

Flambeau Mining Company
N4100 Highway 27
Ladysmith, WI 54848
(715) 532-6690
FAX (715) 532-6885

Kennecott
Minerals

June 11, 1999

Mr. Lawrence J. Lynch
Mine Reclamation Unit
Wisconsin Department of Natural Resources
101 South Webster St., GEF II
Madison, WI 53707


RE: Monitoring Well Construction & Soil Boring Logs - Backfill Wells
Flambeau Mine Site

The Flambeau Mining Company (Flambeau) is providing the Monitoring Well Construction logs for monitoring wells constructed in the backfilled open pit. MW-1013, MW-1013A, MW-1013B, MW-1013C, MW-1014, MW-1014A, MW-1014B, and MW-1014C were constructed in the backfill during September 1999 and well development was completed during February 1999. Well Construction Logs are found in Attachment 1. Soil Boring Log Information is also included for each of the wells constructed in the backfilled open pit. Soil Boring Log Information is found in Attachment 2. Attachment 3 contains a Well/Drillhole/Borehole Abandonment form for a borehole initiated as monitoring well MW-1014C, but abandoned due to casing refusal on a boulder.

Please provide the Department assigned Sample Point Identification Numbers for monitoring wells MW-1013, MW-1013A, MW-1013B, MW-1013C, MW-1014, MW-1014A, MW-1014B, and MW-1014C. These ID numbers are necessary so that Flambeau may provide analytical data in electronic format for these wells.

If you require any further information, please contact me at 715-532-6690 Ext. 105.

Sincerely,



Jana E. Murphy
Environmental & Reclamation Manager

Mr. Lawrence J. Lynch

June 11, 1999

Page 2

Attachments

cc: Al Christianson, City of Ladysmith
Fred Fox, Kennecott Minerals Co.
Jim Hutchison, Foth & Van Dyke
Ken Markart, WDNR
Thure Osuldsen, Rusk County
Tom Riegel, Town of Grant
Erik Silvola, Foth & Van Dyke
CeCe Tesky, Rusk County Zoning

Attachment 1

Monitoring Well Construction Logs for Backfill Wells

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Install	Local Grid Location of Well 40138.375 ft. N. 39200.682 ft. E.	Well Name MW-1013
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. Long. or	Wis. Unique Well Number DNR Well Number <u>J N 8 2 1</u> ---
Type of Well Water Table Observa Piezometer <input type="checkbox"/> 12	St. Plane	Date Well Installed <u>0 9 / 1 4 / 9 8</u> m m d d y y
Distance Well Is From Waste/Source Boundary 0 ft.	Section Location of Waste/Source NW 1/4 of SE 1/4 of Sec. 9, T. 34 N, R. 6 <input type="checkbox"/> E. <input checked="" type="checkbox"/> W.	Well Installed By: (Person's Name and Firm) Scott Shira Layne - Northwest
Is Well A Point of Enforcement Std. Application? N/A <input type="checkbox"/> Yes <input type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	

- A. Protective pipe, top elevation 1 1 2 1 . 3 6 ft. MSL
 B. Well casing, top elevation 1 1 2 1 . 3 8 ft. MSL
 C. Land surface elevation 1 1 1 8 . 4 ft. MSL
 D. Surface seal, bottom 1 1 1 4 . 4 ft. MSL or 4 . 0 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

13. Sieve analysis attached? Yes No

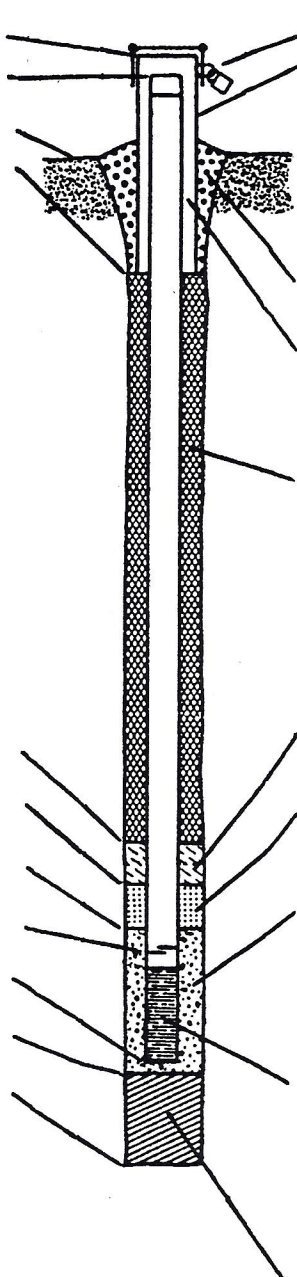
14. Drilling method used: Rotary 5 0
 Hollow Stem Auger 4 1
 Percussion Air Other

15. Drilling fluid used Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis):

- E. Bentonite seal, top 1 1 1 4 . 4 ft. MSL or 4 . 0 ft.
 F. Fine sand, top 1 1 1 0 . 9 ft. MSL or 7 . 5 ft.
 G. Filter pack, top 1 1 0 8 . 9 ft. MSL or 9 . 5 ft.
 H. Screen joint, top 1 1 0 6 . 9 ft. MSL or 11 . 5 ft.
 I. Well bottom 1 0 9 6 . 9 ft. MSL or 21 . 5 ft.
 J. Filter pack, bottom 1 0 9 5 . 4 ft. MSL or 23 . 0 ft.
 K. Borehole, bottom 1 0 9 5 . 5 ft. MSL or 23 . 0 ft.
 L. Borehole, diameter 9 . 0 in.
 M. O.D. well casing 2 . 3 8 in.
 N. I.D. well casing 1 . 8 9 in.



1. Cap and lock? Yes No
2. Protective cover pipe:
 a. Inside diameter: 4.0 in.
 b. Length: 7.0 ft.
 c. Material: Steel 0 4
 Other
 d. Additional protection? Yes No
 If yes, describe: _____
3. Surface seal: Bentonite 3 0
 Concrete 0 1
 Other
4. Material between well casing and protective pipe:
 Bentonite 3 0
 Annular space seal
 Sand Other
5. Annular space seal:
 a. Chipped Bentonite 3 3
 b. _____ Lbs/gal mud weight Bentonite-sand slurry 3 5
 c. _____ Lbs/gal mud weight Bentonite slurry 3 1
 d. _____ % Bentonite Bentonite-cement grout 5 0
 e. 3.9 Ft³ volume added for any of the above
 f. How installed: Tremie 0 1
 Tremie pumped 0 2
 Gravity 0 8
6. Bentonite seal:
 a. Bentonite granules 3 3
 b. 1/4 in. 3/8 in. 1/2 in. Bentonite pellets 3 2
 c. Pure Gold 3/8" Bentonite Chips Other
7. Fine sand material: Manufacturer, product name & mesh size
 a. Red Flint Filter 35-40
 b. Volume added 1.2 ft³
8. Filter pack material: Manufacturer, product name and mesh size
 a. Red Flint Filter #30
 b. Volume added 6.1 ft³
9. Well casing: Flush threaded PVC schedule 40 2 3
 Flush threaded PVC schedule 80 2 4
 Other
10. Screen material: PVC
 a. Screen Type: Factory cut 1 1
 Continuous slot 0 1
 Other
 b. Manufacturer Monoflex
 c. Slot size: 0.0 1 0 in.
 d. Slotted length: 1 0 . 0 ft.
11. Backfill material (below filter pack): None 1 4
 Other

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

Signature Erik Selvola Inc Firm Foth & Van Dyke

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stat., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stat., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5000 for each day of violation. In accordance with ch. 147, Wis. Stat., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other Mining

Facility/Project Name Flambeau Mining Company - Pit Backfill Well Installation	County Name Rusk	Well Name MW-1013	
Facility License, Permit or Monitoring Number <u>0 0 0 0 0 0 0</u>	County Code <u>5 5</u>	Wis. Unique Well Number <u>J N 8 2 1</u>	DNR Well Number <u>0 0 0</u>

		Before Development	After Development
1. Can this well be purged dry?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
2. Well development method			
surged with bailer and bailed	<input type="checkbox"/> 4 1		
surged with bailer and pumped	<input type="checkbox"/> 6 1		
surged with block and bailed	<input type="checkbox"/> 4 2		
surged with block and pumped	<input type="checkbox"/> 6 2		
surged with block, bailed and pumped	<input type="checkbox"/> 7 0		
compressed air	<input type="checkbox"/> 2 0		
bailed only	<input type="checkbox"/> 1 0		
pumped only	<input checked="" type="checkbox"/> 5 1		
pumped slowly	<input type="checkbox"/> 5 0		
Other _____	<input type="checkbox"/> 0 0		
3. Time spent developing well	<u>N A</u> min.		
4. Depth of well (from top of well casing)	<u>2 4 5</u> ft.		
5. Inside diameter of well	<u>1 8 9</u> in.		
6. Volume of water in filter pack and well casing	<u>1 0 0</u> gal.		
7. Volume of water removed from well	<u>4 4 3</u> gal.		
8. Volume of water added (if any)	<u>N A</u> gal.		
9. Source of water added _____			
10. Analysis performed on water added? (If yes, attach results)	<input type="checkbox"/> Yes <input type="checkbox"/> No		
		11. Depth to Water (from top of well casing)	
		a. <u>1 5 3 8</u> ft.	<u>2 1 2 0</u> ft.
		Date	
		b. <u>0 9 / 2 8 / 9 8</u>	<u>0 8 / 0 2 / 9 9</u>
		m m d d y y	m m d d y y
		<input type="checkbox"/> a.m.	<input type="checkbox"/> a.m.
		Time	
		c. <u>N A</u> :__ <input type="checkbox"/> p.m.	<u>N A</u> :__ <input type="checkbox"/> p.m.
		12. Sediment in well bottom	
		<u>N A</u> inches	<u>N A</u> inches
		13. Water clarity	
		Clear <input type="checkbox"/> 1 0	Clear <input type="checkbox"/> 2 0
		Turbid <input checked="" type="checkbox"/> 1 5	Turbid <input type="checkbox"/> 2 5
		(Describe)	(Describe)
		_____	_____
		_____	_____
		_____	_____
		_____	_____
		Fill in if drilling fluids were used and well is at solid waste facility:	
		14. Total suspended solids	
		_____ mg/l	_____ mg/l
		15. COD	
		_____ mg/l	_____ mg/l

16. Additional comments on development:
Well was purged by pumping 8 times and allowed to recover, see attached.

Well developed by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: <u>Jack Christman</u>	Signature: <u>Erik Silvola Jensen</u>
Firm: <u>Flambeau Mining Company</u>	Print Initials: <u>E A S</u>
	Firm: <u>Foth & Van Dyke</u>

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Install	Local Grid Location of Well 40141.143 ft. N. 39195.519 ft. E.	Well Name MW-1013A
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. Long. or	Wis. Unique Well Number DNR Well Number J N 8 2 2
Type of Well Water Table Observation Well <input type="checkbox"/> 11 Piezometer <input checked="" type="checkbox"/> 12	St. Plane	Date Well Installed 0 9 / 1 4 / 9 8 m m d d y y
Distance Well Is From Waste/Source Boundary 0 ft.	Section Location of Waste/Source NW 1/4 of SE 1/4 of Sec. 9, T. 34 N, R. 6 <input type="checkbox"/> E. <input checked="" type="checkbox"/> W.	Well Installed By: (Person's Name and Firm) Scott Shira Layne - Northwest
Is Well A Point of Enforcement Std. Application? N/a <input type="checkbox"/> Yes <input type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	

- A. Protective pipe, top elevation 1 1 2 1 .1 8 ft. MSL
 B. Well casing, top elevation 1 1 2 1 .3 1 ft. MSL
 C. Land surface elevation 1 1 1 8 .3 ft. MSL
 D. Surface seal, bottom 1 1 1 4 .3 ft. MSL or 4 .0 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

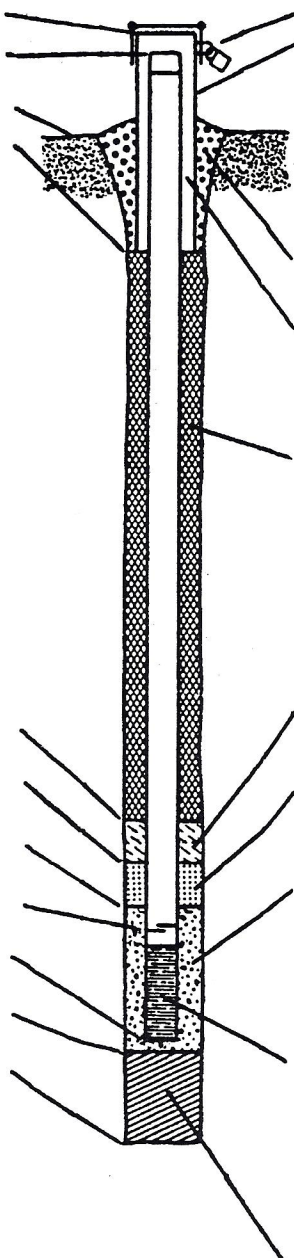
13. Sieve analysis attached? Yes No

14. Drilling method used: Rotary 5 0
 Hollow Stem Auger 4 1
 9" Percussion Air Other

15. Drilling fluid used Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis):



1. Cap and lock? Yes No
2. Protective cover pipe:
 a. Inside diameter: 4.0 in.
 b. Length: 7.0 ft.
 c. Material: Steel 0 4
 Other
 d. Additional protection? Yes No
 If yes, describe: _____
3. Surface seal: Bentonite 3 0
 Concrete 0 1
 Other
4. Material between well casing and protective pipe:
 Bentonite 3 0
 Annular space seal
 Sand
 Other
5. Annular space seal:
 a. Chipped Bentonite 3 3
 b. _____ Lbs/gal mud weight Bentonite-sand slurry 3 5
 c. _____ Lbs/gal mud weight Bentonite slurry 3 1
 d. _____ % Bentonite Bentonite-cement grout 5 0
 e. 10.4 Ft³ volume added for any of the above
 f. How installed: Tremie 0 1
 Tremie pumped 0 2
 Gravity 0 8
6. Bentonite seal:
 a. Bentonite granules 3 3
 b. 1/4 in. 3/8 in. 1/2 in. Bentonite pellets 3 2
 c. Pure Gold 3/8" Bentonite Chips Other
7. Fine sand material: Manufacturer, product name & mesh size
 a. Red Flint Filter 35-40
 b. Volume added 1.1 ft³
8. Filter pack material: Manufacturer, product name and mesh size
 a. Red Flint Filter #30 11.5
 b. Volume added 6.1 ft³
9. Well casing: Flush threaded PVC schedule 40 2 3
 Flush threaded PVC schedule 80 2 4
 Other
10. Screen material: PVC
 a. Screen Type: Factory cut 1 1
 Continuous slot 0 1
 Other
 b. Manufacturer Monoflex
 c. Slot size: 0.0 1 0 in.
 d. Slotted length: 1 0 .0 ft.
11. Backfill material (below filter pack): None 1 4
 Other

- E. Bentonite seal, top 1 1 1 4 .3 ft. MSL or 0 0 4 .0 ft.
 F. Fine sand, top 1 0 8 8 .8 ft. MSL or 0 2 9 .5 ft.
 G. Filter pack, top 1 0 8 6 .8 ft. MSL or 0 3 1 .5 ft.
 H. Screen joint, top 1 0 8 4 .7 ft. MSL or 0 3 3 .6 ft.
 I. Well bottom 1 0 7 4 .7 ft. MSL or 0 4 3 .6 ft.
 J. Filter pack, bottom 1 0 7 3 .3 ft. MSL or 0 4 5 .0 ft.
 K. Borehole, bottom 1 0 7 3 .3 ft. MSL or 0 4 5 .0 ft.
 L. Borehole, diameter 0 9 .0 in.
 M. O.D. well casing 0 2 .3 8 in.
 N. I.D. well casing 0 1 .8 9 in.

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

Signature Erik Silvola INC Firm Foth & Van Dyke

Please complete both sides of this form and return to the appropriate DNR off listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stat., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5000 for each day of violation. In accordance with ch. 147, Wis. Stat., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other Mining

Facility/Project Name Flambeau Mining Company - Pit Backfill Well Installation	County Name Rusk	Well Name MW-1013A	
Facility License, Permit or Monitoring Number <u>0 0 0 0 0 0 0</u>	County Code <u>5 5</u>	Wis. Unique Well Number <u>0 0 0 0 0 0</u>	DNR Well Number <u>0 0 0</u>

		Before Development	After Development
1. Can this well be purged dry?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
2. Well development method			
surged with bailer and bailed	<input type="checkbox"/> 4 1		
surged with bailer and pumped	<input type="checkbox"/> 6 1		
surged with block and bailed	<input type="checkbox"/> 4 2		
surged with block and pumped	<input type="checkbox"/> 6 2		
surged with block, bailed and pumped	<input type="checkbox"/> 7 0		
compressed air	<input type="checkbox"/> 2 0		
bailed only	<input type="checkbox"/> 1 0		
pumped only	<input checked="" type="checkbox"/> 5 1		
pumped slowly	<input type="checkbox"/> 5 0		
Other _____	<input type="checkbox"/> #		
3. Time spent developing well	<u>N A</u> min.		
4. Depth of well (from top of well casing)	<u>4 6 7</u> ft.		
5. Inside diameter of well	<u>1 8 9</u> in.		
6. Volume of water in filter pack and well casing	<u>1 0 1</u> gal.		
7. Volume of water removed from well	<u>3 8 8</u> gal.		
8. Volume of water added (if any)	<u>N A</u> gal.		
9. Source of water added _____			
10. Analysis performed on water added? (If yes, attach results)	<input type="checkbox"/> Yes <input type="checkbox"/> No		
		11. Depth to Water (from top of well casing)	
		a. <u>2 4 5 6</u> ft.	<u>D R Y</u> ft.
		Date	<u>0 9 / 2 8 / 9 8</u>
		m m d d y y	<u>0 2 / 1 5 / 9 9</u>
		Time	<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
		c. <u>N A</u> : <input type="checkbox"/> p.m.	<u>N A</u> : <input type="checkbox"/> p.m.
		12. Sediment in well bottom	<u>N A</u> inches
		13. Water clarity	<u>N A</u> inches
		Clear <input type="checkbox"/> 1 0	Clear <input type="checkbox"/> 2 0
		Turbid <input checked="" type="checkbox"/> 1 5	Turbid <input type="checkbox"/> 2 5
		(Describe)	(Describe)
		Fill in if drilling fluids were used and well is at solid waste facility:	
		14. Total suspended solids	_____ mg/l
		15. COD	_____ mg/l

16. Additional comments on development:

Well pumped and allowed to rest/recover 6 times, see attached

Well developed by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: <u>Jack Christman</u>	Signature: <u>Erik Silvola Jensen</u>
Firm: <u>Flambeau Mining Company</u>	Print Initials: <u>E A S</u>
	Firm: <u>Foth & Van Dyke</u>

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Install	Local Grid Location of Well 40144.240 ft. N. 39191.056 ft. E.	Well Name MW-1013B
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. Long. or	Wis. Unique Well Number DNR Well Number J N 8 2 3
Type of Well Water Table Observation Well <input type="checkbox"/> 11 Piezometer <input checked="" type="checkbox"/> 12	St. Plane	Date Well Installed 0 9 / 1 5 / 9 8 m m d d y y
Distance Well Is From Waste/Source Boundary 0 ft.	Section Location of Waste/Source NW 1/4 of SE 1/4 of Sec. 9, T. 34 N, R. 6 <input type="checkbox"/> E. <input checked="" type="checkbox"/> W.	Well Installed By: (Person's Name and Firm) Scott Shira Layne - Northwest
Is Well A Point of Enforcement Std. Application? N/A <input type="checkbox"/> Yes <input type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	

- A. Protective pipe, top elevation 1 1 2 0 . 8 9 ft. MSL
- B. Well casing, top elevation 1 1 2 1 . 0 8 ft. MSL
- C. Land surface elevation 1 1 1 8 . 3 ft. MSL
- D. Surface seal, bottom 1 1 1 4 . 3 ft. MSL or 4 . 0 ft.

12. USCS classification of soil near screen:
GP GM GC GW SW SP
SM SC ML MH CL CH
Bedrock

13. Sieve analysis attached? Yes No

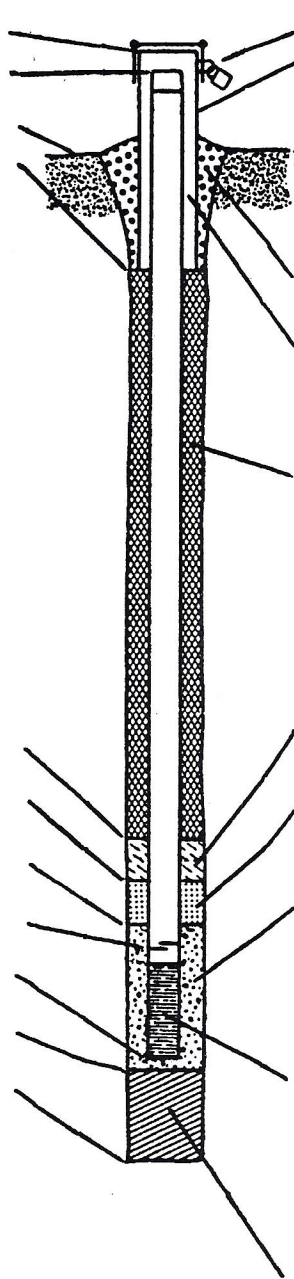
14. Drilling method used: Rotary 5 0
Hollow Stem Auger 4 1
9" Percussion Other

15. Drilling fluid used Water 0 2 Air 0 1
Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
Describe _____

17. Source of water (attach analysis):

- E. Bentonite seal, top 1 1 1 4 . 3 ft. MSL or 0 0 4 . 0 ft.
- F. Fine sand, top 1 0 4 8 . 8 ft. MSL or 0 6 9 . 5 ft.
- G. Filter pack, top 1 0 4 6 . 8 ft. MSL or 0 7 1 . 5 ft.
- H. Screen joint, top 1 0 4 4 . 8 ft. MSL or 0 7 3 . 5 ft.
- I. Well bottom 1 0 3 4 . 8 ft. MSL or 0 8 3 . 5 ft.
- J. Filter pack, bottom 1 0 3 3 . 3 ft. MSL or 0 8 5 . 0 ft.
- K. Borehole, bottom 1 0 3 3 . 3 ft. MSL or 0 8 5 . 0 ft.
- L. Borehole, diameter 0 8 . 0 in.
- M. O.D. well casing 0 2 . 3 8 in.
- N. I.D. well casing 0 1 . 8 9 in.



1. Cap and lock? Yes No
2. Protective cover pipe:
a. Inside diameter: 4.0 in.
b. Length: 7.0 ft.
c. Material: Steel 0 4
Other
d. Additional protection? Yes No
If yes, describe: _____
3. Surface seal: Bentonite 3 0
Concrete 0 1
Other
4. Material between well casing and protective pipe:
Bentonite 3 0
Annular space seal
Sand
5. Annular space seal:
a. Chipped Bentonite 3 3
b. _____ Lbs/gal mud weight Bentonite-sand slurry 2 6
c. _____ Lbs/gal mud weight Bentonite slurry 3 1
d. _____ % Bentonite Bentonite-cement grout 5 0
e. 18.8 Ft³ volume added for any of the above
f. How installed: Tremie 0 1
Tremie pumped 0 2
Gravity 0 8
6. Bentonite seal:
a. Bentonite granules 3 3
b. 1/4 in. 3/8 in. 1/2 in. Bentonite pellets 3 2
c. Pure Gold 5/8" Bentonite Chips
7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint Filter 35-45
b. Volume added 0.9 ft³
8. Filter pack material: Manufacturer, product name and mesh size
a. Red Flint Filter #30 10 1/4
b. Volume added 5.5 ft³
9. Well casing: Flush threaded PVC schedule 40 2 3
Flush threaded PVC schedule 80 2 4
Other
10. Screen material: PVC
a. Screen Type: Factory cut 1 1
Continuous slot 0 1
Other
b. Manufacturer Monoflex
c. Slot size: 0.0 1 0 in.
d. Slotted length: 1 0 . 0 ft.
11. Backfill material (below filter pack): None 1 4
Other

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

Signature Erik Silvola Inc Firm Foth & Van Dyke

Please complete both sides of this form and return to the appropriate DNR off listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stat., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5000 for each day of violation. In accordance with ch. 147, Wis. Stat., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other Mining

Facility/Project Name Flambeau Mining Company - Pit Backfill Well Installation	County Name Rusk	Well Name MW-1013B	
Facility License, Permit or Monitoring Number _____	County Code <u>55</u>	Wis. Unique Well Number _____	DNR Well Number _____

1. Can this well be purged dry? Yes No

2. Well development method

surged with bailer and bailed 4 1

surged with bailer and pumped 6 1

surged with block and bailed 4 2

surged with block and pumped 6 2

surged with block, bailed and pumped 7 0

compressed air 2 0

bailed only 1 0

pumped only 5 1

pumped slowly 5 0

Other _____

3. Time spent developing well N A ___ min.

4. Depth of well (from top of well casing) 8 6 3 ft.

5. Inside diameter of well 1 8 9 in.

6. Volume of water in filter pack and well casing 1 6 2 gal.

7. Volume of water removed from well 1 3 5 5 gal.

8. Volume of water added (if any) N A ___ gal.

9. Source of water added _____

1. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>2 6 2 4</u> ft.	<u>8 5 5 4</u> ft.
Date	b. <u>0 9 / 2 9 / 9 8</u> m m d d y y	<u>0 2 / 1 7 / 9 9</u> m m d d y y
Time	c. <u>N A</u> :__ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<u>N A</u> :__ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	___ inches	___ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe)	Clear <input type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe)
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	_____ mg/l	_____ mg/l
15. COD	_____ mg/l	_____ mg/l

16. Additional comments on development:

Well purged and allowed to rest 12 times, see attached.

Well developed by: Person's Name and Firm

Name: Jack Christman

Firm: Flambeau Mining Company

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

Signature: Erika Silvola Jones

Print Initials: E A S

Firm: Foth & Van Dyke

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Install	Local Grid Location of Well 40135.567 ft. N. 39205.669 ft. E.	Well Name MW-1013C
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. Long. or	Wis. Unique Well Number DNR Well Number <u>J N 8 2 4</u>
Type of Well Water Table Observation Well <input type="checkbox"/> 11 Piezometer <input checked="" type="checkbox"/> 12	St. Plane	Date Well Installed <u>0 9 / 1 1 / 9 8</u> m m d d y y
Distance Well Is From Waste/Source Boundary 0 ft.	Section Location of Waste/Source NW 1/4 of SE 1/4 of Sec. 9, T. 34 N, R. 6 <input type="checkbox"/> E. <input checked="" type="checkbox"/> W.	Well Installed By: (Person's Name and Firm) <u>Scott Shira</u> <u>Layne - Northwest</u>
Is Well A Point of Enforcement Std. Application? N/A <input type="checkbox"/> Yes <input type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	

- A. Protective pipe, top elevation 1 1 2 1 . 4 6 ft. MSL
 B. Well casing, top elevation 1 1 2 1 . 5 9 ft. MSL
 C. Land surface elevation 1 1 1 8 . 1 ft. MSL
 D. Surface seal, bottom 1 1 1 4 . 1 ft. MSL or 4 . 0 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

13. Sieve analysis attached? Yes No

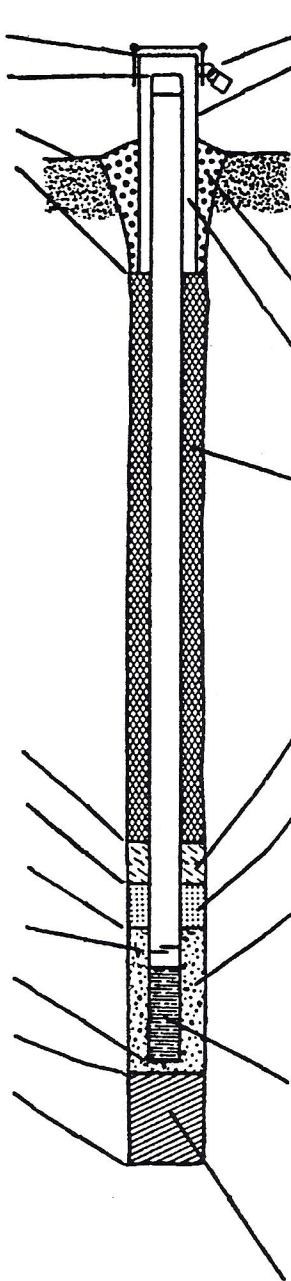
14. Drilling method used: Rotary 5 0
 Hollow Stem Auger 4 1
 Percussion Other

15. Drilling fluid used: Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis):

- E. Bentonite seal, top 1 1 1 4 . 1 ft. MSL or 0 0 4 . 0 ft.
 F. Fine sand, top 0 9 3 4 . 1 ft. MSL or 1 8 4 . 0 ft.
 G. Filter pack, top 0 9 3 2 . 1 ft. MSL or 1 8 6 . 0 ft.
 H. Screen joint, top 0 9 3 0 . 1 ft. MSL or 1 8 8 . 0 ft.
 I. Well bottom 0 9 2 0 . 1 ft. MSL or 1 9 8 . 0 ft.
 J. Filter pack, bottom 0 9 1 9 . 1 ft. MSL or 1 9 9 . 0 ft.
 K. Borehole, bottom 0 9 1 9 . 1 ft. MSL or 1 9 9 . 0 ft.
 L. Borehole, diameter 0 9 . 0 in.
 M. O.D. well casing 0 2 . 3 8 in.
 N. I.D. well casing 0 1 . 8 9 in.



1. Cap and lock? Yes No
2. Protective cover pipe:
 a. Inside diameter: 4.0 in.
 b. Length: 7.0 ft.
 c. Material: Steel 0 4
 Other
 d. Additional protection? Yes No
 If yes, describe: _____
3. Surface seal: Bentonite 3 0
 Concrete 0 1
 Other
4. Material between well casing and protective pipe:
 Bentonite 3 0
 Annular space seal
 Sand
 Other
5. Annular space seal:
 a. Chipped Bentonite 3 3
 b. _____ Lbs/gal mud weight Bentonite-sand slurry 3 5
 c. _____ Lbs/gal mud weight Bentonite slurry 3 1
 d. _____ % Bentonite Bentonite-cement grout 5 0
 e. 45.8 Ft³ volume added for any of the above
 f. How installed: Tremie 0 1
 Tremie pumped 0 2
 Gravity 0 8
6. Bentonite seal:
 a. Bentonite granules 3 3
 b. 1/4 in. 3/8 in. 1/2 in. Bentonite pellets 3 2
 c. Pure Gold 3/8" Bentonite Chips Other 6 8
7. Fine sand material: Manufacturer, product name & mesh size
 a. Red Flint Filter 35-45
 b. Volume added 1.1 ft³ 2 bags
8. Filter pack material: Manufacturer, product name and mesh size
 a. Red Flint Filter #30
 b. Volume added 7.6 ft³ 11 bags
9. Well casing: Flush threaded PVC schedule 40 2 3
 Flush threaded PVC schedule 80 2 4
 Other
10. Screen material: PVC
 a. Screen Type: Factory cut 1 1
 Continuous slot 0 1
 Other
 b. Manufacturer Monoflex
 c. Slot size: 0.0 1 0 in.
 d. Slotted length: 1 0 . 0 ft.
11. Backfill material (below filter pack): None 1 4
 Other

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

Signature Erik Selvola Inc

Firm Foth & Van Dyke

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stat., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5000 for each day of violation. In accordance with ch. 147, Wis. Stat., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other Mining

Facility/Project Name Flambeau Mining Company - Pit Backfill Well Installation	County Name Rusk	Well Name MW-1013C
Facility License, Permit or Monitoring Number _____	County Code <u>55</u>	Wis. Unique Well Number _____
		DNR Well Number _____

1. Can this well be purged dry? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	11. Depth to Water (from top of well casing) a. <u>26.87</u> ft. Date b. <u>10/05/98</u> m m d d y y <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. Time c. <u>N.A.</u> <input type="checkbox"/> p.m.	Before Development	After Development
2. Well development method surged with bailer and bailed <input type="checkbox"/> 41 surged with bailer and pumped <input type="checkbox"/> 61 surged with block and bailed <input type="checkbox"/> 42 surged with block and pumped <input type="checkbox"/> 62 surged with block, bailed and pumped <input type="checkbox"/> 70 compressed air <input type="checkbox"/> 20 bailed only <input type="checkbox"/> 10 pumped only <input checked="" type="checkbox"/> 51 pumped slowly <input type="checkbox"/> 50 Other <input type="checkbox"/> _____	12. Sediment in well bottom <u>N.A.</u> inches	<u>111.50</u> ft.	<u>02/09/99</u> m m d d y y <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
3. Time spent developing well <u>N.A.</u> min.	13. Water clarity Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) _____	<u>N.A.</u> inches	<u>N.A.</u> inches
4. Depth of well (from top of well casing) <u>201.5</u> ft.	Fill in if drilling fluids were used and well is at solid waste facility:	_____	_____
5. Inside diameter of well <u>1.89</u> in.	14. Total suspended solids _____ mg/l	_____	_____
6. Volume of water in filter pack and well casing <u>37.8</u> gal.	15. COD _____ mg/l	_____	_____
7. Volume of water removed from well <u>845.5</u> gal.		_____	_____
8. Volume of water added (if any) <u>N.A.</u> gal.		_____	_____
9. Source of water added _____		_____	_____
1. Analysis performed on water added? (If yes, attach results) <input type="checkbox"/> Yes <input type="checkbox"/> No		_____	_____

16. Additional comments on development:

Well purged and allowed to recover 13 times, see attached.

Well developed by: Person's Name and Firm Name: <u>Jack Christman</u> Firm: <u>Flambeau Mining Company</u>	I hereby certify that the above information is true and correct to the best of my knowledge. Signature: <u>Erik Silvola Jensen</u> Print Initials: <u>E.A.S.</u> Firm: <u>Foth & Van Dyke</u>
--	--

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Install	Local Grid Location of Well St. Plane <u>41289.698</u> ft. N. <u>40475.070</u> ft. E.	Well Name MW-1014
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. _____ Long. _____ or _____	Wis. Unique Well Number DNR Well Number <u>J N 8 2 5</u>
Type of Well Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	St. Plane Section Location of Waste/Source <input type="checkbox"/> E. NW 1/4 of SE 1/4 of Sec. 9, T. 34 N, R. 6 <input checked="" type="checkbox"/> W.	Date Well Installed <u>0 9 / 1 6 / 9 8</u> m m d d y y
Distance Well Is From Waste/Source Boundary ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Well Installed By: (Person's Name and Firm) <u>Scott Shira</u> <u>Layne - Northwest</u>
Is Well A Point of Enforcement Std. Application? <input type="checkbox"/> Yes <input type="checkbox"/> No		

- A. Protective pipe, top elevation 1 1 3 9 . 4 3 ft. MSL
- B. Well casing, top elevation 1 1 3 9 . 6 7 ft. MSL
- C. Land surface elevation 1 1 3 6 . 8 ft. MSL
- D. Surface seal, bottom 1 1 3 2 . 8 ft. MSL or 4 . 0 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

13. Sieve analysis attached? Yes No

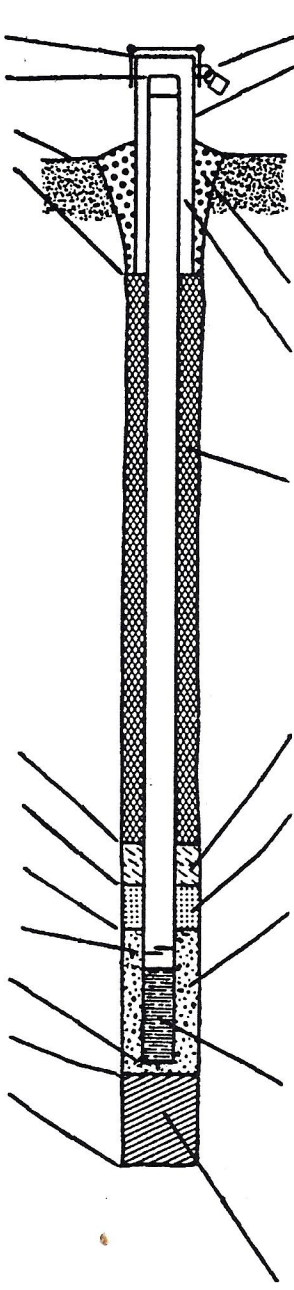
14. Drilling method used: Rotary 5 0
 Hollow Stem Auger 4 1
 9" Percussion Other

15. Drilling fluid used Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis):

- E. Bentonite seal, top 1 1 3 2 . 8 ft. MSL or 0 0 4 . 0 ft.
- F. Fine sand, top 1 1 1 9 . 8 ft. MSL or 0 1 7 . 0 ft.
- G. Filter pack, top 1 1 1 7 . 8 ft. MSL or 0 1 9 . 0 ft.
- H. Screen joint, top 1 1 1 5 . 8 ft. MSL or 0 2 1 . 0 ft.
- I. Well bottom 1 1 0 5 . 8 ft. MSL or 0 3 1 . 0 ft.
- J. Filter pack, bottom 1 1 0 4 . 8 ft. MSL or 0 3 2 . 0 ft.
- K. Borehole, bottom 1 1 0 4 . 8 ft. MSL or 0 3 2 . 0 ft.
- L. Borehole, diameter 0 9 . 0 in.
- M. O.D. well casing 0 2 . 3 8 in.
- N. I.D. well casing 0 1 . 8 9 in.



- 1. Cap and lock? Yes No
- 2. Protective cover pipe:
 - a. Inside diameter: 4.0 in.
 - b. Length: 7.0 ft.
 - c. Material: Steel 0 4
Other
 - d. Additional protection? Yes No
If yes, describe: _____
- 3. Surface seal: Bentonite 3 0
Concrete 0 1
Other
- 4. Material between well casing and protective pipe:
 - Bentonite 3 0
 - Annular space seal
 - Sand
 - Other
- 5. Annular space seal:
 - a. Chipped Bentonite 3 3
 - b. _____ Lbs/gal mud weight Bentonite-sand slurry 3 5
 - c. _____ Lbs/gal mud weight _____ Bentonite slurry 3 1
 - d. _____ % Bentonite Bentonite-cement grout 5 0
 - e. 3.8 Ft³ volume added for any of the above
 - f. How installed: Tremie 0 1
Tremie pumped 0 2
Gravity 0 8
- 6. Bentonite seal:
 - a. Bentonite granules 3 3
 - b. 1/4 in. 3/8 in. 1/2 in. Bentonite pellets 3 2
 - c. Pure Gold 3/8" Bentonite Chips Other
- 7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint Filter 35-45
- b. Volume added 0.9 ft³
- 8. Filter pack material: Manufacturer, product name and mesh size
a. Red Flint Filter #30 10%
- b. Volume added 5.8 ft³
- 9. Well casing: Flush threaded PVC schedule 40 2 3
Flush threaded PVC schedule 80 2 4
Other
- 10. Screen material: PVC
 - a. Screen Type: Factory cut 1 1
Continuous slot 0 1
Other
 - b. Manufacturer Monoflex
 - c. Slot size: 0.0 1 0 in.
 - d. Slotted length: 1 0 . 0 ft.
- 11. Backfill material (below filter pack): None 1 4
Other

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

Signature Erik Selvola Inc Firm Foth & Van Dyke

Please complete both sides of this form and return to the appropriate DNR off listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stat., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5000 for each day of violation. In accordance with ch. 147, Wis. Stat., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other Mining

Facility/Project Name Flambeau Mining Company - Pit Backfill Well Installation	County Name Rusk	Well Name MW-1014
Facility License, Permit or Monitoring Number _____	County Code <u>5 5</u>	Wis. Unique Well Number _____
		DNR Well Number _____

<p>1. Can this well be purged dry? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>2. Well development method</p> <p>surged with bailer and bailed <input type="checkbox"/> 4 1</p> <p>surged with bailer and pumped <input type="checkbox"/> 6 1</p> <p>surged with block and bailed <input type="checkbox"/> 4 2</p> <p>surged with block and pumped <input type="checkbox"/> 6 2</p> <p>surged with block, bailed and pumped <input type="checkbox"/> 7 0</p> <p>compressed air <input type="checkbox"/> 2 0</p> <p>bailed only <input type="checkbox"/> 1 0</p> <p>pumped only <input type="checkbox"/> 5 1</p> <p>pumped slowly <input type="checkbox"/> 5 0</p> <p>Other <u>None - Dry</u> <input type="checkbox"/> </p> <p>3. Time spent developing well _____ min.</p> <p>4. Depth of well (from top of well casing) <u>3 3.9</u> ft.</p> <p>5. Inside diameter of well <u>1.8 9</u> in.</p> <p>6. Volume of water in filter pack and well casing <u>NA</u> gal.</p> <p>7. Volume of water removed from well <u>NA</u> gal.</p> <p>8. Volume of water added (if any) <u>NA</u> gal.</p> <p>9. Source of water added _____</p> <p>_____</p> <p>10. Analysis performed on water added? <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, attach results)</p>	<p>11. Depth to Water (from top of well casing)</p> <p>Before Development: a. <u>NA</u> ft.</p> <p>After Development: <u>NA</u> ft.</p> <p>Date: b. <u>NA</u> / <u>NA</u> / <u>NA</u> m m d d y y <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.</p> <p>Time: c. <u>NA</u>:<u>NA</u> <input type="checkbox"/> p.m.</p> <p>12. Sediment in well bottom _____ inches</p> <p>13. Water clarity</p> <table border="1"> <tr> <td>Clear <input type="checkbox"/> 1 0</td> <td>Clear <input type="checkbox"/> 2 0</td> </tr> <tr> <td>Turbid <input type="checkbox"/> 1 5</td> <td>Turbid <input type="checkbox"/> 2 5</td> </tr> <tr> <td>(Describe) <u>NA</u></td> <td>(Describe) <u>NA</u></td> </tr> <tr> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> </tr> <tr> <td>_____</td> <td>_____</td> </tr> </table> <p>Fill in if drilling fluids were used and well is at solid waste facility:</p> <p>14. Total suspended solids _____ mg/l _____ mg/l</p> <p>15. COD _____ mg/l _____ mg/l</p>	Clear <input type="checkbox"/> 1 0	Clear <input type="checkbox"/> 2 0	Turbid <input type="checkbox"/> 1 5	Turbid <input type="checkbox"/> 2 5	(Describe) <u>NA</u>	(Describe) <u>NA</u>	_____	_____	_____	_____	_____	_____
Clear <input type="checkbox"/> 1 0	Clear <input type="checkbox"/> 2 0												
Turbid <input type="checkbox"/> 1 5	Turbid <input type="checkbox"/> 2 5												
(Describe) <u>NA</u>	(Describe) <u>NA</u>												
_____	_____												
_____	_____												
_____	_____												

16. Additional comments on development:

Could not develop - well is dry.

Well developed by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: <u>Jack Christman</u>	Signature: <u>Eirik Silvola Jensen</u>
Firm: <u>Flambeau Mining Company</u>	Print Initials: <u>E A S</u>
	Firm: <u>Foth & Van Dyke</u>

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Install	Local Grid Location of Well 41284.550 ft. N. 40474.024 ft. E.	Well Name MW-1014A
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. Long. or	Wis. Unique Well Number DNR Well Number J N 8 2 6
Type of Well Water Table Observation Well <input type="checkbox"/> 11 Piezometer <input checked="" type="checkbox"/> 12	St. Plane	Date Well Installed 0 9 / 1 6 / 9 8 m m d d y y
Distance Well Is From Waste/Source Boundary 0 ft.	Section Location of Waste/Source NW 1/4 of SE 1/4 of Sec. 9, T. 34 N, R. 6 <input type="checkbox"/> E. <input checked="" type="checkbox"/> W.	Well Installed By: (Person's Name and Firm) Scott Shira Layne - Northwest
Is Well A Point of Enforcement Std. Application? N/A <input type="checkbox"/> Yes <input type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	

- A. Protective pipe, top elevation 1 1 3 9 . 2 6 ft. MSL
 B. Well casing, top elevation 1 1 3 9 . 4 7 ft. MSL
 C. Land surface elevation 1 1 3 6 . 6 ft. MSL
 D. Surface seal, bottom 1 1 3 2 . 6 ft. MSL or 4 . 0 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

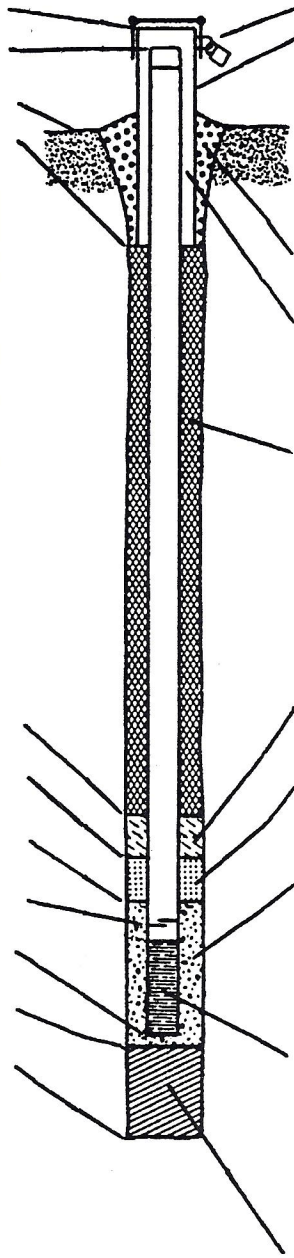
13. Sieve analysis attached? Yes No

14. Drilling method used: Rotary 5 0
 Hollow Stem Auger 4 1
 9" Percussion Other

15. Drilling fluid used Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis):



1. Cap and lock? Yes No
2. Protective cover pipe:
 a. Inside diameter: 4.0 in.
 b. Length: > 4.0 ft.
 c. Material: Steel 0 4
 Other
- d. Additional protection? Yes No
 If yes, describe: _____
3. Surface seal: Bentonite 3 0
 Concrete 0 1
 Other
4. Material between well casing and protective pipe:
 Bentonite 3 0
 Annular space seal
 Sand Other
5. Annular space seal:
 a. Chipped Bentonite 3 3
 b. _____ Lbs/gal mud weight Bentonite-sand slurry 3 5
 c. _____ Lbs/gal mud weight Bentonite slurry 3 1
 d. _____ % Bentonite Bentonite-cement grout 5 0
 e. 16.0 Ft³ volume added for any of the above
 f. How installed: Tremie 0 1
 Tremie pumped 0 2
 Gravity 0 8
6. Bentonite seal:
 a. Bentonite granules 3 3
 b. 1/4 in. 3/8 in. 1/2 in. Bentonite pellets 3 2
 c. Pure Gold 3/8" Bentonite Chips Other
7. Fine sand material: Manufacturer, product name & mesh size
 a. Red Flint Filter 35-45
 b. Volume added 1.0 ft³
8. Filter pack material: Manufacturer, product name and mesh size
 a. Red Flint Filter #30
 b. Volume added 5.9 ft³
9. Well casing: Flush threaded PVC schedule 40 2 3
 Flush threaded PVC schedule 80 2 4
 Other
10. Screen material: PVC
 a. Screen Type: Factory cut 1 1
 Continuous slot 0 1
 Other
 b. Manufacturer Monoflex
 c. Slot size: 0.0 1 0 in.
 d. Slotted length: 1 0 . 0 ft.
11. Backfill material (below filter pack): None 1 4
 Other

- E. Bentonite seal, top 1 1 3 2 . 6 ft. MSL or 0 0 4 . 0 ft.
 F. Fine sand, top 1 0 8 9 . 6 ft. MSL or 0 4 7 . 0 ft.
 G. Filter pack, top 1 0 8 7 . 6 ft. MSL or 0 4 9 . 0 ft.
 H. Screen joint, top 1 0 8 5 . 6 ft. MSL or 0 5 1 . 0 ft.
 I. Well bottom 1 0 7 5 . 6 ft. MSL or 0 6 1 . 0 ft.
 J. Filter pack, bottom 1 0 7 4 . 6 ft. MSL or 0 6 2 . 0 ft.
 K. Borehole, bottom 1 0 7 4 . 6 ft. MSL or 0 6 2 . 0 ft.
 L. Borehole, diameter 0 9 . 0 in.
 M. O.D. well casing 0 2 . 3 8 in.
 N. I.D. well casing 0 1 . 8 9 in.

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

Signature Erik Selvola Inc Firm Foth & Van Dyke

Please complete both sides of this form and return to the appropriate DNR off listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stat., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5000 for each day of violation. In accordance with ch. 147, Wis. Stat., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other Mining

Facility/Project Name Flambeau Mining Company - Pit Backfill	County Name Rusk	Well Name MW-1014A	
Facility License, Permit or Monitoring Number -----	County Code <u>55</u>	Wis. Unique Well Number -----	DNR Well Number -----

<p>1. Can this well be purged dry? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>2. Well development method</p> <p>surged with bailer and bailed <input type="checkbox"/> 4 1</p> <p>surged with bailer and pumped <input type="checkbox"/> 6 1</p> <p>surged with block and bailed <input type="checkbox"/> 4 2</p> <p>surged with block and pumped <input type="checkbox"/> 6 2</p> <p>surged with block, bailed and pumped <input type="checkbox"/> 7 0</p> <p>compressed air <input type="checkbox"/> 2 0</p> <p>bailed only <input type="checkbox"/> 1 0</p> <p>pumped only <input type="checkbox"/> 5 1</p> <p>pumped slowly <input checked="" type="checkbox"/> 5 0</p> <p>Other <input type="checkbox"/> _____</p> <p>3. Time spent developing well <u>N A</u> min.</p> <p>4. Depth of well (from top of well casing) <u>6 4 1</u> ft.</p> <p>5. Inside diameter of well <u>1 8 9</u> in.</p> <p>6. Volume of water in filter pack and well casing <u>1 0 0</u> gal.</p> <p>7. Volume of water removed from well <u>1 4 0</u> gal.</p> <p>8. Volume of water added (if any) <u>N A</u> gal.</p> <p>9. Source of water added _____</p> <p>1. Analysis performed on water added? <input type="checkbox"/> Yes <input type="checkbox"/> No (If yes, attach results)</p>	<p>11. Depth to Water (from top of well casing)</p> <p>a. <u>4 2 5 0</u> ft. <u>D R Y</u> ft.</p> <p>Date b. <u>1 0 / 1 7 / 9 8</u> <u>N A / /</u></p> <p>m m d d y y m m d d y y</p> <p>Time c. <u>N A</u>:__ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m. <u>N A</u>:__ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.</p> <p>12. Sediment in well bottom <u>N A</u> inches <u>N A</u> inches</p> <p>13. Water clarity Clear <input type="checkbox"/> 1 0 Clear <input type="checkbox"/> 2 0</p> <p>Turbid <input checked="" type="checkbox"/> 1 5 Turbid <input type="checkbox"/> 2 5</p> <p>(Describe) (Describe)</p> <p>Fill in if drilling fluids were used and well is at solid waste facility:</p> <p>14. Total suspended solids _____ mg/l _____ mg/l</p> <p>15. COD _____ mg/l _____ mg/l</p>
---	---

16. Additional comments on development:

Purged dry twice, then never recovered.

Well developed by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: <u>Jack Christman</u>	Signature: <u>Eivite Silvola Jensen</u>
Firm: <u>Flambeau Mining Company</u>	Print Initials: <u>E A S</u>
	Firm: <u>Foth & Van Dyke</u>

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Install	Local Grid Location of Well 41279.386 ft. N. 40473.017 ft. E.	Well Name MW-1014B
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. Long. or	Wis. Unique Well Number DNR Well Number <u>J N 8 2 7</u>
Type of Well Water Table Observation Well <input type="checkbox"/> 11 Piezometer <input checked="" type="checkbox"/> 12	St. Plane	Date Well Installed <u>0 9 / 1 7 / 9 8</u> m m d d y y
Distance Well Is From Waste/Source Boundary 0 ft.	Section Location of Waste/Source NW ¼ of SE ¼ of Sec. 9, T. 34 N, R. 6 <input type="checkbox"/> E. <input checked="" type="checkbox"/> W.	Well Installed By: (Person's Name and Firm) <u>Scott Shira</u> <u>Layne - Northwest</u>
Is Well A Point of Enforcement Std. Application? N/A <input type="checkbox"/> Yes <input type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	

- A. Protective pipe, top elevation 1 1 3 9 . 3 7 ft. MSL
- B. Well casing, top elevation 1 1 3 9 . 5 2 ft. MSL
- C. Land surface elevation 1 1 3 6 . 6 ft. MSL
- D. Surface seal, bottom 1 1 3 2 . 6 ft. MSL or 4 . 0 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

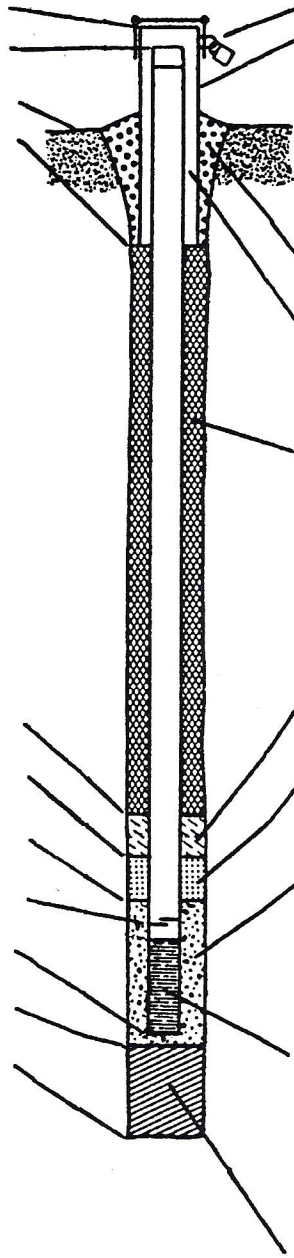
13. Sieve analysis attached? Yes No

14. Drilling method used: Rotary 5 0
 Hollow Stem Auger 4 1
 9" Percussion Other

15. Drilling fluid used Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis): _____



- 1. Cap and lock? Yes No
- 2. Protective cover pipe:
 - a. Inside diameter: 4.0 in.
 - b. Length: 7.0 ft.
 - c. Material: Steel 0 4
Other
 - d. Additional protection? Yes No
If yes, describe: _____
- 3. Surface seal: Bentonite 3 0
Concrete 0 1
Other
- 4. Material between well casing and protective pipe:
 - Bentonite 3 0
 - Annular space seal
 - Sand Other
- 5. Annular space seal:
 - a. Chipped Bentonite 3 3
 - b. _____ Lbs/gal mud weight Bentonite-sand slurry 3 5
 - c. _____ Lbs/gal mud weight Bentonite slurry 3 1
 - d. _____ % Bentonite Bentonite-cement grout 5 0
 - e. 27.1 Ft³ volume added for any of the above
 - f. How installed: Tremie 0 1
Tremie pumped 0 2
Gravity 0 8
- 6. Bentonite seal:
 - a. Bentonite granules 3 3
 - b. ¼ in. % in. ½ in. Bentonite pellets 3 2
 - c. Pure Gold ¾" Bentonite Chips Other
- 7. Fine sand material: Manufacturer, product name & mesh size
 a. Red Flint Filter 35-45
 b. Volume added 1.1 ft³
- 8. Filter pack material: Manufacturer, product name and mesh size
 a. Red Flint Filter #30
 b. Volume added 5.5 ft³
- 9. Well casing: Flush threaded PVC schedule 40 2 3
 Flush threaded PVC schedule 80 2 4
 Other
- 10. Screen material: PVC
 - a. Screen Type: Factory cut 1 1
Continuous slot 0 1
Other
 - b. Manufacturer Monoflex
 - c. Slot size: 0.0 1 0 in.
 - d. Slotted length: 1 0 0 ft.
- 11. Backfill material (below filter pack): None 1 4
Other

- E. Bentonite seal, top 1 1 3 2 . 6 ft. MSL or 0 0 4 . 0 ft.
- F. Fine sand, top 1 0 4 8 . 6 ft. MSL or 0 8 8 . 0 ft.
- G. Filter pack, top 1 0 4 6 . 6 ft. MSL or 0 9 0 . 0 ft.
- H. Screen joint, top 1 0 4 4 . 6 ft. MSL or 0 9 6 . 0 ft.
- I. Well bottom 1 0 3 4 . 6 ft. MSL or 1 0 2 . 0 ft.
- J. Filter pack, bottom 1 0 3 3 . 6 ft. MSL or 1 0 3 . 0 ft.
- K. Borehole, bottom 1 0 3 3 . 6 ft. MSL or 1 0 3 . 0 ft.
- L. Borehole, diameter 0 9 . 0 in.
- M. O.D. well casing 0 2 . 3 8 in.
- N. I.D. well casing 0 1 . 8 9 in.

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

Signature Erik Silvola Inc Firm Foth & Van Dyke

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stat., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5000 for each day of violation. In accordance with ch. 147, Wis. Stat., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other Mining

Facility/Project Name Flambeau Mining Company - Pit Backfill	County Name Rusk	Well Name MW-1014B
Facility License, Permit or Monitoring Number _____	County Code <u>5 5</u>	Wis. Unique Well Number _____
		DNR Well Number _____

1. Can this well be purged dry? Yes No

2. Well development method

surged with bailer and bailed 4 1

surged with bailer and pumped 6 1

surged with block and bailed 4 2

surged with block and pumped 6 2

surged with block, bailed and pumped 7 0

compressed air 2 0

bailed only 1 0

pumped only 5 1

pumped slowly 5 0

Other _____

3. Time spent developing well N A min.

4. Depth of well (from top of well casing) 1 0 4.9 ft.

5. Inside diameter of well 1.8 9 in.

6. Volume of water in filter pack and well casing 1 7.8 gal.

7. Volume of water removed from well 7 0 7.5 gal.

8. Volume of water added (if any) _____ gal.

9. Source of water added _____

10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>3 5.0 0 0</u> ft.	<u>1 0 0.9 0 0</u> ft.
Date	b. <u>1 0 / 0 7 / 9 8</u> m m d d y y	<u>0 2 / 2 3 / 9 9</u> m m d d y y
Time	c. <u>N A</u> :__ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<u>N A</u> :__ <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	<u>N A</u> inches	<u>N A</u> inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe)	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe)
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	_____ mg/l	_____ mg/l
15. COD	_____ mg/l	_____ mg/l

16. Additional comments on development:

Well purged and allowed to recover 26 times.

Well developed by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: <u>Jack Christman</u>	Signature: <u>Eivite Silvola Jensen</u>
Firm: <u>Flambeau Mining Company</u>	Print Initials: <u>E A S</u>
	Firm: <u>Foth & Van Dyke</u>

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Install	Local Grid Location of Well 41268.387 ft. N. 40470.703 ft. E.	Well Name MW-1014C
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. Long. or	Wis. Unique Well Number DNR Well Number <u>J N 8 2 8</u>
Type of Well Water Table Observation Well <input type="checkbox"/> 11 Piezometer <input checked="" type="checkbox"/> 12	St. Plane	Date Well Installed <u>0 9 / 2 2 / 9 8</u> m m d d y y
Distance Well Is From Waste/Source Boundary 0 ft.	Section Location of Waste/Source NW 1/4 of SE 1/4 of Sec. 9, T. 34 N, R. 6 <input type="checkbox"/> E. <input checked="" type="checkbox"/> W.	Well Installed By: (Person's Name and Firm) <u>Scott Shira</u> <u>Layne - Northwest</u>
Is Well A Point of Enforcement Std. Application? N/A <input type="checkbox"/> Yes <input type="checkbox"/> No	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	

- A. Protective pipe, top elevation 1 1 3 9 . 2 0 ft. MSL
 B. Well casing, top elevation 1 1 3 9 . 4 0 ft. MSL
 C. Land surface elevation 1 1 3 6 . 8 ft. MSL
 D. Surface seal, bottom 1 1 3 2 . 8 ft. MSL or 4 . 0 ft.

12. USCS classification of soil near screen:
 GP GM GC GW SW SP
 SM SC ML MH CL CH
 Bedrock

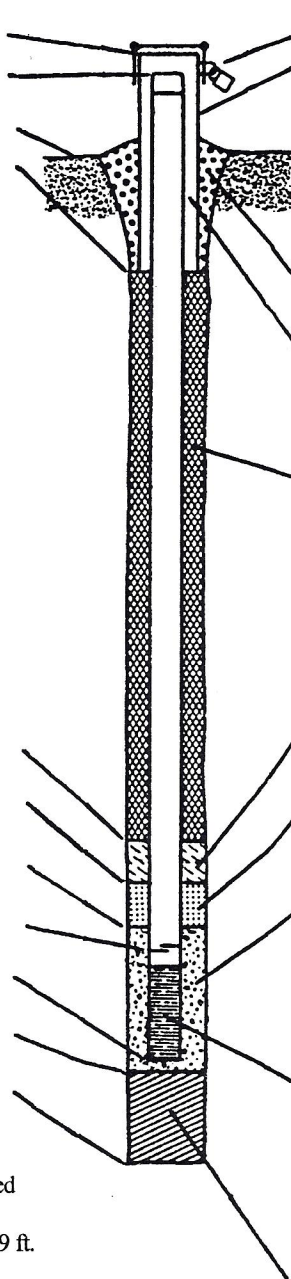
13. Sieve analysis attached? Yes No

14. Drilling method used: Rotary 5 0
 Hollow Stem Auger 4 1
 9" Percussion Other

15. Drilling fluid used Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No
 Describe _____

17. Source of water (attach analysis):



1. Cap and lock? Yes No
2. Protective cover pipe:
 a. Inside diameter: 4.0 in.
 b. Length: 7.0 ft.
 c. Material: Steel 0 4
 Other
- d. Additional protection? Yes No
 If yes, describe: _____
3. Surface seal: Bentonite 3 0
 Concrete 0 1
 Other
4. Material between well casing and protective pipe:
 Bentonite 3 0
 Annular space seal
 Sand
5. Annular space seal:
 a. Chipped Bentonite 3 3
 b. _____ Lbs/gal mud weight Bentonite-sand slurry 3 5
 c. _____ Lbs/gal mud weight Bentonite slurry 3 1
 d. _____ % Bentonite Bentonite-cement grout 5 0
 e. 34.8 Ft³ volume added for any of the above
 f. How installed: Tremie 0 1
 Tremie pumped 0 2
 Gravity 0 8
6. Bentonite seal:
 a. Bentonite granules 3 3
 b. 1/4 in. 3/8 in. 1/2 in. Bentonite pellets 3 2
 c. Pure Gold Chips Other
7. Fine sand material: Manufacturer, product name & mesh size
 a. Red Flint Filter 35-40 (2 bags)
 b. Volume added 1.1 ft³
8. Filter pack material: Manufacturer, product name and mesh size
 a. Red Flint Filter #30 (12.5 bags)
 b. Volume added 6.7 ft³
9. Well casing: Flush threaded PVC schedule 40 2 3
 Flush threaded PVC schedule 80 2 4
 Other
10. Screen material: PVC
 a. Screen Type: Factory cut 1 1
 Continuous slot 0 1
 Other
 b. Manufacturer Monoflex
 c. Slot size: 0.0 1 0 in.
 d. Slotted length: 1 0 . 0 ft.
11. Backfill material (below filter pack): None 1 4
 Other

- E. Bentonite seal, top 1 1 3 2 . 8 ft. MSL or 0 0 4 . 0 ft.
 F. Fine sand, top 0 9 9 6 . 8 ft. MSL or 1 4 0 . 0 ft.
 G. Filter pack, top 0 9 9 4 . 8 ft. MSL or 1 4 2 . 0 ft.
 H. Screen joint, top 0 9 9 2 . 8 ft. MSL or 1 4 4 . 0 ft.
 I. Well bottom 0 9 8 2 . 8 ft. MSL or 1 5 4 . 0 ft.
 J. Filter pack, bottom 0 9 8 2 . 3 ft. MSL or 1 5 4 . 5 ft.
 K. Borehole, bottom 0 9 8 2 . 3 ft. MSL or 1 5 4 . 5 ft.
 L. Borehole, diameter 0 9 . 0 in. Note: Borehole caved
 M. O.D. well casing 0 2 . 3 8 in. between 35-ft. and 59 ft.
 N. I.D. well casing 0 1 . 8 9 in. below ground surface.

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

Signature Erik Selvola RMC

Firm Foth & Van Dyke

Please complete both sides of this form and return to the appropriate DNR off listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stat., and ch. NR 141, Wis. Ad. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5000 for each day of violation. In accordance with ch. 147, Wis. Stat., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other Mining

Facility/Project Name Flambeau Mining Company - Pit Backfill Well Installation	County Name Rusk	Well Name MW-1014C	
Facility License, Permit or Monitoring Number _____	County Code <u>5 5</u>	Wis. Unique Well Number _____	DNR Well Number _____

		Before Development	After Development
1. Can this well be purged dry?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
2. Well development method			
surged with bailer and bailed	<input type="checkbox"/> 4 1		
surged with bailer and pumped	<input type="checkbox"/> 6 1		
surged with block and bailed	<input type="checkbox"/> 4 2		
surged with block and pumped	<input checked="" type="checkbox"/> 6 2		
surged with block, bailed and pumped	<input type="checkbox"/> 7 0		
compressed air	<input type="checkbox"/> 2 0		
bailed only	<input type="checkbox"/> 1 0		
pumped only	<input type="checkbox"/> 5 1		
pumped slowly	<input type="checkbox"/> 5 0		
Other _____	<input type="checkbox"/> _____		
3. Time spent developing well	<u>N A</u> min.		
4. Depth of well (from top of well casing)	<u>1 5 6 . 6</u> ft.		
5. Inside diameter of well	<u>1 . 8 9</u> in.		
6. Volume of water in filter pack and well casing	<u>2 5 . 8</u> gal.		
7. Volume of water removed from well	<u>3 7 5 . 0</u> gal.		
8. Volume of water added (if any)	<u>N A</u> gal.		
9. Source of water added _____			
1. Analysis performed on water added? (If yes, attach results)	<input type="checkbox"/> Yes <input type="checkbox"/> No		
11. Depth to Water (from top of well casing)		a. <u>3 7 . 8 8</u> ft.	<u>3 7 . 5 0</u> ft.
Date		b. <u>1 0 / 1 4 / 9 8</u> m m d d y y	<u>0 2 / 0 5 / 9 9</u> m m d d y y
Time		<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom		c. <u>N A</u> : <input type="checkbox"/> p.m.	<u>N A</u> : <input type="checkbox"/> p.m.
13. Water clarity		Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe)	Clear <input type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe)
Fill in if drilling fluids were used and well is at solid waste facility:			
14. Total suspended solids		_____ mg/l	_____ mg/l
15. COD		_____ mg/l	_____ mg/l

16. Additional comments on development:

Well purged and allowed to recover 7 times, see attached.

Well developed by: Person's Name and Firm	I hereby certify that the above information is true and correct to the best of my knowledge.
Name: <u>Jack Christman</u>	Signature: <u>Erik Silvola Jensen</u>
Firm: <u>Flambeau Mining Company</u>	Print Initials: <u>E A S</u>
	Firm: <u>Foth & Van Dyke</u>

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

Attachment 2

Soil Boring Log Information for Backfill Wells

Route to:

- Solid Waste
- Emergency Response
- Wastewater
- Haz. Waste
- Underground Tanks
- Water Resources
- Other

SOIL BORING LOG INFORMATION

Form 4400-122

7-91

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Installation			License/Permit/Monitoring Number			Boring Number MW - 1013		
Boring Drilled by (Firm name and name of crew chief) Layne - Northwest Scott Shira			Date Started MM/DD/YY 09/14/98		Date Completed MM/DD/YY 09/14/98		Drilling Method 9" Percussion	
DNR Facility Well No.		WI Unique Well No.	Common Well Name		Final Static Water Level		Surface Elevation	Borehole Diameter
		JN 821					1118.4	9"
Boring Location State Plane NW 1/4 of SE 1/4 of Section 9, T 34 N, R 6 E				Local Grid Location (if applicable) 40138.375 N 39200.682 E				
County Rusk			DNR County Code 55			Civil Town/City/or Village Ladysmith		

SAMPLE		Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	U S C S	Graph Log	Well Diag	PID/ FID	Soil Properties					RQD/ Comm
No.	Rec (in)								Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	
			5	0-2: Blind percussion - dual tube till and sandstone; see MW-1013C										
			10											
			15											
			20											
				E.O.B. 23'										

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

Signature Erik Silvola/boc Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

Route to:

- Solid Waste
- Emergency Response
- Wastewater
- Haz. Waste
- Underground Tanks
- Water Resources
- Other

SOIL BORING LOG INFORMATION

Form 4400-122

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Installation			License/Permit/Monitoring Number			Boring Number MW - 1013A		
Boring Drilled by (Firm name and name of crew chief) Layne - Northwest Scott Shira			Date Started MM/DD/YY 09/14/98		Date Completed MM/DD/YY 09/14/98		Drilling Method 9" Percussion	
DNR Facility Well No.	WI Unique Well No. JN 822	Common Well Name	Final Static Water Level		Surface Elevation 1118.3		Borehole Diameter 9"	
Boring Location State Plane NW 1/4 of SE 1/4 of Section 9, T 35 N, R 6 E				Local Grid Location (if applicable) 40141.143 N 39195.519 E				
County Rusk			DNR County Code 55			Civil Town/City/or Village Ladysmith		

SAMPLE		Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	U S C S	Graph Log	Well Diag	PID/ FID	Soil Properties					RQD/ Comm
No.	Rec (in)								Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	
			5	0-45: Blind drill see MW-1013C										
			10	0-23: Brown till, last several feet, sandstone mixed with till										
			15											
			20											
			25	25-30: Saprolite with minor Type I Waste Rock last 6"										
			30	30-45: Type I										
			35											
			40											
			45											
			50	E.O.B. 45'										

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

Signature <i>Erik Selvola</i>	Firm Foth & Van Dyke
----------------------------------	-------------------------

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Installation			License/Permit/Monitoring Number			Boring Number MW - 1013B		
Boring Drilled by (Firm name and name of crew chief) Layne - Northwest Scott Shira			Date Started MM/DD/YY 09/15/98		Date Completed MM/DD/YY 09/15/98		Drilling Method 9" Percussion	
DNR Facility Well No.	WI Unique Well No. JN 823	Common Well Name	Final Static Water Level		Surface Elevation 1118.3		Borehole Diameter 9"	
Boring Location State Plane NW 1/4 of SE 1/4 of Section 9, T 34 N, R 6 W				Local Grid Location (if applicable) 40144.24 N 39191.056 E				
County Rusk			DNR County Code 55			Civil Town/City/or Village Ladysmith		

SAMPLE			Depth in Feet	Soil/Rock description and geologic origin for each major unit	U S C S	Graph Log	Well Diag	PID/ FID	Soil Properties					RQD/ Comm
No.	Rec (in)	Blow Counts							Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	
			0-85: Blind drill, see MW-1013C											
			0-23: Brown till with sandstone in last 3-4'											
			23-30: Red-brown saprolite											
			30-45: Red to red-brown Type I											

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

Signature Erik Silvola & Co. Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
 Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

SAMPLE		Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	U S C S	Graph Log	Well Diag	PID/ FID	Soil Properties					RQD/ Comm
No.	Rec (in)								Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	
			45	45-85: Red to red-brown Type II; noticeable color changes - red-brown, grey-brown, lt to dk grey appear to be related to placement of Class A, B, and C material										
			50											
			55											
			60											
			65											
			70											
			75											
			80											
			85											
			E.O.B. 85'											

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Installation			License/Permit/Monitoring Number			Boring Number MW - 1014B		
Boring Drilled by (Firm name and name of crew chief) Layne - Northwest Scott Shira			Date Started MM/DD/YY 09/17/98		Date Completed MM/DD/YY 09/17/98		Drilling Method 9" Percussion	
DNR Facility Well No.	WI Unique Well No. JN 827	Common Well Name	Final Static Water Level		Surface Elevation 1136.6		Borehole Diameter 9"	
Boring Location State Plane NW 1/4 of SE 1/4 of Section 9, T 34 N, R 6 W			Local Grid Location (if applicable) 41279.386 N 40473.017 E					
County Rusk			DNR County Code 55		Civil Town/City/or Village Ladysmith			

SAMPLE		Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	U S C S	Graph Log	Well Diag	PID/ FID	Soil Properties					RQD/ Comm
No.	Rec (in)								Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	
			-- -- 5	0-103: Blind drill 0-34: Till, sandstone in last few feet										
			-- -- 10											
			-- -- 15											
			-- -- 20											
			-- -- 25											
			-- -- 30											
			-- -- 35	34-41: Red-brown silty clay (saprolite)										
			-- -- 40											
			-- -- 45	41-69: Red-brown to brown silty, sandy clay to clayey sand with cobbles (T-I)										
			-- -- 50											
			-- -- 55											
			-- -- 60											
			-- -- 65											
			-- -- 70	69-103: Red-brown silty sandy clay with rocks, Type II										
			-- -- 75											

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

Signature <i>Erik Selvola smc</i>	Firm Foth & Van Dyke
--------------------------------------	-------------------------

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

- Route to:
- Solid Waste
 - Emergency Response
 - Wastewater
 - Haz. Waste
 - Underground Tanks
 - Water Resources
 - Other

Facility/Project Name Flambeau Mining Company - Pit Backfill - Well Installation				License/Permit/Monitoring Number			Boring Number MW - 1014C			
Boring Drilled by (Firm name and name of crew chief) Layne - Northwest Scott Shira				Date Started MM/DD/YY 09/18 /98		Date Completed MM/DD/YY 09/22/98		Drilling Method 9" Percussion		
DNR Facility Well No.		WI Unique Well No. JN 1014C	Common Well Name		Final Static Water Level		Surface Elevation 1136.8' MSL		Borehole Diameter 9"	
Boring Location State Plane NW 1/4 of SE 1/4 of Section 9, T 34 N, R 6 W				N	E S/C/N		Lat Long	Local Grid Location (if applicable) 41268.387 N 40470.703 E		
County Rusk				DNR County Code 55			Civil Town/City/or Village Ladysmith			

SAMPLE		Blow Counts	Depth in Feet	Soil/Rock description and geologic origin for each major unit	U S C S	Graph Log	Well Diag	PID/ FID	Soil Properties					RQD/ Comm
No.	Rec (in)								Std Pntr	Mst Cont	Liq Lim	Plas Lim	P 200	
			--	0-155: Blind drill										
			--	0-34: Till, sandstone last 4'										
			5											
			10											
			15											
			20											
			25											
			30											
			35	34-41: Red saprolite										
			40											
			45	41-69: Type I, red to red-brown										

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

Signature Erik Selvola Inc Firm Foth & Van Dyke

This form is authorized by Chapters 114.147 and 162, Wis. Stats. Completion of this report is mandatory.
Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 114.06, Wis. Stats.

Attachment 3

Well/Drillhole/Borehole Abandonment

All abandonment work shall be performed in accordance with the provisions of Chapters NR 811, NR 812 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION		(2) FACILITY NAME	
Well/Drillhole/Borehole Location	County <u>Rusk</u>	Original Well Owner (If Known) Flambeau Mining Company	
<u>NW 1/4 of SE 1/4 of Sec. 9 ; T. 34 N R. 6</u>	<input type="checkbox"/> E <input checked="" type="checkbox"/> W	Present Well Owner Flambeau Mining Company	
(If applicable) Gov't Lot _____ Grid Number _____		Street or Route N4100 Highway 27	
Grid Location _____ ft. <input type="checkbox"/> N. <input type="checkbox"/> S., _____ ft. <input type="checkbox"/> E. <input type="checkbox"/> W.		City, State, Zip Code Ladysmith, WI 54848	
Civil Town Name Ladysmith		Facility Well No. and/or Name (If applicable) B-1014C	WI Unique Well No. <u>N A</u>
Street Address of Well N4100 Highway 27		Reason For Abandonment Casing Refusal on Boulder	
City, Village Ladysmith, WI 54848		Date of Abandonment 9/18/98	

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) <u>9/18/98</u>	<input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input type="checkbox"/> Drillhole <input checked="" type="checkbox"/> Borehole	Construction Report Available? <input type="checkbox"/> Yes <input type="checkbox"/> No <u>N/A</u>	(4) Depth to Water (Feet) <u>N/A</u>
			Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No If No, Explain _____ Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <u>N/A</u> Did Sealing Material Rise to Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <u>N/A</u> Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____	Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		(5) Required Method of Placing Sealing Material <input checked="" type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input type="checkbox"/> Dump Bailer <input type="checkbox"/> Other (Explain)
Total Well Depth (ft.) <u>24'</u> Casing Diameter (ins.) <u>N/A</u> (From ground surface) Casing Depth (ft.) <u>N/A</u>	Lower Drillhole Diameter (in.) <u>9"</u>		(6) Sealing Materials For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Bentonite Pellets <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Granular Bentonite <input checked="" type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Bentonite - Cement Grout <input type="checkbox"/> Chipped Bentonite
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? <u>N/A</u> Feet			

(7) Material Used To Fill Well/Drillhole	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Pure Gold 3/8" Chipped Bentonite	Surface	24'	300 lbs.	N/A

(8) Comments: _____

(9) Name of Person or Firm Doing Sealing Work
Erik Silvola, Foth & Van Dyke

Signature of Person Doing Work <u>Erik Silvola jern</u>	Date Signed <u>6-11-99</u>
Street or Route 2737 S. Ridge Road	Telephone Number (920) 497-2500
City, State, Zip Code Green Bay, WI 54304	

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	<input type="checkbox"/> Complying Work <input type="checkbox"/> Noncomplying Work

REASONS FOR WELL/DRILLHOLE/BOREHOLE ABANDONMENT

Wis. Adm. Code (NR 111, NR 112, & NR 141) requires well owners to permanently abandon unused wells/drillholes/boreholes on their property. The reasons for this requirement are:

- To prevent contamination from entering the well/drillhole/borehole at the surface or through corroded well casings and moving downward to an aquifer used by other wells, and
- To prevent vertical movement of water between different geologic formations of differing water quality.

Most licensed well drillers and pump installers have the equipment, knowledge and experience needed to permanently abandon wells/drillholes/boreholes. We recommend that these licensed contractors be hired to do this work.

PROCEDURE

1. Remove any pump, pump piping, debris or other obstacles that could interfere with the sealing operation. In most situations the well casing should be left in place. When the casing is removed it should be pulled during the abandonment process so the drillhole does not collapse.
2. The sealing material must be placed with a conductor (tremie) pipe either by pumping or by gravity, (except when approved chipped bentonite is used according to written department instructions and restrictions).
3. The bottom end of the conductor pipe must initially reach the bottom of the well and must be kept submerged in the sealing material as it is placed.
4. Unconsolidated formation wells should be sealed with the materials listed in item (6) on the form. When clay or sodium bentonite slurry is used to fill wells, the top 20 feet must be sealed with neat cement grout, concrete grout, concrete, or bentonite chips. Bedrock formation wells should be filled with neat cement grout, concrete grout, concrete, or bentonite chips. Monitoring wells must be filled with the materials specified by NR 141, Wis. Adm. Code.
5. Fill the entire well column from the bottom to the top with the required sealing material.
6. When using concrete or cement grout, any standing water in the hole will be forced out by the concrete or cement grout (it is more dense) resulting in an entire column of cement to seal the well. The sealing material must flow at the surface with the same consistency as it is being pumped in.
7. The casing may be cut off several feet below the ground surface.
8. To abandon flowing wells, the flow must be stopped or greatly reduced. This can be accomplished by extending the well casing to an elevation higher than the artesian head, or inserting a seal or packer in the casing. Once the flow has been stopped or reduced, the well can be abandoned the same as other wells.
9. For a municipal well, information regarding drillhole diameter and depths and geologic formations should be submitted on a separate sheet.
10. For use of alternative methods and materials, especially for deep, multi-formation wells contact DNR.

TEMPORARY ABANDONMENT

- A well may be temporarily abandoned if it is planned to place the well back in service within a time specified by administrative rule.
- Temporary abandonment is accomplished by threading or welding a watertight cover to the casing or by filling the well with a clean clay slurry and then placing a cover over the well.
- If the well is not placed back into service, it should be permanently abandoned unless a written extension is granted by DNR.

REPORT TO DNR

The Well/Drillhole/Borehole Abandonment Form 3300-5W, on the front, must be completed by the owner (or agent) and submitted to the appropriate DNR district office or delegated county office within 30 days.

This form is authorized by chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10.00 nor more than \$5,000.00 for each violation. Fined not less than \$10.00 or more than \$100.00 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss. 144.99 and 162.06, Wis. Stats.