

**MEMORANDUM**

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**To:** Wisconsin Department of Natural Resources

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**From:** Ben Peotter

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**Date:** July 1, 2019**Project No.:** 51-0338.10

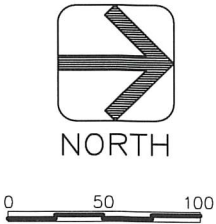
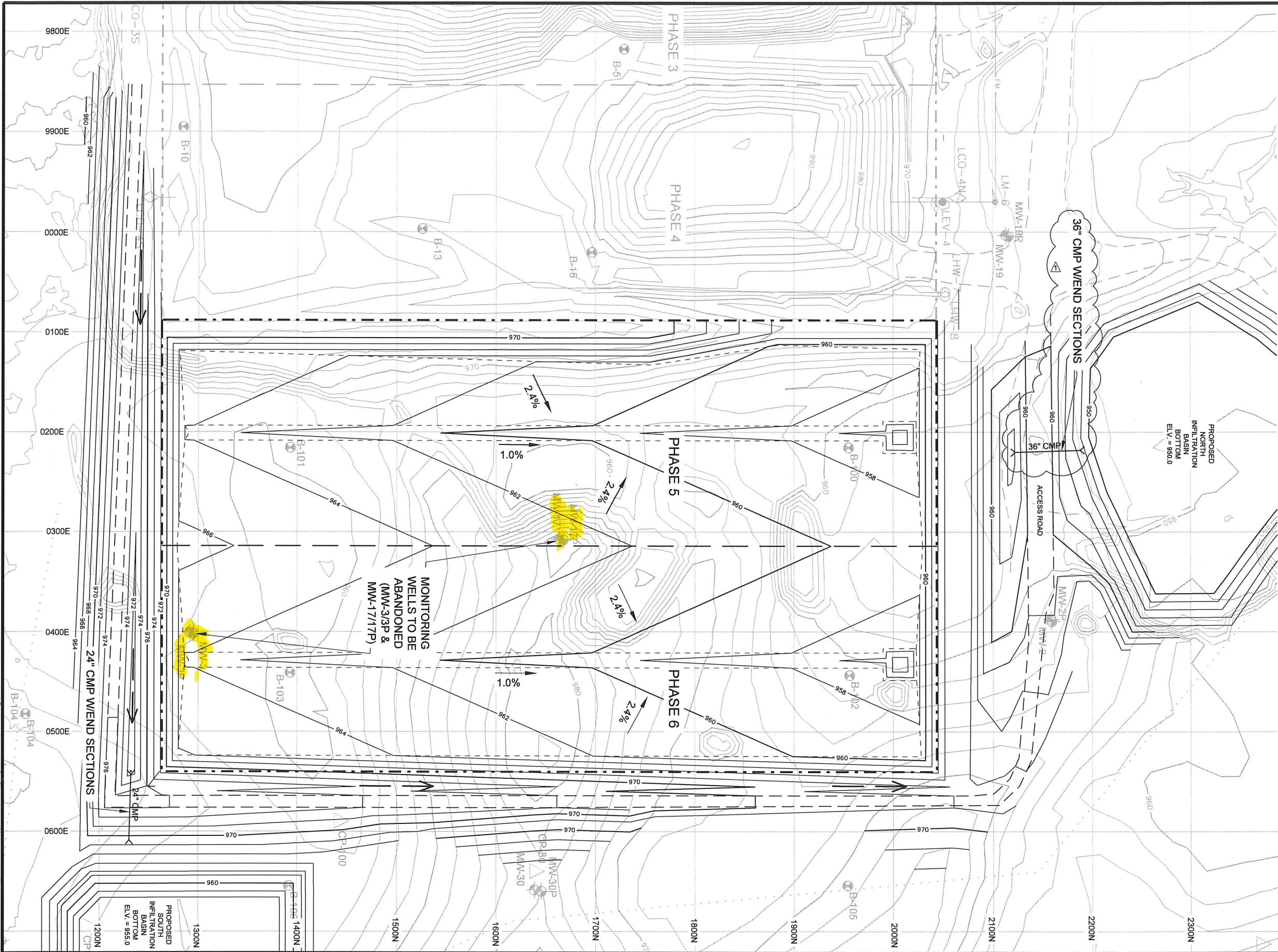
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**Re:** Adams County Landfill Well Abandonment

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This memo is in reference to the Adams County Feasibility Determination (April 11, 2019; Condition 19) in which four (4) 2-inch wells were required to be over-drilled and abandoned in accordance per WI NR 141 Wisc. Adm. Code.

Driller Traut Companies and Ayres senior technician Tim Shupert were on-site May 20, 2019 to abandon the wells on the Adams County Landfill. The four groundwater monitoring wells included MW-3, MW-3P, MW-17, and MW-17P with depths from ground surface of 41, 65, 51, and 81 feet, respectively. All wells were over-drilled with a Rotary Sonic rig, had their casings and screens removed, and had the borehole filled with a bentonite-sand slurry. A photo log and abandonment forms are attached.



- NOTES:**
1. FOR CLARITY ONLY THE LAST 4 DIGITS OF THE COORDINATE SYSTEM ARE SHOWN ON THE SITE GRID.
  2. CONTOURS SHOWN IN PHASE 5 & 6 ARE PROPOSED SUB-BASE GRADES.
  3. ABANDON GW MONITORING WELLS MW-3,MW-3P,MW-17, MW-17P.

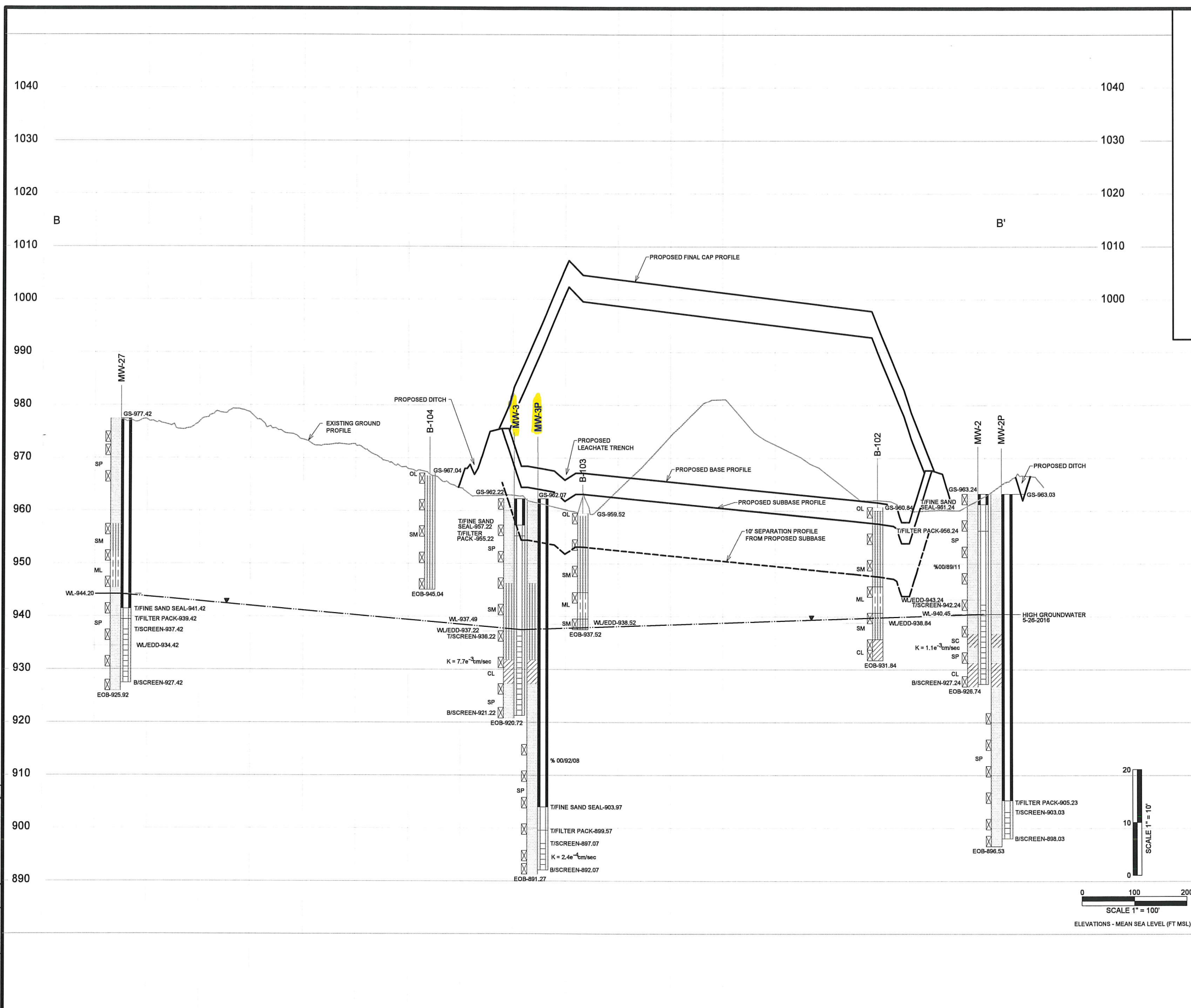
DES BY	R. SHIMKO	BOOK NO	1	11/08/2018	UPSIZED CULVERT PIPE				
DR BY	T. SHUPERT	PROJ NO	51-0244.00						
CHK BY	B. PEOTTER	DATE	AUGUST 2018	NO	DATE	REVISION	NO	DATE	REVISION

PLAN OF OPERATION  
ADAMS COUNTY SANITARY LANDFILL  
ADAMS COUNTY, WISCONSIN

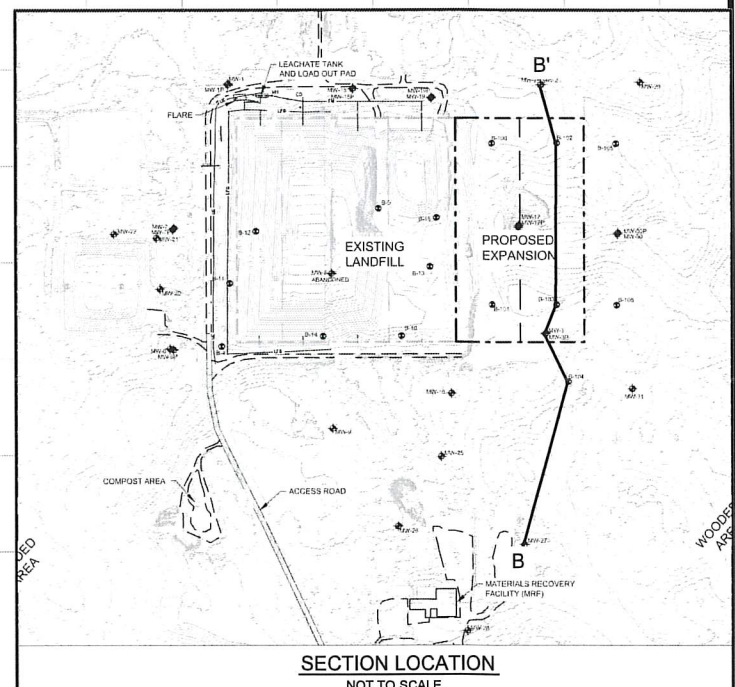


SUB-BASE GRADES

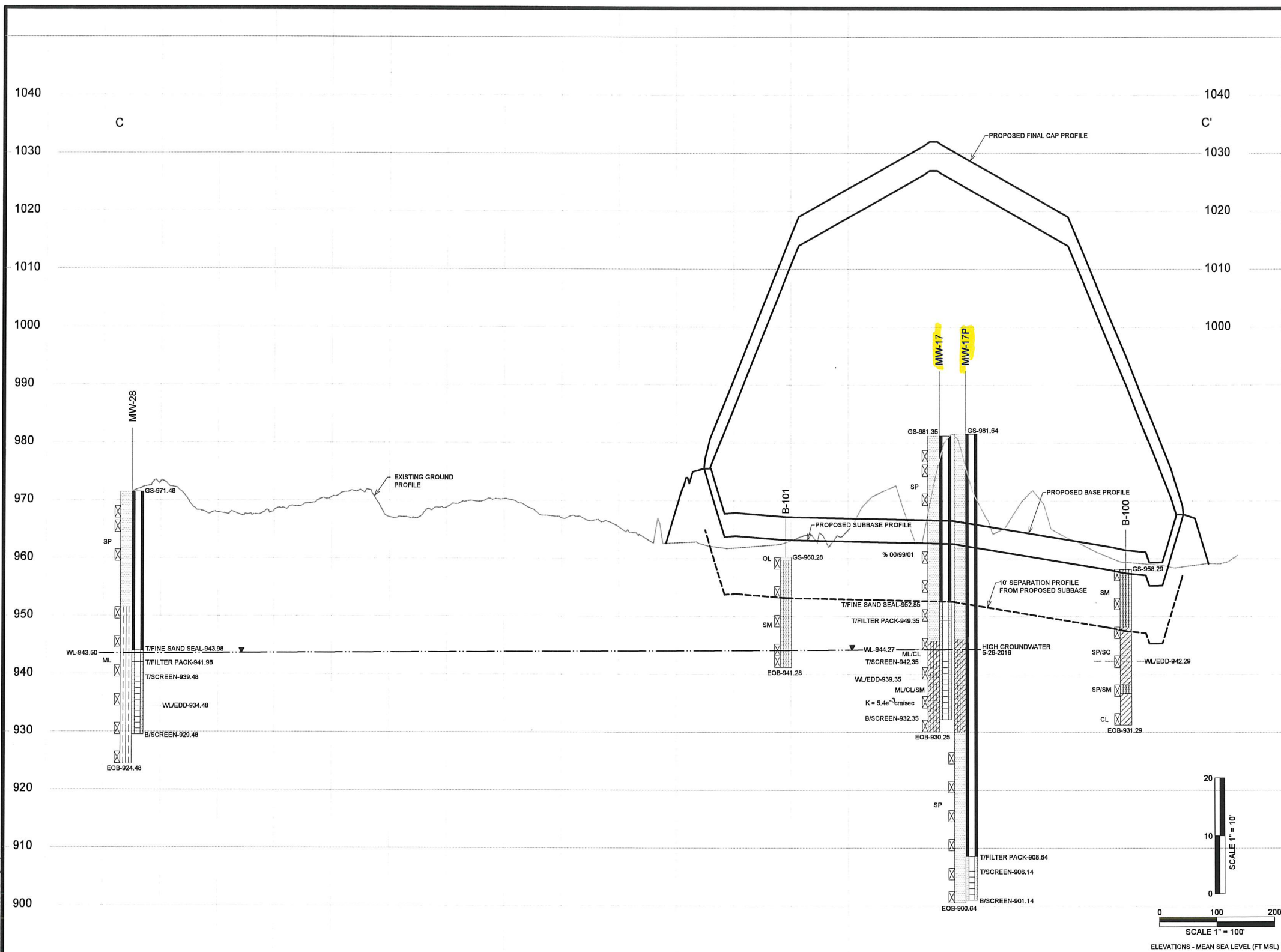

















CLASSIFICATIONS:				
SYMBOL	HATCHING	DESCRIPTION	NAME	COLOR
SP	[Symbol]	FINE TO MEDIUM SAND	POORLY GRADED SANDS OR GRAVELLY SANDS (LITTLE OR NO FINES)	PALE BROWN-LIGHT YELLOWISH BROWN
SM	[Symbol]	SANDY SILT TO SILTY SAND	SILTY SANDS FINE TO MEDIUM (<12 FINES)	REDDISH YELLOW-DARK BROWN
SP-SM	[Symbol]	SAND W/ SILT	POORLY GRADED SILTY SANDS	STRONG BROWN
SP-CL	[Symbol]	SAND W/ CLAY	POORLY GRADED CLAYEY SANDS	BROWN
SM-CL	[Symbol]	SANDY SILT W/ CLAY	SILTY, CLAYEY SANDS	BROWN
SM-ML-CL	[Symbol]	SILTY SAND W/ CLAY AND SILT LENSES	SILTY SANDS INTERBEDDED WITH CLAY AND SILT	BROWN-RED
SC	[Symbol]	SILTY CLAYEY SAND	CLAYEY SANDS, SAND-CLAY MIXTURES	-
SP-SC	[Symbol]	SAND W/ CLAY	POORLY GRADED CLAYEY SANDS	REDDISH YELLOW-BROWN
ML	[Symbol]	SILT	INORGANIC SILTS AND VERY FINE SANDS WITH SLIGHT PLASTICITY	STRONG BROWN-BROWN
CL-ML	[Symbol]	SILT W/ CLAY	SILTY INORGANIC CLAYS LOW PLASTICITY	LIGHT YELLOWISH BROWN-DARK YELLOWISH BROWN
MH	[Symbol]	CLAYEY SILT	INORGANIC SILTS, CLAYEY SILTS OF LOW TO MEDIUM PLASTICITY	BROWN, RED BROWN-GREY
CL	[Symbol]	CLAY W/ SILT	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	YELLOWISH BROWN-BROWN
OL	[Symbol]	ORGANIC SANDS, SILTS, CLAYS	ORGANIC SILTS AND CLAYS OF HIGH PLASTICITY, SANDY ORGANIC SILTS AND CLAYS	YELLOWISH BROWN-DARK YELLOWISH BROWN
				BLACK
				7.5YR 2/5
GEOLOGIC ORIGIN: LACUSTRINE				
GRAIN SIZE DATA:				
50/50 P PERCENT GRAVEL/SAND/FINES				
LL/PL/PI LIQUID LIMIT/PLASTIC LIMIT/PLASTIC INDEX				
ABBREVIATIONS:				
B/ BOTTOM				
MW-3B MONITORING WELL				
MW-3BP PNEUMETER				
EOB/ END OF BORING				
GS/ GROUND SURFACE ELEVATIONS FROM JUNE 2015 AND AUGUST 2016 SURVEY				
K/ ACQUIFER HYDRAULIC CONDUCTIVITY				
B-106 SOIL BORING				
T/ TOP				
WL/EDD/ WATER LEVEL/ENCOUNTERED DURING DRILLING				
WL-260/60/ WATER LEVELS BASED ON 5-26-2016 GROUNDWATER HIGH CONTOURS				
G/ GROUNDWATER ELEVATION				
*See boring logs for detailed soil descriptions.				
**Information presented in 1917 Feasibility cross sections includes data reported in 1986 feasibility, 1987 and 1989 plans of operation, and 1995 plan modification.				
--- Information not provided				









SYMBOL		HATCHING:		*DESCRIPTION	NAME	COLOR	MUNSELL COLOR
SP				FINE TO MEDIUM SAND	POORLY GRADED SANDS OR GRAVELLY SANDS LITTLE OR NO FINES (<5% FINES)	PALE BROWN-LIGHT YELLOW BROWN	10YR 6/3-10YR 6/4
SM				SANDY SILT	SILTY SANDS FINE TO MEDIUM (>52% FINES)	REDISH YELLOW-DARK BROWN VERY PALE BROWN-LIGHT YELLOWISH BROWN	7.5YR 6/3-7.5YR 3/4 10YR 7/3-10YR 6/4
SP-SM				SAND W/ SILT	POORLY GRADED SILTY SANDS	STRONG BROWN	7.5YR 5/6
SP-CL				SAND W/ CLAY	POORLY GRADED CLAYEY SANDS	BROWN	--
SM-CL				SANDY SILT W/ CLAY	SILT, CLAYEY SANDS	BROWN	--
SM-MCL				SILTY SAND W/ CLAY AND SILT LENSES	SILTY SANDS INTERBEDDED WITH CLAY AND SILT	BROWN-RED	--
SC				SILTY CLAYEY SAND	CLAYEY SANDS, SAND-CLAY MIXTURES	--	--
SP-SC				SAND W/ CLAY	POORLY GRADED CLAYEY SANDS	REDISH YELLOW-BROWN	7.5YR 4/6-7.5YR 5/4
ML				SILT	INORGANIC SILTS AND VERY FINE SANDS WITH SLIGHT PLASTICITY	STRONG BROWN-BROWN LIGHT YELLOWISH BROWN-DARK YELLOWISH BROWN	7.5YR 4/6-7.5YR 4/4 10YR 5/4-10YR 4/5
CL-ML				SILT W/ CLAY	SILT INORGANIC CLAYS LOW PLASTICITY	BROWN, RED BROWN, GREY	7.5YR 5/4
MH				CLAYEY SILT	INORGANIC SILTY, CLAYEY SILTS OF LOW TO MEDIUM PLASTICITY	YELLOWISH BROWN-BROWN	10YR 5/4-10YR 5/3
CL				CLAY W/ SILT	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAY SILTS, SILTY CLAYS, LEAN CLAYS	YELLOWISH BROWN-RED YELLOW BROWN YELLOWISH BROWN-DARK YELLOWISH BROWN	5YR 4/6-5YR 4/4 7.5YR 4/4-7.5YR 5/3 10YR 5/4-10YR 4/6
OL				ORGANIC SANDS, SILTS, CLAYS	ORGANIC SILTS AND CLAYS OF HIGH PLASTICITY, SANDY ORGANIC SILTS AND CLAYS	BLACK	7.5YR 2.5/3

GEOLOGIC ORIGIN: LACUSTRINE

**GRAIN SIZE DATA:**  
 %G/S/P PERCENT GRAVEL/SAND/FINES  
 LL/PL/PI LIQUID LIMIT/PLASTIC LIMIT/PLASTIC INDEX

**ABBREVIATIONS:**  
 B/ BOTTOM  
 EFW-30 MONITORING WELL  
 MPW-30P PIEZOMETER  
 EOB END OF BORING  
 GS GROUND SURFACE ELEVATIONS FROM JUNE 2015 AND AUGUST 2016 SURVEY  
 K-4 AQUIFER HYDRAULIC CONDUCTIVITY  
 B-106 SOIL BORING  
 TP TOP  
 W/EIDW WATER LEVEL/ELEVATION DURING DRILLING  
 W-140 DV WATER LEVELS BASED ON 5-26-2016 GROUNDWATER HIGH CONTROLS  
 GROUNDWATER ELEVATION



**ANNULAR SPACE SEAL**

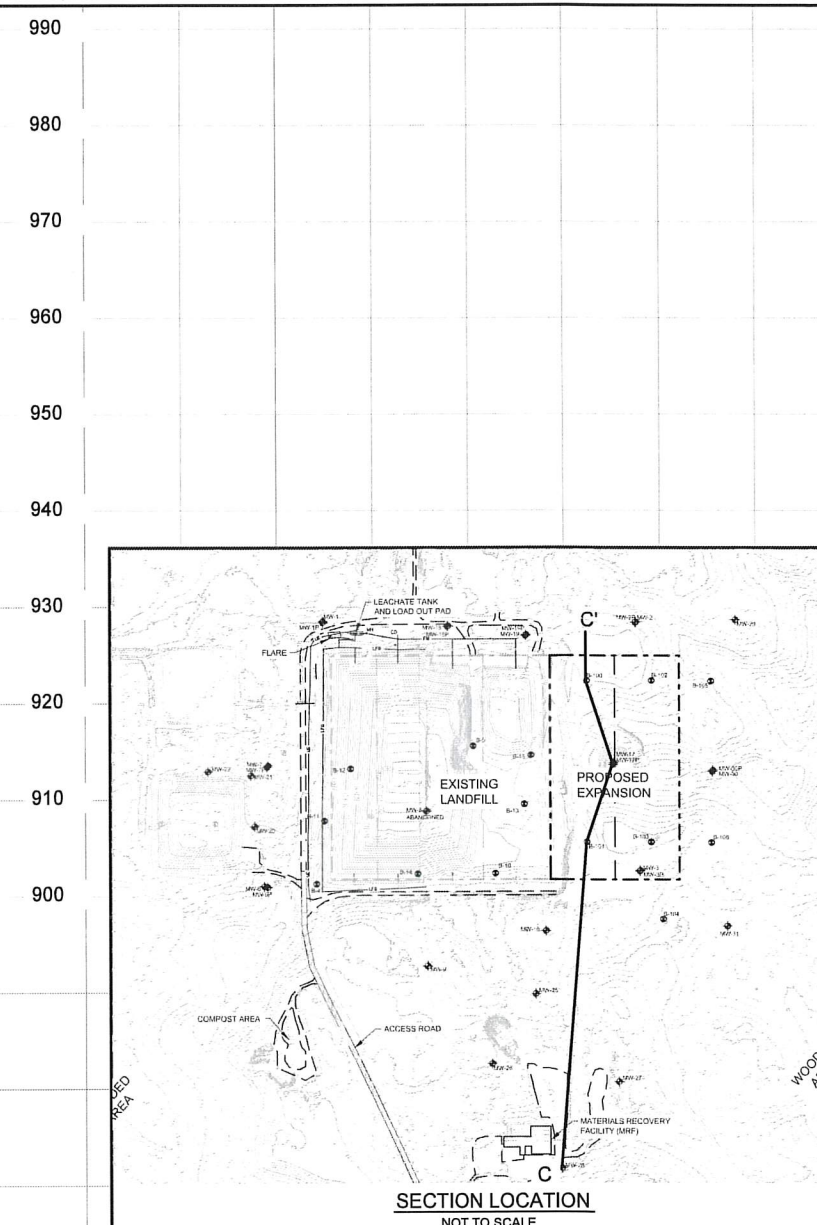
**T/FINE SAND SEAL**

**T/FILTER PACK**

**T/SCREEN**

**TYPICAL WELL DETAIL**

\*See borings logs for detailed soil descriptions.  
 \*\* Information presented in 2017 feasibility cross sections includes data reported in 1988 feasibility, 1987 and 1989 plans of operation, and 1995 plan modification.  
 -- Information not provided



## Wisconsin Department of Natural Resources

## Well / Drillhole / Borehole Filling &amp; Sealing

Form 3300-005

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295 and 299, Wis. Stats., and ch. NR 141 Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295 and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose.

Date of Filling &amp; Sealing: 05/20/2019

Rec #: 161154

Verification. Check only if well filling &amp; sealing was done previously and you are just verifying that work.: No

## 1. Well Location Information

County: Adams		WI Unique Well #:		DNR Hicap Well #:	
Latitude: (DD.DDDDD°) 44.0337 °N		Longitude: (DD.DDDDD°) 89.84072 °W		GPS Method Code: GPS008	
Gov't Lot #:	Qtr/Qtr:	Quarter:	Section #:	Township #: North	Range #:
Well Street Address: 1420 HIGHWAY 21				Subdivision Name:	
Well City/Village/Town: Village of FRIENDSHIP		Well Zip Code:	Lot #:	Does a new well replace this well? No	
Reason for Filling & Sealing: EXPANSION OF LANDFILL				WI Unique Well # of Replacement Well:	

## 2. Facility / Owner Information

Facility Name:		FID #:	License/Permit/Monitoring #:	
Original Well Owner:		Service Category:		
Present Well Owner: ADAMS COUNTY LANDFILL		Mailing Address of Present Owner: 1420 HIGHWAY 21		
		City: FRIENDSHIP	State: WI	Zip Code: 53934

## 3. Well / Drillhole / Borehole Information

Well Type: Monitoring Well	Original Construction Date: (mm/dd/yyyy)	Construction Type: Drilled
Formation Type:	Total Well Depth From Ground Surface (ft.): 41.00	(specify Other):
Casing Diameter (in.): 2.00	Lower Drillhole Diameter (in.):	Casing Depth (ft.):
Was well annular space grouted?	If yes, to what depth (ft.):	Depth to Water (ft.):

## 4. Pump, Liner, Screen, Casing &amp; Sealing Material

Pump and piping removed?	N/A	Liner(s) removed?	N/A	If no, was liner perforated?	
Screen removed?	Yes	Casing/Loop left in place?	No	Was casing cut off below surface?	N/A
Did sealing material rise to surface?	Yes	Did material settle after 24 hours?	No	If yes, was hole retopped?	
If bentonite chips were used, were they hydrated with water from a known water source?					N/A
Method of Placing Sealing Material: Conductor Pipe-Pumped			(Explain Other):		
Water Well Sealing Materials:			Monitoring Wells & other Drillholes: Bentonite-Sand Slurry		

## 5. Material Used to Fill Well / Drillhole

Material:	From (ft.):	To (ft.):	# and Units of Sealant:	Mix Ratio or Mud Weight:
HS BENTONIRE	Surface	41.00	4 BAGS	20%

## 6. Comments

MW-3 WAS OVER-DRILLED WITH A ROTASONIC RIG, CASING AND SCREEN REMOVED, AND BOREHOLE SEALED

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: TRAUT MARK J WELLS INC	License #: 5912	Phone: 320-251-5090
PO BOX 547 WAITE PARK MN 56387-0547		Email Address: MJTRAUT@TRAUTWELLS.COM

## 8. DNR Use Only

Signed On: 06/12/2019	Submitted By: RECEIPT1	Received On: 06/12/2019	Approved On:
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## Wisconsin Department of Natural Resources

## Well / Drillhole / Borehole Filling &amp; Sealing

Form 3300-005

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Date of Filling &amp; Sealing: 05/20/2019

Rec #: 161155

Verification. Check only if well filling &amp; sealing was done previously and you are just verifying that work.: No

## 1. Well Location Information

County: Adams		WI Unique Well #:		DNR Hicap Well #:	
Latitude: (DD.DDDDD°) 44.03469 °N		Longitude: (DD.DDDDD°) 89.84068 °W		GPS Method Code: GPS008	
Gov't Lot #:	Qtr/Qtr:	Quarter:	Section #:	Township #: North	Range #:
Well Street Address: 1420 HIGHWAY 21				Subdivision Name:	
Well City/Village/Town: Village of FRIENDSHIP		Well Zip Code:	Lot #:	Does a new well replace this well? No	
Reason for Filling & Sealing: LANDFILL EXPANSION				WI Unique Well # of Replacement Well:	

## 2. Facility / Owner Information

Facility Name:		FID #:	License/Permit/Monitoring #:	
Original Well Owner:		Service Category:		
Present Well Owner: ADAMS COUNTY LANDFILL		Mailing Address of Present Owner: 1420 HIGHWAY 21		
		City: FRIENDSHIP	State: WI	Zip Code: 53934

## 3. Well / Drillhole / Borehole Information

Well Type: Monitoring Well	Original Construction Date: (mm/dd/yyyy)	Construction Type: Drilled
Formation Type:	Total Well Depth From Ground Surface (ft.): 81.00	(specify Other):
Casing Diameter (in.): 2.00	Lower Drillhole Diameter (in.):	Casing Depth (ft.):
Was well annular space grouted?	If yes, to what depth (ft.):	Depth to Water (ft.):

## 4. Pump, Liner, Screen, Casing &amp; Sealing Material

Pump and piping removed?	N/A	Liner(s) removed?	N/A	If no, was liner perforated?	
Screen removed?	Yes	Casing/Loop left in place?	No	Was casing cut off below surface?	N/A
Did sealing material rise to surface?	Yes	Did material settle after 24 hours?	No	If yes, was hole retopped?	
If bentonite chips were used, were they hydrated with water from a known water source?					N/A
Method of Placing Sealing Material: Conductor Pipe-Pumped			(Explain Other):		
Water Well Sealing Materials:			Monitoring Wells & other Drillholes: Bentonite-Sand Slurry		

## 5. Material Used to Fill Well / Drillhole

Material:	From (ft.):	To (ft.):	# and Units of Sealant:	Mix Ratio or Mud Weight:
HS BENTONIRE	Surface	81.00	13	20% SOLIDS

## 6. Comments

MW 17P WAS OVER-DRILLED WITH A ROTASONIC RIG, CASING AND SCREEN WERE REMOVED AND BOREHOLE SEALED
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## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: TRAUT MARK J WELLS INC	License #: 5912	Phone: 320-251-5090
PO BOX 547 WAITE PARK MN 56387-0547	Email Address: MJTRAUT@TRAUTWELLS.COM	

## 8. DNR Use Only

Signed On: 06/12/2019	Submitted By: RECEIPT1	Received On: 06/12/2019	Approved On:
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## Wisconsin Department of Natural Resources

## Well / Drillhole / Borehole Filling &amp; Sealing

Form 3300-005

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Date of Filling &amp; Sealing: 05/20/2019

Rec #: 161156

Verification. Check only if well filling &amp; sealing was done previously and you are just verifying that work.: No

## 1. Well Location Information

County: Adams		WI Unique Well #:		DNR Hicap Well #:	
Latitude: (DD.DDDDD°) 44.03469 °N		Longitude: (DD.DDDDD°) 89.84068 °W		GPS Method Code: GPS008	
Gov't Lot #:	Qtr/Qtr:	Quarter:	Section #:	Township #: North	Range #:
Well Street Address: 1420 HIGHWAY 21				Subdivision Name:	
Well City/Village/Town: Village of FRIENDSHIP		Well Zip Code:	Lot #:	Does a new well replace this well? No	
Reason for Filling & Sealing: LANDFILL EXPANSION				WI Unique Well # of Replacement Well:	

## 2. Facility / Owner Information

Facility Name:		FID #:	License/Permit/Monitoring #:	
Original Well Owner:		Service Category:		
Present Well Owner: ADAMS COUNTY LANDFILL		Mailing Address of Present Owner: 1420 HIGHWAY 21		
		City: FRIENDSHIP	State: WI	Zip Code: 56378

## 3. Well / Drillhole / Borehole Information

Well Type: Monitoring Well	Original Construction Date: (mm/dd/yyyy)	Construction Type: Drilled
Formation Type:	Total Well Depth From Ground Surface (ft.): 51.00	(specify Other):
Casing Diameter (in.): 2.00	Lower Drillhole Diameter (in.):	Casing Depth (ft.):
Was well annular space grouted?	If yes, to what depth (ft.):	Depth to Water (ft.):

## 4. Pump, Liner, Screen, Casing &amp; Sealing Material

Pump and piping removed?	N/A	Liner(s) removed?	N/A	If no, was liner perforated?	
Screen removed?	Yes	Casing/Loop left in place?	No	Was casing cut off below surface?	N/A
Did sealing material rise to surface?	Yes	Did material settle after 24 hours?	No	If yes, was hole retopped?	
If bentonite chips were used, were they hydrated with water from a known water source?					N/A
Method of Placing Sealing Material: Conductor Pipe-Pumped			(Explain Other):		
Water Well Sealing Materials:			Monitoring Wells & other Drillholes: Bentonite-Sand Slurry		

## 5. Material Used to Fill Well / Drillhole

Material:	From (ft.):	To (ft.):	# and Units of Sealant:	Mix Ratio or Mud Weight:
HS BENTONIRE	Surface	51.00	9 BAGS	20% SOLIDS

## 6. Comments

MW-17 WAS OVER-DRILLED WITH A ROTASONIC RIG, REMOVING CASING AND SCREEN AND BOREHOLE WAS SEALED

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: TRAUT MARK J WELLS INC	License #: 5912	Phone: 320-251-5090
PO BOX 547 WAITE PARK MN 56387-0547		Email Address: MJTRAUT@TRAUTWELLS.COM

## 8. DNR Use Only

Signed On: 06/12/2019	Submitted By: RECEIPT1	Received On: 06/12/2019	Approved On:
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## Wisconsin Department of Natural Resources

## Well / Drillhole / Borehole Filling &amp; Sealing

Form 3300-005

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Date of Filling &amp; Sealing: 05/20/2019

Rec #: 161157

Verification. Check only if well filling &amp; sealing was done previously and you are just verifying that work.: No

## 1. Well Location Information

County: Adams		WI Unique Well #:		DNR Hicap Well #:	
Latitude: (DD.DDDDD°) 44.0337 °N		Longitude: (DD.DDDDD°) 89.94072 °W		GPS Method Code: GPS008	
Gov't Lot #:	Qtr/Qtr:	Quarter:	Section #:	Township #: North	Range #:
Well Street Address: 1420 HIGHWAY 21				Subdivision Name:	
Well City/Village/Town: Village of FRIENDSHIP		Well Zip Code:	Lot #:	Does a new well replace this well? No	
Reason for Filling & Sealing: LANDFILL EXPANSION				WI Unique Well # of Replacement Well:	

## 2. Facility / Owner Information

Facility Name:		FID #:	License/Permit/Monitoring #:	
Original Well Owner:		Service Category:		
Present Well Owner: ADAMS COUNTY LANDFILL		Mailing Address of Present Owner: 1420 HIGHWAY 21		
		City: FRIENDSHIP	State: WI	Zip Code: 53934

## 3. Well / Drillhole / Borehole Information

Well Type: Monitoring Well	Original Construction Date: (mm/dd/yyyy)	Construction Type: Drilled
Formation Type:	Total Well Depth From Ground Surface (ft.): 65.00	(specify Other):
Casing Diameter (in.): 2.00	Lower Drillhole Diameter (in.):	Casing Depth (ft.):
Was well annular space grouted?	If yes, to what depth (ft.):	Depth to Water (ft.):

## 4. Pump, Liner, Screen, Casing &amp; Sealing Material

Pump and piping removed?	N/A	Liner(s) removed?	N/A	If no, was liner perforated?	
Screen removed?	Yes	Casing/Loop left in place?	No	Was casing cut off below surface?	N/A
Did sealing material rise to surface?	Yes	Did material settle after 24 hours?	No	If yes, was hole retopped?	
If bentonite chips were used, were they hydrated with water from a known water source?					N/A
Method of Placing Sealing Material: Conductor Pipe-Pumped			(Explain Other):		
Water Well Sealing Materials:			Monitoring Wells & other Drillholes: Bentonite-Sand Slurry		

## 5. Material Used to Fill Well / Drillhole

Material:	From (ft.):	To (ft.):	# and Units of Sealant:	Mix Ratio or Mud Weight:
HS BENRONITE	Surface	65.00	11 BAGS	20% SOLIDS

## 6. Comments

MW 3P WAS OVER-DRILLED WITH A ROTASONIC RIG, CASING AND SCREEN WERE REMOVED AND BOREHOLE SEALED

## 7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing: TRAUT MARK J WELLS INC	License #: 5912	Phone: 320-251-5090
PO BOX 547 WAITE PARK MN 56387-0547		Email Address: MJTRAUT@TRAUTWELLS.COM

## 8. DNR Use Only

Signed On: 06/12/2019	Submitted By: RECEIPT1	Received On: 06/12/2019	Approved On:
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View of groundwater monitoring well



View of Adams County Landfill



Traut Companies on-site



Traut Companies performing Rotary Sonic drilling





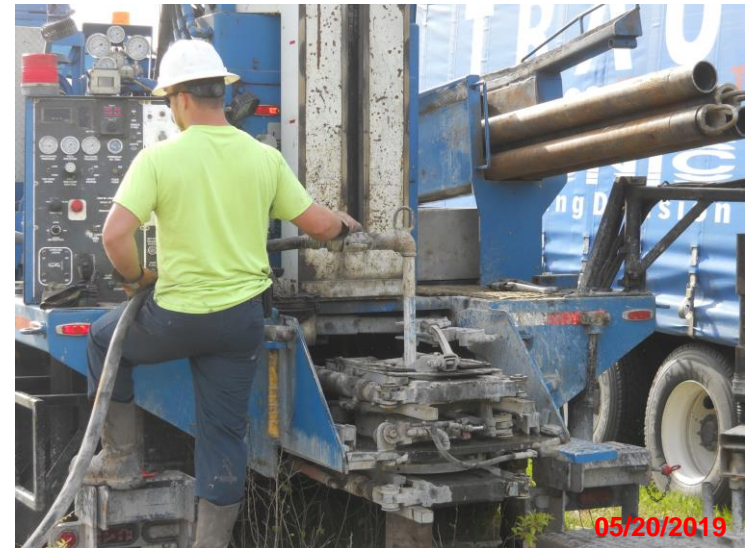
View of the drilling



View of drill rig



Casings removed from wells



Traut Companies operating the drill rig





Bags of bentonite used to seal boreholes



Close-up of bentonite



Mixing the bentonite-sand slurry to fill the boreholes