

Soil Investigation Work Plan

To: John Sager, Wisconsin Department of Natural Resources
From: Lynette Carney and Ryan Erickson
Subject: Superior Water, Light & Power Nemadji Substation Investigation Work Plan
Date: December 18, 2019
Location: Superior Refining Company, Superior, WI
Cc: Mark Darby and Matt Turner, Superior Refining Company
Mike French, LHB Contract Project Manager for MN Power

Dear Mr. Sager:

The following Work Plan is for a soil investigation at the Superior Refining Company (SRC) property that is leased by Superior Water Light & Power (SWL&P) for construction and operation of a new electrical substation (Nemadji Substation). The property is located at 2407 Stinson Ave, Superior, Wisconsin (Property; Figure 1).

Project Background

In 2018, SWL&P leased the Property from SRC to construct and operate an electrical substation. Prior to the lease, Barr Engineering Co. (Barr) had conducted a Phase I Environmental Site Assessment (2018) and a Phase II Investigation (2018) to document the condition of the Property prior to construction. No evidence of contamination was identified during these activities.

During substation construction earthwork activities in November 2019, SWL&P contractors encountered contaminated soil in two separate locations (Figure 1). SWL&P directed the excavation of the identified contaminated soil during their project work. The contaminated soil was characterized and transported offsite for disposal at Shamrock Landfill. SWL&P subsequently indicated that the identified contaminated soil had been remediated through excavation; however, no field screening or analytical confirmation samples were collected from the excavation extents to document final site conditions. SWL&P did report the discovery of contaminated soil to the Wisconsin Department of Natural Resources (WDNR).

The purpose of this proposed investigation is to document the soil conditions at the site following remedial actions through:

- determining whether residual soil impacts remain beneath the locations where impacted soil was excavated by SWL&P
- evaluating soil conditions laterally around the areas where impacted soil was excavated by SWL&P, and
- evaluating soil conditions on portions of the Property that have not been sampled to date.

Proposed Scope of Work

Borings advanced with a push-probe rig are proposed to evaluate the soil conditions at the site. The proposed soil boring locations were selected based on site features and previous boring locations (Barr, 2018), and are depicted on Figure 1.

Barr will prepare a project-specific health and safety plan (PHASP) and coordinate the investigation field work with SRC, SWL&P, and WDNR. Twenty-four (24) soil push-probe borings will be advanced to a depth of approximately 10 feet below ground surface (bgs) with continuous soil sample collection. Final boring locations and depths may vary depending on utility locations, accessibility in the field, depth to groundwater, soil conditions encountered, and the depth of identified contamination (if any). If contamination is identified, soil borings will be advanced to a minimum depth of 5 feet below the deepest level of contamination, as measured through field headspace screening. Soil will be classified as contaminated if it has a headspace reading >10 parts per million (ppm) or if clear evidence of contamination (e.g., hydrocarbon odor, sheen, free-product) is identified. All borings will be abandoned by the driller per Wisconsin regulatory requirements.

A Barr geoscientist will be on site to direct the advancement of the borings and will perform the field tasks and documentation in accordance with Barr's standard operating procedures (SOPs) applicable to the project. Soil samples will be screened for organic vapors using a photoionization detector (PID) with a 10.6 eV lamp. Soil samples will be classified in accordance with the Unified Soil Classification System (USCS) - ASTM D-2488, Standard Practice for Description and Identification of Soils (Visual/Manual Method) and any additional geologic information will be documented.

At least one confirmation/characterization analytical soil sample will be collected from insitu native soils from each boring and will be submitted to an approved certified laboratory for analysis of diesel range organic compounds (DRO), petroleum volatile organic compounds (PVOCs) and naphthalene. Soil samples submitted for laboratory analysis will be collected from 2-3 feet bgs and/or 6-7 feet bgs. The upper sample interval will be adjusted as necessary to ensure that soil is collected from below any recently placed fill or road base material. The lower soil sample interval will be adjusted based on the highest PID reading and/or interval with the most significant discoloration, odor or staining. A proposed soil sampling matrix and rationale has been provided in the attached Table 1. A duplicate sample will not be collected. One trip blank and one equipment blank will be collected.

A letter report will be prepared that summarizes investigation activities, findings and results. Recommendations for potential further actions will be included in the event that residual impacted soils are discovered at the Property.

ATTACHMENTS

Table 1	Boring and Sample Matrix Summary
Figure 1	Proposed Soil Boring Locations

TABLE 1
BORING AND SAMPLE MATRIX SUMMARY
COMPLETED AND PROPOSED BORINGS / WELLS
Site Investigation Work Plan
Nemadji Substation Lease Property

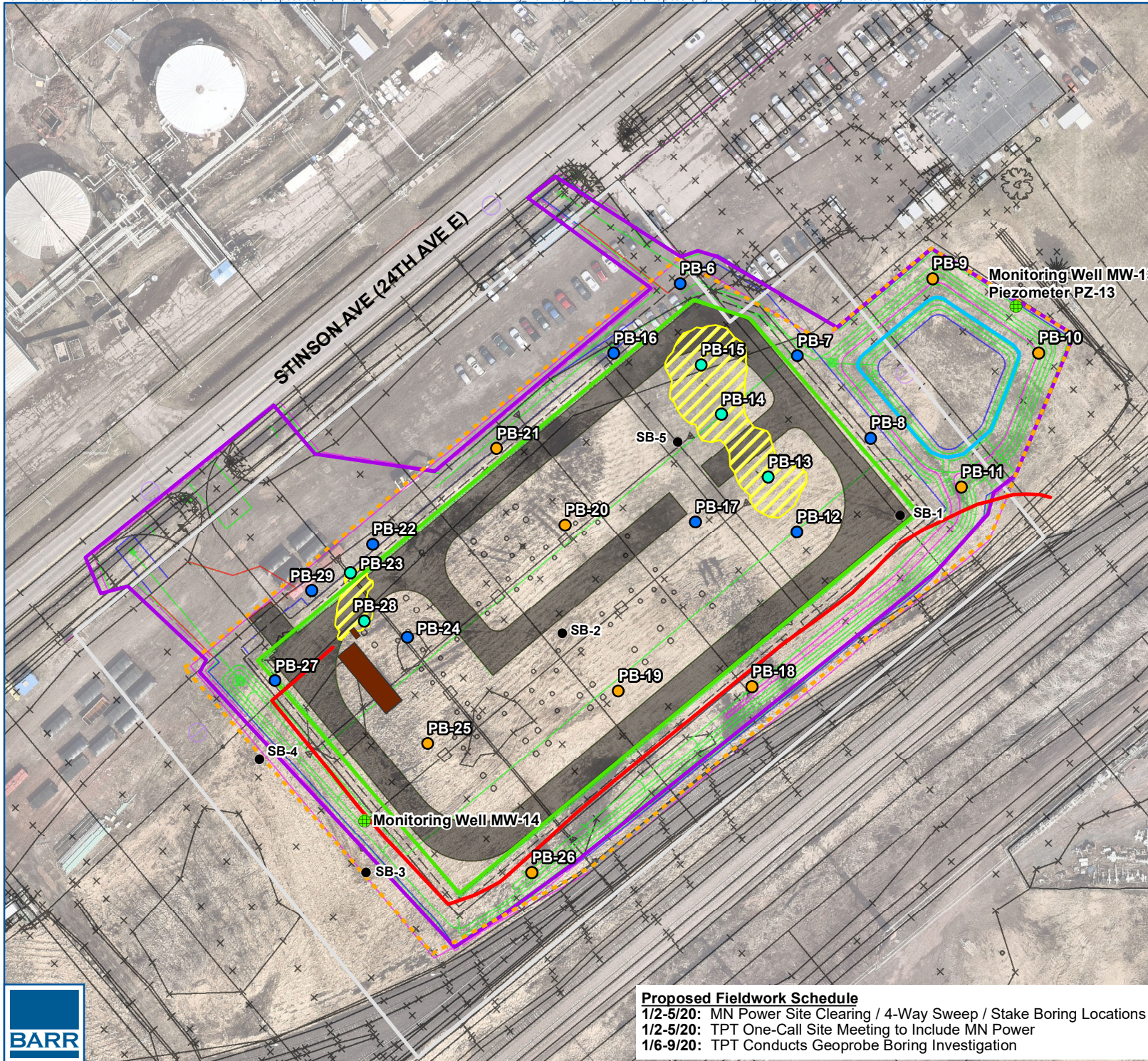
Boring or Well ID	Completed (C) or Proposed (P)	Rationale			Sample Target		Total Depth (ft)	Targeted Soil Sample Depths (ft bgs) ¹	Soil Sampling Parameters					Anticipated Groundwater Depth (ft bgs ⁺)	Groundwater Sampling Parameters		
		Characterization	Delineation	Combined	Excavation Sidewall	Below Engineered Fill			PVOC + Naphthalene	DRO	RCRA Metals ²	VOCs	PAHs		PVOC + Naph	VOCs	PAHs
MW-13	C	X					20	NA						5-10	1		
MW-14	C	X					20	NA						5-10	1		
SB-1	C	X			X	X	15	2-3 12-13			2	2	2	5-10			
SB-2	C	X				X	15	0-1 6-7			2	2	2	5-10			
SB-3	C	X			X	X	15	0-2 8-9			2	2	2	5-10		1	1
SB-4	C	X			X	X	15	0-2 6-7			2	2	2	5-10			
SB-5	C	X				X	15	0-1 8-9			2	2	2	5-10			
PB-6	P			X	X	X	10	2-3 6-7	2	2				5-10			
PB-7	P			X	X	X	10	2-3 6-7	2	2				5-10			
PB-8	P			X	X	X	10	2-3 6-7	2	2				5-10			
PB-9	P	X				X	10	6-7	1	1				5-10			
PB-10	P	X				X	10	6-7	1	1				5-10			
PB-11	P	X				X	10	6-7	1	1				5-10			
PB-12	P			X		X	10	6-7	1	1				5-10			
PB-13	P		X			X	10	6-7	1	1				5-10			
PB-14	P		X			X	10	6-7	1	1				5-10			
PB-15	P		X			X	10	6-7	1	1				5-10			
PB-16	P			X	X	X	10	2-3 6-7	2	2				5-10			
PB-17	P			X		X	10	6-7	1	1				5-10			
PB-18	P	X			X	X	10	2-3 6-7	2	2				5-10			
PB-19	P	X				X	10	6-7	1	1				5-10			
PB-20	P	X				X	10	6-7	1	1				5-10			
PB-21	P	X			X	X	10	2-3 6-7	2	2				5-10			
PB-22	P			X	X	X	10	2-3 6-7	2	2				5-10			
PB-23	P		X			X	10	6-7	1	1				5-10			
PB-24	P			X		X	10	6-7	1	1				5-10			
PB-25	P	X				X	10	6-7	1	1				5-10			
PB-26	P	X			X	X	10	2-3 6-7	2	2				5-10			
PB-27	P			X	X	X	10	2-3 6-7	2	2				5-10			
PB-28	P		X			X	10	6-7	1	1				5-10			
PB-29	P			X	X	X	10	2-3 6-7	2	2				5-10			
									34	34	10	10	10		2	1	1
									EPA 8260B	WI MOD DRO 8015D (C10-C28)	USEPA 6010C / 7471B	EPA 8260B	EPA 8270D		EPA 8260B	EPA 8260B	EPA 8270D

¹Actual soil sampling intervals will be adjusted based on observations of fill vs. native material and/or obvious signs of contamination.

²RCRA Metals will include arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

+ Below ground surface.

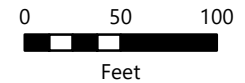
Shaded cells represent locations previously sampled.



- Characterization Boring (9)
- Remedial Action Delineation (Confirmation) Boring (5)
- Combined Delineation/Characterization Boring (10)

Note: final boring locations may be modified due to field conditions but will continue to meet stated investigation objectives.

- Monitoring Well
- Previous Soil Boring Location, Barr 2018
- Property Line
- Underground Electrical
- Construction Limits
- Proposed Substation Fenceline
- ▨ SWL&P-Confirmed Remedial Excavation Area
- Gravel Surfacing
- Foundations
- Proposed Pond
- 2018 Phase II Property Boundary



1 inch = 100 feet

Imagery: Nearmap, 4/25/2019

Proposed Fieldwork Schedule
 1/2-5/20: MN Power Site Clearing / 4-Way Sweep / Stake Boring Locations
 1/2-5/20: TPT One-Call Site Meeting to Include MN Power
 1/6-9/20: TPT Conducts Geoprobe Boring Investigation



PROPOSED SOIL BORING LOCATIONS
 SWL&P Nemadji Substation
 Superior, WI
FIGURE 1