

Millennium Forms

BRRTS No. 02-65-587693

3-26-2024 DNR PowerPoint slides

Questions posed by TRG regarding DNR's March 6, 2024 Letter:

"Site Investigation Report Not Approved and Next Steps"

- What engineering concerns do you have?
- What concerns do you still have regarding our response to your September 20, 2022 letter.
- What concerns do you have regarding the supporting documents
- What are your concerns regarding the site map
- What concerns do you have regarding the source areas identified in SI report
- What concerns do you have regarding the mass of hexavalent chromium
- Anything else that needs to be discussed.

The answers and other documentation provided in these slides are examples, not a comprehensive list



February 21, 2023

To: **Jeff Ackerman**
Hydrogeologist
Fitchburg Service Station
3911 Fish Hatchery Road
Fitchburg, WI 53711

RE: Millennium Forms
550 E. Centralia Street
Elkhorn, Wisconsin, 53121
BRRTS No. 02 65-587693

Jeff,

The Reese Group, LLC has prepared responses to your concerns regarding our previously submitted Site Investigation Report for Millennium Forms. The response has been organized to address each concern with a response.



**SITE INVESTIGATION REPORT
AND
REMEDIAL ACTION OPTIONS EVALUATION**

DNR --- Robert Evangelisti was the Professional Engineer that certified the Report as the professional engineer overseeing the work. Please provide Mr. Evangelisti's contact information, including job title, place of employment, email address, and telephone number.

TRG--- **RESPONSE:** *Robert Evangelisti did not oversee the work. The signature block reads as follows:*

"I, Robert Evangelisti, hereby certify that I am a registered Professional Engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code, and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.

That is what he did (and signed and certified) and NOT that he oversaw the work. Mr. Evangelisti's information is:

*Robert Evangelisti, P.E., CEA, CHMM, CSP
Engineer
revangelisti@the-reese-group.com
262-909-4299*

[NR 722.05\(6\)](#) The evaluation and documentation of an appropriate set of remedial action options shall be conducted by a qualified person or persons pursuant to s. [NR 712.07](#) and shall be signed and sealed by the qualified person or persons in accordance with s. [NR 712.09](#).

[NR 712.07\(2\)](#) Submittals prepared to satisfy the requirements of ch. [NR 722](#) or [724](#) ... for response actions taken to address groundwater contamination shall be jointly prepared by, or under the supervision of, a professional engineer and a hydrogeologist.

[NR 712.09\(1\)](#) Submittals prepared by, or under the supervision of, a professional engineer, a hydrogeologist or a scientist shall be dated and certified by the professional engineer, hydrogeologist or scientist using the appropriate certification set forth in sub. [\(3\)](#)...

[NR 712.03\(5\)](#) "Supervision" means personal, active oversight and control of the preparation of submittals.

A–E 8.04 Offers to perform services shall be truthful. When offering to perform professional services, an architect, landscape architect, professional engineer, designer or professional land surveyor:

(5) May not misrepresent the extent to which the performance of services will involve a partnership or association with another registrant or licensee or misrepresent the identity of a registrant or licensee with whom a partnership or association will be engaged in for the performance of services.

(7) May not practice under a firm name that misrepresents the identity of those practicing in the firm or misrepresents the type of services which the individuals, firm or partnership is authorized and qualified to perform.

A–E 8.10 Plan stamping. (1) No architect, landscape architect, professional engineer or designer may sign, seal or stamp any plans, drawings, documents, specifications or reports for architectural, landscape architectural, professional engineering or design practice which are not prepared by the registrant or under his or her personal direction and control.

Well Development Issue

Original report

The wells were developed to remove debris and sediment produced by construction and to clear the screen slots. The wells were developed by surging and bailing with disposable plastic bailers and in general accordance with chapter NR 141 of the WAC. Well development consisted of emptying each well of water a minimum of 10 times, the well and filter pack volume.

DNR response letter:

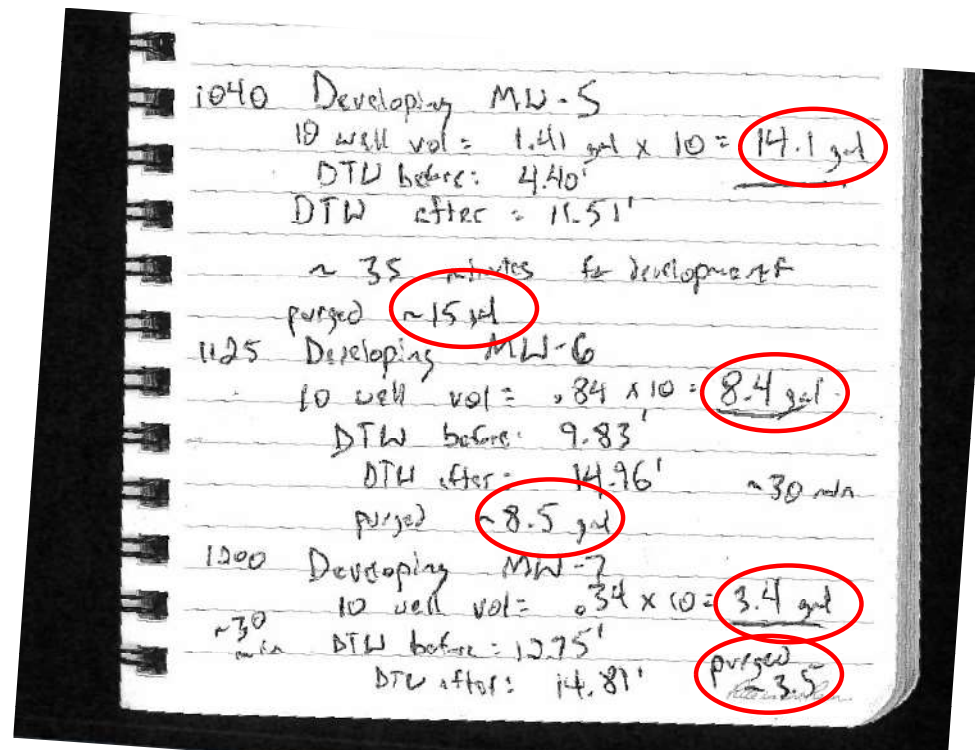
...3.5 to 14 gallons of groundwater was removed from each well during well development. For most water table wells that can't be purged dry, about 7 gallons per foot of standing water, or about 50 gallons of water per well, should be removed during well development. This issue of inadequate water removal may have been the result of an incorrect calculation of the amount of water in the filter pack and well casing, as recorded on the well development forms.

...(groundwater) results were highly variable at four wells sampled that were sampled twice, and the quality of the samples is questionable due to the improper well development.

Well Development Issue

Revised report

Because the monitoring wells were slow to recharge, they were generally developed in accordance with NR141.21(2) Wells That Can Be Purged Dry. The wells were developed by slowly purging the well utilizing low flow methods with a peristaltic pump.



Well Development Issue

Original report

Revised report

Facility/Project Name Millennium Forms	County Name
Facility License, Permit or Monitoring Number	County Code .65__

1. Can this well be purged dry? Yes No

2. Well development method

- surged with bailer and bailed 41
- surged with bailer and pumped 61
- surged with block and bailed 42
- surged with block and pumped 62
- surged with block, bailed and pumped 70
- compressed air 20
- bailed only 10
- pumped only 51
- pumped slowly 50
- Other _____ _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Lee Kimbell

Print Name: Lee Kimbell

Firm: The Reese Group, LLC

Facility/Project Name Millennium Forms	County Name
Facility License, Permit or Monitoring Number	County Code .65__

1. Can this well be purged dry? Yes No

2. Well development method

- surged with bailer and bailed 41
- surged with bailer and pumped 61
- surged with block and bailed 42
- surged with block and pumped 62
- surged with block, bailed and pumped 70
- compressed air 20
- bailed only 10
- pumped only 51
- pumped slowly 50
- Other _____ _____

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Christin Reese for Lee Kimbell

Print Name: Lee Kimbell

Firm: The Reese Group, LLC

Other documents change -for example, the well forms...

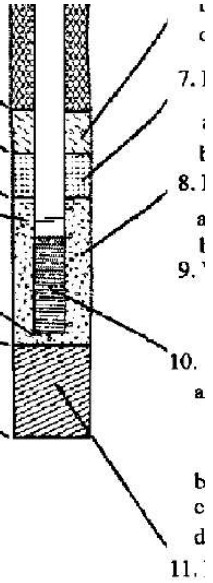
Original report

Revised report

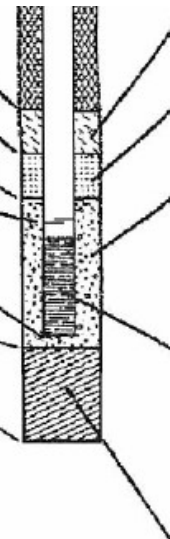
MONITORING WELL CONSTRUCTION Form 4400-113A Rev. 7-98

Well Name
TRG MW-5

E. Bentonite seal, top	ft. MSL or	<u>1</u>	ft.
F. Fine sand, top	ft. MSL or	<u>1.9</u>	ft.
G. Filter pack, top	ft. MSL or	<u>2.9</u>	ft.
H. Screen joint, top	ft. MSL or	<u>2.9</u>	ft.
I. Well bottom	ft. MSL or	<u>12.9</u>	ft.
J. Filter pack, bottom	ft. MSL or	<u>13</u>	ft.
K. Borehole, bottom	ft. MSL or	<u>13</u>	ft.
L. Borehole, diameter		<u>8</u>	in.
M. O.D. well casing		<u>2.38</u>	in.
N. I.D. well casing		<u>2</u>	in.



E. Bentonite seal, top	ft. MSL or	<u>1</u>	ft.
F. Fine sand, top	ft. MSL or	<u>3.9</u>	ft.
G. Filter pack, top	ft. MSL or	<u>4.9</u>	ft.
H. Screen joint, top	ft. MSL or	<u>4.9</u>	ft.
I. Well bottom	ft. MSL or	<u>14.9</u>	ft.
J. Filter pack, bottom	ft. MSL or	<u>15</u>	ft.
K. Borehole, bottom	ft. MSL or	<u>15</u>	ft.
L. Borehole, diameter		<u>8</u>	in.
M. O.D. well casing		<u>2.38</u>	in.
N. I.D. well casing		<u>2</u>	in.



Depth to Water
After Development
11.51 ft.

I hereby certify that the information on this form is true and correct to the best of my knowledge.
Signature: [Signature] Firm: The Reese Group, LLC

I hereby certify that the information on this form is true and correct to the best of my knowledge.
Signature: [Signature] Firm: The Reese Group, LLC

Original report

Revised report

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Well Name TRG MW-5	
Wis. Unique Well No. _____	DNR Well ID No. _____
Date Well Installed 10 / 12 / 2021 m m d d y y y y	
Well Installed By: Name (first, last) and Firm Tony Kapugi On Site Env. Services. Inc.	

Well Name TRG MW-5	
Wis. Unique Well No. WA474	DNR Well ID No. _____
Date Well Installed 5 / 12 / 20 m m d d y y y y	
Well Installed By: Name (first, last) and Firm Adam Sweet Horizon Construction and Exploration	

Other documents change
 -for example, the boring logs and documentation...

	INSTALLATION				COC sample date soil sample	ABANDONMENT	
	old SIR boring log	new SIR boring log	old SIR abandonment form installed	new SIR abandonment form installed		abandoned field notes	new SIR abandonment form date abandoned
boring							
SB-1	-	1/5/021	-	not listed	1/15/2021	1/15/2021	3/29/2022
SB-2	-	1/5/021	-	1/5/2021	1/15/2021	-	3/29/2022
SB-3	-	12/13/2022	-	1/5/2021	1/15/2021	-	3/29/2022
SB-4	11/15/2021	12/13/2022	-	-	10/13/2021	-	-
SB-5	10/12/2021	10/12/2021	-	-	10/12/2021	-	-
SB-6	10/12/2021	10/12/2021	-	-	10/12/2021	-	-
SB-7	10/12/2021	10/12/2021	-	-	10/12/2021	-	-
SB-8	3/24/2022	3/4/022	-	3/24/2022	3/24/2022	-	3/29/2022
SB-9	3/24/2022	3/4/022	-	3/24/2022	3/24/2022	-	not listed
SB-10	3/24/2022	3/4/022	-	3/4/2022	3/24/2022	-	3/29/2022
SB-11	3/24/2022	3/4/022	-	3/4/2022	3/24/2022	-	3/29/2022
SB-12	3/24/2022	3/4/022	-	3/4/2022	3/24/2022	-	3/29/2022
SB-13	3/24/2022	3/4/022	-	not listed	3/24/2022	-	3/29/2022
SB-14	3/24/2022	3/4/022	-	-	3/24/2022	-	3/29/2022
SB-15	3/24/2022	3/4/022	-	3/4/2022	3/24/2022	-	3/29/2022

Millenium Tile 1/15/21
 Phase 2- ESA
 SSO E Centralia St, Elkhorn, WI
 Scope of work- 3 soil borings ~15-20'
 -install 3 Temp Wells bgs
 - collect soil and GL samples

Site Map (e.g. Utilities)

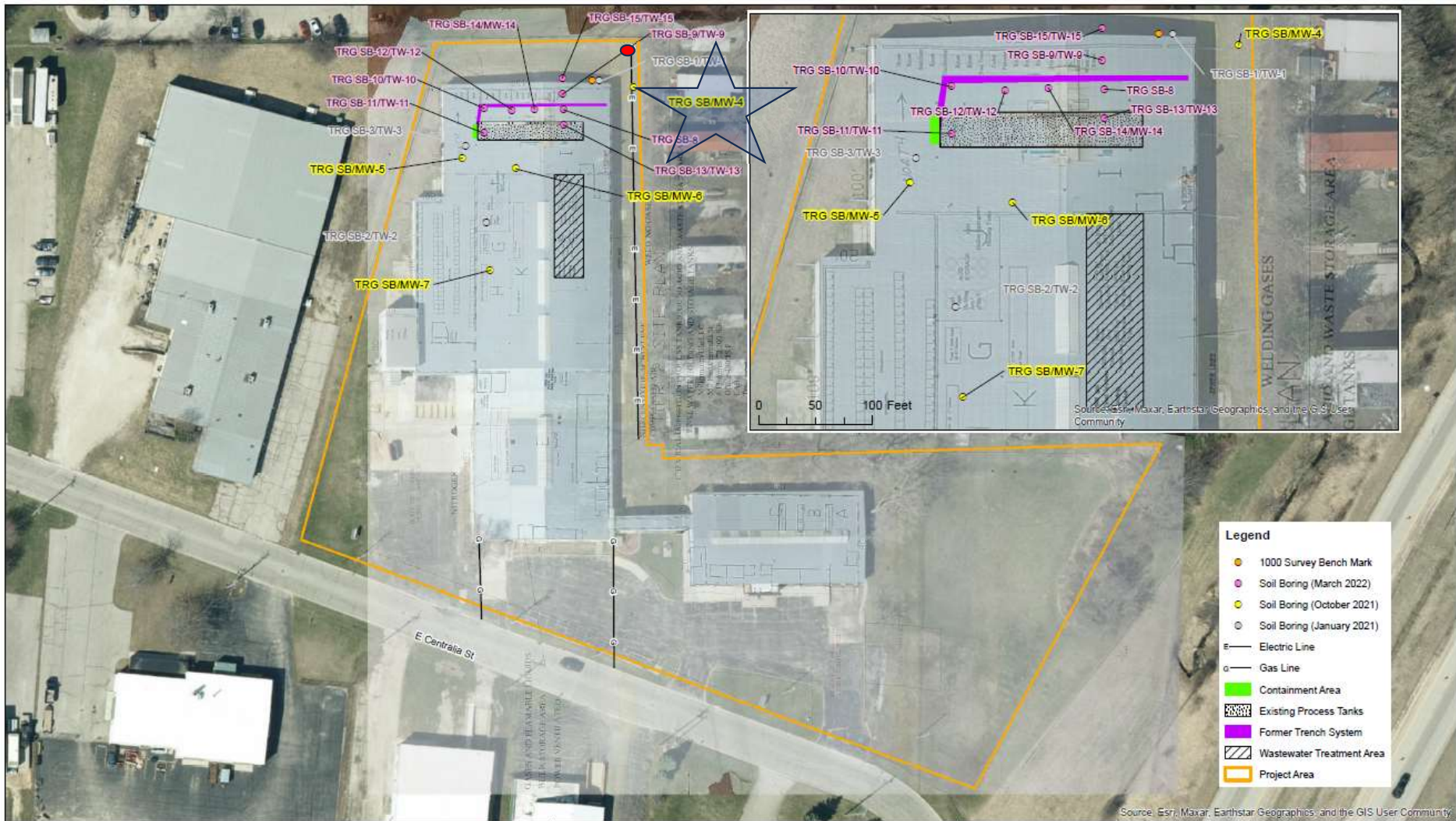
TRG states that preferential groundwater pathways, such as utility corridors, are not a concern. Provide the basis for TRG suggesting the utility backfill has the same hydraulic conductivity as the native glacial deposits. Discuss what the backfill material consists of and show the utilities on the map.



Underground Utilities There are underground utilities and sewer laterals to the south of the Property along East Centralia Street and along the southern property boundary of the Site. Stormwater on Site is conveyed via a system of swales toward the southern portion of the property. However, there is an electrical utility line located along the eastern boundary of the Property in the vicinity of the area of investigation (**Figure 2**). Because electrical lines are typically installed using directional boring methodology, it does not appear as though there are any preferential migration pathways due to underground utilities on the Property.

mtiequip.com/history-horizontal-directional-drilling/

Not to be left behind, manufacturers of smaller-scale equipment began developing HDD equipment as well. In 1988, the Ditch Witch[®] organization was awarded U.S. patent #4,953,638. This innovation advancing slant-nose technology made it possible to effectively install pipe and cable in small-scale applications through fluid-assisted bores. The breakthrough was followed by the introduction of company's first horizontal directional drill, the Jet Trac[®], in 1990.



The well survey is not to MSL...

DNR responded to initial report...

Page 11 states, “The elevation and horizontal location of each groundwater monitoring well were surveyed with respect to a known or designated benchmark on the Property. Elevations of the ground surface and top of the PVC well casing were surveyed.” Survey data must be relative to mean sea level to meet code requirements. No survey data were provided in the report.

***TRG RESPONSE:** As was stated in the WDNR approved workplan the elevations of the ground surface and top of PVC well casing were surveyed to a known or designated benchmark on the Property.*

Photograph No. 1

Photographer: Lee Kimbell

Photograph Date: 10/13/2021

Description:

View of soil boring completed at boring location TRG SB/MW-4. This boring location is located near the northeast corner of the property.



Millennium Forms Site Investigation **Work Plan** - request for revisions and clarifications



Ackerman, Jeffrey A - DNR

To treese@the-reese-group.com

Cc sw@millenniumforms.com

Fri 8/20/2021 2:30 PM

Based on my review, the following items need to be addressed before I can issue an approval:

5. Confirm the surveying methods will obtain the required accuracy (1-foot horizontal, 0.01 foot vertical). [141.065(2)]



4.5 Survey

Hilary Carris
Millennium Forms
September 15, 2021

Page 14 of 14

Upon completion of the soil borings, monitoring wells, and HPV monitoring points, each location will be surveyed to establish the relative vertical elevation of each based on a local benchmark using GPS (horizontal) and laser level (vertical). These surveying methods will obtain the required accuracy of 1-foot (horizontal) and 0.01 foot (vertical).

[NR 141.065\(2\)](#)

- (2) Following installation of the wells, an as-built plan map shall be submitted specifying the exact vertical and horizontal location of the wells. All monitoring well locations shall be reported to the department on a plan map drawn to a specific scale. The map shall indicate structure boundaries, property boundaries, any nearby surface waters and a north arrow. The plan shall show the wells in relation to each other, to property and structure boundaries, and to a common reference point on a horizontal grid system. The origin of the grid system shall be located according to latitude and longitude or according to the state plane coordinate system. **The exact vertical location of the top of the well casing shall be referenced to the nearest benchmark for the national geodetic survey datum to an accuracy of 0.01 feet.** This plan map shall show the exact location of the installed well on a horizontal grid system which is accurate to within one foot. Direction of groundwater flow shall be indicated. In addition, an 8.5-inch by 11-inch site map drawn to scale according to the horizontal grid system shall be submitted showing the location of wells and structures on the site.

10:00 a.m. 10/06/2022
 TAE, GJK ON site
 Double Check benchmark
 and TOC measurements
 Benchmark - 1000
 - bottom right of door
 slab concrete

✓ ed all NR140
 monitoring wells
 including

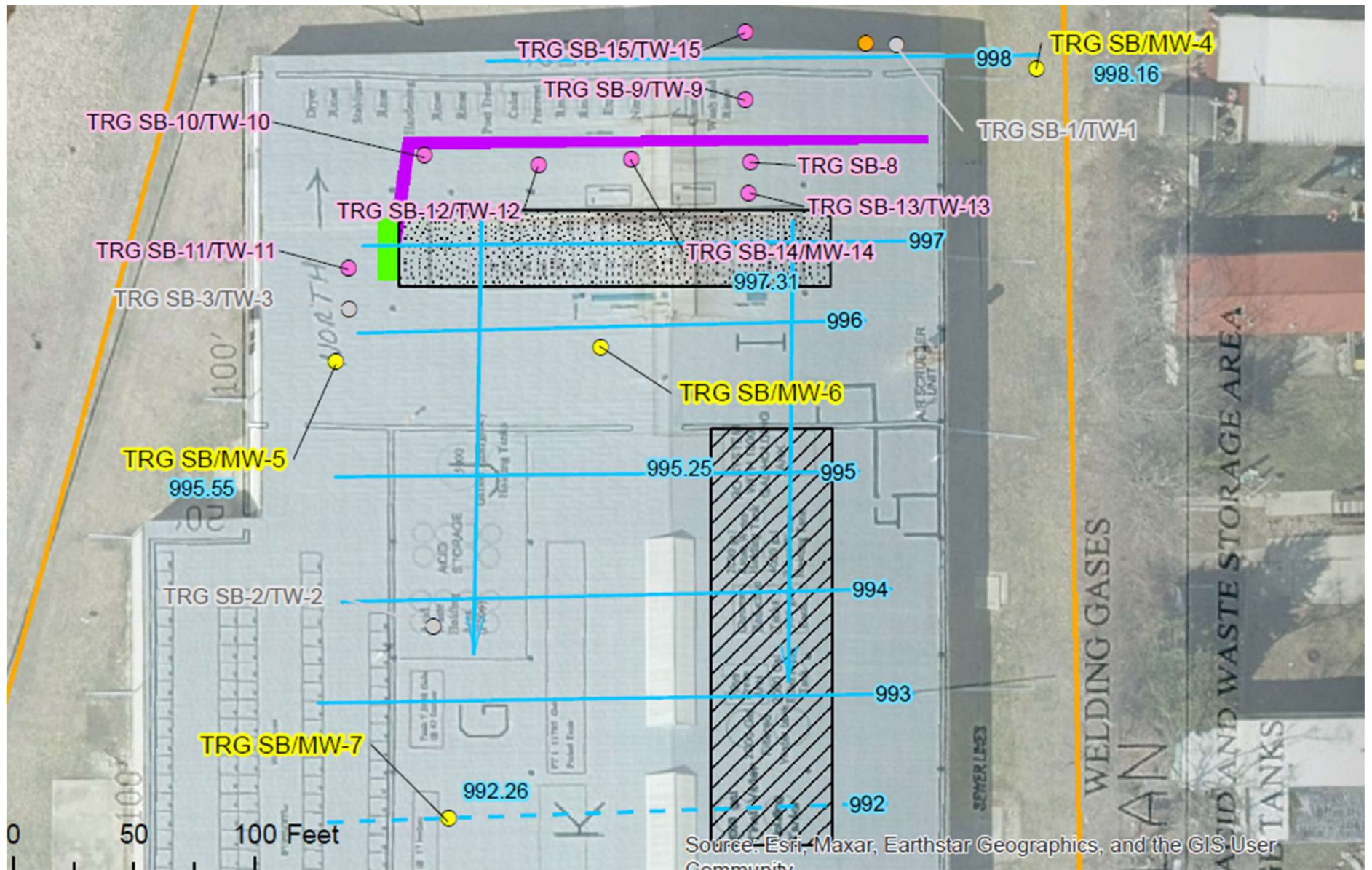
	TOC	GS
MW-14	3' 4 1/2"	4'
MW-5	3' 11"	4' 5 3/4"
	4' 5"	
MW-6	4' 3/4"	4' 1/4"
	TAA	
MW-7	3' 11.5"	4' 4"
MW-4	2' 6 1/4"	2' 11"
MW-14	4' 4"	3' 8.5"

12:30 off-site

Table 3
 Groundwater Elevations
 and
 Water Quality Measurements
 Site Investigation Report
 Millennium Forms
 550 E Centralia Street
 Elkhorn, Wisconsin

Sample Location Identification:	TRG MW-5	TRG MW-6	TRG MW-7
Date of Level	10/15/2021	10/18/2022	10/15/2021
Depth Reference Point (e.g., top of riser)	TOC	TOC	TOC
Elevation from Reference Point (ft)	999.60	999.60	999.63
Measured Depth to Water (ft.)	6.55	4.20	10.04
Measured Well Depth (ft.)	15.35	15.00	15.17
GW Elevation	993.05	995.40	989.59

"stickup" (feet)	1000 + stickup	listed on table 3
0.5625	1000.56	999.6
-0.395833333	999.60	999.6
0.375	1000.38	999.63
-0.5	999.50	1001.27
-0.541666667	999.46	999.46



Cross section issues

DNR responded to initial report...

Figure 6 and 7, the geologic cross sections, contain errors and do not meet code requirements in Wis. Admin Code § NR 716.15 (2)(d).

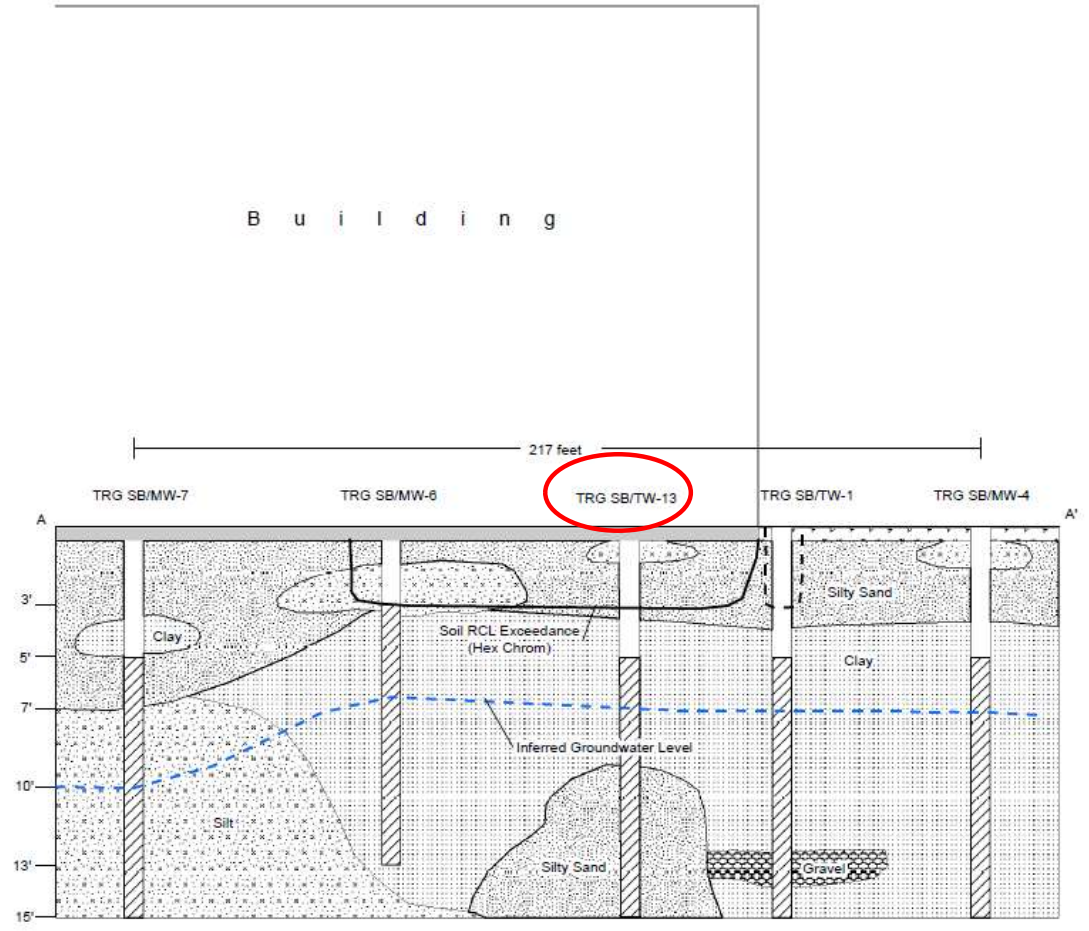
...

- Soil descriptions must match the boring logs. For example, at TRG SB-5, the soil descriptions on the two cross sections are not the same and neither depiction agrees with the data on the soil boring log. Similarly, TRG MW-4 boring log does not match cross section.

***TRG RESPONSE:** Figures 6 and 7 have been updated to reflect the concerns noted above.*



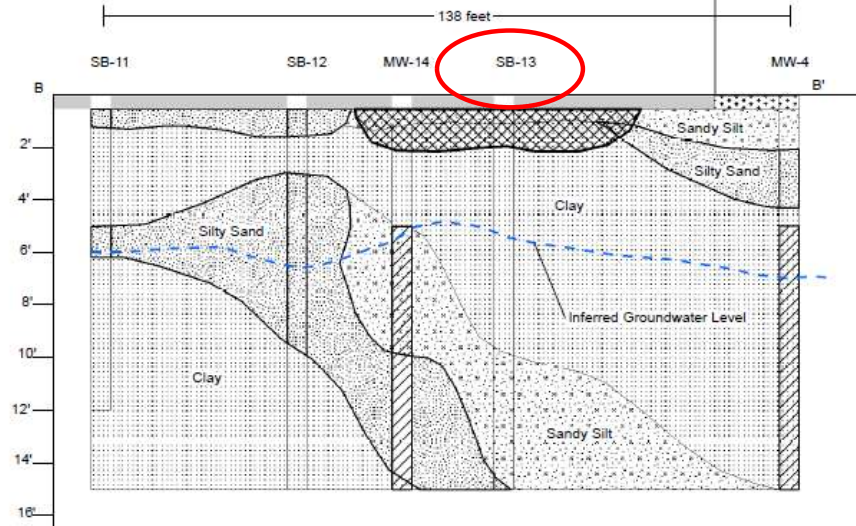
- NR 720 RCL Exceedance for Soil to Groundwater
- - - RCL Exceedance (Inferred)
- - - Groundwater Elevation (Inferred)
- ▨ Clay
- ▨ Gravel
- ▨ Screened Interval
- ▨ Silt
- ▨ Silty Sand
- ▨ Topsoil
- ▨ Concrete



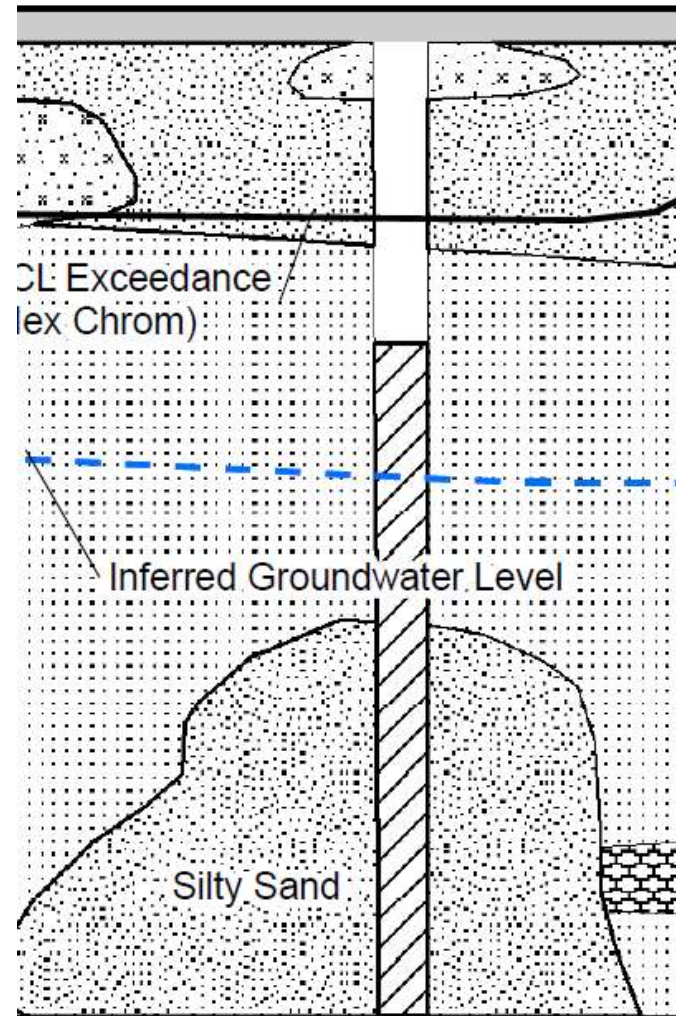


- Groundwater Elevation (inferred)
- Concrete
- Top Soil
- Clay
- Silty Sand
- Sandy Silt
- Silty Sand
- Screened Interval
- Industrial DC RCL Exceedances

B u i l d i n g



TRG SB/TW-13



SB-13

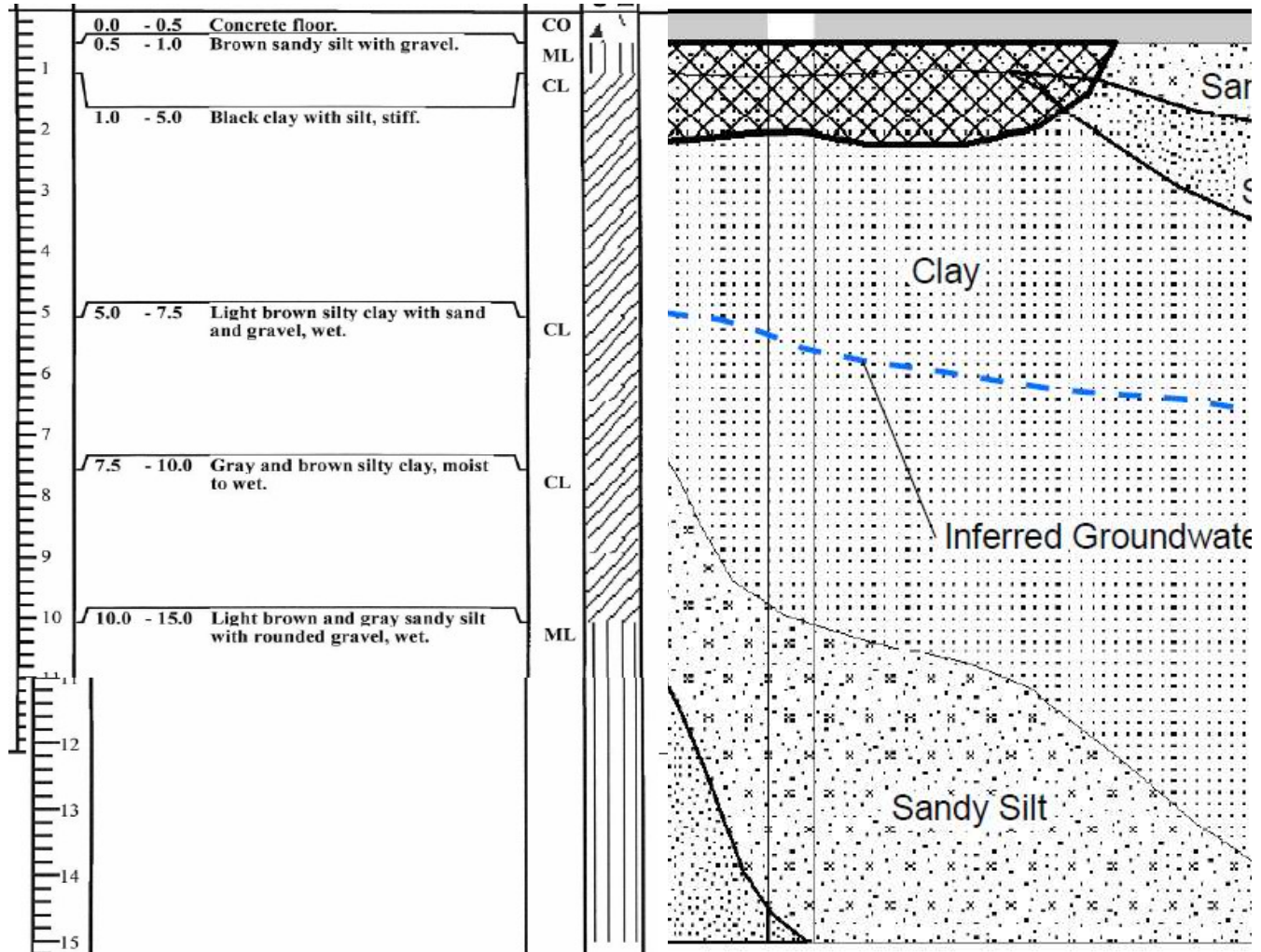


Table 3
Groundwater Elevations
and
Water Quality Measurements
Site Investigation Report
Millennium Forms
550 E Centralia Street
Elkhorn, Wisconsin

Sample Location Identification:	TRG TW-13
Date of Level	3/29/2022
Depth Reference Point (e.g., top of riser)	Ground Surface
Elevation from Reference Point (ft)	--
Measured Depth to Water (ft.)	1.74
Measured Well Depth (ft.)	11.15
GW Elevation	--
Purging/Sampling Device(s)	Peristaltic pump
Target Purge Volume (gallons)	1.25
Date Purging Completed	3/29/2022
Volume Purged (gallons)	1.0
Did Well Purge Dry? (Y or N)	Yes
Date Sample Withdrawn	3/29/2022
Time Sample Withdrawn	11:00
Sampled By	LKK
Color	Brown
Odor	No
Turbidity (Low, Med, Turbid, Highly Turbid)	Turbid
Field Temperature (degrees Celsius)	NA
Dissolved Oxygen (mg/L)	NA
Specific Conductivity (uS/cm)	NA
pH (Standard Units)**	7.5
Oxidation-Reduction Potential (mV)	NA
Other Field Comments	Well went dry, not enough water for water quality



Facility/Project Name: Millennium Forms
Boring No. : TRG SB-13

License/Project/Monitoring N
WI Unique Well No. :

Sample	Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth in Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID
				11	End of boring at 15' bgs. Temporary well installed (TRG TW-13).		[Graphic Log]	[Well Diagram]	
				12					
				13					
				14					
				15					

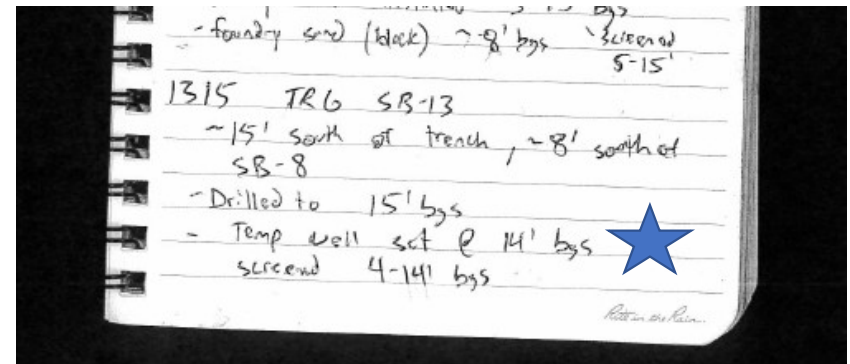


Table 2
 Groundwater Analytical Results
 Site Investigation
 Millennium Forms
 550 E Centralia Street, Elkhorn, WI

Constituent	Enforcement Standard	Preventive Action Limit	TRG TW-1	TRG TW-2	TRG TW-3	TRG MW-4	TRG MW-4	TRG MW-5	TRG MW-5	TRG MW-6	TRG MW-6
			01/15/2021	01/22/2021	01/22/2021	10/15/2021	3/29/2022	10/15/2021	3/29/2022	10/15/2021	3/29/2022
Metals (ug/L)											
Chromium	100	10	9.5	11	280	< 2.5	14	< 2.5	290	120	< 1.1
Chromium, hexavalent	NE	NE	< 0.23	12	390 F1	< 0.18 D3, H1	< 3.2	< 0.073 D3, H1	140	< 0.18 D3, H1	< 3.2

Constituent	Enforcement Standard	Preventive Action Limit	TRG MW-7	TRG MW-7	TRG TW-9	TRG TW-10	TRG TW-11	TRG TW-12	TRG TW-13	TRG MW-14	TRG TW-15
			10/15/2021	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/29/2022
Metals (ug/L)											
Chromium	100	10	< 2.5	76	240	1.2 J	11	1500	33	1.4 J	33
Chromium, hexavalent	NE	NE	< 0.073 D3, H1	< 3.2	520	< 3.2	18	550	< 3.2	< 3.2	< 3.2

Millennium Forms Site Investigation Work Plan - request for revisions and clarifications



Ackerman, Jeffrey A - DNR

Fri 8/20/2021 2:30 PM

To treese@the-reese-group.com

Cc sw@millenniumforms.com

Based on my review, the following items need to be addressed before I can issue an approval:

4. The monitoring well development and groundwater sampling discussion is not clear with respect to your planned activities. The text should clarify, or address:
 - c. The code requirement is for eight groundwater sampling events. [726.09(2)(e)] You are only planning one. Explain your rationale and/or clarify your thinking.



Hilary Carris
Millennium Forms
September 15, 2021
Page 9 of 14

4.3.5 Groundwater Sampling

Initially, a single round of groundwater samples will be collected from the monitoring wells. The Site Investigation data will be compared with the data generated during the Phase II ESA where temporary monitoring wells were utilized. Based on the results of the Site Investigation groundwater sampling, additional groundwater monitoring events will be conducted to comply with the Wisconsin Administrative Code NR726.09(2)(e), if required.

Other considerations

6.2 Potential Contaminant Migration Pathways and Receptors

Groundwater. Groundwater at the Property is impacted with Chromium concentrations that exceed WDNR regulatory standards. Additionally, Hexavalent Chromium is prevalent in groundwater samples collected from monitoring wells located in and adjacent to known or suspected source areas.

At this time, there are no known receptors as the properties located within the vicinity of the Site utilizes the City of Elkhorn's Municipal Water/Sewer Utility Department. There are two identified water wells located approximately 1,100 feet upgradient of the Property (Figure 7). Therefore, potential contaminant migration to water wells is not considered a significant risk.

Table 2
 Groundwater Analytical Results
 Site Investigation
 Millennium Forms
 550 E Centralia Street, Elkhorn, WI

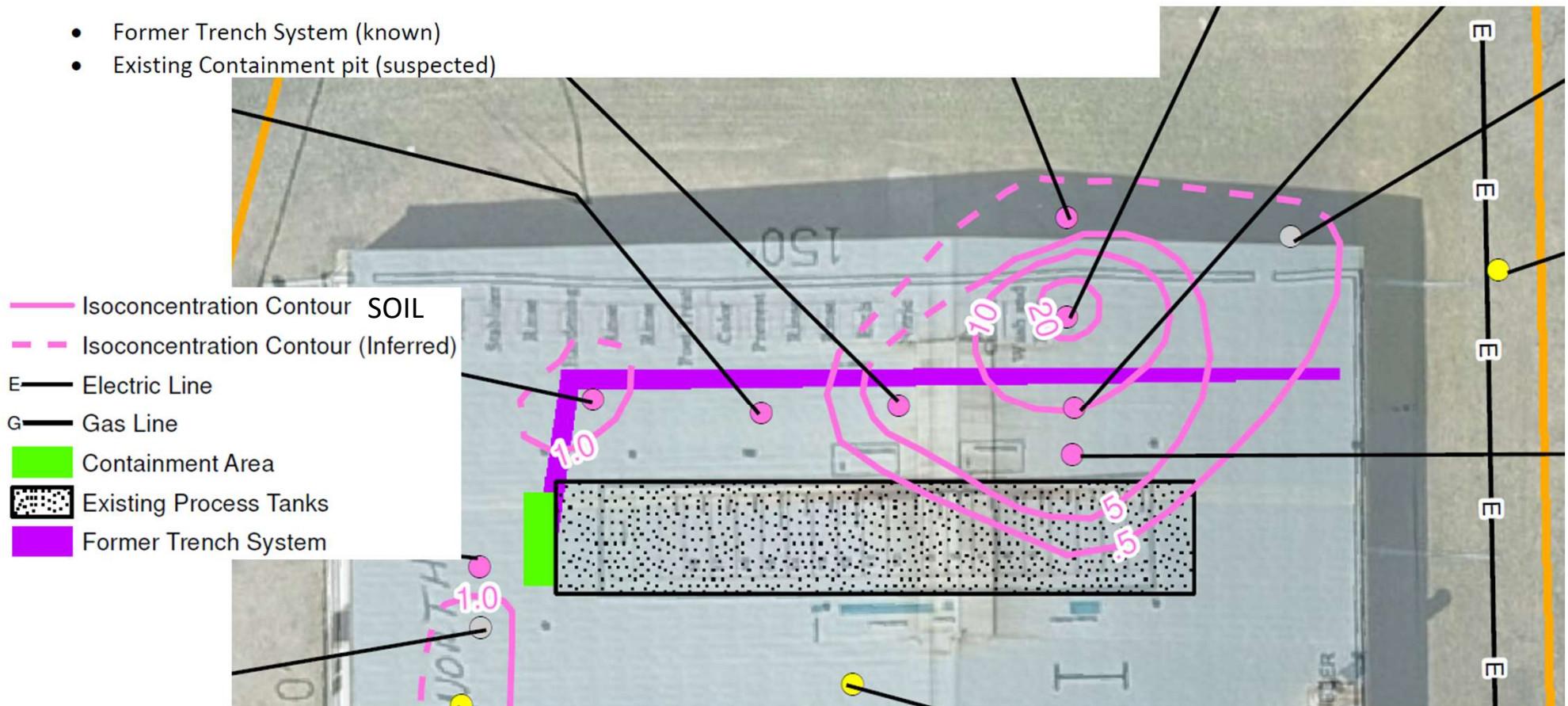
Constituent	Enforcement Standard	Preventive Action Limit	TRG TW-1	TRG TW-2	TRG TW-3	TRG MW-4	TRG MW-4	TRG MW-5	TRG MW-5	TRG MW-6	TRG MW-6
			01/15/2021	01/22/2021	01/22/2021	10/15/2021	3/29/2022	10/15/2021	3/29/2022	10/15/2021	3/29/2022
Metals (ug/L)											
Chromium	100	10	9.5	11	280	< 2.5	14	< 2.5	290	120	< 1.1
Chromium, hexavalent	NE	NE	< 0.23	12	390 F1	< 0.18 D3, H1	< 3.2	< 0.073 D3, H1	140	< 0.18 D3, H1	< 3.2

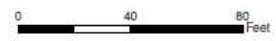
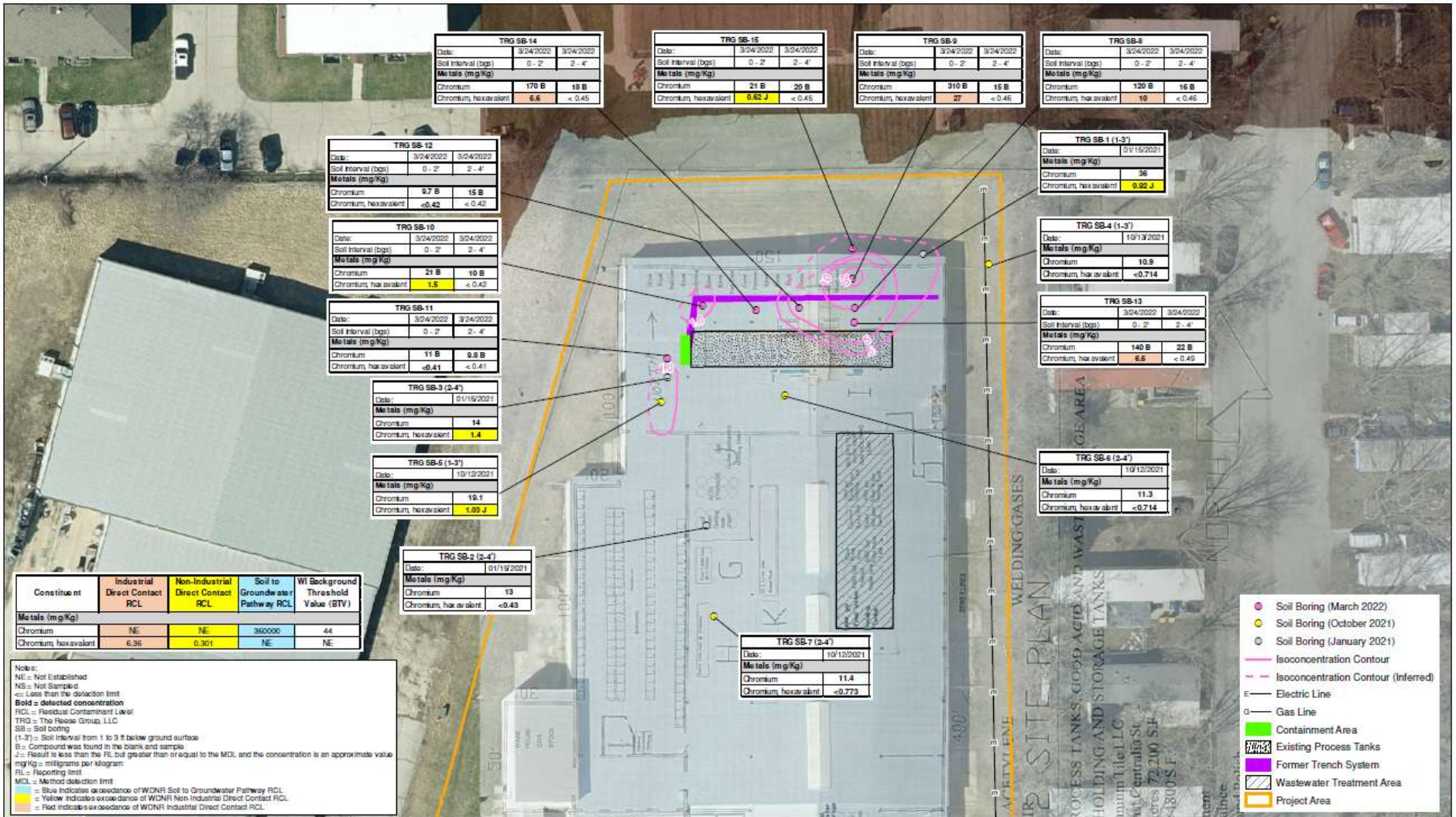
Constituent	Enforcement Standard	Preventive Action Limit	TRG MW-7	TRG MW-7	TRG TW-9	TRG TW-10	TRG TW-11	TRG TW-12	TRG TW-13	TRG MW-14	TRG TW-15
			10/15/2021	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/29/2022	3/29/2022
Metals (ug/L)											
Chromium	100	10	< 2.5	76	240	1.2 J	11	1500	33	1.4 J	33
Chromium, hexavalent	NE	NE	< 0.073 D3, H1	< 3.2	520	< 3.2	18	550	< 3.2	< 3.2	< 3.2

Source Areas

A number of potential source areas were investigated including the existing process tanks, the wastewater treatment area, a former trench system, an existing containment pit, a chemical storage area and an area associated with a known spill. Based on the results of the site investigation activities the following known or suspected source areas were identified:

- Former Trench System (known)
- Existing Containment pit (suspected)





Millennium Forms Site Investigation
 550 E Centralia St.
 Elkhorn, Wisconsin

Figure 3 - Soil Contaminant Isoconcentration Map
 Hexavalent Chromium

Millennium Forms – Chromium Soil data (ppm)

Constituent	Industrial Direct Contact RCL	Non-Industrial Direct Contact RCL	TRG SB-1 (1-3')	TRG SB-2 (2-4')	TRG SB-3 (2-4')	TRG SB-4 (1-3')	TRG SB-5 (1-3')	TRG SB-6 (2-4')	TRG SB-7 (2-4')	TRG SB-8 (0-2')	TRG SB-8 (2-4')	TRG SB-9 (0-2')	TRG SB-9 (2-4')
Sample Date			01/15/2021	01/15/2021	01/15/2021	10/13/2021	10/12/2021	10/12/2021	10/12/2021	3/24/2022	3/24/2022	3/24/2022	3/24/2022
Chromium	NE	NE	36	13	14	10.9	19.1	11.3	11.4	120 B	16 B	310 B	15 B
Chromium, hexavalent	6.36	0.301	0.92 J	< 0.43	1.4	< 0.741	1.03 J	< 0.714	< 0.773	10	< 0.46	27	< 0.46

Constituent	TRG SB-10 (0-2')	TRG SB-10 (2-4')	TRG SB-11 (0-2')	TRG SB-11 (2-4')	TRG SB-12 (0-2')	TRG SB-12 (2-4')	TRG SB-13 (0-2')	TRG SB-13 (2-4')	TRG SB-14 (0-2')	TRG SB-14 (2-4')	TRG SB-15 (0-2')	TRG SB-15 (2-4')
Sample Date	3/24/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022	3/24/2022
Chromium	21 B	10 B	11 B	9.8 B	9.7 B	15 B	140 B	22 B	170 B	18 B	21 B	20 B
Chromium, hexavalent	1.5	< 0.42	< 0.41	< 0.41	< 0.42	< 0.42	6.6	< 0.49	6.6	< 0.45	0.62 J	< 0.45

6.5 Estimate of Contaminant Mass

An estimate of hexavalent chromium contaminant mass at the Property was based on the average depth of contamination (2.0 ft bgs) and the documented soil contamination areas located in the vicinity of the former trench system and the existing containment pit.

CONTAMINANT MASS CALCULATION

Parameter	Concentration	Length	Width	Average Depth	Volume	Density	Density	Mass	Mass	Mass
Units	(mg/kg)	(ft3)	(ft3)	(ft3)	(ft3)	(lbs/ft3)	(kgs/ft3)	(mg)	(kg)	(lbs)
Area 1	8.62	80	60	2	9,600	100	45	3,725,280	3.73	8.20
Area 2	1.5	20	10	2	400	100	45	27,000	0.03	0.06
Area 3	1.22	30	10	2	600	100	45	32,805	0.03	0.07
Totals					10,600				3.79	8.33

Conversion 1 lb = 0.45 kg

C
(mg/kg)

= Concentration of Contaminant

V
(ft3)

= Volume of Soil

D
(kg/ft3)

= Density of Soil

$$\text{MASS} = C \times V \times D$$

Further questions?