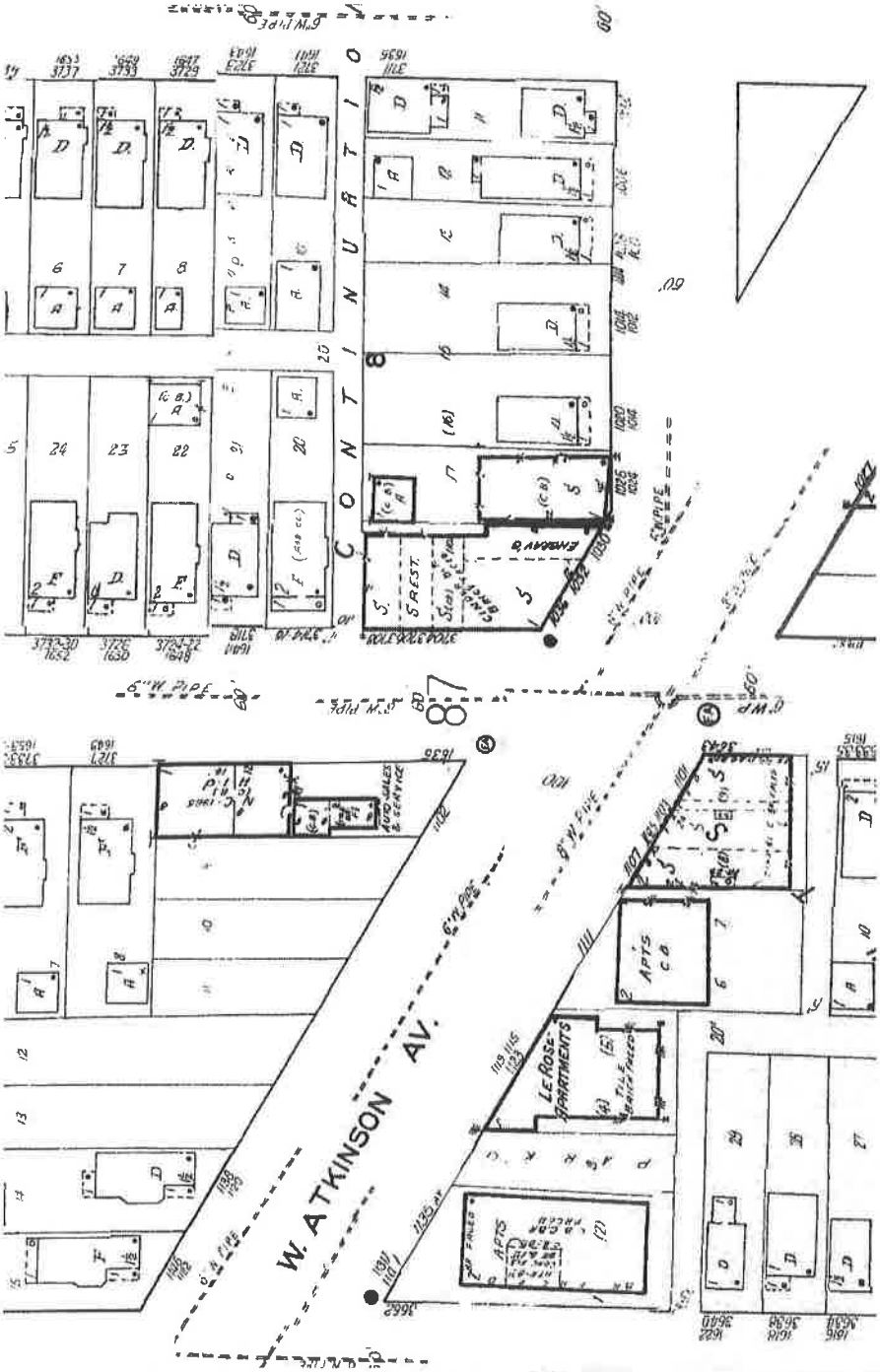
This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.



Volume 8, Sheet 875
Volume 8, Sheet 876
Volume 8, Sheet 878
Volume 8, Sheet 881

0 Feet 150 300 600

N



APPENDIX F/HEALTH AND SAFETY PLAN

Site Investigation Field Procedures Workplan - METCO
Smith Property

Safety Plan Information

Company Name:	METCO
Contact Information:	Jason Powell 709 Gillette Street, Suite 3 La Crosse, WI 54603 (608) 781-8879

Site Information

METCO Project #:	C2713
Site Name:	Smith Property
Site address:	1102 W Atkinson Avenue Milwaukee, WI 53206
County:	Milwaukee
WDNR Contact:	Andy Alles 101 S Webster Avenue Madison, WI 53707 (608) 261-8509
WDNR BRRTS Case #:	03-41-506431

Purpose of Activity (Check all that apply)

Petroleum Release Investigation	X
Ag Chemical Release Investigation	
Install Soil Borings/Monitoring Wells	X
Tank/Piping Removal	
Tank/Piping Closure Assessment	
Phase 1/Phase 2 Environmental Site Assessment	
Install Remedial System	
Other	

Site Investigation Field Procedures Workplan - METCO
Smith Property

Tank Information

Tank Size (Gallons)	Contents	Age
1,000 (3 tanks)	Leaded Gasoline	Unknown

Potential Health and Safety Hazards (Check all that apply)

Handling/Transfer of Product (Fire, Explosions)	
General Construction (Electrical Hazards, Physical Injury)	X
Confined Space Entry (Explosions)	
Heavy Equipment	X
Noise	X
Underground and Overhead Utilities	X
Site Traffic	X
Oxygen Depletion	
Excavation (Cave Ins, Falls, Slips)	
Poisonous Plants	
Snakes, Insects, Rodents	
Heat, Cold	X
Other	

Evaluation of Chemical Hazards

Name	Physical State	Route of Entry	TWA/STEL (ppm)	Symptoms of Exposure
Gasoline	Vapor/Liquid	Inhalation/Skin	300/500	Irritation, Nausea, Vomiting, Dizziness, Unconsciousness

On-Site Personnel Responsibilities

	Team Member	Responsibility
1.	Ron Anderson	Senior Project Manager
2.	Jason Powell	Site Project Manager
3.	Eric Dahl	Hydrogeologist
4.	Tyler Woodke	Staff Scientist
5.	Kaylin Felix	Hydrogeologist
6.	Maxwell Wannow	Hydrogeologist

Site Investigation Field Procedures Workplan - METCO
Smith Property

Method to Control Potential Heath and Safety Hazards

Monitoring Instruments

Photoionization Detector (PID)	X
Flame Ionization Detector (FID)	
Combustible Gas Indicator	
Four Gas Meter	
Detector Tubes	

Action Levels	Action
0-10% LEL (No Explosion Hazard)	None
Oxygen Deficient (Less Than 21%)	Notify Health & Safety Officer
Oxygen Deficient (Less Than 19%)	Evacuate

Personal Protective Equipment

Minimum Requirements:

1. Hardhat
2. Safety Glasses/Goggles
3. Steel Toe Shoes or Boots
4. Flame Retardant Coveralls
5. Hearing Protection (Muffs or Ear Plugs)
6. Nitrile Gloves

Is additional PPE required? No

Additional Requirements

Uncoated Tyvek Coveralls	
Saranex Tyvek Coveralls	
Rubber Boots	
Overboots	
Surgical Inner Gloves	
Butyl Neoprine/Nitrile Outer Gloves	
Full Face Respirators	
Type of Cartridge:	
SCBA/SAR	
Other	

Level of Protection Designated: D

Site Investigation Field Procedures Workplan - METCO
Smith Property

Site Control

Work Zones

Support Zone: Beyond a 25 foot radius of drilling or excavation and upwind of operation.
Contamination Reduction Zone: Between 15 and 25 foot radius of drilling or excavation.
Exclusion Zone: Within 15 foot radius of of drilling or excavation.

Site Entry Procedure: Obtain all approval and instructions from project manager.

Decontamination Procedures:

Personnel: Remove protective equipment and wash hands prior to eating.
Equipment: Wash with brush and Alconox soap, rinse with fresh tap water.

Investigation Derived Material Disposal:

Stockpiling: The soils will be placed on and covered with plastic. The client will determine the stockpile location, but will have to be approved by the project manager. Soils will be disposed of by the most efficient and cost effective approved method.

DOT drums: Label drums as to content and date filled. Routinely inspect drums for leakage or spills. Place together in area where movement is at minimum.

Work Limitations: Daylight hours. No eating, drinking, or smoking in the exclusion zone or contamination reduction zone.

Employee Limitations:

Site Resources:

Shower	
Water Supply	X

Contingency Planning

Emergency Contacts	Phone Number
Ambulance: Milwaukee	911
Hospital Emergency Room: Columbia St Mary's	(414) 961-3300
Poison Control Center: Milwaukee	(800) 222-1222
Police: Milwaukee	911
Fire Department: Milwaukee	911
Hazardous Waste Response Center: Wisconsin	(800) 943-0003
EPA	(800) 424-8802

Location Address: 1102 W Atkinson Avenue, Milwaukee WI 53206

Site Investigation Field Procedures Workplan - METCO
Smith Property

Hospital: Columbia St Mary's
2025 Newport Avenue
Milwaukee, WI 53211
(414) 961-3300

Emergency Route:

- Travel northwest on W Atkinson Avenue and travel 250 feet to N 12th Street.
- Turn right onto N 12th Street and travel north 0.3 miles to W Capitol Drive (WI 190/57).
- Turn right onto W Capitol Drive and travel east 1.7 miles to N Morris Blvd.
- Turn right onto N Morris Blvd and travel south 0.4 miles to where N Morris Blvd becomes E Menlo Blvd.
- E Menlo Blvd curves left toward the east and continue 0.4 miles to N Maryland Avenue.
- Turn right onto N Maryland Avenue and travel south 0.3 miles to E Newport Avenue.
- Turn right onto E Newport Avenue and travel 350 feet west to N Frederick Avenue.
- Turn left onto N Frederick Avenue and travel 250 feet to hospital entrance.
- Turn right at hospital entrance, travel 200 feet, and hospital will be on right.

Emergency Procedures:

If an emergency develops at the site, the discoverer will take the following course of action:

– Notify the proper emergency service (fire, police, etc.) for assistance.
– Notify other personnel on the site. Notify project manager.
– Contact METCO and the client representative to inform them of the incident as soon as possible.
– Prepare a summary report of the incident for METCO and the client representative.

On-Site Organization	Phone Numbers	
METCO Project Manager: Jason Powell	work	(608) 781-8879
	cell	(608) 385-1467
METCO Safety Officer: Brian Hora	work	(800) 236-0448
	cell	(608) 604-2933
METCO Corporate Contact: Paul Knower	work	(800) 236-0448
	cell	(608) 604-2931
Client Contact: Thomas Smith	(414) 426-5980	

Daily Safety Plan Check

1. Hard Hat
2. Visible Fire Extinguisher
3. Safety Glasses
4. Hearing Protection
5. No Smoking On Site
6. Safety Data Sheet
7. Route to Hospital
8. Barricades (Cones, Flags, Fences, Vehicle)
9. Emergency Phone Numbers
10. Know Where the Site Safety Plan Is

US Hospital Finder (/)™: Directions

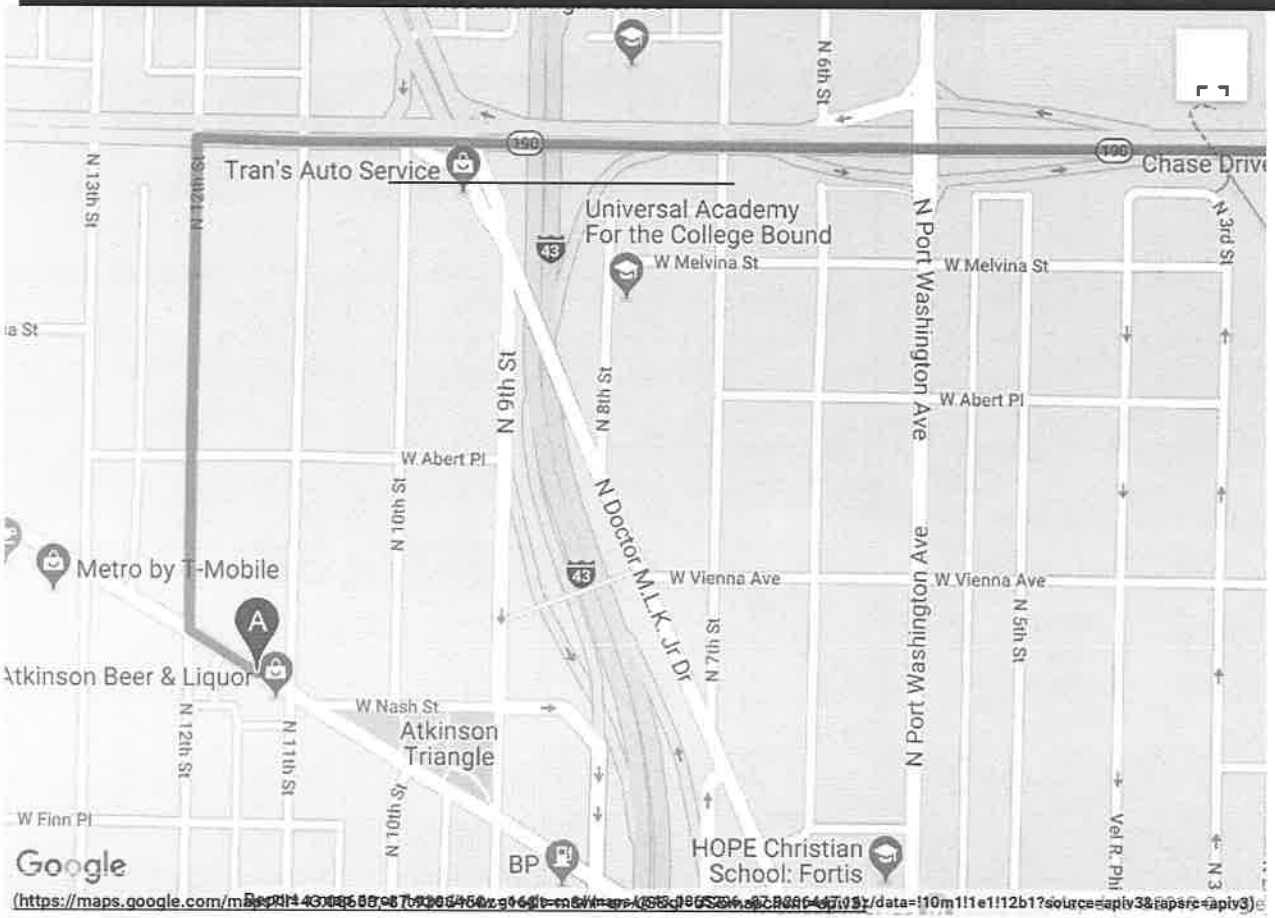
From: 1102 W Atkinson Avenue, Milwaukee, WI

To: Columbia St Mary's-Columbia 2025 East NEwport Avenue Milwaukee, WI 53211-2990

US Hospital Finder (/)™: Directions

From: 1102 W Atkinson Avenue, Milwaukee, WI

To: Columbia St Mary's-Columbia 2025 East NEwport Avenue Milwaukee, WI 53211-2990



US Hospital Finder (/)™: Directions

From: 1102 W Atkinson Avenue, Milwaukee, WI

To: Columbia St Mary's-Columbia 2025 East NEwport Avenue Milwaukee, WI 53211-2990

APPENDIX G/QUALIFICATIONS

Ronald J. Anderson, P.G.

Professional Titles

- Senior Hydrogeologist
- Project Manager

Credentials

- Licensed Professional Geologist in Wisconsin
- Licensed Professional Geologist in Minnesota
- Recognized by the State of Wisconsin Department of Natural Resources (Chapter NR712) as a qualified Hydrogeologist
- Certified by State of Wisconsin to conduct PECFA-funded LUST projects
- Certified tank closure site assessor (#41861) in Wisconsin
- Member of the Wisconsin Groundwater Association
- Member of the Minnesota Groundwater Association
- Member of the Federation of Environmental Technologist, Inc.

Education

Includes a BA in Earth Science from the University of Minnesota-Duluth. Applicable courses successfully completed include Hydrogeology, Applied Hydrogeology, Environmental Geology, Geological Field Methods, Geology Field Camp, Geomorphology, Structural Geology, Stratigraphy/Tectonics, Mineralogy/Petrology, Glacial/Quaternary Geology, Geology of North America, Oceanography, General Chemistry, Organic Chemistry, and Environmental Conservation.

Post-Graduate Education

Includes Personnel Protection and Safety, Conducting Comprehensive Environmental Property Assessments, Groundwater Flow and Well Hydraulics, Effective Techniques for Contaminated Groundwater Treatment, and numerous other continuing education classes and conferences.

Work Experience

Includes nine months with the Wisconsin Department of Natural Resources Leaking Underground Storage Tank Program regulating LUST sites and since June 1990, with METCO as a Hydrogeologist and Project Manager. Duties have included: managing, conducting, and reporting tank closure assessments; property assessment, LUST investigations; spill investigations; agricultural chemical investigations, dry cleaning chemical investigations, general geotechnical/environmental investigations; Geoprobe projects (soil, groundwater, soil gas sampling); drilling projects (soil boring and monitoring wells); and remedial projects. Since 1989, METCO has sampled/consulted over 1,465 environmental sites.

Jason T. Powell

Professional Title

- Staff Scientist

Credentials

- Recognized by the State of Wisconsin Department of Natural Resources (Chapter NR712) as a qualified Scientist.

Education

Includes a BS in Groundwater Management from the University of Wisconsin- Stevens Point. Applicable courses successfully completed include Hydrogeology, Applied Hydrogeology, Environmental Geology, Hydrogeology-Groundwater Flow Modeling, Groundwater Management, Structural Geology, Mineralogy, Glacial Geology, Soils, Soil Physics, Hydrology, Geochemistry, Water Chemistry, Organic Chemistry, General Chemistry, Environmental Issues.

Post-Graduate Education

40-hour OSHA Hazardous Materials Safety Training course with 8-hour refresher course.

Work Experience

With METCO since May 1992 as a Geoprobe Assistant and Geoprobe Operator. In June 1995 to July 1996 as a Environmental Technician. In July 1996 as a Staff Scientist. Duties have included: LUST investigations; general geotechnical/environmental investigations; Geoprobe projects (soil, groundwater sampling); drilling projects (soil boring and monitoring wells); remedial projects (sampling, pilot tests, system operation/maintenance) and project management.

Eric J. Dahl

Professional Title

- Hydrogeologist

Credentials

- Recognized by the State of Wisconsin Department of Natural Resources (Chapter NR712) as a qualified Hydrogeologist.
- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#823519).

Education

Includes B.S. in Geology from the University of Wisconsin-Eau Claire. Applicable courses successfully completed include Environmental Geology, Physical Hydrogeology, Chemical Hydrogeology, Computer Modeling in Hydrogeology, Aqueous Geochemistry, Field Geology I and II, Mineralogy and Petrology I and II, Sedimentology and Stratigraphy, Petroleum and Economic Geology, Earth Resources, Earth History, and Structural Geology.

Post-Graduate Education

40-hour OSHA Hazardous Materials Safety Training course with 8-hour refresher course.

Work Experience

With METCO since November 1999 as a Hydrogeologist. Duties have included: Site Investigations, Phase I and Phase II Environmental Site Assessments, Case Closure Requests/GIS Registry, Geoprobe projects (oversight, direction, and sampling), drilling projects/monitoring well installation (oversight, direction, and sampling), soil excavation projects (oversight, direction, and sampling), Geoprobe operation, and operation and maintenance of remedial systems.

Thomas P. Pignet, P.E.

Professional Titles

- Chemical Engineer
- Industrial Engineer

Credentials

- Licensed Professional Engineer in Wisconsin

Education

Undergraduate: B.S. in Chemical Engineering from the University of Wisconsin. Applicable courses include the standard chemistry curriculum - basic, physical, organic, etc. - plus engineering transport phenomena, chemical unit operations (e.g. separations), fluid mechanics, etc.

Post-Graduate Education

Ph.D. in Chemical Engineering from the University of Minnesota - with applicable special training in absorption & catalysis; M.S. in Industrial Engineering from the University of Wisconsin - Milwaukee - with special emphasis on statistical techniques and data analysis. Applicable further training: continuing education, semester-length courses in [1] Understanding Environmental & Safety Regulation; [2] Hazardous & Toxic Waste Management; plus a number of 1-2 day workshops - Fire & Explosion Safety; Small Quantity Generations of Hazardous Waste.

Work Experience

Includes ten years as a research chemical engineer with a large chemical manufacturer; one year as process development engineer and demonstration-scale test analyst on a unique coal gasification project; ten years in association with UW-M, teaching and consulting to industry on energy efficiency, waste minimization and productivity improvement. One year working with a small engineering consulting firm on energy, environmental, and process improvement projects, including LUST Investigations and Remediations. With METCO since February 2000. Duties include Remedial Action Plan preparation, pilot test design and performance, remedial systems design and implementation, and general management of METCO's remedial projects.

Tyler Woodke

Professional Title

- Staff Scientist

Credentials

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#396413).

Education

Includes B.S. in Geography with an Environmental Studies minor from the University of Wisconsin-La Crosse. Applicable courses successfully completed include: Introduction to Biology, Introduction to Environmental Studies, Earth Environments, Conservation of Global Environments, Introduction to GIS, History of Environmental Policies in the U.S., Interpretation of Aerial Photographs, Fundamentals of Cartography, Environmental Hazards/Land Use, Remote Sensing, Water Resources, Environmental Sustainability, and Environmental Ethics, Outdoor Recreation and Natural Resources.

Work Experience

With METCO since February, 2018 as Staff Scientist. Duties include: soil and groundwater sampling, operation and maintenance of remedial systems, Geoprobe projects (oversight, direction, and sampling), site mapping, data reduction and analysis, and reporting.

Kaylin D. Felix

Professional Title

- Hydrogeologist

Credentials

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#1564301).

Education

Includes B.S. in Geology (Hydrogeology) from the University of Wisconsin- Oshkosh. Applicable courses successfully completed include Physical Hydrogeology, Chemical Hydrogeology, Applied Geologic Field Methods, Field Geology, Mineralogy, Sedimentology, Lithology, Evolution of Earth, Physical Geology, Structural Geology and Tectonics, Glacial Geology, Geophysics and Geotectonics, Geochemistry, Water Resource Management and Geographic Informational Systems.

Work Experience

With METCO since April, 2018 as Hydrogeologist. Duties include: soil and groundwater sampling, operation and maintenance of remedial systems, Geoprobe projects (oversight, direction, and sampling), site mapping, data reduction and analysis, and reporting.

Maxwell Wannow

Professional Title

- Hydrogeologist

Credentials

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#55909).

Education

Includes B.S. in Geology (Professional Geology) from the University of Wisconsin- Oshkosh. Applicable courses successfully completed include Geochemistry, Geophysics, Sedimentology, Field Geology, Stratigraphy and Basin Analysis, Sedimentary Petrology, Structural Geology, Mineralogy, Lithology, Paleontology, Evolution of Earth, and Physical Geology.

Work Experience

With METCO since June, 2018 as Hydrogeologist. Duties include: soil and groundwater sampling, operation and maintenance of remedial systems, Geoprobe projects (oversight, direction, and sampling), site mapping, data reduction and analysis, and reporting.

APPENDIX H/LIST OF ACRONYMS

AST - Aboveground Storage Tank
ASTM - American Society for Testing and Materials
Cd - Cadmium
DOT - Department of Transportation
DRO - Diesel Range Organics
ES - Enforcement Standards
gpm - gallons per minute
GRO - Gasoline Range Organics
ID - inside-diameter
LAST - Leaking Aboveground Storage Tank
LUST - Leaking Underground Storage Tank
MSL - Mean Sea Level
MTBE - Methyl-tert-butyl ether
MW - Monitoring Well
NIOSH - National Institute for Occupational Safety & Health
NR - Natural Resources
OD - outside-diameter
PAH - Polynuclear Aromatic Hydrocarbons
PAL - Preventive Action Limits
Pb - Lead
PECFA - Petroleum Environmental Cleanup Fund
PID - Photoionization Detector
POTW - Publicly Owned Treatment Works
ppb ug/kg - parts per billion
ppm mg/kg - parts per million
psi - pounds per square inch
PVC - Polyvinyl Chloride
PVOC - Petroleum Volatile Organic Compounds
RAP - Remedial Action Plan
scfm - standard cubic feet per minute
SVE - Soil Vapor Extraction
USCS - Unified Soil Classification System
USGS - United States Geological Survey
UST - Underground Storage Tank
VOC - Volatile Organic Compounds
WDNR - Wisconsin Department of Natural Resources
WPDES - Wisconsin Pollutant Discharge Elimination System