

**SITE ASSESSMENT PLAN
Groundwater Monitoring
FORMER BENSON OIL COMPANY
587 LIBERTY AVENUE
CLINTON, IOWA**

CON: 12-15
Doc #35725

Attachments to the Site Assessment Plan:

1. Sample Location Map
2. Project Schedule

PROPERTY IDENTIFICATION

1. Facility (Property) Name: Former Benson Oil Company
2. Parcel Numbers: 8039580000
3. Common Address: 587 Liberty Avenue

PURPOSE OF ACTIVITIES

Contamination in both soil and groundwater was previously identified on this property. This contamination was a result of past use of the property and included product-saturated soil and benzene and ethylbenzene groundwater plumes. Previous mitigation efforts included soil over excavation to remove product-saturated soil. The excavation of the product-saturated soil removed a source of contamination to groundwater at the site. The purpose of the activities discussed in this site assessment plan (SAP) is to assess groundwater conditions and to identify the groundwater concentration trends at the Former Benson Oil Company site.

PROPERTY-SPECIFIC SAMPLING DESIGN(S)

Sampling locations are based on the findings of previously completed assessments on the property with one monitoring well located in each of the following locations: upgradient of the identified groundwater plumes (MW-1); in the source zone and standing oil extent of the identified groundwater plumes (MW-2); and downgradient of the identified groundwater plumes (MW-3).

These three wells will be sampled quarterly and groundwater samples will be analyzed for OA1, MTBE, and OA2.

The site is located in an area where shallow bedrock is present and all previously collected groundwater samples were collected from first encountered water above bedrock elevation. Monitoring wells will be completed in a manner to collect groundwater from the same material, assuming groundwater is encountered prior to bedrock. These monitoring wells will be developed upon their installation. The first sample collection event will occur on a separate mobilization, allowing for sufficient time for the system to equilibrate. Groundwater samples will be collected by a dedicated bailer and then placed into laboratory-provided sample jars. All collected groundwater samples will then be placed in an iced cooler before they are delivered to the laboratory for analysis.

Proposed sampling locations are shown on the Sampling Map in Attachment 1. The Groundwater Quarterly Sampling Table below references the sampling parameters to be collected at each location for each quarterly sampling event.

GROUNDWATER QUARTERLY SAMPLING TABLE

Sampling Location	BTEX + MTBE	Diesel, Waste Oil, and Gasoline
MW-1	X	X
MW-2	X	X
MW-3	X	X
Number to Analyze	3	3

CHEMICAL ANALYSES SAMPLE PARAMETERS/BOTTLES

The following table summarizes the analytical methods prescribed for each chemical group.

CHEMICAL GROUP	LAB METHOD	Number of VOAs (3 per sample)	Number of Amber Jars
BTEX and MTBE	OA1	9	
Diesel, Waste Oil, and Gasoline	OA2		3

SAMPLE PRESERVATION AND HOLDING TIMES

This reference table is a summary of preservation method and holding time constraints.

Matrix	Analysis	Container	Preservation	Holding Time
Groundwater	OA1 and MTBE	3 40-mL vials	HCl to pH <2, cool to 4° C	14 days
	OA2	1 250-mL amber glass bottle	Cool to 4° C	7 days for extraction; 40 days for analysis

VI. EQUIPMENT LIST

The following table summarizes equipment needed for this project.

EQUIPMENT	REQUIRED FOR THE PROJECT
PID	X
NITRILE GLOVES	X
OTHER GLOVES	X
PPE – Hard Hat, ear plugs, steel toe boots	X
WATER LEVEL METER	X
DECON SUPPLIES	Driller / X
DI – WATER	X
ZIP-LOCK BAG	X

HEALTH AND SAFETY (A8.2.5, Default Approval Limited to D & D Modified Levels)

HR Green’s Health and Safety Plan will be used during any on site Phase II ESA activities.

- Level D Personal Protective Equipment (PPE): equip., monitor and record accordingly.
- Level D Modified PPE: equip., monitor and record accordingly.
- Level C PPE: equip., monitor and record accordingly.




QUALITY CONTROL CHECKS

HR Green and the analytical laboratory will complete the following QA/QC measures, where warranted: lab reagent blank, method blank, matrix spike/matrix spike duplicate, laboratory control sample, and general bottle control.

ATTACHMENT 1
SAMPLE LOCATION MAP



Legend

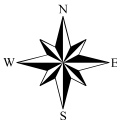
-  Monitoring Well Location
-  Subject Property
-  Final Excavation Area

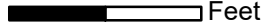
ATTACHMENT 1

Sampling Map

Former Benson Oil Company

City of Clinton
Clinton County, Iowa



0 40
 Feet
 1 inch = 40 feet



ATTACHMENT 2

SCHEDULE OF ACTIVITIES

The following schedule is proposed to implement the groundwater sampling for this property. Factors such as inclement weather, response timing by regulatory agencies or other logistics out of HR Green's control may extend the project milestones by equivalent days.

April 2019:	Submit Site Assessment Plan to IDNR for Groundwater Monitoring Activities
April 2019:	Receive IDNR Site Assessment Plan approval
April-May 2019:	Install and develop monitoring wells
April-June 2019:	Complete first quarterly sampling event and reporting
July-September 2019:	Complete second quarterly sampling event and reporting
October-December 2019:	Complete third quarterly sampling event and reporting
January-March 2020:	Complete fourth quarterly sampling event and reporting and evaluate groundwater trend data to determine if additional sample collection is needed. Complete additional sample collection on a quarterly schedule, if warranted.