

# Site Investigation Field Procedures Workplan

Osceola Oil Bulk Plant - Milltown  
431 2<sup>nd</sup> Avenue SW  
Milltown, Wisconsin

May 1, 2017  
by METCO

WDNR File Reference #: 02-49-483615  
PECFA Claim #: 54858-9022-13



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This document was prepared by:

A handwritten signature in black ink, appearing to read "Jason T. Powell", written over a horizontal line.

Jason T. Powell  
Staff Scientist

A handwritten signature in black ink, appearing to read "Ronald J. Anderson", written over a horizontal line.

Ronald J. Anderson, P.G.  
Senior Hydrogeologist/Project Manager



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WDNR BRRTS#: 02-49-483615

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Mike Montgomery  
945 187<sup>th</sup> Street, P.O. Box 45  
Dresser, WI 54009

Dear Mr. Montgomery,

Enclosed is our "Site Investigation Field Procedures Workplan" concerning the Osceola Oil Bulk Plant - Milltown site in Milltown, 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: Carrie Stoltz – WDNR

**Site Investigation Field Procedures Workplan - METCO  
Osceola Oil Bulk Plant - Milltown**

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## **Site Investigation Field Procedures Workplan - METCO Osceola Oil Bulk Plant - Milltown**

### **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.

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Osceola Oil Bulk Plant - Milltown**

**INTRODUCTION**

**Site Name**

Osceola Oil Bulk Plant - Milltown

**Site Address**

431 2<sup>nd</sup> Avenue SW  
Milltown, Wisconsin

**Legal Description**

NW ¼, SW ¼, Section 17, Township 35 North, Range 17 West, Polk County

**WTM Coordinates**

324068, 563724

Note: The site is not located correctly on the WDNR RR sites map and is incorrectly located nearly one mile to the north of its actual location. Above are the correct coordinates.

**Contact or Client**

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Dresser, WI 54009  
(715) 501-8349

**WDNR Project Manager**

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**Consultant**

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(608) 781-8879

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**SITE BACKGROUND**

**Facility**

A bulk petroleum storage facility operated on the property from approximately the 1950s until 2001. The property is currently used for general storage.

On June 1, 2001, nine above ground storage tanks (ASTs) were removed from the subject property. The ASTs consisted of one 14,000-gallon fuel oil, one 14,000-gallon diesel, two 12,000-gallon diesel, one 12,000-gallon kerosene, two 10,000-gallon unleaded gasoline, one 10,000-gallon diesel, and one 1,500-gallon kerosene AST.

On July 28, 2003, DPRA, Inc. completed a Phase 2 Environmental Site Assessment (P2ESA) at the subject property. No report of the P2ESA results is available. However, it appears that obvious soil contamination was encountered and reported to the WDNR on the same date.

No other LUST or ERP sites exist within ½ mile of the subject property.

**Potential Risks and Impacts**

There is currently no municipal or private water supply at the subject property. The Village of Milltown municipal water system extends down 2<sup>nd</sup> Avenue SW to about the northern property boundary, supplying municipal water to the nearby properties to the north. The water main then turns west and runs down Tiger Avenue. The Village of Milltown has two municipal water supply wells, which are located approximately 2,100 feet to the north-northeast of the subject property. Properties to the south are not connected to the municipal water supply. However, there do not appear to be any structures within 1,200 feet of the subject property that would have private water supply wells.

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, Milltown is located in the central portion of the St Croix River Basin. This area is characterized by knob and kettle topography with numerous swamps and lakes.

The elevation of the site is approximately 1,220 feet above Mean Sea Level (MSL). See Appendix A for site location.

## **Site Investigation Field Procedures Workplan - METCO Osceola Oil Bulk Plant - Milltown**

### **Geology**

Native unconsolidated materials in this area generally consist of sand to silty sand. The unconsolidated materials are underlain by sandstone bedrock at approximately 100 feet bgs.

### **Hydrology**

The nearest surface water is a wetland area along Rice Creek which exists approximately 450 feet to the southeast of the subject property.

### **Hydrogeology**

Based on the local topography, groundwater is expected to exist at approximately 10 feet below ground surface. The local groundwater flow direction 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 Project**

METCO has proposed a 1-2 day Geoprobe Project. We propose 15 to 20 borings to 15 to 20 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.

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

1. Determine general subsurface geotechnical characteristics.
2. Determine general extent of the contaminants in the unconsolidated deposits.
3. Determine the general extent of contaminants in groundwater, if applicable.
4. Determine if contaminants have migrated to competent rock, if

## Site Investigation Field Procedures Workplan - METCO Osceola Oil Bulk Plant - Milltown

applicable.

This data will either completely define the extent of contamination or be used to guide the Drilling Project if required.

### **Drilling Project (if required)**

METCO has proposed 6 to 10 boreholes to be completed on/off site. METCO has also proposed 5 to 8 monitoring wells to be installed on/off site. Based on the results of the Geoprobe project, we will be able to determine how many monitoring wells will need to be installed.

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

1. Collect a soil sample for field analysis every 2.5 feet of boring.
2. Collect at least two soil samples for laboratory analysis in every boring.
3. Verify, through sampling, the horizontal and vertical extent of soil contamination, including smear zones.
4. Install monitoring wells in an arrangement that fully defines the horizontal and vertical extent of groundwater contamination.
5. Develop the monitoring wells.
6. Collect at least two rounds of groundwater samples from the monitoring wells.
7. If conditions warrant, perform slug tests on at least one monitoring well.

### **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, 3 or 4-foot long, stainless steel rods into the subsurface. At desired depths, either a soil or water sample can be collected.



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A 4-foot or 5-foot long, ½ or 1-inch diameter soil sampler is advanced to the sampling location. At desired depths, a soil sample is collected and brought to the surface for analysis.

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

### Drilling

Drilling is conducted with a truck mounted 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 in accordance with ASTM D-1586 "Penetration Tests and Split-Barrel Sampling of Soils" using a 2-inch outside diameter (O.D.), 2.5 foot split spoon sampler. Using this procedure, a split spoon sampler is driven into the soil by a 140-pound weight falling 30-inches, and a soil sample collected.

All borings are properly abandoned to ground level using bentonite clay.

### HNU 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 HNU probe is inserted into the plastic bag halfway between the sample and the highest meter response recorded. The samples

## Site Investigation Field Procedures Workplan - METCO Osceola Oil Bulk Plant - Milltown

are screened with a MODEL DL-102 HNU 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 or 80 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

## **Site Investigation Field Procedures Workplan - METCO Osceola Oil Bulk Plant - Milltown**

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.

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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.

### Variations

We are not aware of any variations 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 (4/1/17).
- 5) METCO conducts Geoprobe 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) Depending on the results of the investigation, METCO prepares a brief summary report or final report and sends copies to client and WDNR (2 months after lab results are received).

**NOTE: If groundwater is found to be impacted or suspected of being impacted by released contaminants, the WDNR will require a Drilling Project with monitoring wells.**

- 7) METCO conducts Drilling Project (2 months). 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).
- 8) METCO develops/surveys the installed monitoring wells and collects.

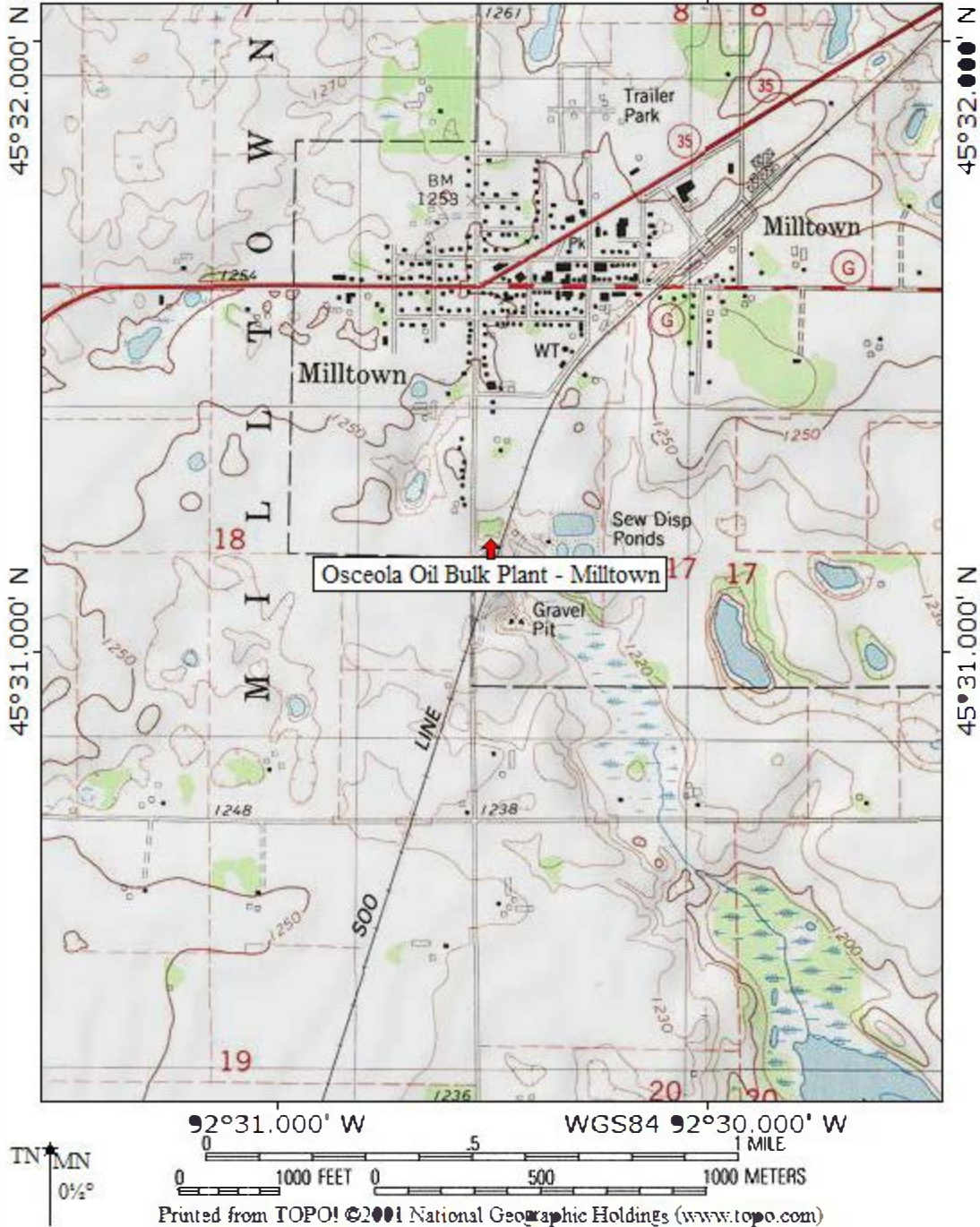
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- Round 1 groundwater samples for laboratory analysis (1 month to receive lab results).
- 9) METCO collects Round 2 groundwater samples for laboratory analysis (1 month to receive lab results).
  - 10) METCO completes any additional work that is needed, such as slug tests (1 month).
  - 11) METCO prepares a Site Investigation report that contains all collected data and submits to the client and WDNR (3-6 months).
  - 12) 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 (reimbursement takes 3 to 6 months).
  - 13) If further investigation and/or remediation is required METCO will provide further assistance.



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**APPENDIX A/SITE MAPS**

TOPO! map printed on 03/30/17 from "Wisconsin.tpo" and "Untitled.tpg"  
92°31.000' W WGS84 92°30.000' W



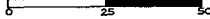
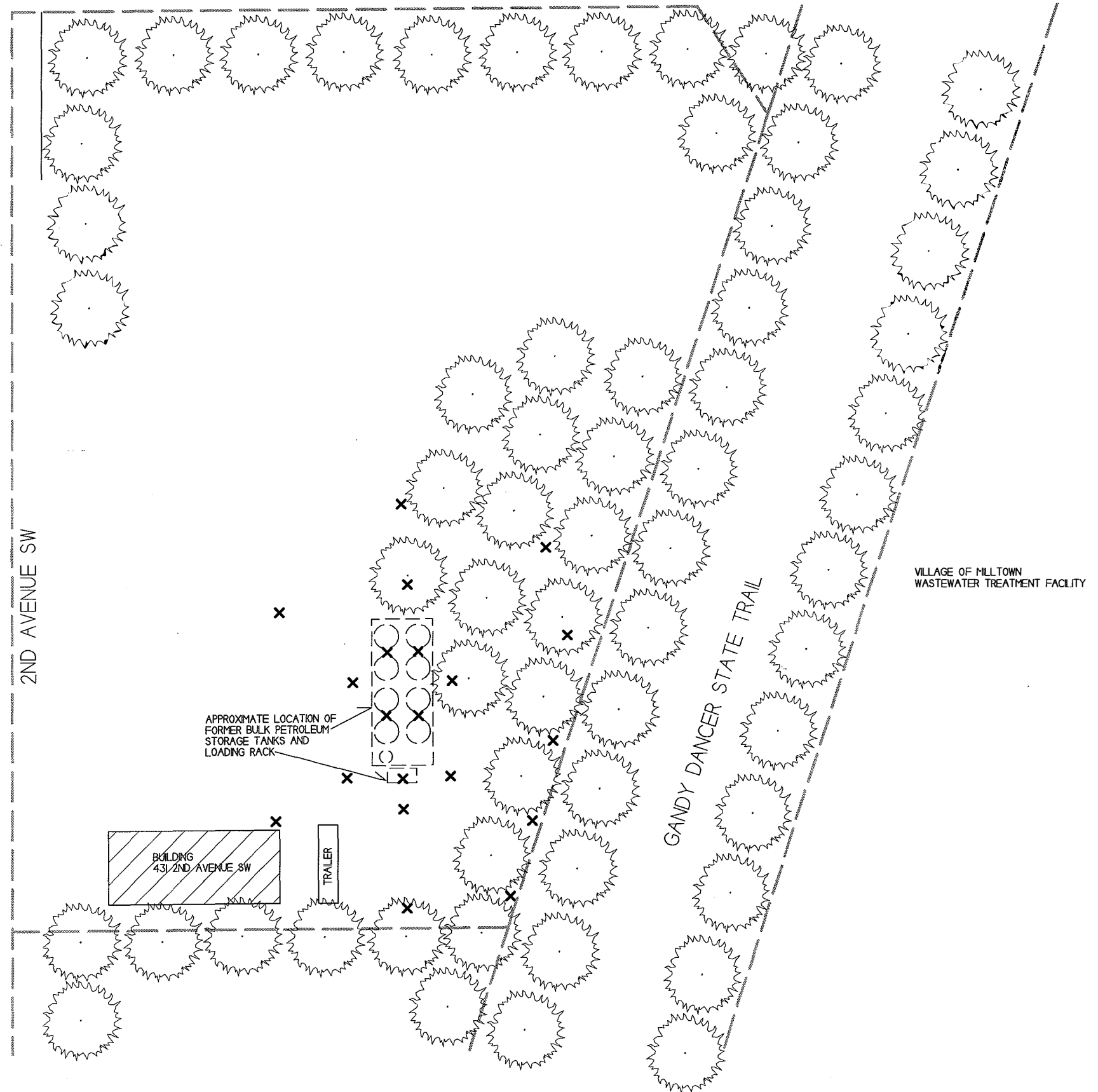
B.1.a LOCATION MAP  
CONTOUR INTERVAL 10 FEET  
OSCEOLA OIL BULK PLANT – MILLTOWN, WI  
SEAMLESS USGS TOPOGRAPHIC MAPS ON CD-ROM

SITE LAYOUT MAP		
OSCEOLA OIL BULK PLANT - MILLTOWN		
	MILLTOWN, WISCONSIN <small>109 Glacis Street, Suite 3 La Crosse, WI 54603 Tel: (608) 781-8879 Fax: (608) 781-8823</small> DRAWN BY: ED DATE: 03/29/2007	

NOTE: INFORMATION BASED ON AVAILABLE DATA. ACTUAL CONDITIONS MAY DIFFER

- PROPERTY LINE
- ✕ - PROPOSED SOIL BORING LOCATION

SCALE: 1 INCH = 50 FEET



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**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 (3300-58)
  - \_\_\_ 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

**Site Investigation Field Procedures Workplan - METCO  
Osceola Oil Bulk Plant - Milltown**

**APPENDIX C/LUST SAMPLING GUIDELINES**

LUST and Petroleum Analytical and QA Guidance  
July 1993 Revision

Petroleum Substance Discharged	Analysis of Samples Collected for UST Tank Closure Assessments	Solid Waste Program Requirements for Soils to be landfilled <sup>9</sup>	Site Investigation, Pretreatment and Posttreatment Sample Analysis <sup>11</sup>
Regular Gasoline	GRO <sup>2</sup>	Free Liquids <sup>6</sup> GRO Benzene <sup>7</sup> Pb <sup>7</sup> Haz. Waste Deter. <sup>8</sup>	GRO VOC/PVOC <sup>15</sup> Pb <sup>12</sup>
Unleaded Gasoline; Grades 80 100, and 100 LL (Low Lead) Aviation Fuel	GRO <sup>2</sup>	Free Liquids <sup>6</sup> GRO Benzene <sup>7</sup> Pb <sup>7</sup> Haz. Waste Deter. <sup>8</sup>	GRO PVOC
Diesel; Jet Fuels; and No's 1, 2, and 4 Fuel Oil	DRO <sup>3</sup>	Free Liquids <sup>6</sup> DRO Benzene <sup>7</sup> Haz. Waste Deter. <sup>8</sup>	DRO <sup>3</sup> PVOC PAH <sup>13 14</sup>
Crude Oil; Lubricating Oils; No. 6 Fuel Oil	DRO <sup>3</sup>	Free Liquids <sup>6</sup> DRO Haz. Waste Deter. <sup>8</sup>	DRO <sup>3</sup> PAH <sup>13 14</sup>
Unknown Petroleum	GRO <sup>7</sup> and DRO <sup>3 4</sup>	Free Liquids <sup>6</sup> GRO and DRO Pb, Cd <sup>7</sup> Haz. Waste Deter. <sup>8</sup> CN <sup>19</sup> S <sup>2 10</sup>	GRO and DRO <sup>3 4</sup> VOC/PVOC <sup>15</sup> PAH <sup>13 14</sup> Pb, Cd <sup>12</sup>
Waste Oil	DRO <sup>3</sup>	Free Liquids <sup>6</sup> DRO Pb, Cd <sup>7</sup> Haz. Waste Deter. <sup>8</sup> CN <sup>19</sup> S <sup>2 10</sup>	DRO <sup>3</sup> VOC/PVOC <sup>15</sup> PAH <sup>13 14</sup> PCBs <sup>16</sup> Pb, Cd <sup>12</sup>

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
<b>WET CHEMISTRY</b>			
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 <sub>2</sub> SO <sub>4</sub>	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 <sub>2</sub> SO <sub>4</sub>	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 <sub>3</sub>	180 days
TKN EPA 351.2	1 Liter HDPE	4°C, pH<2 with H <sub>2</sub> SO <sub>4</sub>	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 <sub>2</sub> SO <sub>4</sub>	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 <sub>2</sub> SO <sub>4</sub>	28 days
Organic Carbon SW846 9060/ EPA 415.1	40 ml Glass	4°C, pH<2 with H <sub>2</sub> SO <sub>4</sub> or HCL	28 days
Phenol, Total EPA 420.1	1 Liter Glass	4°C, pH<2 with H <sub>2</sub> SO <sub>4</sub>	28 days
Phosphorus, Total EPA 365.3	250 mL HDPE	4°C, pH<2 with H <sub>2</sub> SO <sub>4</sub>	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
<b>METALS</b>			
Metals	250 mL HDPE	4°C, pH<2 with HNO <sub>3</sub>	6 months
Mercury SW8467470/EPA 245.1	250 mL HDPE	4°C, pH<2 with HNO <sub>3</sub>	28 days
<b>ORGANICS</b>			
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
<b>METALS</b>						
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
<b>ORGANICS</b>						
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.**

**Site Investigation Field Procedures Workplan - METCO  
Osceola Oil Bulk Plant - Milltown**

**APPENDIX D/WDNR DOCUMENTS**

**Residual Contaminant Levels Protective of Groundwater Quality**  
 (Soil-to-Groundwater Scenario Results from: [http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search))

NR140 Substance	NR 140 CAS	Fed MCL (ug/l) (If Red, MCL>ES)	NR 140 ES (ug/l)	RCL-gw (mg/kg) DF=1	Use 2, or input the calculated site-specific DF -->	2.00	INPUT NUMERIC Site Data Max (mg/kg)	Flag E = Individual Exceedance!
Acetochlor	34256-82-1	-	7	5.58E-03			1.12E-02	
Acetone	67-64-1	-	9000	1.85E+00			3.69E+00	
Alachlor	15972-60-8	2	2	1.65E-03			3.30E-03	
Aldicarb	116-06-3	3	10	2.49E-03			4.99E-03	
Aluminum	7429-90-5	-	200	3.01E+02			6.01E+02	
Antimony	7440-36-0	6	6	2.71E-01			5.42E-01	
Anthracene	120-12-7	-	3000	9.84E+01			1.97E+02	
Arsenic	7440-38-2	10	10	2.92E-01			5.84E-01	
Arazine, total chlorinated residues	1912-24-9	3	3	1.95E-03			3.90E-03	
Barium	7440-39-3	2000	2000	8.24E+01			1.65E+02	
Bentazon	25057-89-0	-	300	6.59E-02			1.32E-01	
Benzene	71-43-2	5	5	2.56E-03			5.12E-03	
Benzo(a)pyrene (PAH)	50-32-8	0.2	0.2	2.35E-01			4.70E-01	
Benzo(b)fluoranthene (PAH)	205-99-2	-	0.2	2.40E-01			4.80E-01	
Beryllium	7440-41-7	4	4	3.16E+00			6.32E+00	
Boron	7440-42-8	-	1000	3.20E+00			6.40E+00	
Bromodichloromethane (THM)	75-27-4	80	0.6	1.63E-04			3.26E-04	
Bromoform (THM)	75-25-2	80	4.4	1.17E-03			2.33E-03	
Bromomethane	74-83-9	-	10	2.53E-03			5.06E-03	
Butylate	2008-41-5	-	400	3.88E-01			7.76E-01	
Cadmium	7440-43-9	5	5	3.76E-01			7.52E-01	
Carbaryl	63-25-2	-	40	3.64E-02			7.27E-02	
Carbofuran	1563-66-2	40	40	1.56E-02			3.12E-02	
Carbon disulfide	75-15-0	-	1000	2.97E-01			5.93E-01	
Carbon tetrachloride	56-23-5	5	5	1.94E-03			3.88E-03	
Chloramben	133-90-4	-	150	3.63E-02			7.27E-02	
Chlorodifluoromethane	75-45-6	-	7000	2.89E+00			5.79E+00	
Chloroethane	75-00-3	-	400	1.13E-01			2.27E-01	
Chloroform (THM)	67-66-3	80	6	1.67E-03			3.33E-03	
Chlorpyrifos	2921-88-2	-	2	2.95E-02			5.90E-02	
Chloromethane	74-87-3	-	30	7.76E-03			1.55E-02	
Chromium (total)	7440-47-3	100	100	1.80E+05			3.60E+05	
Chrysene (PAH)	218-01-9	-	0.2	7.25E-02			1.45E-01	
Cobalt	7440-48-4	-	40	1.81E+00			3.62E+00	
Copper	7440-50-8	1300	1300	4.58E+01			9.16E+01	
Cyanazine	21725-46-2	-	1	4.68E-04			9.37E-04	
Cyanide, free	57-12-5	200	200	2.02E+00			4.04E+00	
Dacthal (DCPA)	1861-32-1	-	70	8.56E-02			1.71E-01	
1,2-Dibromoethane	106-93-4	0.05	0.05	1.41E-05			2.82E-05	
Dibromochloromethane (THM)	124-48-1	80	60	1.60E-02			3.20E-02	
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.2	0.2	8.64E-05			1.73E-04	
Dibutyl phthalate	84-74-2	-	1000	2.52E+00			5.04E+00	
Dicamba	1918-00-9	-	300	7.76E-02			1.55E-01	
1,2-Dichlorobenzene	95-50-1	600	600	5.84E-01			1.17E+00	
1,3-Dichlorobenzene	541-73-1	-	600	5.76E-01			1.15E+00	
1,4-Dichlorobenzene	106-46-7	75	75	7.20E-02			1.44E-01	
Dichlorodifluoromethane	75-71-8	-	1000	1.54E+00			3.08E+00	
1,1-Dichloroethane	75-34-3	-	850	2.42E-01			4.84E-01	
1,2-Dichloroethane	107-06-2	5	5	1.42E-03			2.84E-03	
1,1-Dichloroethylene	75-35-4	7	7	2.51E-03			5.02E-03	
1,2-Dichloroethylene (cis)	156-59-2	70	70	2.06E-02			4.12E-02	
1,2-Dichloroethylene (trans)	156-60-5	100	100	2.94E-02			5.88E-02	
2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7	70	70	1.81E-02			3.62E-02	
1,2-Dichloropropane	78-87-5	5	5	1.66E-03			3.32E-03	
1,3-Dichloropropane (cis/trans) (Telone)	542-75-6	-	0.4	1.43E-04			2.85E-04	
Di (2-ethylhexyl) phthalate	117-81-7	6	6	1.44E+00			2.88E+00	
Dimethoate	60-51-5	-	2	4.51E-04			9.02E-04	
2,4-Dinitrotoluene	121-14-2	-	0.05	6.76E-05			1.35E-04	
2,6-Dinitrotoluene	606-20-2	-	0.05	6.88E-05			1.38E-04	
Dinitrotoluene, Total Residues	25321-14-6	-	0.05	6.89E-05			1.38E-04	
Dinoseb	88-85-7	7	7	6.15E-02			1.23E-01	
1,4-Dioxane (p-dioxane)	123-91-1	-	3	6.18E-04			1.24E-03	
Dioxin (2,3,7,8-TCDD)	1746-01-6	0	0	1.50E-05			3.00E-05	
Endrin	72-20-8	2	2	8.08E-02			1.62E-01	
EPTC	759-94-4	-	250	1.32E-01			2.64E-01	
Ethylbenzene	100-41-4	700	700	7.85E-01			1.57E+00	
Ethyl Ether (Diethyl Ether)	60-29-7	-	1000	2.24E-01			4.47E-01	
Ethylene glycol	107-21-1	-	14000	2.82E+00			5.64E+00	
Fluoranthene	206-44-0	-	400	4.44E+01			8.88E+01	
Fluorene (PAH)	86-73-7	-	400	7.41E+00			1.48E+01	

Type BRRTS No.  
Here (If Known).  
Assess groundwater  
levels separately.

Re-assess if Cr-VI present

**Residual Contaminant Levels Protective of Groundwater Quality**  
 (Soil-to-Groundwater Scenario Results from: [http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl\\_search](http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search))

NR140 Substance	NR 140 CAS	Fed MCL (ug/l) (If Red, MCL>ES)	NR 140 ES (ug/l)	RCL-gw (mg/kg) DF=1	Use 2, or input the calculated site-specific DF -->	2.00	INPUT NUMERIC Site Data Max (mg/kg)	Flag E = Individual Exceedance!
Fluoride	7782-41-4	4000	4000	6.01E+02			1.20E+03	
Fluorotrichloromethane	75-69-4	-	3490	2.23E+00			4.47E+00	
Formaldehyde	50-00-0	-	1000	2.02E-01			4.04E-01	
Heptachlor	76-44-8	0.4	0.4	3.31E-02			6.62E-02	
Heptachlor epoxide	1024-57-3	0.2	0.2	4.08E-03			8.16E-03	
Hexachlorobenzene	118-74-1	1	1	1.26E-02			2.52E-02	
n-Hexane	110-54-3	-	600	4.22E+00			8.44E+00	
Lead	7439-92-1	15	15	1.35E+01			2.70E+01	
Lindane	58-89-9	0.2	0.2	1.16E-03			2.32E-03	
Manganese	7439-96-5	-	300	1.96E+01			3.91E+01	
Mercury	7439-97-6	2	2	1.04E-01			2.08E-01	
Methanol	67-56-1	-	5000	1.01E+00			2.03E+00	
Methoxychlor	72-43-5	40	40	2.16E+00			4.32E+00	
Methylene chloride	75-09-2	5	5	1.28E-03			2.56E-03	
Methyl ethyl ketone (MEK)	78-93-3	-	4000	8.39E-01			1.68E+00	
Methyl isobutyl ketone (MIBK)	108-10-1	-	500	1.13E-01			2.26E-01	
Methyl tert-butyl ether (MTBE)	1634-04-4	-	60	1.35E-02			2.70E-02	
Metolachlor/s-Metolachlor	51218-45-2	-	100	1.17E-01			2.34E-01	
Metribuzin	21087-64-9	-	70	2.14E-02			4.28E-02	
Molybdenum	7439-98-7	-	40	8.08E-01			1.62E+00	
Monochlorobenzene	108-90-7	100	100	6.79E-02			1.36E-01	
Naphthalene	91-20-3	-	100	3.29E-01			6.59E-01	
Nickel	7440-02-0	-	100	6.50E+00			1.30E+01	
N-Nitrosodiphenylamine (NDPA)	86-30-6	-	7	3.82E-02			7.64E-02	
Pentachlorophenol (PCP)	87-86-5	1	1	1.01E-02			2.02E-02	
Phenol	108-95-2	-	2000	1.15E+00			2.30E+00	
Picloram	1918-02-1	500	500	1.39E-01			2.78E-01	
Polychlorinated biphenyls (PCBs)	1336-36-3	0.5	0.03	4.69E-03			9.38E-03	
Prometon	1610-18-0	-	100	4.75E-02			9.49E-02	
Propazine	139-40-2	-	10	8.86E-03			1.77E-02	
Pyrene (PAH)	129-00-0	-	250	2.72E+01			5.45E+01	
Pyridine	110-86-1	-	10	3.44E-03			6.87E-03	
Selenium	7782-49-2	50	50	2.60E-01			5.20E-01	
Silver	7440-22-4	-	50	4.25E-01			8.50E-01	
Simazine	122-34-9	4	4	1.97E-03			3.94E-03	
Styrene	100-42-5	100	100	1.10E-01			2.20E-01	
Tertiary Butyl Alcohol (TBA)	75-65-0	-	12	2.45E-03			4.90E-03	
1,1,1,2-Tetrachloroethane	630-20-6	-	70	2.67E-02			5.33E-02	
1,1,2,2-Tetrachloroethane	79-34-5	-	0.2	7.80E-05			1.56E-04	
Tetrachloroethylene (PCE)	127-18-4	5	5	2.27E-03			4.54E-03	
Tetrahydrofuran	109-99-9	-	50	1.11E-02			2.22E-02	
Thallium	7440-28-0	2	2	1.42E-01			2.84E-01	
Toluene	108-88-3	1000	800	5.54E-01			1.11E+00	
Toxaphene	8001-35-2	3	3	4.64E-01			9.28E-01	
1,2,4-Trichlorobenzene	120-82-1	70	70	2.04E-01			4.08E-01	
1,1,1-Trichloroethane	71-55-6	200	200	7.01E-02			1.40E-01	
1,1,2-Trichloroethane	79-00-5	5	5	1.62E-03			3.24E-03	
Trichloroethylene (TCE)	79-01-6	5	5	1.79E-03			3.58E-03	
1,2-Dichloropropane	93-72-1	50	50	2.75E-02			5.50E-02	
1,2,3-Trichloropropane	96-18-4	-	60	2.60E-02			5.20E-02	
Trifluralin	1582-09-8	-	7.5	2.48E-01			4.95E-01	
1,2,4-Trichlorobenzene and 1,3,5-trichlorobenzene	95-63-6 / 108-67-8	-	480	6.90E-01			1.38E+00	
Vanadium	7440-62-2	-	-	-			-	
Vinyl chloride	75-01-4	2	0.2	6.90E-05			1.38E-04	
Xylenes(m-, o-, p- combined)	1330-20-7	10000	2000	1.97E+00			3.94E+00	

Type BRRTS No.  
Here (If Known).  
Assess groundwater  
levels separately.



Residential setting. Not-To-Exceed D-C RCLs from web-calculator at: [http://epa-prgs.cerl.gov/cgi-bin/chemicals/csl\\_search](http://epa-prgs.cerl.gov/cgi-bin/chemicals/csl_search) (Chicago as climatic zone). Basis: ca = cancer; nc = non-cancer; Csat = soil saturation concentration; ceiling = 10%.

Basis: ca

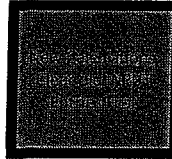
----- If web-calculator result or Csat exceeds 10% by weight (the ceiling limit concentration defined in RSL Users Guide), Not-to-Exceed D-C RCL defaults to 100,000 ppm.

1. Enter data in yellow cells. Numeric only values under "INPUT Site Data." For ND, use detection limit. Do not type '.', 'NA' nor 'space bar.' Leave purple cells "as is."

2. After completing data entry, See Summary in Row 872.

Site Name:

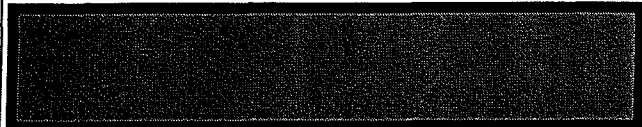
Sample ID:



Contaminant	CAS Number	NC RCL (mg/kg)	C RCL (mg/kg)	Not-To-Exceed D-C RCL (mg/kg)	Basis	INPUT Site Data (mg/kg)	Comparison / Hazard Index / Cumulative Cancer Risk		
							Flag E = Individual Exceedance	Hazard Quotient (HQ) from Data	Cancer Risk (CR) from Data
Benzene	71-43-2	111	1.49	1.49	ca				Target CR used: 1.00E-06
Ethylbenzene	100-41-4	4220	7.47	7.47	ca				
Toluene	108-88-3	5300	-	818	Csat				
Xylenes	1330-20-7	890	-	258	Csat				
Methyl tert-Butyl Ether (MTBE)	1634-04-4	23800	59.4	59.4	ca				
Dichloroethane, 1,2-	107-06-2	46.7	0.61	0.61	ca				
Dibromoethane, 1,2-	106-93-4	107	0.05	0.05	ca				
Trimethylbenzene, 1,2,4-	95-63-6	89.8	-	89.8	nc				
Trimethylbenzene, 1,3,5-	108-67-8	782	-	182	Csat				
Naphthalene	91-20-3	188	5.15	5.15	ca				
Benzo[a]pyrene	50-32-8	-	0.01	0.01	ca				
Acenaphthene	83-32-9	3440	-	3440	nc				
Anthracene	120-12-7	17200	-	17200	nc				
Benzo[a]anthracene	56-55-3	-	0.15	0.15	ca				
Benzo[j]fluoranthene	205-82-3	-	0.38	0.38	ca				
Benzo[b]fluoranthene	205-99-2	-	0.15	0.15	ca				
Benzo[k]fluoranthene	207-08-9	-	1.48	1.48	ca				
Chrysene	218-01-9	-	14.8	14.8	ca				
Dibenzo[a,h]anthracene	53-70-3	-	0.01	0.01	ca				
Dibenzo[a,e]pyrene	192-65-4	-	0.04	0.04	ca				
Dimethylbenz(a)anthracene, 7,12-	57-97-6	-	0	0	ca				
Fluoranthene	206-44-0	2290	-	2290	nc				
Fluorene	86-73-7	2290	-	2290	nc				
Indeno[1,2,3-cd]pyrene	193-39-5	-	0.15	0.15	ca				
Methylnaphthalene, 1-	90-12-0	4010	15.6	15.6	ca				
Methylnaphthalene, 2-	91-57-6	229	-	229	nc				
Nitropyrene, 4-	57835-92-4	-	0.38	0.38	ca				
Pyrene	129-00-0	1720	-	1720	nc				
Lead and Compounds	7439-92-1	400	-	400	nc				

03-14-563925

Exceedance Count / Hazard Index / Cumulative Cancer Risk: 0 0.00E+00 0.0E+00



To Pass, data must meet all these criteria: Exceedance HI Count = 0 1.00E+00 ≤ Cumulative CR ≤ 1e-05

Bottom-Line:

Soil Data Entry Needed!

# 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	CAS Number	Mutagen?	VOC?	Ingestion SF		Inhalation Unit		Chronic RfD (mg/kg-day)	Chronic RfD Ref	Chronic RfC (mg/m <sup>3</sup> )	Chronic RfC Ref
				(mg/kg-day) <sup>-1</sup>	SFO Ref	Risk (ug/m <sup>3</sup> ) <sup>-1</sup>	IUR Ref				
Benzene	71-43-2	No	Yes	5.50E-02	I	7.80E-06	I	4.00E-03	I	3.00E-02	I
Dibromoethane, 1,2-	106-93-4	No	Yes	2.00E+00	I	6.00E-04	I	9.00E-03	I	9.00E-03	I
Dichloroethane, 1,2-	107-06-2	No	Yes	9.10E-02	I	2.60E-05	I	6.00E-03	S	7.00E-03	P
Ethylbenzene	100-41-4	No	Yes	1.10E-02	C	2.50E-06	C	1.00E-01	I	1.00E+00	I
Lead and Compounds	7439-92-1	No	No	-	-	-	-	-	-	-	-
Methyl tert-Butyl Ether (MTBE)	1634-04-4	No	Yes	1.80E-03	C	2.60E-07	C	-	-	3.00E+00	I
Acenaphthene	83-32-9	No	Yes	-	-	-	-	6.00E-02	I	-	-
Anthracene	120-12-7	No	Yes	-	-	-	-	3.00E-01	I	-	-
Benz[a]anthracene	56-55-3	Yes	Yes	7.30E-01	W	1.10E-04	C	-	-	-	-
Benzo(j)fluoranthene	205-82-3	No	No	1.20E+00	C	1.10E-04	C	-	-	-	-
Benzo[a]pyrene	50-32-8	Yes	No	7.30E+00	I	1.10E-03	C	-	-	-	-
Benzo[b]fluoranthene	205-99-2	Yes	No	7.30E-01	W	1.10E-04	C	-	-	-	-
Benzo[k]fluoranthene	207-08-9	Yes	No	7.30E-02	W	1.10E-04	C	-	-	-	-
Chrysene	218-01-9	Yes	No	7.30E-03	W	1.10E-05	C	-	-	-	-
Dibenz[a,h]anthracene	53-70-3	Yes	No	7.30E+00	W	1.20E-03	C	-	-	-	-
Dibenzo(a,e)pyrene	192-65-4	No	No	1.20E+01	C	1.10E-03	C	-	-	-	-
Dimethylbenz(a)anthracene, 7,12-	57-97-6	Yes	No	2.50E+02	C	7.10E-02	C	-	-	-	-
Fluoranthene	206-44-0	No	No	-	-	-	-	4.00E-02	I	-	-
Fluorene	86-73-7	No	Yes	-	-	-	-	4.00E-02	I	-	-
Indeno[1,2,3-cd]pyrene	193-39-5	Yes	No	7.30E-01	W	1.10E-04	C	-	-	-	-
Methylnaphthalene, 1-	90-12-0	No	Yes	2.90E-02	P	-	-	7.00E-02	A	-	-
Methylnaphthalene, 2-	91-57-6	No	Yes	-	-	-	-	4.00E-03	I	-	-
Naphthalene	91-20-3	No	Yes	-	-	3.40E-05	C	2.00E-02	I	3.00E-03	I
Nitropyrene, 4-	57835-92-4	No	No	1.20E+00	C	1.10E-04	C	-	-	-	-
Pyrene	129-00-0	No	Yes	-	-	-	-	3.00E-02	I	-	-
Toluene	108-88-3	No	Yes	-	-	-	-	8.00E-02	I	5.00E+00	I
Trimethylbenzene, 1,2,4-	95-63-6	No	Yes	-	-	-	-	-	-	7.00E-03	P
Trimethylbenzene, 1,3,5-	108-67-8	No	Yes	-	-	-	-	1.00E-02	S	-	-
Xylenes	1330-20-7	No	Yes	-	-	-	-	2.00E-01	I	1.00E-01	I

# 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	Soil	Particulate	Ingestion	Dermal	Inhalation	Carcinogenic
				Factor (m <sup>3</sup> /kg)	Saturation Concentration (mg/kg)	Emission Factor (m <sup>3</sup> /kg)	SL TR=1.0E-6 (mg/kg)	SL TR=1.0E-6 (mg/kg)	SL TR=1.0E-6 (mg/kg)	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	-	-	-	-

# 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	Ingestion	Dermal	Inhalation	Noncarcinogenic	Ingestion	Dermal	Inhalation	Noncarcinogenic	Screening Level (mg/kg)
	SL Child THQ=1 (mg/kg)	SL Child THQ=1 (mg/kg)	SL Child THQ=1 (mg/kg)	SL Child THI=1 (mg/kg)	SL Adult THQ=1 (mg/kg)	SL Adult THQ=1 (mg/kg)	SL Adult THQ=1 (mg/kg)	SL Adult THI=1 (mg/kg)	
Benzene	3.13E+02	-	1.60E+02	1.06E+02	3.34E+03	-	1.60E+02	1.52E+02	1.60E+00 ca
Dibromoethane, 1,2-	7.04E+02	-	1.17E+02	1.00E+02	7.51E+03	-	1.17E+02	1.15E+02	5.00E-02 ca
Dichloroethane, 1,2-	4.69E+02	-	4.82E+01	4.37E+01	5.01E+03	-	4.82E+01	4.77E+01	6.52E-01 ca*
Ethylbenzene	7.82E+03	-	8.53E+03	4.08E+03	8.34E+04	-	8.53E+03	7.74E+03	8.02E+00 ca
Lead and Compounds	-	-	-	-	-	-	-	-	4.00E+02 nc
Methyl tert-Butyl Ether (MTBE)	-	-	2.21E+04	2.21E+04	-	-	2.21E+04	2.21E+04	6.38E+01 ca
Acenaphthene	4.69E+03	1.52E+04	-	3.59E+03	5.01E+04	9.12E+04	-	3.23E+04	3.59E+03 nc
Anthracene	2.35E+04	7.61E+04	-	1.79E+04	2.50E+05	4.56E+05	-	1.62E+05	1.79E+04 nc
Benz[a]anthracene	-	-	-	-	-	-	-	-	1.57E-01 ca
Benzo(i)fluoranthene	-	-	-	-	-	-	-	-	4.24E-01 ca
Benzo[a]pyrene	-	-	-	-	-	-	-	-	1.57E-02 ca
Benzo[b]fluoranthene	-	-	-	-	-	-	-	-	1.57E-01 ca
Benzo[k]fluoranthene	-	-	-	-	-	-	-	-	1.57E+00 ca
Chrysene	-	-	-	-	-	-	-	-	1.57E-01 ca
Dibenz[a,h]anthracene	-	-	-	-	-	-	-	-	1.57E-02 ca
Dibenzo(a,e)pyrene	-	-	-	-	-	-	-	-	4.24E-02 ca
Dimethylbenz(a)anthracene, 7,12-	-	-	-	-	-	-	-	-	4.59E-04 ca
Fluoranthene	3.13E+03	1.01E+04	-	2.39E+03	3.34E+04	6.08E+04	-	2.15E+04	2.39E+03 nc
Fluorene	3.13E+03	1.01E+04	-	2.39E+03	3.34E+04	6.08E+04	-	2.15E+04	2.39E+03 nc
Indeno[1,2,3-cd]pyrene	-	-	-	-	-	-	-	-	1.57E-01 ca
Methylnaphthalene, 1-	5.48E+03	1.77E+04	-	4.18E+03	5.84E+04	1.06E+05	-	3.77E+04	1.76E+01 ca
Methylnaphthalene, 2-	3.13E+02	1.01E+03	-	2.39E+02	3.34E+03	6.08E+03	-	2.15E+03	2.39E+02 nc
Naphthalene	1.56E+03	5.07E+03	2.09E+02	1.78E+02	1.67E+04	3.04E+04	2.09E+02	2.05E+02	5.52E+00 ca*
Nitropyrene, 4-	-	-	-	-	-	-	-	-	4.24E-01 ca
Pyrene	2.35E+03	7.61E+03	-	1.79E+03	2.50E+04	4.56E+04	-	1.62E+04	1.79E+03 nc
Toluene	6.26E+03	-	3.23E+04	5.24E+03	6.67E+04	-	3.23E+04	2.18E+04	5.24E+03 sat
Trimethylbenzene, 1,2,4-	-	-	8.34E+01	8.34E+01	-	-	8.34E+01	8.34E+01	8.34E+01 nc
Trimethylbenzene, 1,3,5-	7.82E+02	-	-	7.82E+02	8.34E+03	-	-	8.34E+03	7.82E+02 sat
Xylenes	1.56E+04	-	8.64E+02	8.18E+02	1.67E+05	-	8.64E+02	8.59E+02	8.18E+02 sat

(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, 1983, 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 <sup>1</sup>	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 <sup>2</sup>	0.3 <sup>2</sup>
Bacteria, Total Coliform	0 <sup>3</sup>	0 <sup>3</sup>
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

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**Table 1 – Continued**  
**Public Health Groundwater Quality Standards**

<b>Substance<sup>1</sup></b>	<b>Enforcement Standard (micrograms per liter – except as noted)</b>	<b>Preventive Action Limit (micrograms per liter – except as noted)</b>
Cobalt	40	8
Copper	1300	130
Cyanazine	1	0.1
Cyanide, free <sup>4</sup>	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 <sup>5</sup>	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**

<b>Substance<sup>1</sup></b>	<b>Enforcement Standard (micrograms per liter – except as noted)</b>	<b>Preventive Action Limit (micrograms per liter – except as noted)</b>
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

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**Table 1 – Continued**  
**Public Health Groundwater Quality Standards**

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

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

<sup>2</sup> 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).

<sup>3</sup> 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.

<sup>4</sup> "Cyanide, free" refers to the simple cyanides (HCN, CN<sup>-</sup>) 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".

<sup>5</sup> 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.

<sup>6</sup> 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



**Site Investigation Field Procedures Workplan - METCO  
Osceola Oil Bulk Plant - Milltown**

**APPENDIX E/PROJECT DOCUMENTS**



Facsimile Transmission  
from

*DN 494-836*

**DPRA Incorporated**  
B-1500 First National Bank Building  
332 Minnesota St.  
St. Paul, MN 55101-1314

FAX: (651) 227-5522  
Voice: (651) 227-6500

Date: July 28, 2003

Number of Pages: 3  
(including cover page)

To: Name: Janet Kazda  
Company/Agency: WDNR  
FAX Number: (715) 365-8932  
Verification number:

From: Name: Marty Bonnell  
DPRA Project/Proposal No: Osceola Oil-Milltown

Sent by:

The information contained in this telecopy transmission may be privileged and confidential. It is intended only for the individual or entity to whom it is sent. If the recipient of this transmittal is not the intended recipient, or an employee or agent responsible to deliver it to the intended recipient, any dissemination, distribution or reproduction of this communication is strictly prohibited. If you have received this communication in error, please immediately notify us by telephone, and return the original message to us at the above address via U.S. Mail.

Message: Attached is the Notification of Petroleum Contamination form for a release detected at the Former Osceola bulk plant located in Milltown.

If you have any questions, please call me at (651) 227-6500, ext. 3140.

Sincerely,

Marty Bonnell, P.E.

*ASTs were removed a  
couple of years ago.*

*lab results  
are coming  
soon.*

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

Notification of Petroleum Contamination from Underground/Aboveground Storage Tank Systems

Please complete this form and FAX it to the appropriate WDNR contact person (see list on second page) immediately upon discovery of a release from an UST/AST system.

To: WDNR, Attn: Janet Kazda
FAX #: (715) 365-8932

1. Name, company, mailing address and phone number of person reporting the discharge:
DPRA Environmental
332 Minnesota Street, Suite E-1500
St. Paul, MN 55101-1314
Contact person: Martin Bonnell
(651) 227-6500, ext. 3140

2. Site Information:

Name of site at which discharge occurred (local name of site/business--not responsible party name, unless a residence):

Former Osceola Oil Bulk Plant
Milltown, Wisconsin

Location (actual street address, not P.O. Box; if no street address, describe precisely as possible, i.e., 1/4 mile NW of CTHs 60 & 123 on E side of CTH 60):

413 Second Avenue South (approximately 1/4 mile south of Milltown on Second Avenue South)

Municipality (city, village, township in which the site is located--not mailing address):

Milltown, WI

County:

Polk County

Legal Description: SE 1/4, NW 1/4, Section 17, Tn 35N, Range 17W

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

RP/Company Name: Osceola Oil

Contact Person (if different): Mike Montgomery

Mailing Address (include zip code): P.O. Box 117
300 Zindaus Street
Osceola, Wisconsin 54020

Telephone Number: (715) 294-4466

4. Identity, physical state and quantity of the hazardous substance discharged (check all that apply):

- X Unleaded gasoline
Leaded gasoline
X Diesel
X Fuel oil
Waste oil
Other

5. Impacts to the environment (enter "K" for known or "P" for potential for all that apply):

- Fire/explosion threat
- Contaminated private wells (# of wells) \_\_\_\_\_
- Contaminated public wells
- Groundwater contamination
- Soil contamination
- Surface water impacts
- Floating product
- Other \_\_\_\_\_

6. Contamination was discovered as a result of:

- Tank closure assessment
- Site assessment
- Other: Soil contamination was detected during a Phase II Property Assessment

On what date: July 28, 2003

Additional Comments:

**Fax Numbers for Reporting Leaking Tank Sites in DNR's Five Regions:**

**Northeast Region: 920-492-5859**

Attention: Janis DeBrock (underground tanks)  
Attention: Roxanne Chronert (aboveground tanks)

Brown, Calumet, Door, Fond du Lac (except City of Waupun--see South Central Region), Green Lake, Kewaunee, Manitowoc, Marinette, Marquette, Menomonee, Oconto, Outagamie, Shawano, Waupaca, Waushara, Winnebago Counties

**Northern Region: 715-365-8932**

Attention: Janet Kazda

Ashland, Barron, Bayfield, Burnett, Douglas, Florence, Forest, Iron, Langlade, Lincoln, Polk, Price, Oneida, Rusk, Sawyer, Taylor, Vilas, Washburn Counties

**South Central Region: 608-275-3338**

Attention: Marilyn Jahnke

Columbia, Crawford, Dane, Dodge, Fond du Lac (City of Waupun only), Grant, Green, Iowa, Jefferson, Lafayette, Richland, Rock, Sauk Counties

**Southeast Region: 414-229-0810**

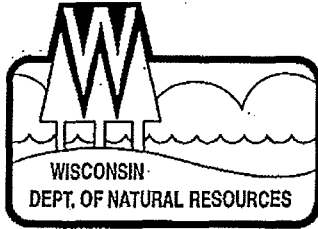
Attention: Mike Farley

Kenosha, Milwaukee, Ozaukee, Racine, Sheboygan, Walworth, Washington, Waukesha Counties

**West Central Region: 715-839-6076**

Attention: John Grump

Adams, Buffalo, Chippewa, Clark, Dunn, Eau Claire, Jackson, Juneau, La Crosse, Marathon, Monroe, Pepin, Pierce, Portage, St. Croix, Trempealeau, Vernon, Wood Counties



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor  
Scott Hassett, Secretary  
John Gozdziński, Regional Director

file  
Antigo Service Center  
223 E Steinfest Rd  
Antigo, Wisconsin 54414  
Telephone 715-623-4190  
FAX 715-623-6773

December 14, 2004

Mike Montgomery  
Osceola Oil  
PO Box 117  
Osceola, WI 54020

Subject: Former Osceola Bulk Plant, 413 Second Ave., Milltown, WI  
WDNR BRRTS # 02-49-483615

Dear Mike Montgomery:

On July 28, 2003, Martin Bonnell of DPRA, notified the Wisconsin Department of Natural Resources (WDNR) that unleaded gasoline, fuel oil and diesel contamination had been detected at the site listed above.

Based on the information submitted to the WDNR, we believe you are responsible for restoring the environment at the referenced site under Section 292, Wisconsin Stats., known as the hazardous substances spills law.

This letter describes your legal responsibilities, explains what you need to do to investigate and clean up the contamination, and provides you with information about cleanups, environmental consultants, possible financial assistance, and working cooperatively with the WDNR and Department of Commerce (Commerce).

**Legal Responsibilities:**

Your legal responsibilities are defined both in statute and in administrative codes. The hazardous substances spill law, Section 292.11 (3) Wisconsin Statutes, states:

- **RESPONSIBILITY.** A person who possesses or controls a hazardous substance which is discharged or who causes the discharge of a hazardous substance should take the actions necessary to restore the environment to the extent practicable and minimize the harmful effects from the discharge to the air, lands, or waters of the state.

Wisconsin Administrative Code chapters NR 700 through NR 749 establish requirements for emergency and interim actions, public information, site investigations, design and operation of remedial action systems, and case closure. Chapter NR 708 includes provisions for immediate actions in response to limited contamination. Wisconsin Administrative Code chapter NR 140 establishes groundwater standards for contaminants that reach groundwater.

### Steps to Take:

The longer contamination is left in the environment the farther it can spread and the more it may cost to clean up. Quick action may lessen damage to your property and neighboring properties and reduce your costs in investigating and cleaning up the contamination. To ensure that your cleanup complies with Wisconsin's laws and administrative codes, you should hire a professional environmental consultant who understands what needs to be done. These are the first three steps to take:

1. Within the next **30 days**, you must submit written verification (such as a letter from the consultant) that you have hired an environmental consultant.
2. Within the next **60 days**, your consultant must submit a workplan and schedule for the investigation. The consultant must follow the WDNR administrative codes and technical guidance documents. To facilitate prompt agency review of your reports, your consultant should use the site investigation and closure formats which are available on-line at [www.dnr.state.wi.us](http://www.dnr.state.wi.us).

Once an investigation has established the degree and extent of contamination involved at your site, your consultant will be able to determine whether Commerce or the WDNR has authority over the case.

3. Within 30 days of completion of the site investigation, you or your consultant must provide a brief report at least every 90 days per NR 724.13(3). Quarterly reports need only include one or two pages of text, plus any relevant maps and tables. Should conditions at your site warrant, we may require more frequent contacts.
4. Sites where discharges to the environment have been reported are entered into the Bureau for Remediation and Redevelopment Tracking System (BRRTS), a version of which appears on the WDNR's internet site. You may view the information related to your site at any time (<http://www.dnr.state.wi.us/org/aw/rr/brrts>) and use the feedback system to alert us to any errors in the data.

If you want a formal response from the agency on a specific submittal, please be aware that a review fee is required in accordance with s. NR 749, Wis. Adm. Code. If a fee is not submitted with your reports, you should proceed under the advice of your consultant to complete the site investigation to maintain your compliance with the spills law and chs. NR 700 through NR 749. **Do not delay the investigation of your site by waiting for an agency response.** We have provided detailed technical guidance to environmental consultants. Your consultant is expected to know our technical procedures and administrative codes and should be able to answer your questions on meeting cleanup requirements.

All correspondence regarding this site should be sent to:

Danielle Wincentzen  
Wisconsin Department of Natural Resources  
223 E Steinfest Rd.  
Antigo, WI 54409

Unless otherwise requested, please send only one copy of plans and reports. To speed processing, correspondence should reference the BRR.TS and FID numbers (if assigned) shown at the top of this letter.

**Additional Information for Site Owners:**

Information to help you select a consultant, and materials on controlling costs, understanding the cleanup process, and choosing a site cleanup method are enclosed. In addition, *Fact Sheet 2, Voluntary Party Remediation and Exemption from Liability* provides information on obtaining the protection of limited liability under s. 292.15, Stats.

**Financial Assistance:**

Reimbursement from the Petroleum Environmental Cleanup Fund (PECFA) is available for some of the costs of cleaning up contamination from eligible petroleum storage tanks. Please refer to the enclosed information sheet entitled "*Information About PECFA*" for more information on eligibility and regulations for this program. For more information on the PECFA program, please call the Department of Commerce at 608-266-2424 or visit their web site at: <http://www.commerce.state.wi.us>.

Call Phil Richard at 715-762-4684 ext. 115 for more information on eligibility or visit the RR web site. <http://www.dnr.state.wi.us/org/aw/rr>. You may also contact this person for all other questions regarding this letter.

Thank you for your cooperation.

Sincerely,



Danielle Wincentzen  
Bureau for Remediation & Redevelopment

cc: Martin Bonnell, DPRA Environmental

**Site Investigation Field Procedures Workplan - METCO  
Osceola Oil Bulk Plant - Milltown**

**APPENDIX F/HEALTH AND SAFETY PLAN**



**Site Investigation Field Procedures Workplan - METCO  
Osceola Oil Bulk Plant - Milltown**

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 #: C2214

Site Name: Osceola Oil Bulk Plant - Milltown  
Site address: 431 2<sup>nd</sup> Ave SW  
Milltown, WI 54858

County: Polk

WDNR Contact: Carrie Stoltz  
107 Sutliff Avenue  
Rhineland, WI 54501  
(715) 365-8942

WDNR BRRTS Case #: 02-49-483615

Purpose of Activity (Check all that apply)

Petroleum Release Investigation	<input checked="" type="checkbox"/>
Ag Chemical Release Investigation	<input type="checkbox"/>
Install Soil Borings/Monitoring Wells	<input checked="" type="checkbox"/>
Tank/Piping Removal	<input type="checkbox"/>
Tank/Piping Closure Assessment	<input type="checkbox"/>
Phase 1/Phase 2 Environmental Site Assessment	<input type="checkbox"/>
Install Remedial System	<input type="checkbox"/>
Other	<input type="checkbox"/>

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Tank Information

Tank Size (Gallons)	Contents	Age
14,000	Fuel Oil	Removed (2001)
14,000	Diesel	Removed (2001)
12,000 (x2)	Diesel	Removed (2001)
12,000	Kerosene	Removed (2001)
10,000 (x2)	Unleaded Gasoline	Removed (2001)
10,000	Diesel	Removed (2001)

Potential Health and Safety Hazards (Check all that apply)

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

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
Diesel/Fuel Oil/Kerosene	Vapor/Liquid	Inhalation/Skin	100/None	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.	Jon Jensen	Staff Scientist

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- 5. Matt Michalski Hydrogeologist
- 6. Bryce Kujawa Hydrogeologist

Method to Control Potential Health and Safety Hazards

Monitoring Instruments

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

Action Levels	<u>Action</u>
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 Neoprene/Nitrile Outer Gloves	
Full Face Respirators	
Type of Cartridge:	
SCBA/SAR	
Other	

Level of Protection Designated: D

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**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	<input type="checkbox"/>
Water Supply	<input checked="" type="checkbox"/>

Contingency Planning

<u>Emergency Contacts</u>	Phone Number
Ambulance: Milltown	911
Hospital Emergency Room: St Croix Regional Medical Center	(715) 483-3261
Poison Control Center: Milwaukee	(800) 222-1222
Police: Milltown	911
Fire Department: Milltown	911
Hazardous Waste Response Center: Wisconsin	(800) 943-0003
EPA	(800) 424-8802

Location Address: 431 2<sup>nd</sup> Avenue SW, Milltown, WI 54858

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Hospital: St Croix Regional Medical Center  
204 South Adams Street  
St Croix Falls, WI 54024  
(715) 483-3261

Emergency Route:

Head <b>north</b> on <b>2nd Ave SW</b> toward <b>Bank St</b>	0.2 mi
Turn <b>left</b> onto <b>WI-35 S/Main St W</b>	10.0 mi
Continue to follow WI-35 S	
Turn <b>right</b> onto <b>US-8 W</b>	1.5 mi
At the traffic circle, take the <b>2nd</b> exit and stay on <b>US-8 W</b>	3.0 mi
Turn <b>right</b> onto <b>WI-87 N</b>	0.3 mi
Turn <b>right</b> onto <b>Illinois St</b>	354 ft
Turn <b>left</b> onto <b>S Adams St</b>	0.1 mi
Destination will be on the 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: Mike Montgomery		(715) 501-8349

## 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

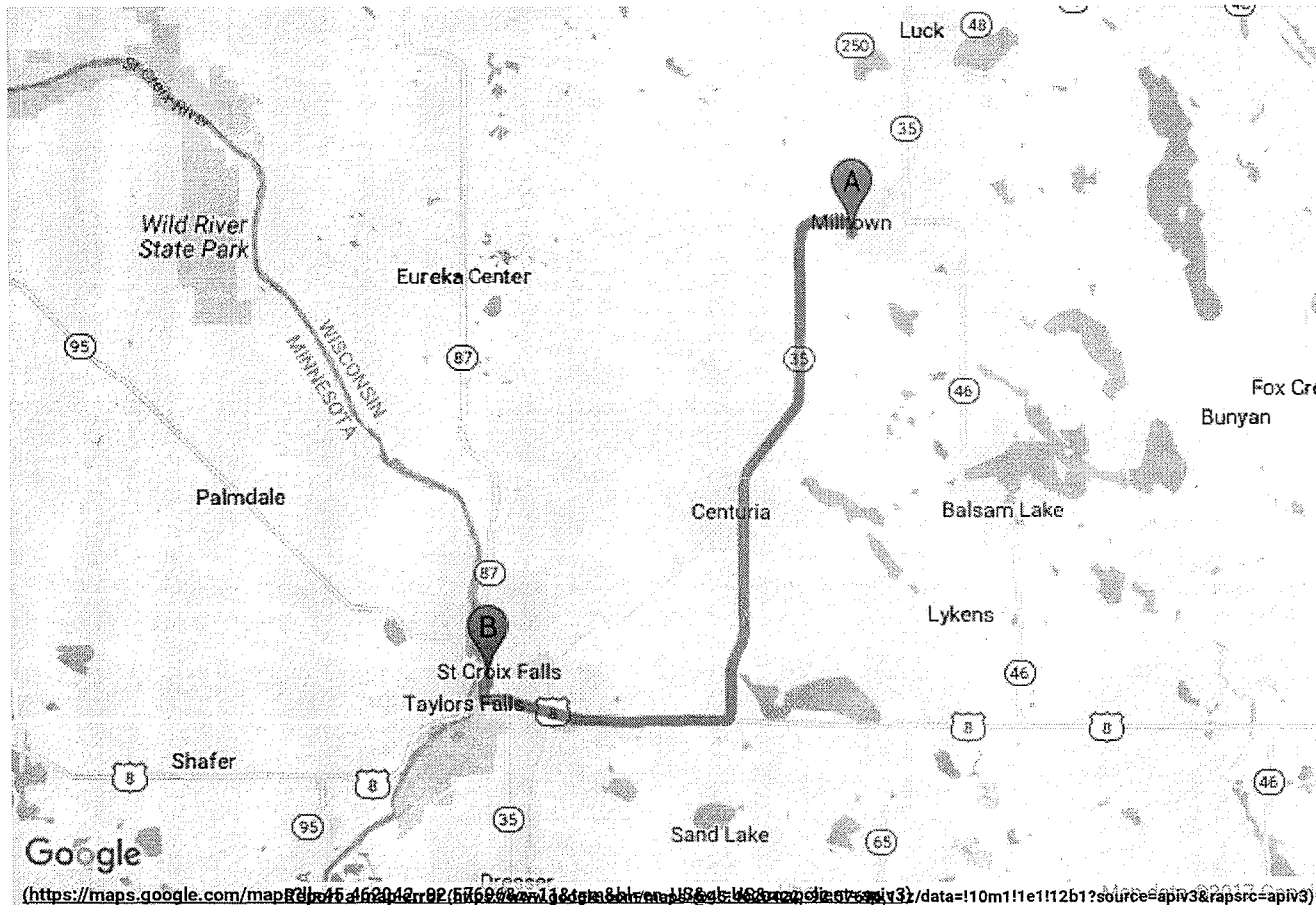
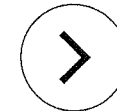
## US Hospital Finder (/)™: Directions

From: 432 2nd Ave SW, Milltown, WI

To: St Croix Regional Medical Ctr 204 South Adams Street St Croix Falls, WI 54024-9400

# Teen Addiction Treatment

Hazelden in Plymouth provides specialized addiction treatment for teens ages 12-25. Go to [www-cm.hazeldenbettyford.org](http://www-cm.hazeldenbettyford.org)



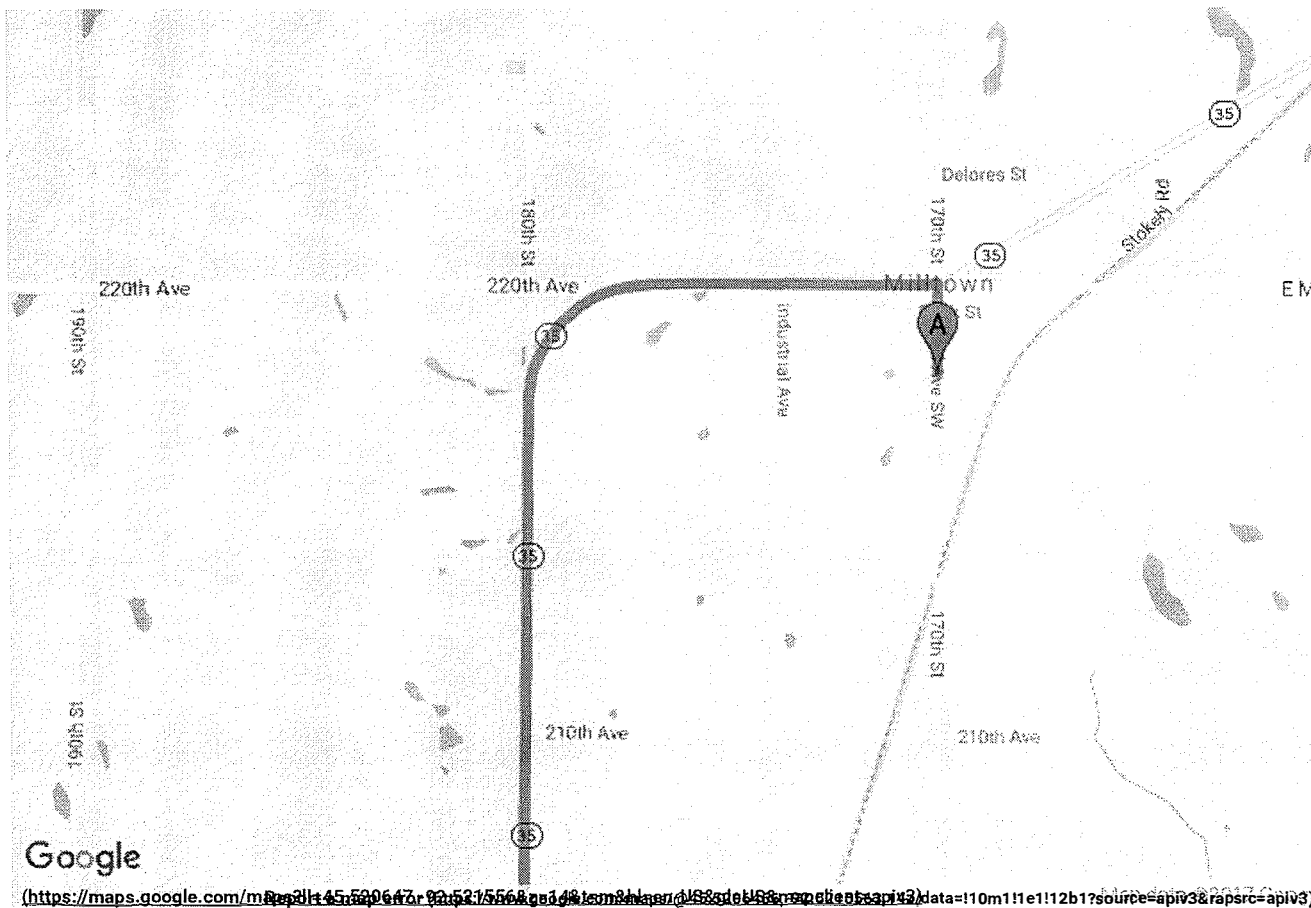
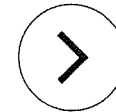
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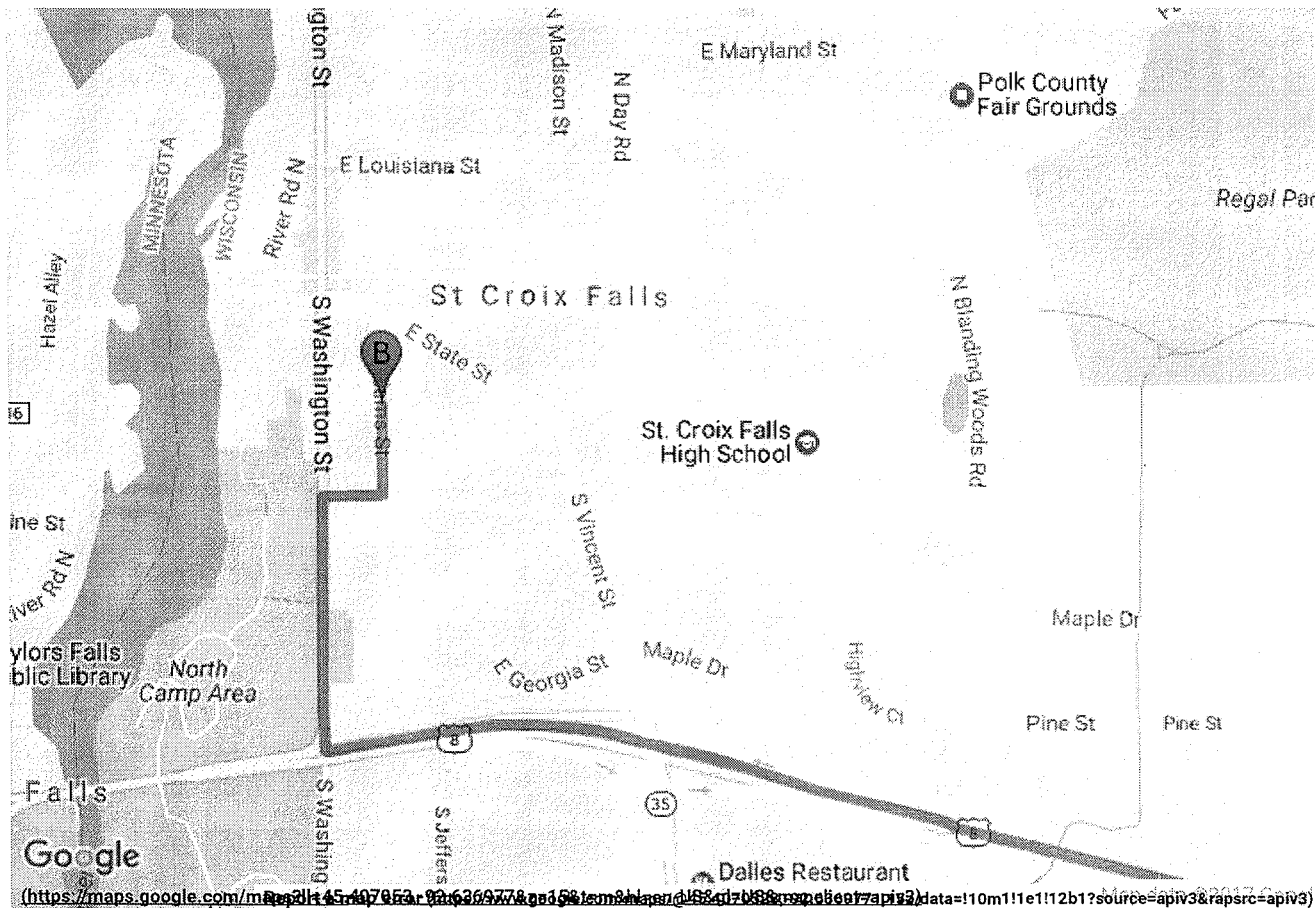
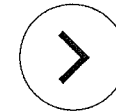
# US Hospital Finder (I)<sup>TM</sup>: Directions

**From:** 432 2nd Ave SW, Milltown, WI

**To:** St Croix Regional Medical Ctr 204 South Adams Street St Croix Falls, WI 54024-9400

## Teen Addiction Treatment

Hazelden in Plymouth provides specialized addiction treatment for teens ages 12-25. Go to [www-cm.hazeldenbettyford.org](http://www-cm.hazeldenbettyford.org)



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**APPENDIX G/QUALIFICATIONS**

**Site Investigation Field Procedures Workplan - METCO  
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**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.

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**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.

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**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.

**Site Investigation Field Procedures Workplan - METCO  
Osceola Oil Bulk Plant - Milltown**

**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.

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**Jon Jensen**

**Professional Title**

- Staff Scientist

**Credentials**

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#1294924 ).

**Education**

Includes B.S. in Geography with and Environmental Science minor from University of Wisconsin – La Crosse: Applicable courses successfully completed include Interpretation of Aerial Photographs, Intro to GIS, Advanced Remote Sensing, Fundamentals of Cartography, Biogeography, and Conservation of Global Environments.

**Work Experience**

With METCO since July, 2014 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.

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**Matthew C. Michalski**

**Professional Title**

- Hydrogeologist

**Credentials**

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#1261443).
- Member of the Wisconsin Groundwater Association
- Member of the Minnesota Groundwater Association
- Member of the National Groundwater Association
- Member of the American Institute of Professional Geologist
- Member of the Geological Society of America

**Education**

Includes B.S. in Geology with an emphasis in Hydrogeology and Water Chemistry from the University of Wisconsin-Eau Claire, completion of Western Michigan University's Hydrogeology Field Camp, a B.S. In Geography from the University of Wisconsin-La Crosse.. Applicable courses successfully completed include Hydrogeology, Contaminant Hydrogeology, Aqueous Geochemistry, Geomorphology and Aerial Photography interpretation, Sedimentology and Stratigraphy, Structural Geology, Mineralogy and Petrology, Hazardous Waste Operation and Emergency Response, Surface Geophysics, Principles and Practices of Groundwater Sampling and Monitoring, Principles and Practices of Aquifer Testing, Principles of Well Drilling and Installation, Remediation Design and Implementation, Water Resources, Environmental Hazards and Land Use, and Advanced Map Design.

**Post-Graduate Education**

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

**Work Experience**

With METCO since May 2016 as a Hydrogeologist and from August 2012 to August 2014 as a Staff scientist. Duties have included: soil and groundwater sampling, 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), and operation and maintenance of remedial systems, site mapping, data reduction and analysis, and reporting.



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**Bryce Kujawa**

**Professional Title**

- Staff Scientist

**Credentials**

- Registered through the Wisconsin Department of Safety and Professional Services as a PECFA consultant (#17138).
- Member of the Geological Society of America

**Education**

Includes B.S. in Geology from the University of Wisconsin-Eau Claire. Applicable courses successfully completed include Hydrogeology, Contaminant Hydrogeology, Field Geology I and II, Mineralogy and Petrology I and II, Sedimentology and Stratigraphy, Petroleum and Economic Geology, Earth History, Physical Geology, Structural Geology, Computers in Geology, Geographic Informational Systems, Global Environmental Change, and General Chemistry.

**Work Experience**

With METCO since June, 2016 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.

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**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  
**HNU** - brand name for Photoionization Detector  
**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