### Wisconsin Department of Natural Resources

Attn: Ralph Smith 101 S. Webster Street Madison, WI 53707

## Subject:

Site Investigation Work Plan Burnett County – Former Hedlund DX 10557 State Highway 70 Daniels, WI 54840 BRRTS: 03-07-000151 PECFA#54840-9999-00

#### Dear Ralph,

The purpose of this letter is to notify you that REI Engineering, Inc. has been retained as the environmental consultant for the above site and is hereby submitting the site investigation work plan for the above referenced site. This meets the requirements of your letter from June 28, 2016. If you have any comments, please contact our office at (715) 675-9784 or electronically at klassa@reiengineering.com.

Sincerely, REI Engineering, Inc.

David N. Larsen, P.G. Hydrogeologist

cc: Burnett County, Mr. Nate Ehalt, 7410 County Road K #116, Siren, WI 54872



SITE INVESTIGATION WORK PLAN

BURNETT COUNTY FORMER HEDLUND DX 10557 STATE HIGHWAY 70 DANIELS, WI

**REI PROJECT #7367AxUC** 

COMPREHENSIVE SERVICES WITH PRACTICAL SOLUTIONS

# SITE INVESTIGATION WORK PLAN BURNETT COUNTY – FORMER HEDLUND DX 10557 STATE HIGHWAY 70 DANIELS, WI BRRTS #03-07-000151 PECFA#54840-9999-00

**REI #7367** 

# **PREPARED FOR:**

Burnett County Mr. Nate Ehalt 7410 County Road K, #116 Siren, WI 54872

# **PREPARED BY:**

REI Engineering, Inc. 4080 North 20th Avenue Wausau, WI 54401 (715) 675-9784

July 2016

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# SITE INVESTIGATION WORK PLAN BURNETT COUNTY – FORMER HEDLUND DX 10557 STATE HIGHWAY 70 DANIELS, WI

# BRRTS #03-07-000151 PECFA#54840-9999-00

# **REI #7371AxUC**

### **1.0 INTRODUCTION**

REI Engineering, Inc. (REI) has prepared a work plan to conduct a Site Investigation at the above referenced property. The purpose of the site investigation is to advance soil borings on the property with the collection of soil, groundwater and vapor samples if needed, for laboratory analysis, in an attempt to determine the degree and extent of the known release. The known release was originally reported to the Wisconsin Department of Natural Resources (WDNR) on February 9, 1990. Previous site work was completed at this site involved the advancement of four (4) soil borings with three (3) of the borings converted into groundwater monitoring wells. This work was completed in 1990 and 1991. Although a Site Assessment Grant (SAG) was pursued, it appears that work related to this grant consisted of razing the building and no additional site investigation work was completed. Therefore, it is not known if the wells remain in place from this initial work. Additional work will include updated site figures as the building on the site has been razed.

### 2.0 BACKGROUND INFORMATION AND SCOPE OF WORK

### 2.1 **Responsible Party**

Burnett County Attn: Mr. Nate Ehalt 7410 County Road K, #116 Siren, WI 548728 Site Investigation Work Plan Burnett County – Hedlund DX July 2016

# 2.2 Consultant

REI Engineering, Inc. 4080 North 20<sup>th</sup> Avenue Wausau, Wisconsin 54401 Phone (715) 675-9784

### 2.3 Site Name, Address, and Location

Site Name:	Burnett County – Hedlund DX - Falun
Site Address:	10557 State Highway 70
	Daniels, WI 54840
Site Location:	$NW^{1}\!$
	County, Wisconsin

# 2.4 Past and Present Land Use

The Hedlund DX site was operated as a retail gas station from 1929 through 1980. REI reviewed the State of Wisconsin registered storage tanks database and did not find any Underground Storage Tanks (USTs) registered to this property. However, the figures obtained from a cursory file review show two (2) former USTs on the property with one near the northwest corner of the building and the other along the east side of the building. Additional file documentation reveals the USTs were removed in 1980. The figures reviewed from the file report reveals the size of the USTs as 1,000 gallons. Burnett County received a SAG grant award on March 1, 2005. This award was reportedly used to raze the building and remove any USTs. However, REI has not reviewed any summary documentation related to the SAG activities.

The property immediately adjacent to the site to the east is known as Bob's Service Station (#03-07-000148). This site is also a known contaminated site, but is considered stalled due to an uncooperative responsible party. It is unknown if contamination form this site is impacting the subject property or extent of groundwater contamination plume. Site Investigation Work Plan Burnett County – Hedlund DX July 2016

## 2.5 Scope of Work

The initial soil borings were advanced in 1990 with three (3) borings converted into groundwater monitoring wells. These monitoring wells were sampled on two (2) dates on December 31, 1990 and March 21, 1991. No activities have happened on this site since the SAG activities involved the razing of the building in 2005. No site activities have taken place since at least 2005 and therefore it is unknown it the previously installed groundwater monitoring wells remain on the site. The specific work scope is as follows:

- 1. REI will coordinate soil boring subcontractor to mobilize to the site to advance borings as proposed. Utility located will be completed in advance of site work.
- 2. REI will use metal detector in an effort to find the locations of the groundwater monitoring wells advanced in 1990.
- 3. REI proposes to advance eight (8) soil borings. Specific depth to groundwater is not known from review of the file. However, it is anticipated to be within sixteen (16) feet below land surface. Additional borings may be required in the process of defining the degree and extent of previously identified soil contamination if field screening results and observations reveal contamination.
- 4. The property boundaries, location of important site features, previously collected soil samples as well as proposed soil boring locations are depicted on the Figure B.1.b site map. REI will field screen soil samples using a Photoionization detector (PID) to detect the presence of organic vapors in the soil.
- 5. REI will collect a minimum of two (2) soil samples from each boring. One (1) sample will be collected from within four (4) feet of the surface to evaluate direct contact risks. The second sample will be collected from the highest PID field screen reading or the sample directly above the groundwater. Samples will be submitted for laboratory analysis of Petroleum Volatile Organic Compounds plus Naphthalene (PVOC + N) and Lead (Pb). All soil cuttings will

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be containerized in DOT certified 55-gallon drums and left on site pending final disposal at a licensed facility.

- 6. REI will make a determination in the field depending on if previously installed groundwater monitoring can be located and are useable. REI anticipates converting a minimum of four (4) boreholes to groundwater monitoring wells. When these wells are developed and sampled, purge water will be containerized in DOT approved 55-gallon drums and removed from the site and disposed at a licensed facility. Groundwater samples will be submitted for laboratory analysis of PVOCs + N and Dissolved Lead.
- 7. Historical file information indicates the site immediately to the west (Andy's Bait) had petroleum contamination in their potable well prior to 1980. REI will make contact with adjacent property owner to locate potable well on the property and other pertinent information such as if the structure has a basement where vapor could be a concern.
- 8. Upon completion of the fieldwork, REI will prepare a letter report summarizing actions to date and determine what additional investigative work may be needed. The report will include a figure identifying the locations of the soil samples, tabulated data, photographs, and laboratory analytical reports. Results of the site work will determine the need (if any) for additional site investigation work or if no further action is needed. If additional work is needed, REI will prepare scope and submit to WDNR project manager for approval prior to conducting work. REI will also complete required regular WDNR reporting.

# 2.6 Other Sources of Contamination

REI will conduct a review of the WDNR spills and LUST for other potential sites in the vicinity of the subject property. As previously mentioned, this site investigation began in 1990. The property immediately adjacent to the site to the east is known as Bob's Service Station (#03-07-000148). This site is also a known contaminated site, but is considered stalled due to an uncooperative responsible party. It is unknown if

contamination form this site is impacting the subject property or extent of groundwater contamination plume.

### 2.7 Potential Impact to Receptors

REI will investigate and evaluate the potential impact to receptors during the site investigation. REI will determine potential vapor intrusion into structures.

#### 2.8 Potable Water Survey

REI will conduct a well records search for locations of existing nearby potable wells. Results of this search will be included in the report.

#### 3.0 TOPOGRAPHICAL, GEOLOGICAL, AND HYDROLOGIC CONDITIONS

The property is located in the St. Croix River Basin. Site specific soil and geologic conditions, prominent topographic features, significant hydrologic features and surface water drainage patterns will be documented during the site investigation.

#### **4.0 METHODOLOGIES**

#### 4.1 Geoprobe

#### 4.1.1 Soil Sampling

The Geoprobe unit hydraulically advances threaded, two-inch diameter, fourfoot long, steel rod sections into the subsurface. A four-foot sampler, consisting of a drive shoe, a steel tube with a clean acetate liner, and a drive-head retractable piston, is attached to the leading Geoprobe rod. The sampler is driven down to the top of the interval to be sampled. The stop-pin is removed to release the drive head piston, which retracts as the sampler is advanced. When the sampler has been advanced four feet, the rods are retracted from the hole and the soil in the acetate liner is recovered. The acetate liner is split open and the soil is visually and manually classified by the field geologist/technician in accordance with **ASTM:D2488-84**. Logs of the borings are filled out indicating the depth and identification of the various strata, water level information, and pertinent information regarding the method of maintaining and advancing the borings. Immediately after identification, the soil is quickly divided into two portions. One portion is prepared for potential laboratory analysis. The other portion is placed into a clean one-quart Ziploc bag for field screening. See the section "Soil Headspace Analysis" for field screening procedures.

Soil samples recovered by the acetate liner will be divided into two portions. One portion will be prepared for laboratory analysis. The other portion will be placed into a clean one quart Ziploc bag. A headspace analysis will then be conducted on this latter portion. Soils storage will be in WDOT approved 55gallon drums. These drums will be kept on site until transportation and treatment can be approved and arranged.

# 4.1.2 Groundwater Sampling

Water samples will be collected via polyethylene tubing that is inserted into the Geoprobe boring. Groundwater is extracted through the polyethylene tubing using a peristaltic pump. Retained samples are then placed into laboratory prepared containers and stored in an iced cooler.

# 4.2 Hollow Stem Auger Boring and Monitoring Well Installation

# 4.2.1 Soil Sampling

Soil sampling will be done in accordance with **ASTM:D1586-84**. Using this procedure, a two inch **OD**, two foot long split barrel sampler is driven into the soil by a 140 pound weight falling 30 inches. After an initial set of six inches, the number of blows required to drive the sampler an additional 12 inches is known as the penetration resistance, or N value. The N value is an index of the relative density of cohesionless soils and the consistency of cohesive soils.

As the samples are obtained in the field, they will be visually and manually classified by the field geologist/technician in accordance with **ASTM:D2488-84**. Representative portions of the samples will be returned to the laboratory for further examination and for verification of the field classification. Logs of the

borings will be filled out indicating the depth and identification of the various strata, the N value, water level information and pertinent information regarding the method of maintaining and advancing the borings.

Soil samples recovered by the split spoon will be divided into two portions. One portion will be prepared for laboratory analysis. The other portion will be placed into a clean one- quart Ziploc bag. A headspace analysis will then be conducted on this latter portion. Soils storage will be in WDOT approved 55-gallon drums. These drums will be kept on site until transportation and treatment can be approved and arranged.

## 4.2.2 Monitoring Well Installation

Monitoring wells will be installed in accordance with Wisconsin Administrative Code NR 141 regulations. The WDNR "Monitoring Well Construction Form 4400-113A" will be completed in accordance with ch. 144, 147, and 160 Wis Stats.

The water table monitoring wells consist of pipe joint threaded, two (2) inch by ten (10) feet long schedule 40 PVC screen (#10 slot) with two (2) inch schedule 40 PVC riser. The bottom of the screens will be placed five (5) to seven (7) feet below the water table. After the screen and riser pipe are set, a sand filter pack will be placed around the screen to a depth two (2) feet above the top of the screen, capped by two (2) feet of fine sand layer, covered with a bentonite seal, annular space seal and surface seal. A protective casing will enclose the PVC riser pipe and locking caps will be used to protect the integrity of the well.

### 4.2.3 Water Level

Groundwater level measurements will be obtained by using an electronic measuring device, which indicates when a probe is in contact with the water surface. The distance from the top of the well casing to the probe will be measured. All measurements will be reported to the nearest 0.01 foot.

# 4.2.4 Groundwater Investigation Methodology

If monitoring wells are included in the scope of work, they will be positioned so that hydrogeologic parameters can be evaluated for the site. The wells will be set to bisect the groundwater table in order to accommodate for seasonal fluctuations in groundwater levels.

# 4.2.5 Groundwater Sample Collection

Each of the groundwater monitoring wells will be sampled for analysis of petroleum volatile organic compounds (PVOC), naphthalene, and lead constituents. Before each sampling event, each well will be purged by removing at least four (4) well casing volumes of water with a disposable (polyethylene) bailer to ensure collection of a representative sample. If a well is purged dry, it will be allowed to regenerate before being sampled. The wells will then be sampled with disposable (polyethylene) bailers, which will be disposed of following sample collection at each well location. Samples will be taken from the middle section of the bailer and will be placed in laboratory prepared bottles. Samples will be labeled and stored in an iced cooler at approximately four degrees Celsius. Samples will be accompanied by Chain of Custody records. All well development and purge water will be containerized on site in 55-gallon, WDOT approved drums, until proper handling procedures are determined.

### 4.3 Headspace Analysis

The soils will be screened with a Mini-RAE photoionization detector (PID) equipped with a 10.6 eV lamp. The detector will be calibrated in instrument units for Total Organic Vapors using an isobutylene standard. The soil sample, sealed in a Ziploc bag, will be shaken vigorously to promote volatilization of the contaminant into the headspace of the bag. The sample will be allowed to rest for at least ten minutes and then shaken again before screening. When ambient temperatures are below 60 degrees F, soil samples are allowed to warm for a minimum of ten (10) minutes in a heated environment prior to headspace development. The Ziploc bag will be punctured with the PID probe and the resulting meter reading will be recorded.

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# 4.4 Vapor Analysis (If Needed)

# **4.4.1 Interior Vapor Sample Collection**

Interior sampling will be conducted by the installation of a permanent sample port purchased from Entech Instruments, Inc. (Part #01-39-640020) and installed using a hammer drill with a 3/8" bit through the concrete slab and a  $\frac{3}{4}$ " bit to a depth of approximately 2" to set the probe. The probes will be set in place using anchoring cement. Due to the type of sample port used, REI will use Entech part #39-64200 - Gas Extraction Fitting. Samples will be collected using one liter Summa Canister and a helium shroud. The helium shroud consists of a three gallon polyethylene box placed over the sample port. The sample tubing is connected to the sample port through the gas extraction fitting, and the tubing passes through the helium shroud. Helium is introduced through a valve in the top of the helium shroud and a vacuum pump is used to purge the sample line. Four volumes of air were removed from the tubing and the purge air monitored for the presence of helium using a Restek Electronic Leak detector. Once the line was purged, and the helium detector showed the seal was adequate, the Summa Canister was connected to the sample line and allowed to fill for 30 minutes through a 30 minute flow restrictor.

# 4.4.2 Exterior Soil Gas Sampling

Soil gas sampling points will be installed to depth using direct push technology. A bentonite surface seal will be placed around the probe rods and the sampling points will be fitted with new inert tubing. A minimum of two (2) air volumes will be purged with a graduated syringe and the samples will be collected by attaching the top end of the tubing to a Summa canister instrumented with a vacuum gauge. The initial vacuum reading will be noted and the valve will be opened. The Summa canister valve will be closed after the canister has filled and a PID reading is collected. Each probe hole will be abandoned with bentonite after gas sampling is completed. The canister will be submitted to a state certified laboratory and analyzed using EPA Method TO-15.

# 4.5 Quality Assurance/Quality Control (QA/QC)

REI personnel will maintain strict adherence to established QA/QC procedures during sample collection and handling. EPA and/or WDNR standard accepted sample collection, transportation and storage protocols will be implemented prior to analysis of samples by a state certified laboratory. Sample containers will be properly preserved and stored prior to analysis. Dates of analysis, contingent upon the shelf life of the parameter of interest, will be noted. Field chain-of-custody (COC) documentation will be maintained for each sample. Internal laboratory QA/QC protocols will be adhered to in accordance with protocols outlined in EPA document SW846, Test Methods for Evaluating Solid Waste, EPA Method 8020 WDNR modified DRO & GRO, EPA Method 8270 (PNA's), and EPA method 3050 Total Lead (Pb).

# 4.5.1 Chain of Custody

Upon completion of a soil or groundwater sample, a chain of custody log will be initiated. The chain of custody record will include the following information: project name, work order number, shipped by, shipped to, sampling point, location, field ID number, date and time taken, sample type, number of containers, analysis required, sampler(s) signature(s), etc. The fewest number of people possible will handle the samples.

# 4.5.2 Decontamination

Decontamination of all field equipment will be performed to eliminate potential cross-mixing between discrete sampling points. All sampling equipment will be decontaminated by washing with an Alconox/distilled water solution, rinsing with distilled water and triple rinsing with deionized water. All drilling equipment including augers, tools, and split spoons will be decontaminated using a high pressure steam cleaner. Wash water will be contained on-site in Wisconsin Department of Transportation (WDOT) approved 55-gallon drums pending proper disposal or treatment.

Site Investigation Work Plan Burnett County – Hedlund DX July 2016

## 5.0 CHEMICAL ANALYSIS OF SOILS

Soil samples collected will be submitted to a state certified laboratory for analysis of appropriate constituents. Laboratory analysis of the collected soil samples will be completed in accordance with EPA and/or WDNR accepted methods. The soil/water interface sample and the sample exhibiting the highest PID reading from each boring will be analyzed according to one or more of the following methodologies:

EPA Method 8021 6020/200.8 Analytical Constituent Petroleum Volatile Organic Compounds and Naphthalene Lead Method Detection Limit 0.002387-0.007161 mg/kg

0.0003 mg/kg

ug/kg = parts per billion (ppb) mg/kg = parts per million (ppm)

### **6.0 CHEMICAL ANALYSIS OF GROUNDWATER**

Groundwater samples will be collected from each monitoring well and will be sent to the laboratory for analysis of appropriate constituents. Samples will be collected in laboratory prepared vials and jars, placed into an iced cooler and transported to a state certified laboratory for one or more of the following analysis:

EPA Method	<b>Analytical Constituent</b>	<b>Method Detection Limit</b>
8021	Petroleum Volatile Organic Compounds and	0.322-1.029 ug/L
	Naphthalene	
6020/200.8	Dissolved Lead	l ug/L

ug/L = ppb mg/L = ppm

# **7.0 REPORTING**

At the conclusion of the field investigation, REI will analyze the data collected and prepare a written report of the findings. Measurements that are taken in the field will be utilized to prepare a scaled map of the subject site. Laboratory reports for both soil and groundwater samples collected during the investigation will be utilized to determine the extent of contamination. All data will be summarized into data tables. All soil samples collected will be classified and logged on the Wisconsin Department of Natural Resources Soil Boring Log Information Form 4400-122. The WDNR Well Construction Form 4400-113A will also be completed following installation of temporary monitoring wells. The report that follows the investigative work will provide documentation of all work performed for the project and will include recommendations as to whether or not additional delineation of hydrocarbon constituents or completion of a Remedial Action Plan is warranted.

# 8.0 PROJECT SCHEDULE

Once the Site Investigation Proposal has been approved by all parties the project will proceed according to the following schedule. The project schedule may be altered accordingly should additional work be required beyond the scope of work outlined in the Work Plan:

TASK DESCRIPTION Time in Weel						eeks			1.1
	1	2	3	4	5	6	7	8	9
1. Submittal of Work Plan	*								
2. Field Work	State of the								
3. Lab Analysis			を思う		<b>花</b> 点:	に行った			
4. Data Interpretation & Draft					H H	和政治管			
5. Client Review								ANG TO A	
6. Letter Report								研究	BAR





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