



MACKINAC ENVIRONMENTAL TECHNOLOGY, INC.

Environmental Consulting and Contracting Since 1990

September 9, 2022

Mr. Hal Wolff
2045 McKinley Avenue
Ypsilanti, Michigan 48197
runlikehal@yahoo.com
(734) 487-5616

RE: Septic Field Investigation – 07645 Cedar Lane (Parcel ID: 15-006-700-024-00)

Dear Mr. Wolff,

The following was prepared by Mackinac Environmental Technology, Inc. (MET) to provide results of the septic field subsurface investigation completed at 07645 Cedar Lane, East Jordan, Michigan ("Site").

The Site consists of a lake front lot along the south shore of Lake Charlevoix in Eveline Township, Charlevoix County. Current developments include a camping trailer, small storage shed and separate bathroom. It is MET's understanding that the Site is used seasonally during the summer months.

The Site's existing sewage system consists of an approximate 300-gallon septic tank and associated drainage field (two 10-foot drain pipes in a 4 feet wide drain bed).

On August 29, 2022, MET was on-Site to conduct a subsurface investigation near the existing septic system. The investigation included the advancement of three soil borings (S-1 to S-3). See attached Figure 1 – Site Plan for boring locations.

A stainless-steel hand auger was utilized to complete the soil borings. Continuous soil cores were completed from surface to a maximum explored depth of 9.5 feet below grade. The soil was classified in accordance with the Unified Soil Classification guidelines and recorded in the field. Site soil lithology generally consisted of a surficial loamy sand/cobble (0 to 2.5 feet), followed by a fine sand/silt (2.5 to 6 feet), medium sand/cobble (6 to 8 feet) and silt/clay (8 to 9.5 feet). Saturated soils were encountered at approximately 7.5 feet below grade. See attached boring logs for specific soil lithology.

Temporary monitoring wells, consisting of a five-foot section of two-inch diameter polyvinyl chloride (PVC) #10 slot screen and associated PVC risers, were installed in boreholes S-2 and S-3. Please note that due to auger refusal encountered at 7.5 feet below grade, a monitoring well was not installed in borehole S-1. The screened sections were set to bisect the groundwater table. Clean filter sand was used to fill annular space around the wells to grade. Photographs of the installed monitoring wells are also attached.

Following a four-day stabilization period, MET conducted depth-to-water measurements on September 2, 2022. All water level measurements were made relative to each wells top-of-

casings (TOCs) using an electronic static water level meter (accurate to 0.01-feet). Above grade casing height was subtracted to determine exact depth to groundwater from surface grade.

Table 1 – Depth to Groundwater

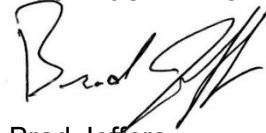
Location	TOC - Depth to Groundwater	Above Grade Casing Height	Surface Grade - Depth to Groundwater
	Unit (ft)		
S-2	9.21	1.54	7.67
S-3	8.20	1.25	6.95

As depicted above, groundwater was encountered beneath the existing drain field at 7.67 feet below grade. Groundwater depth, located approximately 10 feet south of the drain field, was measured at 6.95 feet below grade.

Mackinac Environmental Technology, Inc. appreciates the opportunity to provide these consulting services. Should you have any questions or comments regarding this report, or if we can be of further assistance, please do not hesitate to contact us.

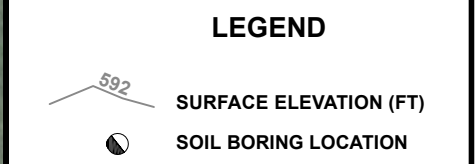
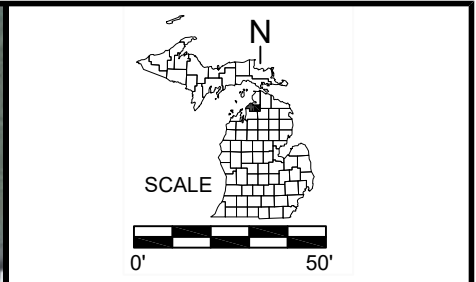
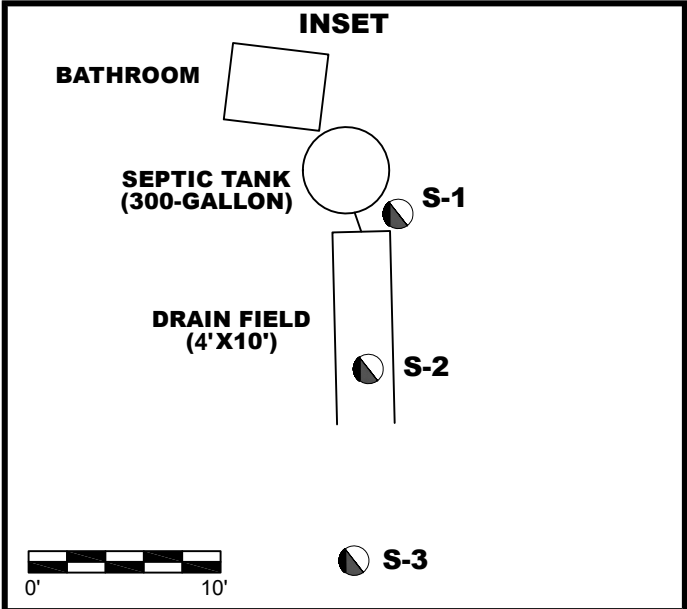
Sincerely,

Mackinac Environmental Technology, Inc.



Brad Jeffers
Environmental Professional

Attachment:
- Figure 1: Site Plan
- Boring Logs
- Site Photographs



NOT A LEGAL SURVEY. SITE LAYOUT APPROXIMATE ONLY.
 CREDITS: GOOGLE EARTH (2019 AERIAL IMAGERY), USGS
 DIGITAL ELEVATION MODEL

HAL WOLFF RESIDENCE 07645 CEDAR LANE, EAST JORDAN, MI	M22-3771
SITE PLAN	FIGURE 1
	8/29/2022

S-1

HAL WOLFF RESIDENCE

07645 CEDAR LANE, EAST JORDAN, MI

Project Number: M22-3771	Drilling Co: Mackinac Environmental Tech.
Logged By: B. Jeffers (MET)	Ground Elevation: N/A
Date Drilled: 8/29/2022	Boring Depth: 7.5'
Borehole Diameter: 4" Stainless Steel Hand Auger	Saturation Depth: N/A

Depth (FT)	Sample	PID (ppm)	Depth to Water	Comments	Graphic Log	Subsurface Lithology	Well Diagram
0						LOAMY SAND, COBBLE	
1							
2						MEDIUM SAND	
3						FINE SAND, SILT	
4							
5							
6						MEDIUM SAND, GRAVEL, COBBLE	
7						MEDIUM SAND, HEAVY COBBLE	
8						AUGER REFUSAL	
9							
10							

Completion Notes: Soil boring S-1 completed along southeast side of septic tank.

- = bentonite
- = filter sand
- Casing = N/A
- Screen = N/A

S-2

HAL WOLFF RESIDENCE

07645 CEDAR LANE, EAST JORDAN, MI

Project Number: M22-3771	Drilling Co: Mackinac Environmental Tech.
Logged By: B. Jeffers (MET)	Ground Elevation: N/A
Date Drilled: 8/29/2022	Boring Depth: 9.5'
Borehole Diameter: 4" Stainless Steel Hand Auger	Saturation Depth: 7.5'

Depth (FT)	Sample	PID (ppm)	Depth to Water	Comments	Graphic Log	Subsurface Lithology	Well Diagram
0						LOAMY SAND, COBBLE	
1						DRAIN STONE	
2						FINE SAND, SILT	
3						FINE SAND, SILT	
4						FINE SAND, SILT	
5						FINE SAND, SILT	
6						MEDIUM SAND, COBBLE	
7						MEDIUM SAND, COBBLE	
8				DEPTH TO GROUNDWATER (7.67 FEET)		FINE SAND, SILT	
9						FINE SAND, SILT	
10						END OF BORING	

Completion Notes: Soil boring S-2 completed near center of current drain field.

= bentonite
 = filter sand
 Casing = 4'
 Screen = 5'



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S-3

HAL WOLFF RESIDENCE

07645 CEDAR LANE, EAST JORDAN, MI

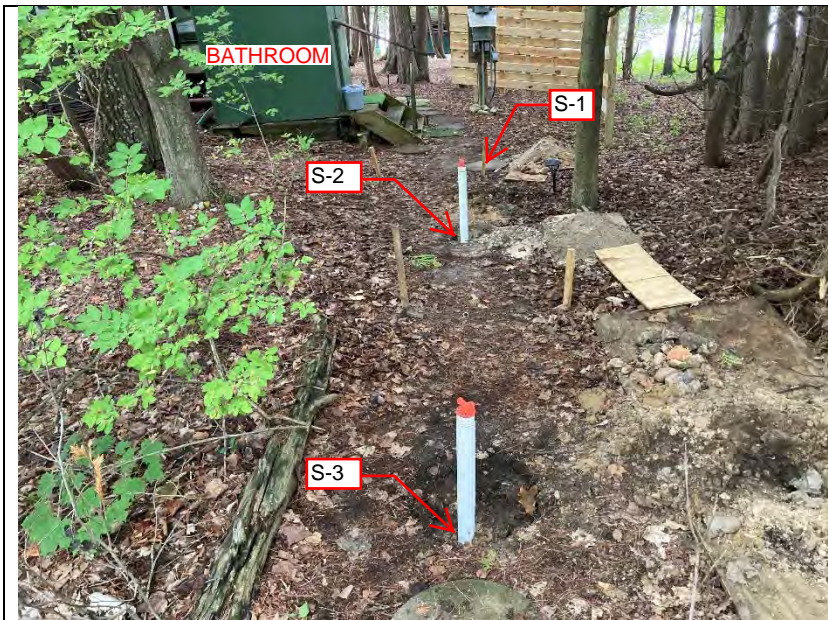
Project Number: M22-3771	Drilling Co: Mackinac Environmental Tech.
Logged By: B. Jeffers (MET)	Ground Elevation: N/A
Date Drilled: 8/29/2022	Boring Depth: 9.5'
Borehole Diameter: 4" Stainless Steel Hand Auger	Saturation Depth: 7.0'

Depth (FT)	Sample	PID (ppm)	Depth to Water	Comments	Graphic Log	Subsurface Lithology	Well Diagram
0						LOAMY SAND, COBBLE	
1							
2						MEDIUM SAND	
3						FINE SAND, SILT	
4							
5							
6						MEDIUM SAND, COBBLE	
7			▼ DEPTH TO GROUNDWATER (6.95 FEET)				
8						MEDIUM SAND	
9						SILT	
						SILTY CLAY	
10						END OF BORING	

Completion Notes: Soil boring S-3 completed approximately 10 feet south of current drain field.

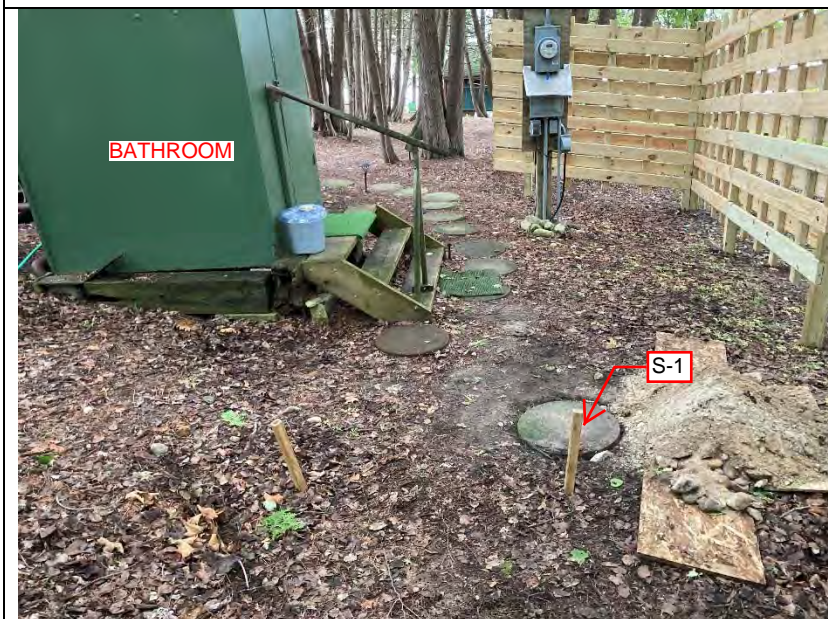
- = bentonite
- = filter sand
- Casing = 4'
- Screen = 5'





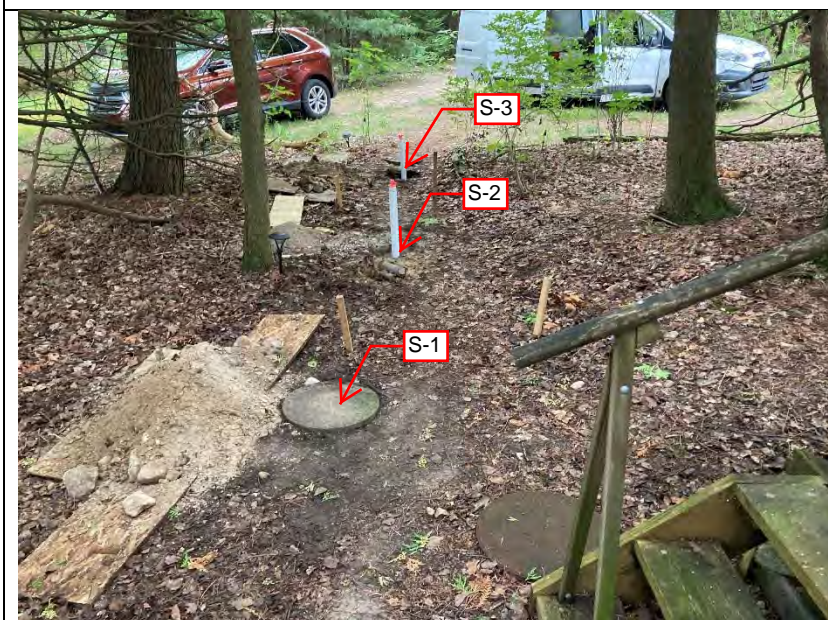
Photograph: 1

Description: Looking north, across the septic drain field, towards the Site bathroom.



Photograph: 2

Description: Looking north towards the Site bathroom.



Photograph: 3

Description: Looking south, across the Site drain field, from the bathroom location.