

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

**Kennecott
Minerals**

December 12, 1995

Mr. William Rock
Private Water Supply Section Chief
WI Department of Natural Resources
PO Box 7921
Madison, WI 53707

RE: Flambeau Mining Company
Groundwater Intercept Wells

Dear Mr. Rock:

Flambeau Mining Company (Flambeau) would appreciate your immediate review of our proposal to construct three groundwater intercept wells to enhance the stability of the pit's north wall. If possible, we would like to receive verbal approval so that we may initiate construction within the week.

To familiarize you with the Flambeau Project, following is a short history of groundwater production at the mine site. During January 1991 Flambeau received its eleven permits to operate an open pit copper mine in Rusk County, Wisconsin. One of the eleven permits is the Groundwater Withdrawal Permit which approved the operation of both the high capacity groundwater control system (mine dewatering) and the low capacity, facility supply well. Flambeau initiated operations during June 1993. The mine dewatering operation currently removes groundwater from the open pit at an approximate rate of 200 gpm. Flambeau's facility supply well produces groundwater at a rate of approximately five gpm.

The north wall stability has been addressed by several engineering methods including slope redesign, improved drainage control, horizontal drains, rock bolting, buttress walls, and removal of upgradient standing water. Due to continued instability, the determination has been made that it will be necessary to utilize dewatering wells to further improve the stability. The intercept wells would be located adjacent to the north wall, removing groundwater prior to seepage through the north wall into the open pit. The expected rate of removal would be approximately five gpm per well for a total of approximately 15 gpm. This same 15 gpm would be collected in the open pit regardless of whether intercept wells are constructed or not. Therefore, the potential for increase in groundwater withdrawal associated with the intercept wells is minimal. The intercept wells would be utilized throughout the operation of the open pit into 1997.

Mr. William Rock
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December 12, 1995

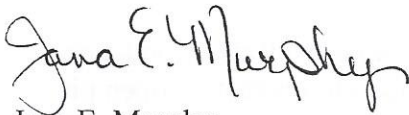
Denny Drilling, Duluth, MN will be installing the wells. Denny Drilling is a qualified and experienced well driller who is familiar with Wisconsin well drilling requirements. Denny will be constructing the wells under the inspection of Ray Yost, Geological Engineer, who has been retained by Flambeau to evaluate and engineer the pit wall design.

Following are specifications regarding the construction of the intercept wells:

Drilling Method:	Air rotary; pipe driven through till followed by drilling through sandstone.
Depth:	Approximately 40 feet.
Casing:	Schedule 40
Sealing:	Bentonite pellets.
Screen:	Slotted stainless steel.
Sand Pack:	#45-55 red flint silica sand.
Well Head Seal:	Dependent upon well production rate; in accordance with NR 812.30.
Pump Type:	Grundfoss or Aerometer ½ HP/six amp.

We appreciate your cooperation in expediting the review and approval of our proposal. If you have any questions or comments, please contact me at 715-532-6690 Ext. 717.

Sincerely,



Jana E. Murphy
Supervisor of Environmental Affairs

cc: Tom Myatt, Flambeau
John Barnes, Flambeau
Ray Yost, Flambeau
Larry Lynch, WDNR
Ken Markart, WDNR
Bernice Dukerschein, Rusk Co.
Al Christianson, City of Ladysmith
Melvin Spencer, Rusk Co. Zoning
Tom Riegel, Town of Grant
Jim Hutchison, Foth & Van Dyke

Flambeau Mining Company
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**Kennecott
Minerals**

December 18, 1995

Jim Scharch
Private Water Supply
Wisconsin Department of Natural Resources
PO Box 7921
Madison, WI 53707

RE: Flambeau Mining Company
Groundwater Intercept Wells Construction Detail

Dear Mr. Scharch:

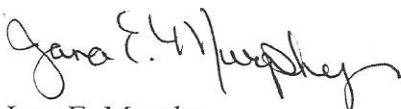
In a letter to the Department dated December 12, Flambeau Mining Company (Flambeau) requested the review and approval of the construction of three groundwater interception wells to be placed adjacent to the mine pit north wall.

As per your request, I am providing additional detail of the proposed well construction. The well head assembly will be the standard Wisconsin well head in accordance with NR 812.

In the interim, the intercept groundwater will be pumped into the open pit and treated through the on-site wastewater treatment plant. Flambeau's WPDES permit is currently undergoing renewal. Within the renewed WPDES permit, the intercept groundwater may be directed to either the Flambeau River, a wetland, or the wastewater treatment plant.

I appreciate your immediate attention to our request for review and approval of this request. Please call 715-532-6690 Ext. 717 with questions or comments.

Sincerely,



Jana E. Murphy
Supervisor of Environmental Affairs

Attachments

Mr. Jim Scharch
Page 2
December 18, 1995

cc: Tom Myatt, Flambeau
John Barnes, Flambeau
Ray Yost, Flambeau
Larry Lynch, WDNR
Ken Markart, WDNR
Bernice Dukerschein, Rusk Co.
Al Christianson, City of Ladysmith
Melvin Spencer, Rusk Co. Zoning
Tom Riegel, Town of Grant
Jim Hutchison, Foth & Van Dyke

PROPOSED WELL CONSTRUCTION GRAVEL-PACK SYSTEM

THREE (3) WELLS ARE ARE PLANNED FOR DEVELOP-
MENT IN LOOSELY-CEMENTED SANDSTONE AQUIFER
30' TO 40' DEEP TO CHECK FOR WATER FLOW
ON NORTH WALL -

BORE HOLE DIAMETER - 7.875"

DIAMETER OF CASING - 4"

THICKNESS OF CASING - 0.250"

SCREEN TYPE - STAINLESS STEEL

SCREEN SIZE - 5" TELESCOPIC

SCREEN TRENCH TO BOTTOM OF CASING

FILTER PACK - RED FLINT

GRAVEL PACK WILL SURROUND THE ENTIRE

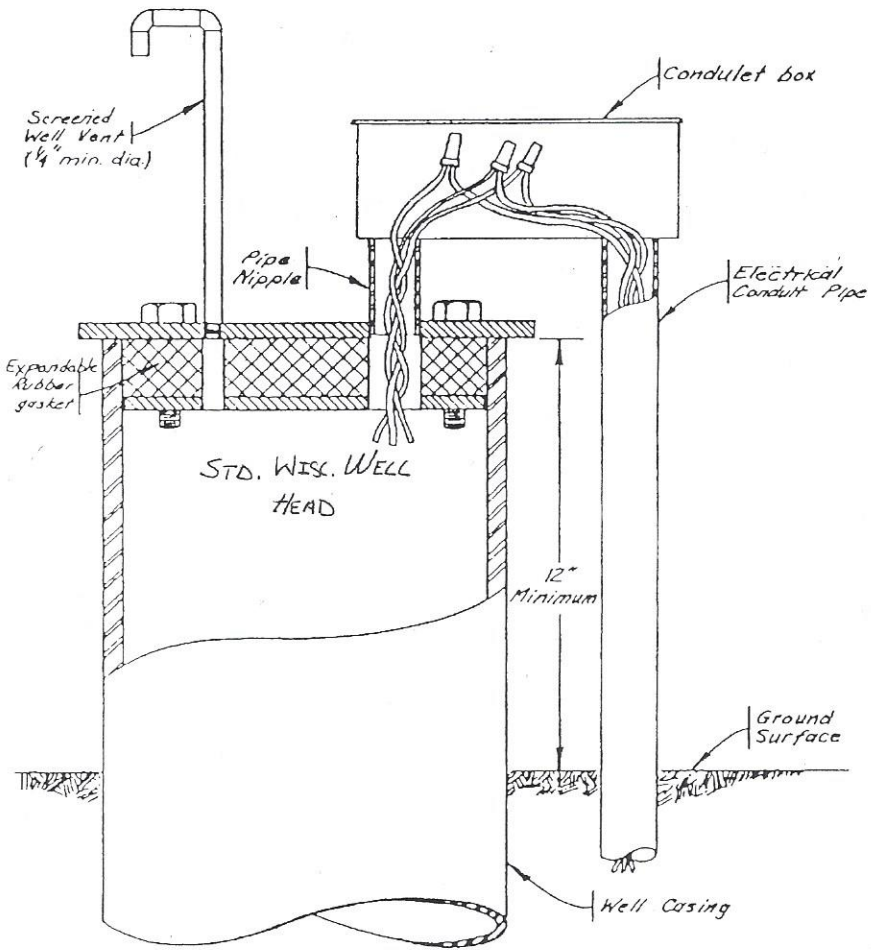
SCREEN AND COIL EXTENDS AT LEAST 2 FEET

ABOVE TOP OF SCREEN.

ANNULAR SPACE & COIL - $\frac{3}{8}$ " HOLE PLUG

$\frac{1}{2}$ HP WATER PUMP/WELL

DATE: 12/13/95	COMPANY: FLAM BEAR	PROJECT: WATER TOWER
BY: JDP	PROPOSED WELL CONSTRUCTION	CHARGE NO:
DIST:	GRAVEL-FACE METHOD	SHEET 1 OF 1



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

**Kennecott
Minerals**

January 18, 1996

Mr. William Rock
Department of Natural Resources
101 S. Webster St., GEF II
PO Box 7921
Madison, WI 53707

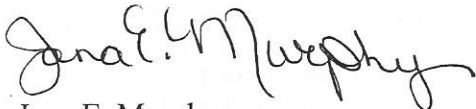
RE: Intercept Well Construction Reports

Dear Mr. Rock:

Flambeau Mining Company (Flambeau) is submitting the Well Construction Reports for three low capacity dewatering wells constructed to intercept shallow groundwater in the area of the north pit wall for the purpose of stabilizing the wall. In a letter dated December 19, 1995, you provided conditional approval to Flambeau for the construction of the dewatering wells.

If you have any questions regarding this submittal, please contact me at 715-532-6690 Ext. 717.

Sincerely,



Jana E. Murphy
Supervisor of Environmental Affairs

Enclosures

cc: Tom Myatt, Flambeau
Ray Yost, Geological Engineer
Denny Koepp, Denny's Drilling
Larry Lynch, WDNR
Ken Markart, WDNR
Parke Ruesh, WDNR
Bernice Dukerschein, Rusk Co.
Al Christianson, City of Ladysmith
Tom Riegel, Town of Grant
Melvin Spencer, Rusk Co. Zoning
Jim Hutchison, Foth & Van Dyke

Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER **IW-2 KT 002**

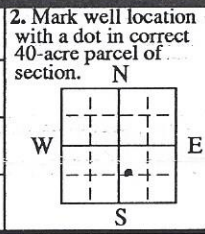
State of Wisconsin
 Private Water Supply - WS/2
 Department of Natural Resources
 Box 7921
 Madison, WI 53707 (Please type or print
 using a black pen.)

Property Owner **Flambeau Mining Co.** Telephone Number **(715) 532-6690**

Mailing Address **N4100 Hwy 27**
 City **Ladysmith** State **WI** Zip Code **54848**

County of Well Location **Dodge** Co. Well Permit No. **W** Well Completion Date (mm-dd-yy) **1-2-24-95**

Well Constructor (Business Name) **Denny's Drilling Co.** License # _____
 Address **5211 LaVague Jct. Rd.**
 City **Duluth** State **MN** Zip Code **55811**



1. Well Location Please use decimals instead of fractions.
 Town City Village Fire # (If avail.) _____
 of **Ladysmith**
 Grid or Street Address or Road Name and Number (If avail.)
N4050556 E39000.24
 Subdivision Name _____ Lot # _____ Block # _____

Gov't Lot # _____ or NW 1/4 of SE 1/4 of Section **9**, T **34** N; R **6** E W

3. Well Type New
 Replacement Reconstruction

of previous unique well # _____ constructed in 19 _____
 Reason for new, replaced or reconstructed well? _____

4. Well serves _____ # of homes and or **Dewater Open Pit Wall** High Capacity: Well? Yes No
 (Ex: barn, restaurant, church, school, industry, etc.) *Property? Yes No

5. Well located on highest point of property, consistent with the general layout and surroundings? Yes No If no, explain on back side.
- | | | |
|---|---|--|
| Well located in floodplain? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | 9. Downspout/Yard Hydrant _____ | 17. Wastewater Sump _____ |
| Distance in Feet From Well To Nearest: | 10. Privy _____ | 18. Paved Animal Barn Pen _____ |
| 1. Landfill _____ | 11. Foundation Drain to Clearwater _____ | 19. Animal Yard or Shelter _____ |
| 2. Building Overhang _____ | 12. Foundation Drain to Sewer _____ | 20. Silo - Type _____ |
| 3. Septic or Holding Tank (circle one) _____ | 13. Building Drain _____ | 21. Barn Gutter _____ |
| 4. Sewage Absorption Unit _____ | <input type="checkbox"/> Cast Iron or Plastic <input type="checkbox"/> Other _____ | 22. Manure Pipe <input type="checkbox"/> Gravity <input type="checkbox"/> Pressure _____ |
| 5. Nonconforming Pit _____ | 14. Building Sewer <input type="checkbox"/> Gravity <input type="checkbox"/> Pressure _____ | <input type="checkbox"/> Cast Iron or Plastic <input type="checkbox"/> Other _____ |
| 6. Buried Home Heating Oil Tank _____ | <input type="checkbox"/> Cast Iron or Plastic <input type="checkbox"/> Other _____ | 23. Other Manure Storage _____ |
| 7. Buried Petroleum Tank _____ | 15. Collector or Street Sewer _____ | Other NR 112 Waste Source _____ |
| 8. Shoreline/Swimming Pool _____ | 16. Clearwater Sump _____ | 24. _____ |

6. Drillhole Dimensions

Dia. (in.)	From (ft.)	To (ft.)
8	surface	36.9

Method of constructing upper enlarged drillhole only.

1. Rotary - Mud Circulation
 2. Rotary - Air
 3. Rotary - Foam
 4. Reverse Rotary
 5. Cable-tool Bit _____ in. dia.
 6. Temp. Outer Casing _____ in. dia.
 Removed? Yes No
 If no, explain _____
 7. Other _____

9. Geology

Type, Caving/Noncaving, Color, Hardness, Etc.	From (ft.)	To (ft.)
Till	Surface	17
Sand & Till	17	19
Sand Stone	19	33
Clay	33	36.9

7. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification	From (ft.)	To (ft.)
4"	T&C Schedule 40	surface	27
5"	10' Screen THD Plate Bottom		

10. Static Water Level _____ ft. above ground surface
 _____ ft. below ground surface **24.5**

11. Pump Test
 Pumping Level **30'** ft. below surface
 Pumping at **8.5** GPM for **3** hours

12. Well Is:
 Above Grade
 Below Grade
 Developed? Yes No
 Disinfected? Yes No
 Capped? Yes No

8. Grout or Other Sealing Material

Method	Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
3/8" Hole Plug		surface	19	11

13. Did you permanently seal all unused, noncomplying, or unsafe wells?
 Yes No If no, explain _____

14. Signature of Point Driver or Licensed Supervisory Driller _____ Date Signed _____

Signature of Drill Rig Operator (Mandatory unless same as above) _____ Date Signed **Jan 17, 1996**

Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER IW-3 KT 003

State of Wisconsin
 Private Water Supply - WS/2
 Department of Natural Resources
 Box 7921
 Madison, WI 53707 (Please type or print
 using a black pen.)

Property Owner **Flambeau Mining Co.** Telephone Number **(715) 532-6690**

Mailing Address **N4100 Hwy 27**

City **Ladysmith** State **WI** Zip Code **54848**

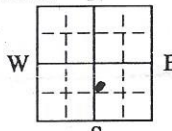
County of Well Location **Rusk** Co. Well Permit No. **W** Well Completion Date (mm-dd-yy) **1-2-2-9-93**

Well Constructor (Business Name) **Denny's Drilling Co.** License #

Address **5211 LaVague Jct. Rd.**

City **Duluth** State **MN** Zip Code **55811**

2. Mark well location with a dot in correct 40-acre parcel of section. **N**



1. Well Location Please use decimals instead of fractions.

Town City Village Fire # (If avail.)
of Ladysmith

Grid or Street Address or Road Name and Number (If avail.)
N40551.86 E39047.86

Subdivision Name Lot # Block #

Gov't Lot # or NW 1/4 of SE 1/4 of

Section **9**, T **34** N; R **6** E W

3. Well Type New

Replacement Reconstruction

of previous unique well # _____ constructed in 19 _____
 Reason for new, replaced or reconstructed well?

4. Well serves # of homes and or **NA**
 (Ex: barn, restaurant, church, school, industry, etc.)

High Capacity:
 Well? Yes No
 *Property? Yes No

Drilled Driven Point Jetted Other

5. Well located on highest point of property, consistent with the general layout and surroundings? Yes No If no, explain on back side.

Well located in floodplain? Yes No
 Distance in Feet From Well To Nearest:

1. Landfill
2. Building Overhang
3. Septic or Holding Tank (circle one)
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. Shoreline/Swimming Pool

9. Downspout/Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain
14. Building Sewer Cast Iron or Plastic Other
15. Collector or Street Sewer
16. Clearwater Sump

17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo - Type _____
21. Barn Gutter
22. Manure Pipe Gravity Pressure
23. Other Manure Storage _____
24. Other NR 112 Waste Source _____

6. Drillhole Dimensions
 From To
 Dia. (in.) (ft.) (ft.)

8 surface **39.5**

Method of constructing upper enlarged drillhole only.

1. Rotary - Mud Circulation
2. Rotary - Air
3. Rotary - Foam
4. Reverse Rotary
5. Cable-tool Bit _____ in. dia.
6. Temp. Outer Casing _____ in. dia.
 Removed? Yes No
7. Other _____
 If no, explain _____

DNR USE ONLY

9. Geology Type, Caving/Noncaving, Color, Hardness, Etc. From To (ft.) (ft.)

Till	Surface	26
Sand Yellow Brn.	26	35
Clay	35	39.5

7. Casing, Liner, Screen Material, Weight, Specification From To Dia. (in.) Manufacturer & Method of Assembly (ft.) (ft.)

4 surface **29**

8. Grout or Other Sealing Material Method **3/4** From To # Sacks Cement (ft.) (ft.)

3/4 Hole Plug surface **24** **12**

10. Static Water Level _____ ft. above ground surface **27.5** ft. below ground surface

12. Well Is: Above Grade Below

11. Pump Test Pumping Level **30** ft. below surface Pumping at **3.5** GPM for **2** hours

Developed? Yes No
 Disinfected? Yes No
 Capped? Yes No

13. Did you permanently seal all unused, noncomplying, or unsafe wells? Yes No If no, explain

14. Signature of Point Driver or Licensed Supervisory Driller Date Signed

Signature of Drill Rig Operator (Mandatory unless same as above) Date Signed
Jan 17 1996

Make additional comments on reverse side about geology, additional screens, water quality, etc.
 Comments on reverse side (Check , if yes)