Foth & Van Dyke

REPORT

1992 Annual Report

Scope ID: 91F6

Flambeau Mining Company
Ladysmith, Wisconsin

January 1993

Foth & Van Dyke

Engineers
Architects
Planners
Scientists

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January 29, 1993

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FEB 1 1993

BUREAU OF SOLID -
HAZARDOUS WASTE MANAGEMENT

Mr. Gordon Reinke, Chief
Mine Reclamation Section
Bureau of Solid Waste Management
Wisconsin Department of Natural Resources
202 South Webster Street, GEF II
Madison, WI 53707

Dear Mr. Reinke:

RE: Flambeau Project - 1992 Annual Report

On behalf of the Flambeau Mining Company (Flambeau), we are submitting 12 copies of the attached 1992 Annual Report pursuant to Part 1-8 of the conditions of the Mine Permit Approval for the Flambeau Project in Rusk County, Wisconsin. This submittal also addresses other requirements of the Mining Permit. These requirements include Part 2, Condition 4, deviations from the approved Mining Plan; Part 2, Condition 6, spills, pond overflows, and embankment failure or leakage; Part 2, Condition 7, drilling activities; Part 3, Condition 10, reclamation activities; and Part 3, Condition 26.d and Part 4, Condition 9, site environmental monitoring.

If you have any comments or questions regarding this submittal, please contact us at (414) 497-2500.

Sincerely,

Foth & Van Dyke

James B Hutchison

James B. Hutchison, P.E.
Project Engineer

Jerry W. Sevick

Jerry W. Sevick, P.E.
Group Vice President

JBH:JWS:jef

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1992 Annual Report

Scope ID 91F6

Prepared for
Flambeau Mining Company

Prepared by
Foth & Van Dyke and Associates Inc.

January 1993

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Flambeau Mining Company
1992 Annual Report

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1 Purpose and Need

The Flambeau Mining Company (Flambeau) submitted a Mining Permit Application (MPA) to the Wisconsin Department of Natural Resources (WDNR) dated December 29, 1989. A Mining Permit was issued by the State of Wisconsin, Division of Hearings and Appeals, Docket No. IH-89-14, dated January 14, 1991.

This report serves to document the work that was done at the project site in 1992 and to satisfy the requirements of the following Mining Permit (MP) conditions:

Mining Permit, Part 1, Condition 8:

> In accordance with sec. 144.89, Stats., Flambeau shall submit a report annually to the Department summarizing the activities which took place on the mining site during the year and shall include other additional information specified in this permit and associated plan approvals.

Mining Permit, Part 2, Condition 4:

> The annual report required under sec. 144.89, Stats., shall include discussion of all modifications received during the previous year and shall include an inventory of all modifications received subsequent to permit issuance. The annual report shall also discuss deviations from the approved Mining Plan as a result of final engineering refinements or subsequent plan approvals if these deviations do not require modifications, under Part 2, conditions 2 and 3.

Mining Permit, Part 2, Condition 6:

> Flambeau shall keep a log of all incidents, such as spills, pond overflows and embankment failure or leakage, reported to its environmental compliance staff. This log shall, at all reasonable times, be available for inspection by any duly authorized Department employee. A summary of incidents subject to various Department reporting requirements shall be included in the annual report required under sec. 144.89, Stats.

Mining Permit, Part 2, Condition 7 (Excerpt):

> The annual report required under sec. 144.89, Stats, shall include a summary of all exploration drilling activities conducted on the mining site during the previous year.

Mining Permit, Part 3, Condition 10:

> Flambeau shall conduct a program of in-field trials for reclamation methods and materials prior to final reclamation. A description of methods, materials, analyses and results shall be submitted to the Department on an annual basis.

Mining Permit, Part 4, Condition 9:

> Monitoring data and results shall be submitted to the Department within 30 days after completion of the required analyses. The annual report required in this permit shall summarize the year's monitoring activities and any observed trends in the monitoring data.

The location of the information which fulfills the requirements of the above conditions are referenced in Table 1-1.

Table 1-1

Location Information Key

Condition No.	Location of Information
MP, Part 1-8	Section 2.3 and Appendices B and C
MP, Part 2-4	Section 2.4
MP, Part 2-6	Section 4.4 and Appendix L
MP, Part 2-7	Section 2.2 and Appendix A
MP, Part 3-10	Section 3 and Appendix D
MP, Part 4-9	Section 4 and Appendix E through K

2 Construction Activities - 1992

2.1 Notifications/Start-up

The WDNR was notified of the anticipated construction start-up date of May 18, 1992, on April 15, 1992, pursuant to the Air Pollution Control Permit Condition B.1.b. The Department of Industry, Labor and Human Relations (DILHR) was notified on May 9, 1992, pursuant to ILHR 8, and the Park Falls Area Water Management Specialist was notified of the anticipated start-up date on April 15, 1992, pursuant to the Water Regulatory Permit Condition 1.

Verbal notice of Outfall 001 and 002 construction start-up was provided to Kenneth Markart of the WDNR on July 9, 1992, by Robert Sinclair of Flambeau. Work began on the outfalls during the week of August 10, 1992.

2.2 Borehole and Monitoring Well Activity

Boreholes 22-163 through 22-192 were drilled in the pit area for mining grade control purposes. These boreholes were abandoned soon after drilling. Drillhole abandonment forms (Form 2700-2) were submitted to the WDNR on a weekly basis from September 4, 1992, to November 13, 1992.

A number of older well and boreholes were abandoned within the pit area even though they would have been totally removed during pit excavation. These boreholes were OW-40, PZ-K8, PZ-R5, PZ-R7, ST-9-2. In addition, two cased holes were also abandoned in the pit. The respective abandonment forms for each of these wells are contained in Appendix A.

Five former potable wells that are owned by Flambeau and which were located on Flambeau owned properties surrounding the project area were also abandoned. Wells #6, #21, #65, #71 and #72 were abandoned in November and December 1992. Abandonment forms for these wells are located in Appendix A.

Well #18 located on the project site near the former H&H Building was not abandoned as originally planned since it currently is being used and will continue to be used as a source of water for the one-acre aquascape testplot. Conversations were held with Larry Lynch of the WDNR during the fall of 1992 to notify him of the status of the well and it was agreed that continued use of the well was a minor deviation which should be listed in the annual report.

One potable, low capacity well was installed (Well DN 736) in November 8, 1992 as per the approved Groundwater Withdrawal Permit for the project. A private water supply form (W5/2) for this well is included in Appendix A.

The location of the Slurry Cutoff Wall System required that monitoring well MW 1000 be abandoned and replaced with MW 1000R located approximately 100 feet east of the original location of MW 1000. MW 1000 needed to be moved since its original location was downgradient of the Slurry Cutoff Wall System, negating the ability of the well to monitor the shallow till downgradient of the backfilled pit. MW 1000R is positioned to accomplish this intent. A well abandonment form and well construction diagram for MW 1000 and MW 1000R, respectively are contained in Appendix A.

On October 23, 1992, Monitoring Well MW-1010P was inadvertently damaged when construction equipment was placing topsoil in the vicinity of the slurry cutoff wall system. MW-1010P's protector pipe was pulled out of place and the top three feet of PVC casing was bent at a 45° angle. The PVC was not cracked or broken. The PVC was temporarily capped to prevent well contamination.

Huntingdon-Twin City Testing Corp. was contracted to repair MW-1010P. A letter from Huntingdon to Flambeau regarding this work is found in Appendix A. The Huntingdon-Twin City Testing Corp. on-site representative repaired the well on October 27, 1992. A backhoe was used to carefully dig down approximately 11 feet exposing the damaged piece of PVC riser. The damaged riser was unscrewed and replaced with a new 10 foot piece. As the hole was being backfilled, bentonite was poured around the riser up to the ground surface. The undamaged original four-inch protector pipe with the protector cap was then set in place and cemented. The top of PVC elevation was reshot and found to be 1102.91 feet. MW-1010P was redeveloped by Flambeau by bailing dry on three separate days.

2.3 1992 Construction Activities

Mine site construction activities were resumed on May 18, 1992. Prior to this, erosion control measures as outlined in the Surface Water Management Plan, such as placement of strawbales, were taking place.

2.3.1 Clearing and Soil Movement

Clearing, grubbing and topsoil movement were completed in all project areas, Topsoil in these areas, excluding the railroad spur, was stripped and placed in the topsoil stockpile which was mulched with straw upon reaching final grade. In 1993 the topsoil stockpile is to be seeded on the east face with a prairie seed mix and all remaining slopes are to be seeded with WDOT No. 70 seed mix. Topsoil from the railroad spur was spread over the disturbed areas and reseeded. Delineated hydric soils were placed in the hydric soil stockpile area which was then flooded.

2.3.2 Borrow Material and HDPE Lined Area Construction

Fine grained excavated soils from the project area were used as the one foot subsoil beneath the HDPE liner in the Type II stockpile area and the other HDPE lined areas. Coarser grained excavated soils from the project area were used to complete construction of various areas throughout the project including the Type I and Type II berms and the railroad spur subgrade. The Type II stockpile overliner was a processed material brought in from outside the project area. The Type II, Phase I stockpile perimeter berm was completed, as well as, a portion of the Phase II. The Type II stockpile liner system and construction of all HDPE lined areas (Surge Pond, Runoff Pond, Ore Crusher Area, Lysimeter and Fuel Storage Area) were completed as described in the January 1993 Construction Documentation Report. A 60-foot haul road to and in the Type II stockpile area was constructed from borrow from the mine area and is 80 percent complete. Leachate piping cover in the Type II stockpile area will be completed in 1993 in addition to the pressure jetting of the leachate collection pipes.

2.3.3 Facilities Area

All piping between the Type II stockpile area, Surge Pond, Runoff Pond, mine pit area, fire system, wastewater treatment plant (WWTP) and Outfall 001 was completed. Dewatering sumps were installed at the Runoff Pond and Surge Pond. The WWTP was 80 percent complete at the end of 1992. The Administration Building and Maintenance Building (with its oil separator system) and associated parking lot were completed. The Assay Laboratory was 90 percent complete at the end of 1992. A potable water well (Well DN 736) was drilled in the southeast corner of the project area to supply the facilities area. Two 7,500 gallon holding tanks were installed to provide sewage storage for the facilities area.

2.3.4 Outfalls

Outfall 001 and Outfall 002 were lined with geotextile and rip rapped down to the Flambeau River.

2.3.5 Railroad Spur

The railroad spur construction was completed. Preparation of the subgrade required borrow materials from the Type I stockpile area. Materials excavated from the railroad spur construction corridor were stockpiled in the Type I stockpile area. Construction of the railroad spur required the relocation of Stream C. The relocation of Stream C included the installation of culverts through the railroad spur embankment. The railroad crossing across STH 27 was completed. In addition, all work on STH 27 was completed. This included passing and turning lanes at the Visitor's Center and the Flambeau Mine entrance road.

2.3.6 Slurry Cutoff Wall System

The slurry cutoff wall system and flood control dike were constructed southwest of the mine pit area. An emergency catch basin was constructed northeast of the slurry cutoff wall system construction corridor. A Slurry Cutoff Wall System Construction Report will be submitted to the Department.

2.3.7 Security Fence

A six-foot high security fence constructed with chain link and barbed wire was completed around the project area. In addition, select project areas were fenced including the meteorological station and air monitoring stations.

2.3.8 Diversion Structures

A diversion structure was constructed across Stream A to allow for diversion of water to the one-acre aquascape testplot. A second structure was constructed across the Settling Ponds drainage ditch to divert water to the hydric soil stockpile.

2.3.9 Type I Stockpile Area

The Type I stockpile area base grades were established through topography mapping which is documented in the January 1993 Construction Documentation Report. Culverts were installed between the Type I stockpile area and the No. 1 Settling Pond. The lysimeter was constructed on the east side of the Type I stockpile area. The southwest portion of the Type I stockpile area was excavated and diked to serve as emergency storage of accumulated site water.

2.3.10 Visitors Parking Lot

The visitors parking lot located east of the topsoil stockpile was graded and paved.

2.3.11 Testing and Photographs

Data collected by Cooper Engineering as a result of testing soils, concrete, and bituminous are located in Appendix B. Photographs taken by Cooper Engineering which document construction performed in 1992 are located in Appendix C.

2.4 Deviations

During the course of 1992 construction, deviations from the MPA and the MP occurred as a primary result of final engineering refinements. Table 2-1 contains a listing of the deviations; a reference to the appropriate document or permit; and information regarding authorizations obtained from the WDNR regarding the deviations. Deviations were either discussed with WDNR personnel before they were implemented or they were highlighted in project documents submitted to the WDNR as required by the project's MP.

No major modifications were requested in 1992. A letter describing minor modifications which do not increase or decrease the mine site size or capacity will be submitted to the WDNR shortly. The minor modifications consist of the following:

1. The Administration Building has been increased by approximately 50 percent to provide housing for additional staff to manage environmental and safety affairs and to accommodate increased laboratory needs.

2. A water tank was constructed next to the wastewater treatment plant for facility fire protection.

Table 2-1

Flambeau Project
List of Deviations from Original Submittals

1992

Permit/ Document/ Application	Section	Deviations	Authorization Method	Authorization Person	Date
Surface Water Management Plan		Use of annual oats as nurse crop for seeding	Verbal to Jeff Tygesen	Thomas Portle	05/19/92
001 Outfall Plans and Specs	6.3.1	Increased size and changed the dimensions of the Neutralization and Mixing Tank (250-MDA-04)	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Deleted clarifier feed pump (250-NPP-26)	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Replaced the centrifugal milk of lime pump (250-NPP-04) with a sump pump	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Replaced solids separator (250-MSS-01) in the milk of lime (MOL) system with three 3" cyclones (250-NCY-01,02,03) and a 55-gallon clarified lime tank (250-MDH-16)	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	The clarifier underflow piping was moved from being buried under the clarifier to being placed within the clarifier tank	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Added a separate clarifier overflow tank (250-MDA-10)	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Added in-line mixer (250-NAI-03) to the clarifier overflow line and changed the dilute acid addition point from the first sulfide mix tank to the clarifier overflow line before the in-line mixer	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Replaced the concentrated polymer pump (250-NPP-11), the polymer in-line mixer (250-NAS-01), the dilute polymer tank (250-MDA-06) and its agitator (250-NPP-12 and 13) with a complete polymer mixing and dilution system (250-NSL-01)	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Deleted the 1,200 gallon storage tank (250-MDA-08) for purchased acid	Conditional approval letter	Michael D. Witt	06/02/92

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Table 2-1 (*Cont.*)

Permit/ Document/ Application	Section	Deviations	Authorization		Date
			Method	Person	
001 Outfall Plans and Specs	6.3.1	Increased the size of the clarifier underflow storage tank (250-MDA-17) capacity from 8,000 gallons to 10,300 gallons	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Deleted pump (250-NPP-24)	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Deleted pump (250-NPP-33)	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Added in-line mixer (250-NAJ-02) in the sand filter effluent line prior to the pH neutralization tank and added the clarifier MOL in front of the in-line mixer rather than into the pH neutralization tank	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Changed the sand filter system (250-NFL-02,03.04) from a pressurized system to a gravity system	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Replaced the fresh water pump (250-NPP-30) with a complete sump and pressurized tank system (250-NPS-01)	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Deleted the backwash storage tank (250-MAA-02) and installation of a floor sump. The tank discharge pump (250-NPP-20) was also changed from a floor mounted, centrifugal pump to a sump pump	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Added sand filter effluent pump to pump the clarified effluent from the filters to the pH neutralization tank (250-MDA-01)	Conditional approval letter	Michael D. Witt	06/02/92
001 Outfall Plans and Specs	6.3.1	Added installation of underdrain collection and pumping system under the surge and runoff ponds	Conditional approval letter	Michael D. Witt	06/02/92
Preconstruction Report - Drawings 210-C-012 and 210-C-013	--	Invert elevations for the pump and sump system for the runoff and surge ponds were lowered 18 inches.	N/A	N/A	Summer 1992
Preconstruction Report - Appendix C Specification SP-10102-C-004 Section B.1	--	Gradation specifications for overliner material (drainage layer) was slightly changed.	Verbal	Robert Griefe	

Table 2-1 (*Cont.*)

Permit/ Document/ Application	Section	Deviations	Authorization		Date
			Method	Person	
MP	Part 2 Cond. 27	Basegrades and filling plan revised to take into account borrow from the west portion and fill in the east portion of the Type I stockpile area.	Verbal	Larry Lynch	Oct./Nov. 1992
Groundwater Withdrawal Permit	1	Well #18 was not abandoned since it is located on the project site and is being used to supplement the water within the one-acre aquascape testplot.	Verbal	Larry Lynch	Fall 1992
Mining Permit Application	4.7.3.3.6	The Slurry Cutoff Wall System incorporated the use of a concrete diaphragm wall for stability.	Conditional approval letter	Gordon Reinke	09/01/92
Preconstruction Report	--	A valve was installed between the Type II stockpile area and the surge pond.	Verbal	Larry Lynch	Fall 1992

N/A = Not Applicable

3 Reclamation Activities

Reclamation activities performed at the site during 1992 consisted of the following:

- Stream "C" Relocation
- Flood Control Dike Construction
- Temporary Nursery
- Plant Trees in the Buffer Strip
- Permanent Seeding
- Slope Restoration
- Type II Stockpile - East Berm
- Settling Ponds (inside slope stabilization)
- Slurry Cut-Off Wall System
- One Acre Aquascape Testplot (stem count)

An annual reclamation report was submitted to the WDNR on November 11, 1992, pursuant to Mining Permit, Part 3, Condition 26.d. This report described the above list of reclamation activities. The annual reclamation report is included in Appendix D of this report.

4 Site Monitoring

In accordance with the January 14, 1991, Findings of Fact, Conclusions of Law, and Mine Permit Conditions, this portion of this report constitutes the annual report of Flambeau Mining Company's (Flambeau) Monitoring Activities for its Flambeau Project. Per the Mining Permit conditions of approval, the annual report addresses construction phase monitoring for 1992 conducted in accordance with the Updated Monitoring Plan, which was submitted to the WDNR on July 1, 1991.

Construction and operation phase monitoring includes individual programs for groundwater quality, surface water quality, terrestrial ecology, meteorology, total suspended particulate matter, asbestiform fibers, and Type II stockpile leachate.

In 1992, the following monitoring activities were conducted and are summarized in the sections of this reports indicated below:

- Groundwater Quality Sampling/Analysis - Section 4.1
- Sediment Sampling/Analysis - Section 4.2.1
- Fish Sampling/Analysis - Section 4.2.2
- Macroinvertebrate Sampling/Analysis - Section 4.2.3
- Surface Water Quality Sampling/Analysis - Section 4.2.4
- Habitat Characterization - Section 4.2.5
- Wetland Surface Flows - Section 4.2.6
- Meteorology - Section 4.3
- Total Suspended Particulate (TSP) Sampling/Analysis - Section 4.4
- Asbestiform Fibers - Section 4.5
- Source Performance Test - Section 4.6

Monitoring of the Type I stockpile exfiltrate, pit inflows, asbestiform fibers, and Type II stockpile leachate were not conducted in 1992 since these elements of the monitoring program relate to project elements which were not part of the 1992 construction activities.

4.1 Groundwater Quality Sampling and Analysis

Under s. NR 132.11 and s. NR 182.13, groundwater sampling and analysis during construction and operation is required for this project. A discussion of the groundwater monitoring program follows.

S. NR 182.13(2) requires quarterly analysis of groundwater samples for water levels, specific conductance (field), pH (field and laboratory), total dissolved solids (TDS), and other parameters which were selected based upon the results of the waste characterization studies. Total alkalinity and total hardness, as indicators of overall water quality, are also quarterly parameters. For the Flambeau Project, quarterly monitoring occurs in January, April, July and October of each calendar year. In addition, s. NR 182.13(2) also required annual testing of "other contaminants which would reasonably be expected to occur in leachate from the facility." The waste characterization and input transport modeling studies completed for this project have identified iron, manganese, copper and sulfate as principal constituents that may be generated at the site. These four parameters are included as quarterly monitoring parameters.

4.1.1 Quarterly Monitoring

Quarterly groundwater sampling was conducted in January, April, July and October of 1992. The samples were submitted to ORTEK in Green Bay, Wisconsin, for analysis. The results of these analyses are summarized in Table 4-1.

Appendix E contains analytical results sheets and chain-of-custody documentation for the four 1992 groundwater monitoring events.

4.1.2 Background Monitoring

In addition to the quarterly monitoring described above, background data was collected for new groundwater monitoring well MW 1010P and replacement groundwater monitoring well MW 1000R. MW 1010P was installed in 1991. Correspondence regarding the 1992 abandonment and replacement of MW 1000 is found in Appendix A. The monitoring program for MW 1010P consists of testing the first eight quarterly samples from the well for the parameters on the regular quarterly program plus the following metals:

- arsenic
- barium
- cadmium
- total chromium
- lead
- mercury
- selenium
- silver
- zinc

These metals were selected either because they are primary drinking water standard metals or because they may occur in the leachate from the Type II waste.

Samples from MW 1010P were procured during the January, April, July and October quarterly events. The samples were submitted to ORTEK in Green Bay, Wisconsin, for analysis. The results of these analyses are summarized in Table 4-2. Appendix E contains analytical results sheets and chain-of-custody documentation for the four 1992 monitoring events for MW 1010P.

The monitoring program for MW 1000R consists of the same program specified for MW 1010P except that samples will be collected on an approximate 30-day interval for eight consecutive months or until pit dewatering renders the well dry. The first of the eight background samples from MW 1000R were procured at the end of November. The second sample was scheduled to be taken during the regular quarterly monitoring activities in early January of 1993. The sample was submitted to ORTEK in Green Bay, Wisconsin, for analysis. The results of these analyses are summarized in Table 4-3. Since there was only one monitoring event at this well in 1992, no statements can be made with respect to trends in the data. Appendix E contains the analytical results sheet and chain-of-custody documentation for the November monitoring event.

4.1.3 Groundwater Quality Trend Analysis

Simple linear regression techniques were used to determine if trends exist in the groundwater results collected between July of 1991 and October of 1992.

Table 4-1

1992 Quarterly Groundwater Monitoring Data Summary

	Alkalinity (mg/l)	Copper (ug/l)	Iron (ug/l)	Hardness (mg/l)	Manganese (ug/l)	pH (SU)	Sulfate (mg/l)	TDS (mg/l)
MW 1000								
01/92	20	<14	<55	67	6.1	6.5	38	110
04/92	<10	210	250	67	7.1	2.6	410	130
07/92	29	<14	<55	80	5.6	6.9	47	120
10/92	30	<14	<55	150	<4.0	7.0	120	<50
MW 1000P								
01/92	88	<14	1700	110	820	6.4	11	120
04/92	84	<14	1300	88	830	6.7	14	120
07/92	81	<14	470	120	730	7.1	12	140
10/92	95	<14	800	100	780	7.1	12	160
MW 1002								
01/92	47	<14	<55	67	<4.0	6.5	<10	100
04/92	49	<14	<55	48	<4.0	7.0	11	85
07/92	41	<14	<55	120	<4.0	7.0	<10	87
10/92	53	<14	<55	82	15	7.5	11	130
MW 1002G								
01/92	80	<14	<55	110	<4.0	6.4	11	140
04/92	84	<14	<55	110	<4.0	6.9	14	150
07/92	79	<14	<55	160	<4.0	6.8	11	150
10/92	85	<14	<55	130	<4.0	7.2	11	180

Table 4-1 (*Cont.*)

	Alkalinity (mg/l)	Copper (ug/l)	Iron (ug/l)	Hardness (mg/l)	Manganese (ug/l)	pH (SU)	Sulfate (mg/l)	TDS (mg/l)
MW 1004								
01/92	27	<14	<55	37	<4.0	6.6	<10	65
04/92	36	<14	<55	77	<4.0	7.1	12	82
07/92	29	<14	59	160	57	7.0	<10	77
10/92	40	<14	<55	84	<4.0	7.0	<10	48
MW 1004S								
01/92	27	<14	<55	62	<4.0	6.5	11	95
04/92	60	<14	<55	72	<4.0	7.2	12	100
07/92	74	<14	<55	150	<4.0	6.8	<10	110
10/92	100	<14	<55	110	<4.0	7.0	<10	220
MW 1004P								
01/92	160	<14	320	150	120	6.7	<10	160
04/92	170	<14	370	160	140	7.0	<10	180
07/92	160	<14	380	170	130	7.0	<10	180
10/92	190	<14	320	180	130	7.8	<10	260
MW 1005								
01/92	86	<14	18000	1000	460	6.2	14	530
04/92	90	<14	17000	520	380	6.3	16	680
07/92	90	<14	19000	440	440	6.3	15	640
10/92	110	<14	22000	420	470	6.5	15	600

Table 4-1 (*Cont.*)

	Alkalinity (mg/l)	Copper (ug/l)	Iron (ug/l)	Hardness (mg/l)	Manganese (ug/l)	pH (SU)	Sulfate (mg/l)	TDS (mg/l)
MW 1005S								
01/92	170	<14	3600	250	210	6.7	<10	<20
04/92	180	<14	3700	290	200	7.1	<10	210
07/92	170	<14	4100	220	210	6.8	<10	220
10/92	190	<14	3900	270	200	7.3	<10	260
MW 1005P								
01/92	260	<14	750	240	160	6.8	<10	280
04/92	260	<14	1000	240	130	7.0	<10	350
07/92	270	<14	950	260	150	6.9	<10	270
10/92	270	<14	1200	260	100	7.6	<10	320

Table 4-2

1992 Background Groundwater Monitoring Data Summary
MW 1010P

	01/92	04/92	07/92	10/92
alkalinity (mg/l)	150	160	160	180
copper (ug/l)	<14	<14	<14	<14
iron (ug/l)	150	<55	<55	<55
hardness (mg/l)	130	140	180	160
manganese (ug/l)	250	200	86	140
pH (SU)	7.2	7.7	7.0	7.8
sulfate (mg/l)	16	14	<10	<10
TDS (mg/l)	200	340	180	280
silver (ug/l)	<0.4	<0.4	<0.4	<0.40
arsenic (ug/l)	<3.0	5.5	4.3	8.8
barium (ug/l)	79	92	62	82
cadmium (ug/l)	1.0	2.1	1.6	0.3
chromium (ug/l)	<2	<2	<2.0	<2.0
mercury (ug/l)	<0.2	<0.2	<0.2	<0.2
lead (ug/l)	<2.0	<2.0	<2.0	<2.0
selenium (ug/l)	<3.0	<3.0	<3.0	<3.0
zinc (ug/l)	<20	<20	<20	<20

Table 4-3

1992 Background Groundwater Monitoring Data Summary
MW 1000R

	11/92
alkalinity (mg/l)	42
copper (ug/l)	<14
iron (ug/l)	<55
hardness (mg/l)	47
manganese (ug/l)	140
pH (SU)	7.2
sulfate (mg/l)	<10
TDS (mg/l)	96
silver (ug/l)	<0.4
arsenic (ug/l)	<3.0
barium (ug/l)	17
cadmium (ug/l)	<0.3
chromium (ug/l)	<2.0
mercury (ug/l)	<0.2
lead (ug/l)	<2.0
selenium (ug/l)	<3.0
zinc (ug/l)	<20

It should be noted that the simple linear regression analysis identifies only linearly increasing or decreasing trends occurring over the six sampling quarters. As a result, the analysis does not test for seasonal changes.

To complete the analysis, subsets consisting of the data for each compound collected at each sampling location were analyzed separately. If a sample result was not detected, it was replaced with a value of zero. Graphs of the analytical results for each of these subsets are presented in Appendix F. If a compound was not detected at a sampling location, from July of 1991 through October of 1992, no regression analysis was performed, and no graph was created.

A simple linear regression analysis gives a "best fit" linear trend line for a set of data. It also provides a statistical test to determine whether no overall trend exists. The statistical test gives the probability of no trend in the data. If the probability of no trend is very low (close to zero), it is concluded that a trend is present. An example of the regression output is given in Appendix G.

The results of the regression analysis are summarized in Table 4-4. In the table, the probability of no trend is given for each compound at each sampling location. If this probability is below 0.05, it is concluded that either an increasing or decreasing trend is present. In this case, the trend itself is also given in terms of the change in units per sampling quarter.

A total of 97 subsets were included as part of the groundwater analysis. Of this number only eight showed trends, four increasing and four decreasing. The relative number of subsets showing calculated trends in comparison to the total number of subsets tested results in the conclusion that it is very unlikely that between July of 1991 and October of 1992 a true change in conditions at the site has taken place. A discussion of each of the subsets showing a trend follows.

Alkalinity showed an increasing trend in MW 1005P and MW 1010P. In MW 1005P, alkalinity increased at a rate of 2.29 mg/l per sampling quarter. In MW 1010P, alkalinity increased at a rate of 6.00 mg/l per sampling quarter. Another increasing trend occurred for hardness in MW 1005P. This trend was calculated as 6.86 mg/l per sampling quarter.

Since MW 1010P and MW 1005P are both very deep monitoring wells and since MW 1005P is an upgradient well, it is unlikely that the change in alkalinity and hardness conditions are related to the project, especially since no other wells revealed trends for these two compounds. Hardness is chemically related to alkalinity such that an increase in alkalinity would likely correspond to an increase in hardness. Since the increasing trend in alkalinity and hardness over the six sampling periods in these two wells was at a very slow rate (less than seven mg/l per sampling quarter), it is most likely due to a slight change in natural conditions.

Table 4-4

Groundwater Quality Results - Trend Analysis

Compound	Well	Probability of Trend Equalling Zero	Trend
Alkalinity			
	MW 1000	0.796	--
	MW 1000P	0.198	--
	MW 1002	0.861	--
	MW 1002G	0.398	--
	MW 1004	0.181	--
	MW 1004S	0.075	--
	MW 1004P	0.213	--
	MW 1005	0.095	--
	MW 1005S	0.119	--
	MW 1005P	0.042*	+2.29 mg/l per quarter
	MW 1010P	0.034*	+6.00 mg/l per quarter
Copper			
	MW 1000	0.873	--
	MW 1000P	0.441	--
	MW 1002	Not detected	--
	MW 1002G	Not detected	--
	MW 1004	Not detected	--
	MW 1004S	Not detected	--
	MW 1004P	Not detected	--
	MW 1005	Not detected	--
	MW 1005S	Not detected	--
	MW 1005P	Not detected	--
	MW 1010P	Not detected	--
Iron			
	MW 1000	0.805	--
	MW 1000P	0.867	--
	MW 1002	0.158	--
	MW 1002G	Not detected	--
	MW 1004	0.441	--
	MW 1004S	Not detected	--
	MW 1004P	0.369	--
	MW 1005	0.229	--
	MW 1005S	0.067	--
	MW 1005P	0.953	--
	MW 1010P	0.805	--

Table 4-4 (*Cont.*)

Compound	Well	Probability of Trend Equalling Zero	Trend
Hardness			
	MW 1000	0.361	--
	MW 1000P	0.514	--
	MW 1002	0.243	--
	MW 1002G	0.141	--
	MW 1004	0.168	--
	MW 1004S	0.074	--
	MW 1004P	0.117	--
	MW 1005	0.987	--
	MW 1005S	0.102	--
	MW 1005P	0.005*	+6.86 mg/l per quarter
	MW 1010P	0.116	--
Manganese			
	MW 1000	0.851	--
	MW 1000P	0.059	--
	MW 1002	0.387	--
	MW 1002G	0.158	--
	MW 1004	0.501	--
	MW 1004S	Not detected	--
	MW 1004P	0.749	--
	MW 1005	0.305	--
	MW 1005S	0.172	--
	MW 1005P	0.033*	-18.00 ug/l per quarter
	MW 1010P	0.027*	-35.20 ug/l per quarter
pH			
	MW 1000	0.694	--
	MW 1000P	0.332	--
	MW 1002	0.119	--
	MW 1002G	0.289	--
	MW 1004	0.428	--
	MW 1004S	0.409	--
	MW 1004P	0.332	--
	MW 1005	0.414	--
	MW 1005S	0.106	--
	MW 1005P	0.560	--
	MW 1010P	0.305	--

Table 4-4 (*Cont.*)

Compound	Well	Probability of Trend Equalling Zero	Trend
Sulfate			
	MW 1000	0.602	--
	MW 1000P	0.042*	+2.83 mg/l per quarter
	MW 1002	0.188	--
	MW 1002G	0.143	--
	MW 1004	0.359	--
	MW 1004S	0.625	--
	MW 1004P	Not detected	--
	MW 1005	0.399	--
	MW 1005S	Not detected	--
	MW 1005P	Not detected	--
	MW 1010P	0.666	--
TDS			
	MW 1000	0.047*	-27.43 mg/l per quarter
	MW 1000P	0.415	--
	MW 1002	0.212	--
	MW 1002G	0.176	--
	MW 1004	0.021*	-26.06 mg/l per quarter
	MW 1004S	0.798	--
	MW 1004P	0.833	--
	MW 1005	0.916	--
	MW 1005S	0.973	--
	MW 1005P	0.641	--
	MW 1010P	0.484	--
Arsenic			
	MW 1010P	0.974	--
Barium			
	MW 1010P	0.153	--
Cadmium			
	MW 1010P	0.807	--
Chromium			
	MW 1010P	0.158	--
Mercury			
	MW 1010P	Not detected	--
Lead			
	MW 1010P	Not detected	--
Selenium			
	MW 1010P	Not detected	--

Table 4-4 (*Cont.*)

Compound	Well	Probability of Trend Equalling Zero	Trend
Silver			
	MW 1010P	Not detected	--
Zinc			
	MW 1010P	Not detected	--

* Trend different from zero at a 95 percent confidence level.

Two wells, MW 1005P and MW 1010P, had decreasing trends of manganese. The trend observed in MW 1005P was a negative 18.0 ug/l per sampling quarter. This means that on the average, between July of 1991 and October of 1992, manganese decreased 18.0 ug every three months in this well. However, this trend is due mainly to the July 1991 value of 220 ug/l and the October 1992 value of 100 ug/l. Between October of 1991 and July of 1992 basically no trend existed. The manganese values during this time period were respectively 150 ug/l, 160 ug/l, 130 ug/l and 150 ug/l.

The trend of manganese observed in MW 1010P was a negative 35.2 ug/l per sampling quarter. This means that on the average between July of 1991 and October of 1992, manganese decreased 35.2 ug/l every three months. The trend observed was due to the July 1992 value of 86 ug/l and the October 1992 value of 140 ug/l. The manganese levels between July 1991 and April 1992 were respectively 260 ug/l, 280 ug/l, 250 ug/l and 200 ug/l.

The values of sulfate measured in MW 1000P from July of 1991 to October of 1992 were <10 mg/l, <10 mg/l, 11 mg/l, 14 mg/l, 12 mg/l and 12 mg/l, respectively. Treating the first two values of <10 mg/l as zero in this situation was very conservative, and resulted in the regression analysis indicating an increasing trend exists. The first two values in reality could take on any value between zero and 10 mg/l. Replacing them with any value equal to or above 5.5 mg/l would result in the regression analysis indicating no trend in sulfate exists.

Two wells, MW 1000 and MW 1004, had slight decreasing trends of TDS. During 1992, TDS values from samples taken at MW 1000 ranged between 110 and 130 mg/l, except for the October 1992 event where TDS was not detected above the detection limit in MW 1000. During 1992, TDS in MW 1004 ranged between 48 and 82 mg/l with the lowest value reported during the last monitoring quarter.

In the groundwater quality graphs, it can be seen that in April of 1992, MW 1000 had an increase in copper, iron, and sulfate, and a decrease in pH. However, by the next sampling period, copper and iron had dropped back below detection, and sulfate and pH had returned to levels within the range of those observed previous to April of 1992. Given the degree of changes noted and the fact that changes were noted for only one round of analyses, the most logical explanation for the test results likely relates to sample collection procedures.

4.2 Surface Water

Water-quality based effluent limitations have been established for the surface water discharges from the Flambeau Project. These limitations are designed to protect the sensitive components of the aquatic environment and they incorporate bioaccumulation and bioconcentration considerations in their development. The surface water monitoring program includes sampling and analytical testing of the following: sediments, fish, macroinvertebrates, water quality, habitat characteristics, and wetland surface flows. A discussion of each program element follows.

4.2.1 Sediments

Sediments in the Flambeau River are to be collected once annually at two locations. An upstream sampling station is to be established at Blackberry Lane, and a downstream station is to be located at the old Port Arthur Dam site. At each of these locations, three sediment traps are to be installed after the spring runoff period is over. The traps are to be suspended above the river bed in May of each year. Sediment samples are to be analyzed individually for the following parameters:

- particle size
- percent volatile solids
- iron
- manganese
- aluminum
- arsenic
- silver
- nickel
- cadmium
- chromium
- copper
- lead
- mercury
- selenium
- zinc

On May 27, 1992, per conditions of the mine permit, a representative from Foth & Van Dyke installed three sediment samplers at designated locations [Blackberry Lane (location S-1) and Port Arthur Dam (location S-2)] within the Flambeau River near the Flambeau Mining Company site. In a May 20, 1992, telephone conversation, Foth & Van Dyke notified WDNR Northwest District staff personnel of the date the samplers were to be installed.

The samplers consisted of one quart mason jars placed above the river bed. Due to erosion and sloughing at the 1991 Port Arthur Dam sampling location, a new sampling location was chosen approximately 120 feet downstream. The new location exhibited similar bank and sediment characteristics as well as flow velocity.

The samplers were collected on July 1, 1992, by a Foth & Van Dyke representative. In a June 24, 1992, telephone conversation, Foth & Van Dyke notified WDNR Northwest District staff personnel of the date the samplers were to be collected. The sample containers were capped below the water surface with a parafilm seal allowing for zero headspace. Immediately following collection, the containers were labeled and placed into a cooler with ice. The samples were thermally preserved during transportation and hand delivered to ORTEK Laboratory in Green Bay, Wisconsin, on July 1, 1992, accompanied with chain-of-custody documentation.

Table 4-5 represents analytical results from the samples collected from each location and a comparison to 1991 sample results. Results from samples collected in 1992 from the Blackberry Lane site were relatively comparable to 1992 results with the exception of manganese concentrations, which decreased from 1900.0 ppm to 1000.0 ppm. Samples collected in 1992 when compared to 1991 data from the Port Arthur Dam location show increases in concentrations or laboratory method detection limits of 12 metal analyses, whereas manganese concentrations decreased from 1600.0 ppm to 570.0 ppm. Decreases in percent total solids was also observed from 76.8 percent o to 35.0 percent, however, percent total volatile solids increased from 2.5 percent to 12.0 percent.

Table 4-5

Flambeau River Sediment Sampling Results 1991 and 1992

	Sample Location/Number			
	Blackberry Lane		Port Arthur Dam	
Metals (ppm)	S-1-01 (1991)	S-1-02 (1992)	S-2-01 (1991)	S-2-02 (1992)
silver	<1.2	<1.1	<1.1	<2.6
aluminum	3800.0	3300.0	4000.0	12000.0
arsenic	2.2	2.2	1.5	4.1
cadmium	<0.7	<0.6	0.6	<1.4
chromium	11.0	10.0	13.0	24.0
copper	7.3	6.0	7.2	24.0
iron	18000.0	16000.0	16000.0	25000.0
mercury	0.1	<0.1	0.1	<0.3
manganese	1900.0	1000.0	1600.0	570.0
nickel	5.8	6.1	7.3	12.0
lead	6.0	5.8	6.9	20.0
selenium	0.4	<0.4	0.4	<0.9
zinc	47.0	33.0	45.0	79.0

Other				
Total Solids (%)	73.0	78.6	76.8	35.0
Total Volatile Solids (%)	1.80	1.60	2.5	12.0
Field Temp. (C)	25.0	16.2	25.0	15.8

1992 results of particle size analysis (ASTM C136 and C117) show the sample collected from Blackberry Lane dominated by a coarse gravel to medium sand fraction (gravel with sand), whereas the sample collected from Port Arthur Dam was dominated by fine gravel to a silt fraction (silty gravel with sand). 1991 particle size analysis results showed fine to medium grained sand at both locations.

A detailed letter report submitted to WDNR on September 24, 1992, discussing a comparison of results from 1991 and 1992 sediment sampling is contained in Appendix H. The analysis presented in this letter concluded that "the 1992 Port Arthur Dam sediment test results have not been influenced by Flambeau Project activities and that the Flambeau Project has not caused any adverse impact on the Flambeau River." The report went on to conclude that the most likely cause for the changes in the Port Arthur Dam site sediments was the accelerated erosion occurring in the vicinity of the sampling location. To address this issue, Flambeau will adjust the 1993 sediment sampling program to add a third sampling location upriver of the current Port Arthur Dam sampling site. Details regarding this additional sampling location are contained in the letter report in Appendix H.

4.2.2 Fish Sampling

Fish (walleye) are required to be collected once annually during the low flow period of the year from the Ladysmith Flowage upstream of the site and the Thornapple Flowage downstream of the site. Acceptable sampling methods include hook and line, electroshocking and fyke netting. A reasonable effort is to be made to collect walleyes from each location according to the following size ranges:

- 10 to 12 inches - one fish.
- 12 to 15 inches - two fish.
- 15 to 18 inches - three fish.
- 18 to 22 inches - two fish.
- Greater than 22 inches - one fish.

Fillets (with skin left on) are to be tested for total mercury. The livers of the fish collected at each of the two sampling stations are to be composited into one upstream and one downstream sample. Each is to be analyzed for the metal parameters included on the list of analytical parameters for sediments. Each organism is to be measured for total length, sexed, and the stomach contents noted. The age of each individual fish is to be determined using commonly accepted techniques.

On September 29 and 30, 1992, representatives of EA Associates located in Hunt Valley, Maryland, under subcontract to Foth & Van Dyke, completed fish collection efforts using boat electroshocking techniques. Electrofishing was conducted on the Thornapple Flowage on September 29 and on the Ladysmith Flowage on September 30. Electrofishing was conducted using a pulsed DC electrofishing boat.

Approximately 70 percent of the Thornapple shoreline was shocked and about 65 percent of the Ladysmith shoreline was shocked. Fish encountered during the shocking events were identified and listed.

Walleye fillets and livers were extracted by EA Associates. Fillets from each fish and each flowage were analyzed separately for mercury. Livers from walleye were composited for each flowage and analyzed as a composite sample.

Table 4-6 indicates the species which were observed during the shocking event. A total of nine walleye were collected from each of the two flowages. Walleye which were saved for tissue analysis were sexed, aged, measured and weighed. This data appears in Table 4-7. A stomach analysis of each walleye was conducted, the data for which appears in Table 4-8. Tables 4-9 and 4-10 show the results of the tissue analysis (fillet and liver).

Species observed during the collection event were consistent with those collected in previous collection efforts. As was the case in 1991, there was some difficulty collecting all of the walleye for each of the size classes.

4.2.2.1 Interpretation of Results of Fish Data

Fish species observed during the shocking event were similar in 1991 and 1992. Since shocking activities were targeting walleye, no attempt was made to use the shocking procedure as a quantitative or qualitative measure of fish species. The reported fish species should be considered the result of observations made while completing the walleye collection activities.

There is a slight difference in the concentration of mercury found in the walleye tissue in 1991 and 1992 (Table 4-9). In 1991, the mercury concentration of fish from the Ladysmith Flowage and the Thornapple Flowage was similar, 0.74 and 0.71 mg/kg respectively. In 1992, the average concentration of mercury in walleye fillets from the Ladysmith Flowage was to 0.85 mg/kg which mercury concentrations in walleye in the Thornapple Flowage were to 0.58 mg/kg. The smaller walleye in the Thornapple Flowage had the lower mercury concentration levels which is considered typical. However, smaller sized walleye of the Ladysmith Flowage did not show this trend in 1992.

With the exception of zinc and aluminum, metal concentrations in the liver of walleye sampled remained constant from 1991 to 1992. Zinc concentrations approximately doubled in the liver samples in walleye from both the Ladysmith and Thornapple Flowages. While aluminum concentrations are essentially the same (14 and 15 mg/kg at Ladysmith and Thornapple Flowages respectively), aluminum increased at the Ladysmith Flowage by a factor of 4.8 and by a factor of 13.6 at the Thornapple Flowage. The data regarding crayfish results for zinc and aluminum also reflect this phenomenon (Table 4-10).

4.2.3 Macroinvertebrate

Three sampling locations have been established for the collection of macroinvertebrates. An upstream station is located at Blackberry Lane. Downstream stations are located at the site immediately above the mouth of Meadowbrook Creek and at the site which coincides with the sediment sampling location near the old Port Arthur Dam site. Macroinvertebrate collection stations were placed to within 50 yards of the eastern bank of the river.

Table 4-6

Species of Fish Encountered
Electroshocking (September 1992)
Flambeau River, Ladysmith, Wisconsin

Thornapple Dam	Ladysmith Dam
Shorthead Redhorse	Shorthead Redhorse
Silver Redhorse	Silver Redhorse
Golden Redhorse	Golden Redhorse
Burbot	Burbot
Rock Bass	Rock Bass
Small Mouth Bass	Small Mouth Bass
Troutperch	Troutperch
Yellow Perch	Yellow Perch
Northern Pike	Northern Pike
Muskellunge	Muskellunge
White Sucker	White Sucker
Walleye	Walleye
Large Mouth Bass	Bluegill
Lamprey sp.	
Black Crappie	

Table 4-7

Physical Data of Walleye
Flambeau River, Ladysmith, Wisconsin
September 1992

Thornapple Flowage

ID#	Length(mm)	Weight(g)	Sex	Age
WE-TA-01	510	1180	F	5+
WE-TA-02	460	870	F	6+
WE-TA-03	455	760	F	5+
WE-TA-04	425	670	F	4+
WE-TA-05	413	610	M	6+
WE-TA-06	412	640	M	6+
WE-TA-07	365	410	M	4+
WE-TA-08	366	430	M	4+
WE-TA-09	276	160	Imm.	3+

Ladysmith Flowage

ID#	Length(mm)	Weight(g)	Sex	Age
WE-LS-01	401	480	F	5+
WE-LS-02	386	465	M	5+
WE-LS-03	418	640	F	5+
WE-LS-04	360	430	M	4+
WE-LS-05	400	560	F	6+
WE-LS-06	400	510	M	4+
WE-LS-07	384	420	F	4+
WE-LS-08	342	320	F	3+
WE-LS-09	281	170	M	3+

Imm : immature

Table 4-8

Stomach Analysis of Walleye
Flambeau River, Ladysmith, Wisconsin
September 1992

Sample ID	Percent Full	Type of Content	General Comment
WE-TA-01	Empty	None	None
WE-TA-02	40%	Meat of 1 Minnow	Nearly all digested
WE-TA-03	50%	Meat of 1 Minnow	Partially digested
WE-TA-04	70%	1 Minnow, 3.5cm	Partially digested
WE-TA-05	50%	Meat of 1 Minnow	Partially digested
WE-TA-06	70%	1 Minnow, leaf	Minnow mostly digested
WE-TA-07	40%	1 Minnow, 3.5cm	Mostly digested
WE-TA-08	30%	1 Minnow, 2.6cm	Tail lacking
WE-TA-09	Empty	None	None
WE-LS-01	30%	1 Minnow, 2.8cm	Partially digested
WE-LS-02	Empty	None	None
WE-LS-03	60%	1 Minnow, 5.0cm	Mostly digested
WE-LS-04	100%	1 Perch, 7.8cm	Undigested
WE-LS-05	70%	1 Minnow, 4.5cm	Mostly digested
WE-LS-06	70%	1 Perch, 5.6cm	Undigested
WE-LS-07	Empty	None	None
WE-LS-08	20%	1 Minnow	Mostly digested
WE-LS-09	Empty	None	None

Table 4-9

Mercury Tissue Analysis of Walleye
Flambeau River, Ladysmith, Wisconsin
October 1991 and September 1992
Results in mg/kg

Fish ID #	1991	1992
	Thornapple Flowage	
WE-TA-1	0.90	0.78
WE-TA-2	1.00	0.55
WE-TA-3	0.60	0.59
WE-TA-4	0.80	0.52
WE-TA-5	0.40	0.68
WE-TA-6	0.70	0.76
WE-TA-7	0.60	0.44
WE-TA-8	0.80	0.47
WE-TA-9	0.60	0.38
Average	0.71	0.58
	Ladysmith Flowage	
WE-LS-1	0.90	0.99
WE-LS-2	0.80	0.94
WE-LS-3	0.80	0.79
WE-LS-4	0.70	0.85
WE-LS-5	0.90	0.81
WE-LS-6	0.60	0.91
WE-LS-7	0.80	0.82
WE-LS-8	0.60	0.96
WE-LS-9	0.60	0.55
Average	0.74	0.85

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Table 4-10

Metals Analysis of Walleye and Crayfish
Flambeau River, Ladysmith, Wisconsin
October 1991 and September 1992
Results in mg/kg

Sample ID	Cd	Cr	Cu	Ni	Pb	Zn	Al	Hg	As	Se	Ag	Fe	Mn
Fish Liver													
WE-TA-1-9 1991	0.1	0.2	1.5	0.4	1.3	17	1.1	0.3	0.02	0.51	0.2	73	1.5
WE-TA-1-9 1992	<0.1	<0.1	1.6	<0.2	<0.1	33	15	0.2	<0.04	0.6	<0.1	96	1.6
WE-LS-1-9 1991	0.1	0.3	6.0	0.5	1.2	18	2.9	0.3	0.02	0.48	0.2	67	1.4
WE-LS-1-9 1992	0.2	0.2	9.6	<0.2	<0.1	37	14	0.4	<0.05	0.6	<0.1	59	2.0
Crayfish*													
Blackberry 1991	0.1	1.0	17	0.4	1.2	23	36	0.1	0.24	0.14	0.2	-	-
Blackberry 1992	<0.1	0.4	16	<0.2	0.1	43	46	0.1	0.30	0.13	<0.1		
Meadowbrk 1991	0.1	1.6	20	0.5	1.3	27	36	0.1	0.29	0.15	0.2	-	-
Meadowbrk 1992	<0.1	0.5	19	<0.2	0.2	39	82	0.11	0.40	0.12	<0.1		
Pt. Arthur 1991	0.1	0.6	20	0.5	1.2	21	27	0.3	0.28	0.15	0.2	-	-
Pt. Arthur 1992	<0.1	0.4	14	1.5	0.2	33	430	0.10	0.34	0.14	<0.1		

* Crayfish were compisted: 25 specimens were composited from each of the three sites.

Once per year, an adequate sample size of crayfish (25 individuals or more) are to be collected from each site using the best available methods. Each of the three composite samples are to be analyzed for:

- aluminum
- arsenic
- cadmium
- chromium
- copper
- lead
- mercury
- zinc
- selenium
- nickel
- silver

At each of the three macroinvertebrate sampling stations, the macroinvertebrate fauna are to be collected in the fall of each year.

From September 28 to October 1, 1992, macroinvertebrates were collected from each of three sampling stations using surber sampler and D-frame nets for macroinvertebrates and baited minnow traps and hand collecting techniques for crayfish. Sample locations on the Flambeau River included the following areas: the end of Blackberry Lane, the river at the confluence with Meadowbrook Creek, and at the site of the old Port Arthur Dam.

A total of 12 minnow traps were placed in the Flambeau River, six at Blackberry Lane and six at Port Arthur Dam. Traps were inspected twice a day for the presence of crayfish. No crayfish were taken in the first two days of trapping. It was noted that many of the traps alternated between periods of being submerged and emerged due to the wide fluctuation of the river stage resulting from the normal cyclical release of river water from the Ladysmith Flowage. On days three and four, crayfish were collected by hand generally between the hours of 10:00 a.m. and 2:00 p.m. when crayfish were active in the shallows. Crayfish which were collected were combined at each location and saved for analysis. Collected specimens were preserved by freezing. The data representing the analysis of crayfish appears in Table 4-10.

Picked specimens of other macroinvertebrates were placed in a quart jar and preserved with alcohol. Identifications were completed by EA Associates. Specimens of crayfish which were collected during the macroinvertebrate collection efforts were saved and added to those collected by the hand.

Aquatic invertebrate collections were conducted using kick sampling techniques with both surber sample and D-frame nets. Species encountered appear in Table 4-11.

Substrates in all three sample locations are represented by a mix of gravel, cobble, pebble, and sand. It was noted that there was a higher degree of sediment and silt located at the mouth of Meadowbrook Creek than at the other two sites. Vegetation in terms of brush and trees was observed up to the banks at both Blackberry Lane and Meadowbrook Creek but lacking at Port Arthur.

4.2.3.1 Interpretation of Results of Macroinvertebrate Data

Twenty-five crayfish from each of three sample locations were sampled for metal uptake. For each sample, whole crayfish were used and all twenty-five specimens were composited for the single analysis.

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Table 4-11

Species of Macroinvertebrate Encountered
Flambeau River, Ladysmith, Wisconsin
Fall 1991

Taxa	Blackberry Lane	Port Arthur	Meadowbrook Creek
Platyhelminthes			
Dugesia sp.	2	1	
Nematoda			1
Oligochaeta			
Aulodrilus pigueti		2	
Branchiobdellida sp.			2
Chaetogaster limnae		1	
Dero sp.			1
Lumbriculidae			1
Imm. Tubificidae w/o cap. chaetae	1		1
Nais simplex			1
Nais behningi		1	
Nais sp.		1	
Crustacea			
Decapoda			
Astracidae			1
Isopoda			
Asellus sp.		3	1
Amphipoda			
Gammarus pseudolimnaeus			1
Hyalella azteca		38	1
Insecta			
Ephemeroptera			
Baetisca sp.		1	
Baetis sp.	2	1	1
Ephemera simulans	1	6	23
Ephemerella sp.	2	1	
Isonychia sp.	3		
Leptophlebia sp.		26	11
Potamanthus verticis	18	7	21
Stenacron sp.		3	4
Stenonema near exiguum		1	
Stenonema mediopunctatum	7		
Stenonema vicarium		16	6

Table 4-11 (*Cont.*)

Taxa	Blackberry Lane	Port Arthur	Meadowbrook Creek
Odonata			
Aeshna sp.		1	
Argia moesta		2	
Calopteryx sp.		5	
Ophiogomphus rupinsulensis type	4		
Somatochlora sp.		1	
Plecoptera			
Acroneuria sp.		1	
Neoperla clymene	5		
Perlinella sp.		1	
Phasganophora sp.	48	2	2
Hemiptera			
Belostoma flumineum	1	4	
Gerris sp.	5		
Metrobates sp.	1		
Notonecta sp.		5	
Ranatra fusca	1	2	
Corixidae	1	44	3
Megaloptera			
Nigronia sp.	1		12
Sialis sp.		1	4
Tricoptera			
Ceraclea sp.	1		
Cheumatopsyche sp.	6	1	4
Chimarra obscura	5		
Helicopsyche borealis	1		3
Hydropsyche phalerata	2		
Hyfroptila sp.			3
Lepidostoma sp.	3		
Micrasema rusticum	1		
Neuroclipsis sp.	1	1	
Polycentropus sp.	1	2	9
Pycnopsyche sp.		1	
Psychomyia flavida	12		1
Symphitopsyche bifica series	325	1	2
Coleoptera			
Ectopria nervosa		2	1
Gyrinus sp.	1	22	
Haliplus sp.		1	
Hydaticus sp.	1		
Optioservus sp.	9		
Peltodytnes		1	
Stenelmis sp.	4	1	5

Table 4-11 (*Cont.*)

Taxa	Blackberry Lane	Port Arthur	Meadowbrook Creek
Diptera			
Cladotanytarsus sp.			1
Cricotopus tremulus series			1
Cryptochironomus sp.		1	1
Demicryptochironomus sp.	1		1
Dicrotendipes sp.			1
Epoicocladius sp.			3
Lenziella sp.			2
Microtendipes sp.		2	2
Nanocladius sp.			3
Orthocladiinae			1
Orthocladius sp.	1	1	1
Paratendipes sp.			2
Phaenopsecta sp.			3
Polypedilum scalaneum type			1
Stempellinella sp.		1	1
Stictochironomus sp.	2		5
Synorthocladius sp.		1	
Tanytarsus coffmani			1
Tanytarsus sp.			3
Thienemannimyia series		2	1
Tyentenia discloripes group	2		
Chironmini			2
Empididae	1		1
Tipulidae		2	
Mollusca			
Gastropoda			
Ferrissia sp.	8	1	2
Helisoma sp.			1
Physella sp.		21	4
Pelecypoda			
Sphaeriidae	4		2
Sphaerium striatinum		2	2
TOTAL TAXA*	39	48	54

* TAXA = Number of categories or subdivisions of macroinvertebrates represented.

Table 4-10 shows the metal concentrations in the crayfish from the sample locations. As with the metal data for walleye liver, all metals with the exception of zinc and aluminum are consistent from 1991 to 1992. Zinc and aluminum concentrations increased from 1991 to 1992. Since all sites and all samples show the increase, it is suggested that the 1991 data may show the result of incomplete laboratory digestion. Since full digestion is necessary to completely solubilize metals in preparation for analysis, this is an important consideration. In addition, the aluminum value for the Port Arthur sample (1992) is very high. While the quality control for the sample has been documented, laboratory error has not been ruled out.

The number of taxa found at the three sample locations increased an average of 28 percent from 1991 to 1992. This may be due in part to the timing of the sampling event. In 1991, the sampling event occurred during the last week of October. Air temperatures during the collection period were well below freezing. The 1992 sampling event occurred during September, a full month earlier than in 1991. It is likely that the warmer temperatures observed during the 1992 sampling event resulted in higher macroinvertebrate activity and hence more accessibility. Species collected in 1992 were similar to those collected in 1991 and previous years.

4.2.4 Surface Water Quality

Sampling of surface water was undertaken quarterly at two locations in the Flambeau River. Upstream sampling (SW1) was at the western end of Blackberry Lane. The downstream sampling location (SW2) was approximately 100 yards below the wastewater treatment plant discharge point (Outfall 001).

The surface water samples were analyzed for the following parameters:

- aluminum
- arsenic
- beryllium
- cadmium
- hexzvalent chromium
- total chromium
- hardness
- lead
- mercury
- dissolved oxygen
- pH
- selenium
- silver
- total dissolved solids
- total suspended solids
- zinc
- copper
- nickel

Quarterly surface water sampling was conducted in January, April, July and October of 1992. The samples were submitted to Northern Lake Services in Crandon, Wisconsin, for analysis. The results of these analyses are summarized in Table 4-12.

Linear regression techniques as discussed in Section 4.1.3 were applied to this data set (Table 4-13) to determine if trends exist in the surface water results collected between July 1991 and October 1992. None of the compounds measured in either of the surface water sampling locations had significant trends between July of 1991 and October of 1992. Graphs of the surface water quality results are presented in Appendix I.

Appendix J contains analytical results sheets and chain-of-custody documentation for the 1992 surface water monitoring events.

Table 4-12

1992 Quarterly Surface Water Quality Data Summary

	SW-1				SW-2			
	01/92	04/92	07/92	10/92	01/92	04/92	07/92	10/92
aluminum (mg/l)	0.70	0.75	0.140	0.42	0.42	0.72	0.140	0.54
arsenic (ug/l)	<2	<2	<2	<2	<2	<2	<2	<2
beryllium (mg/l)	<0.2	<0.001	<0.001	<0.001	<0.2	<0.001	<0.001	<0.001
cadmium (ug/l)	<0.2	<0.2	0.6	<0.2	<0.2	<0.2	<0.2	<0.2
chromium VI (mg/l)	0.009	<0.020	<0.018	<0.020	0.007	<0.020	<0.013	<0.020
chromium (ug/l)	2	<1	<1	<1	2	<1	1	<1
hardness (mg/l)	50	34	23	52	50	34	28	68
lead (ug/l)	<1	<1	<1	<1	1	<1	3	<1
mercury (ug/l)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
nickel (mg/l)	<0.05	<0.02	<0.018	<0.02	<0.05	<0.02	<0.018	<0.02
DO (mg/l)	12	11.2	7.4	9.9	12	11.5	7.6	10
pH (SU)	6.4	6.3	7.5	7.4	6.5	6.1	7.3	7.4
selenium (ug/l)	<2	<2	<2	<2	<2	<2	<2	<2
silver (ug/l)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TDS (mg/l)	90	86	90	90	87	120	120	96
TSS (mg/l)	4	<1	9	4	<1	<1	7	5
zinc (mg/l)	0.008	0.011	<0.006	<0.003	0.004	0.009	0.008	<0.003
copper (ug/l)	3	5	2	4	4	<2	<2	4

Table 4-13

Surface Water Quality Results - Trend Analysis

Compound	Location	Probability of Trend Equalling Zero	Trend
Aluminum	SW-1	0.453	--
	SW-2	0.211	--
Arsenic	SW-1	Not detected	--
	SW-2	Not detected	--
Beryllium	SW-1	Not detected	--
	SW-2	Not detected	--
Cadmium	SW-1	0.779	--
	SW-2	0.441	--
Chromium VI	SW-1	0.170	--
	SW-2	0.149	--
Chromium	SW-1	0.144	--
	SW-2	0.537	--
Copper	SW-1	0.338	--
	SW-2	0.821	--
Hardness	SW-1	0.157	--
	SW-2	0.845	--
Lead	SW-1	0.158	--
	SW-2	0.864	--
Mercury	SW-1	Not detected	--
	SW-2	Not detected	--
Nickel	SW-1	Not detected	--
	SW-2	Not detected	--
DO	SW-1	0.763	--
	SW-2	0.643	--
pH	SW-1	0.330	--
	SW-2	0.217	--
Selenium	SW-1	Not detected	--
	SW-2	Not detected	--
Silver	SW-1	Not detected	--
	SW-2	Not detected	--
TDS	SW-1	0.102	--
	SW-2	0.705	--

Table 4-13 (*Cont.*)

Compound	Location	Probability of Trend Equalling Zero	Trend
TSS	SW-1	0.985	--
	SW-2	0.217	--
Zinc	SW-1	0.440	--
	SW-2	0.305	--

4.2.5 Habitat Characterization

The mining permit requires the Flambeau Mining Company to conduct an annual evaluation of the river bottom habitats along the east bank of the Flambeau River. The segment of river to be included in the evaluation is an area from 100 yards upstream of Outfall 002 to a point 1000 yards downstream of Outfall 001. The evaluation is to note the physical character of the bottom habitats (i.e., location of river sediment bars, percent of area that is sand or finer particle size, unusual biological growth) and is to include the production of a map of the bottom types in the area of the evaluation.

The initial habitat characterization was completed on August 11, 1992. This analysis occurred prior to the installation of the outfall structures. A report regarding the evaluation appears in Appendix K. A general summary of the report provides the following information.

Several substrate complexes were noted including rock/cobble, rock/cobble/gravel, cobble/gravel, gravel/silt, and silt/organic matter. Each of these classifications is defined in the summary report. In the area immediately adjacent to the mine, it was noted that there is a highly erodible bank. Substrate in this area consists of silt/organic matter up to five feet from the shore. Other sections of substrate containing silt/organic matter are near Meadowbrook Creek as well as areas where the river bank is inset from the main channel of the river.

Natural sediment deposition in the area of the mine and Meadowbrook Creek may continue to be an annual occurrence due to the natural erosion potential of the river bank adjacent to the mine and the sediment load contributed by Meadowbrook Creek.

Three genera of plants were observed in the study area. Of these three, the most abundant was Vallisneria sp.

4.2.6 Wetland Surface Flows

Water levels in selected wetlands are to be read and recorded monthly from March through November of each year. The staff gauges were required to be installed and read beginning two months (or as soon as practical depending on the season) after project permits are granted in order to obtain preconstruction water levels. At the time the pit is backfilled, the data will be compared to preconstruction levels and the recent precipitation history for the region. If water levels indicated there has been no significant drawdown effects on these wetlands attributable to the project, readings will cease.

On May 29, 1991, a wetland scientist from Foth & Van Dyke installed staff gauges at designated locations near the Flambeau Mining Company site. Wetland staff gauges were installed at locations as required per conditions of the mine permit. The staff gauges, three feet in length and incremented in 1/100, were attached to treated posts with the bottom of the staff gauge equal to ground surface. Following installation of the staff gauges, they were located vertically per mean sea level as well as horizontally and a bench mark was established nearby to periodically verify elevations, if needed.

Water level readings were recorded monthly from each of the wetland staff gauges by a qualified person. Table 4-14 presents a summary of water level readings recorded between May 1991 and November 1991 and between March 1992 and November 1992. The 1992 water level results show dry wetland conditions were observed at WT-1 and WT-3 periodically throughout the survey period. Dry conditions were observed at WT-1 from June 30, 1992, through August 31, 1992, and at WT-3 from May 30, 1992, through October 31, 1992.

A comparison of 1991 and 1992 water level readings show dry conditions encountered more frequently at WT-1 and WT-3 during 1992. Dry conditions were not observed at WT-4 and WT-5 during 1992 whereas dry conditions were observed at these locations periodically during 1991. WT-2 did not observe dry conditions during 1991 or 1992.

4.3 Meteorology

Meteorological data were collected in the vicinity of the mining site through the use of wind sensors and a precipitation gauge. The wind sensors are mounted approximately 30 feet off the ground where they are free of air turbulence caused by ground level obstructions such as buildings and trees. A tipping bucket is used to gather data regarding precipitation occurring at the project site.

The meteorological instruments were operated continuously from the time construction resumed on May 18. The location of the meteorological station is the same as that used during baseline sampling. The site is approximately one mile south of the southeast sampling site at the northwest corner of Highways 27 and P.

Weather data (wind speed, wind direction, precipitation) are measured and stored at the project site. Signals from the wind instruments and precipitation gauge are recorded on a Campbell Scientific CR10 measurement and control module mounted in a weatherproof enclosure. The "datalogger" performs sensor measurement, signal conversion, timekeeping, communication, data reduction, data/program storage and control functions. Data is transferred to a remote computer at a Foth & Van Dyke office from the station datalogger via a Campbell Scientific DC112 telephone modem. The data is then loaded unto a spreadsheet which is submitted to WDNR with the TSP data. A lead acid battery supplies power to the unit and is float charged with AC power. It provides power during power outages.

In addition to limited monitoring during the injunction period, the wind speed sensor was struck by lightning on May 23, 1992. Wind speed equipment was repaired in June 1992 with continuous data being collected from June 18 on.

Meteorological data has not been included in this report because of its voluminous nature. Copies of the information have been previously submitted to Julian Chazin of WDNR.

4.4 Total Suspended Particulate Matter (TSP)

The TSP concentration in the ambient air was also monitored from May 18, when construction resumed after the injunction period, to the end of the year. The TSP ambient air concentration was monitored using high-volume air samplers at each of four sites: north site (Rusk County Hospital), southeast site (Jansen Road and Highway 27), northeast site (Highway 27 and Blackberry Lane), and Blackberry Lane. Samplers were operated every third day.

Table 4-14

Monthly Wetland Staff Gauge Reading Summary

						Staff Gauge Location/Water Level (ft)									
				Remarks		WT-1		WT-2		WT-3		WT-4		WT-5	
Date	Time	Weather	Personnel	1991	1992	1991[1]	1992	1991[1]	1992	1991[1]	1992	1991[1]	1992	1991[1]	1992
3-30-92	13:50-16:00	40°F Sunny	JC	--	Rainfall data not available	--	0.61	--	0.96	--	0.46	--	1.25	--	0.53
4-30-92	09:00-11:00	60°F Sunny Light Wind	JC	--	3.11" rain 4/1 - 4/28	--	0.46	--	0.85	--	0.28	--	1.07	--	0.50
5-30-92	09:30-11:30	64°F Sunny	JC	--	3.0" rain 5/5 - 5/31	0.83	0.20	1.11	0.73	0.61	Dry	1.30	0.95	0.56	0.46
6-30-92	08:30-10:30	62°F Sunny	JC	--	1.22" rain June	0.77	Dry	0.69	0.48	Dry	Dry	Dry	0.65	0.49	0.47
7-31-92	15:30-17:15	78°F Sunny	JC	.77" rain 7/10 - 7/31	3.15" rain July	0.04	Dry	0.62	0.27	Dry	Dry	0.60	0.40	0.44	0.11
8-31-92	16:30-18:30	68°F Mostly Cloudy	JC	.82" rain Aug.	1.0" rain 8/11 - 8/31	Dry	Dry	0.26	0.26	Dry	Dry	Dry	0.49	Dry	0.42
9-30-92	17:00-19:00	72°F Sunny	JC	6.51" rain Sept.	3.5" rain Sept.	0.20	0.08	0.63	0.37	Dry	Dry	0.75	0.61	0.54	0.67
10-31-92	08:30-10:30	30°F Light Snow	JC	1.21" rain Oct.	3.93" rain Oct.	Dry	0.67	0.55	0.27	Dry	Dry	0.59	0.83	0.53	0.58
11-30-92	--	--	JC	5.82" rain Nov.	1.91" rain Nov. frozen conditions	NRT	NRT	NRT	NRT	NRT	NRT	NRT	NRT	NRT	NRT

[1] 1991 readings obtained from 1991 Annual Report.
NRT No reading taken due to frozen conditions.

[A3S10]91F6

TSP data collected for 1992 are included as Table 4-15. Data was collected in 1992 between May 18 and December 29. Two exceedances of the TSP standard were recorded, both at the southeast site. The first occurred on October 21 and the second occurred on December 2. The exceedance on October 21 was attributed to sandblasting of the highway using routine techniques in order to restripe it. The second exceedance occurred when erosion control mulch was being applied to the Type II stockpile area with a bale chopper pursuant to Flambeau's Erosion Control Plan. These exceedances were reported (Appendix L) to the WDNR as specified in the permit.

Portions of the TSP filters were saved. Once every three months, these filter sections were composited and analyzed for arsenic, beryllium, cadmium, chromium, mercury and nickel. Results of these composite analyses for May through November are summarized in Table 4-16.

The 1992 TSP data was plotted for each site. The plots are shown in Figures 4-1 through 4-4. The data at the southeast, northeast and northwest sites illustrated some variability in TSP data. The TSP results for the hospital site were relatively consistent.

4.5 Asbestiform Fibers

Asbestiform samples will be collected when the mining phase (ore removal) commences. No asbestiform samples were procured or analyzed during 1992 since the mining phase of the project did not commence.

4.6 Source Performance Test

A source performance test was performed in 1991 during the preproduction phase of the mine. The next test is to be performed during the mining phase, thus no source test was performed in 1992.

Table 4-15

1992 TSP Data Summary (ug/m^3)

Date	1 North Site	3 Southeast Site	4 Northeast Site	5 Northwest Site
5-18	22	30	22	
5-21		84	76	
5-24	11	13	13	17
5-27	22	70	34	39
5-30		83	51	85
6-2	54		65	93
6-5	34	64	41	71
6-8	17	19	18	18
6-11	45		55	71
6-14	26	31	29	28
6-17	34	48	59	38
6-20	10	17	14	13
6-23	12	18	14	13
6-26	11	17	27	22
6-29	13	32	44	26
7-2	13	20	19	14
7-5	11	31	16	13
7-8		128	37	23
7-11	14	19	17	15
7-14	19	22	19	
7-17	33	45	43	16
7-20	15	56	22	8
7-23	19	37	67	14
7-26	15	49	17	22
7-29	17	100	78	23
8-1	20		45	29
8-4	13		100	25
8-7	34	47	47	32
8-10	18	25	32	16
8-13	14	33	61	21
8-16	21	35	22	25
8-19	31	49	50	22
8-22	47	50	48	38
8-25	10	12	17	6
8-28	22	42	46	31
8-31	10	40	38	12

Table 4-15 (*Cont.*)

Date	1 North Site	3 Southeast Site	4 Northeast Site	5 Northwest Site
9-3	20	25	54	18
9-6	13	27	13	11
9-9	11	20	14	10
9-12	25	23	28	26
9-15	14	36	25	15
9-18	9	12	12	9
9-21	18	25	19	19
9-24	31	48	33	28
9-27	25	49	27	25
9-30	40		69	67
10-3		37	41	24
10-6	27	40	34	32
10-9	8	8	8	7
10-12	17	60	47	17
10-15	8	41	48	8
10-18	9	11	16	8
10-21	22	187	32	23
10-24	26	40	30	20
10-27	33	85	40	22
10-30	33	53	45	20
11-2	4	8	9	3
11-5	3	3	3	3
11-8	16	17	18	15
11-11	14	16	16	10
11-14	5	23	9	4
11-17	20	27	22	18
11-20	7	12	8	5
11-23	6	12	10	5
11-26	5	9	7	4
11-29	32	31	29	31
12-2	7	155	6	4
12-5	9	14	11	8
12-8	19	19	21	15
12-11	13	16	13	13
12-14	13	13	13	12
12-17	7	6	6	6
12-20	15	17	19	15
12-23	8	10	8	7
12-26	10	12	10	8
12-29	21	23	18	17

Table 4-16

Quarterly TSP Filter Metal Results Summary (ug/m^3)

	Arsenic	Beryllium	Cadmium	Chromium	Mercury	Nickel
North Site						
Oct.-Dec. 91	<0.0000043	<0.00000054	0.0000013	0.000018*	<0.00000032	0.000019*
May-Aug. 92	<0.0000026	<0.00000052	<0.0000044	0.0000096	0.00000026	<0.0000200
Aug.-Oct. 92	<0.0000019	<0.00000039	<0.0000019	0.000028	<0.00000083	<0.000015
Southeast Site						
Oct.-Dec. 91	<0.0000020	<0.00000050	0.00000070	0.000015*	<0.00000030	<0.000018*
May-Aug. 92	<0.0000025	<0.00000049	<0.0000041	0.000012	<0.00000016	<0.000019
Aug.-Oct. 92	<0.0000040	<0.00000081	<0.0000040	<0.0000027	<0.00000081	<0.000031
Northeast Site						
Oct.-Dec. 91	<0.0000021	<0.00000052	0.00000085	0.000017*	<0.00000032	<0.000019*
May-Aug. 92	<0.0000026	<0.00000051	<0.0000043	0.000011	<0.00000017	<0.000018
Aug.-Oct. 92	<0.0000020	<0.00000041	<0.0000020	0.000022	<0.00000079	<0.000016
Northwest Site						
Oct.-Dec. 91	0.0000032	<0.00000053	0.00000063	0.000017*	<0.00000032	<0.000019*
May-Aug. 92	<0.0000025	<0.00000049	<0.0000041	0.000011	<0.00000016	<0.000018
Aug.-Oct. 92	<0.0000023	<0.00000046	<0.0000023	0.000016	<0.00000083	<0.000017

* Chromium and nickel were detected in blank unexposed filters at 0.8 mg/kg (Cr) and 4.2 mg/kg (Ni). These values correlate to an exposed filter concentration of 8.2×10^{-5} ug/m^3 (Cr) and 4.3×10^{-4} ug/m^3 (Ni).

Figure 4-1

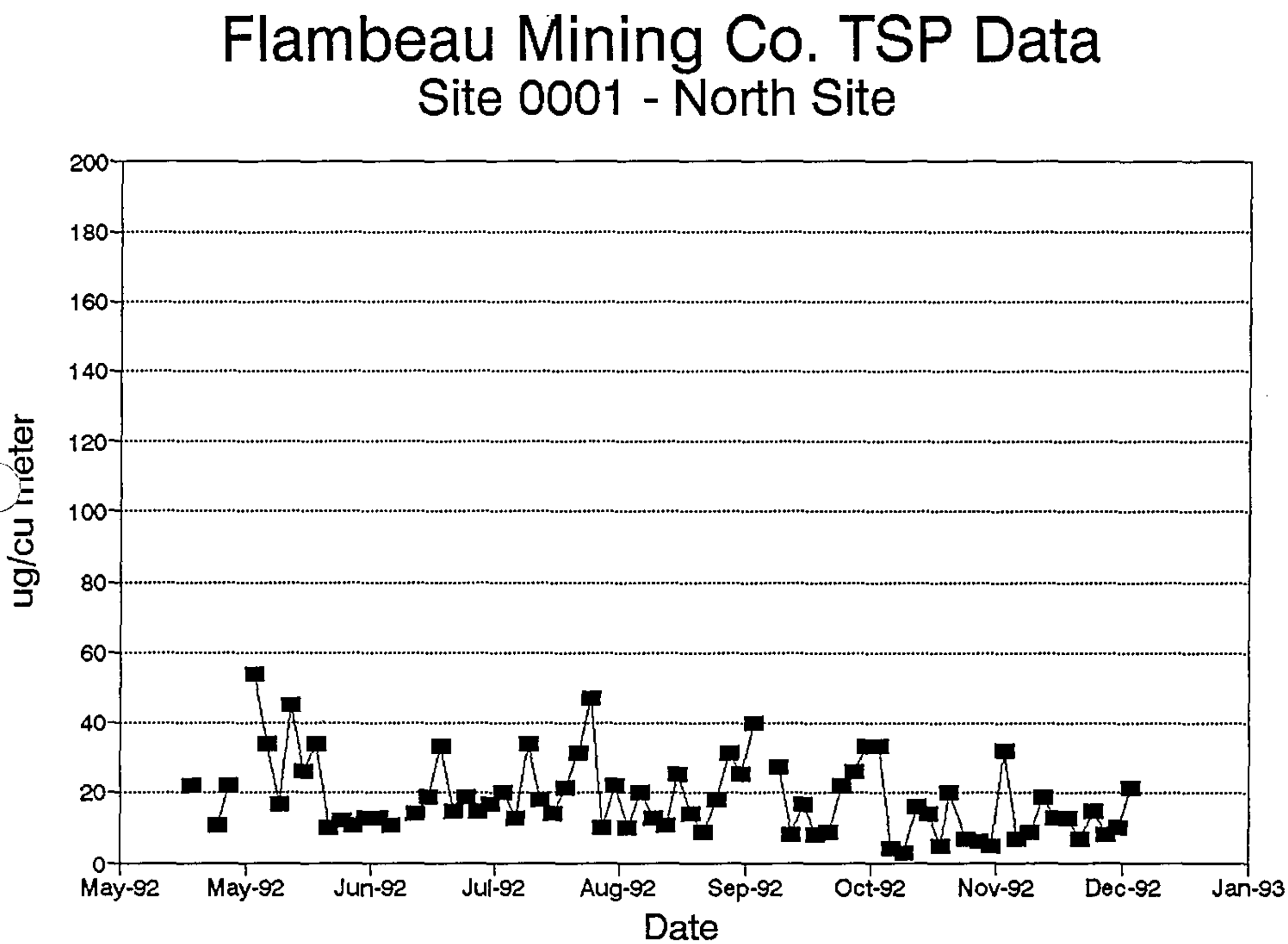

Flambeau Mining Co. TSP Data
Site 0001 - North Site
ug/cu meter
0
20
40
60
80
100
120
140
160
180
200
May-92
May-92
Jun-92
Jul-92
Aug-92
Sep-92
Oct-92
Nov-92
Dec-92
Jan-93
Date

Figure 4-2

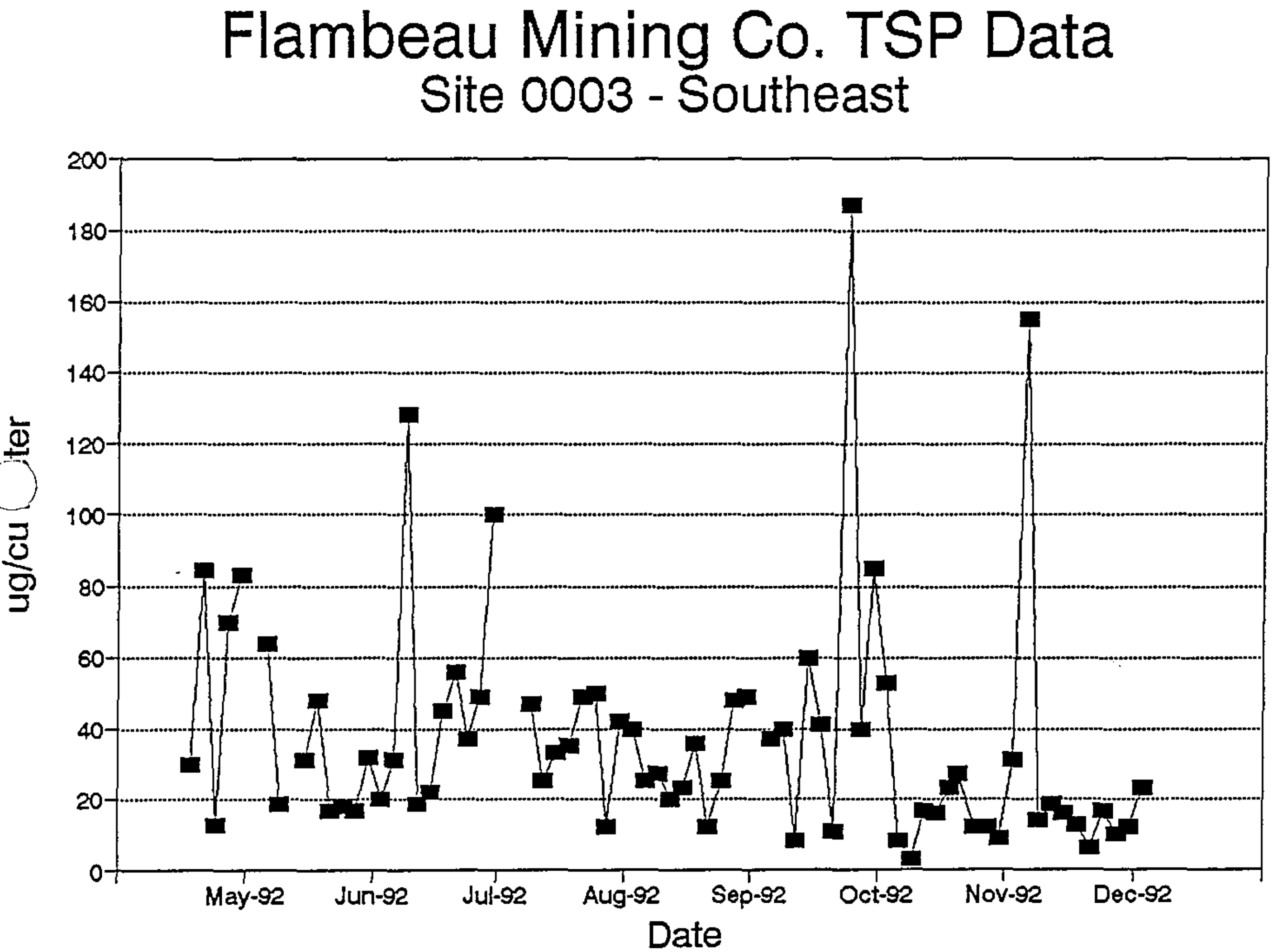
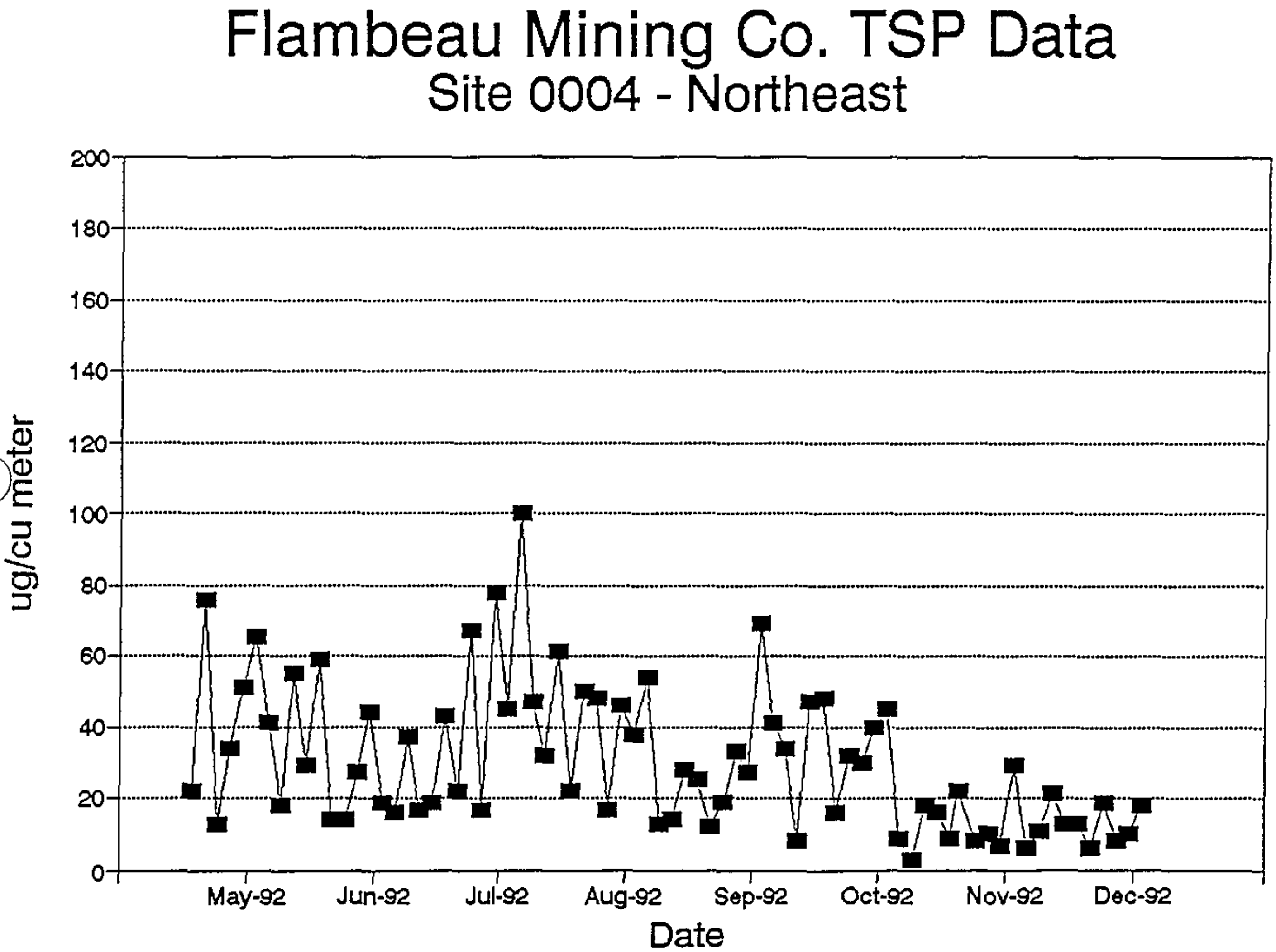
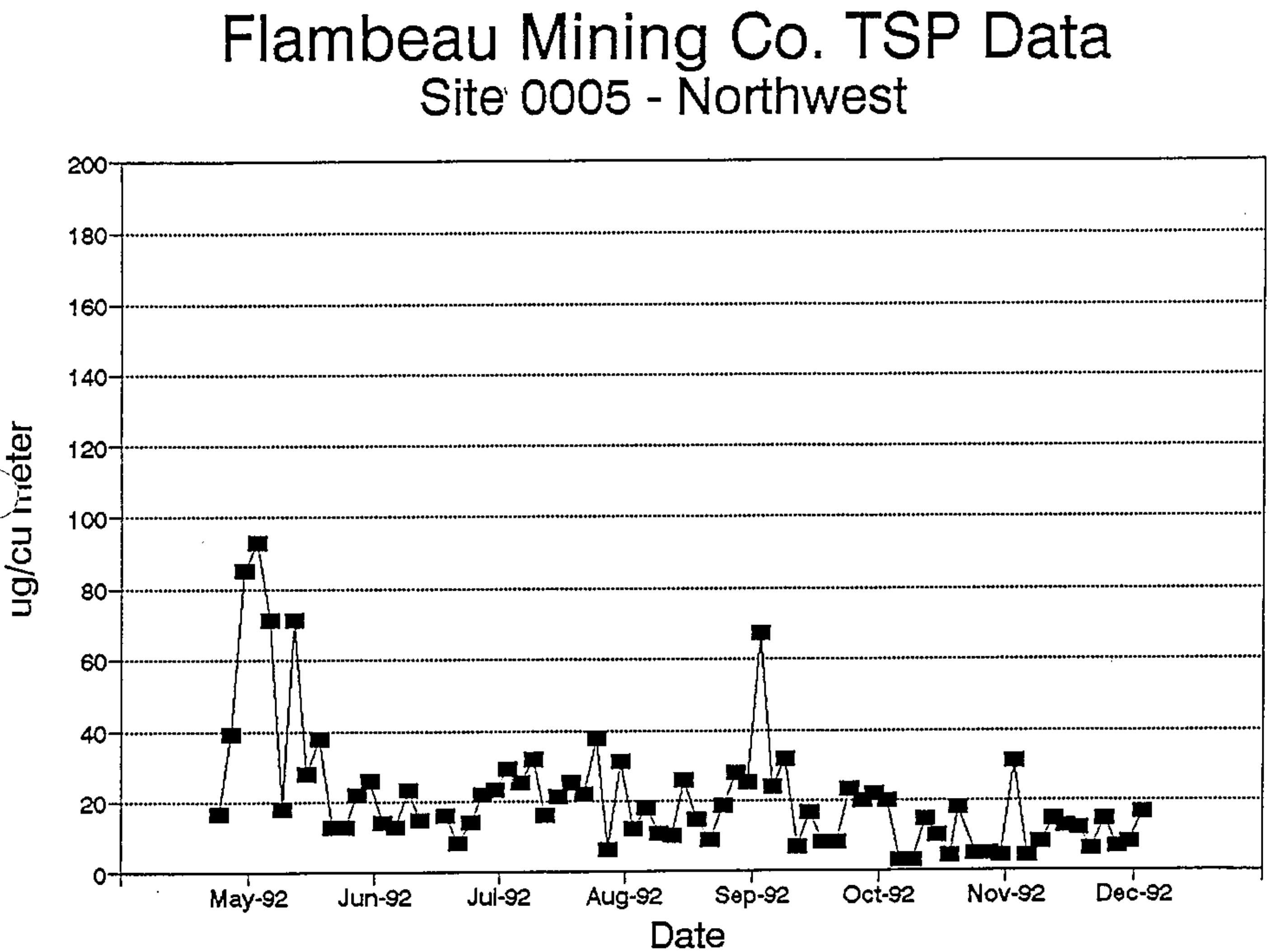

Flambeau Mining Co. TSP Data
Site 0003 - Southeast
200
180
160
140
120
100
80
60
40
20
0
May-92
Jun-92
Jul-92
Aug-92
Sep-92
Oct-92
Nov-92
Dec-92
Date

Figure 4-3



Flambeau Mining Co. TSP Data
Site 0004 - Northeast
ug/cu meter
200
180
160
140
120
100
80
60
40
20
0
May-92
Jun-92
Jul-92
Aug-92
Sep-92
Oct-92
Nov-92
Dec-92
Date

Figure 4-4



Flambeau Mining Co. TSP Data
Site 0005 - Northwest
ug/cu meter
200
180
160
140
120
100
80
60
40
20
0
May-92
Jun-92
Jul-92
Aug-92
Sep-92
Oct-92
Nov-92
Dec-92
Date

Appendix A

Well Abandonment Forms

Private Water Supply Form

Well Abandonment Form and Well Construction Diagram for MW 1000 and MW 1000R, Respectively

Foth & Van Dyke
2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
Fax: 414/497-8516

LETTER OF TRANSMITTAL

DATE: 9-4-92 SCOPE I.D.: 91F6-2

ATTENTION: KEN Markart

RE: Flambeau Project
Drillhole Aband. Forms

To: Ken Markart
WDNR
P.O. BOX 818
Rhinelander, Wi 54501

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via ______ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ ______

COPIES	DATE	NO.	DESCRIPTION
1			Drillhole Abandonement Forms (Form 2700-2)

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit ____ copies
☒ For your use ☐ Make corrections noted ☐ Submit ____ copies for distribution
☒ As requested ☐ Rejected (see remarks) ☐ Return ____ corrected copies
☐ For review and comment ☐ Other ______
☐ FOR BIDS DUE ______ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS: Ken

Here are the Drillhole Abandonment Report Forms for Drillhole numbers 22-163, 22-164, and 22-165 for the Flambeau Project. Please note I am sending you Madison's, state Geologists, and the District's copy(ies). You said you would forward the copies to the appropriate people. Thank you

COPY TO: File

A1 SIGNED: Jim Hutchison

FORM REG006 (1/91)

If enclosures are not as noted, kindly notify us at once.

State of Wisconsin
Department of [illegible]
Box 818
Rhinelander, [illegible]

FED EXED TO FOTH & VAN DYKE
8/28/92

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT
Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-163

Location: ~~NE~~ SW 1/4 Of The ~~SW~~ SE 1/4 KJS 9-11-92 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: 70°
Direction (Azimuth): S 45° E

Property Owner Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0.0	16.0	5.625"			
16.0	21.0	4.000"			
21.0	162.7	3.782"			

Total Depth of Drillhole: 162.7 Feet

Date Started Drilling: 8/24/92
Date Finished Drilling: 8/26/92

Depth to Water: N/A Feet

Drillhole Is

☐ Temporarily Abandoned
☒ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap
☐ Welded Steel Plate

Depths		Type of Overburden	Depths		If Permanently Abandoned	
From	To	And Rock	From	To	Sealing Material Used	Amount*
0	17.0	GLACIAL TILL	0	162.7	PORTLAND CEMENT	13 BAGS, 78 GALLONS
17.0	162.7	VOLCANICS				

Was Casing Left In Place
☐ Yes
☒ No
If Yes, To What Depth? ________

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 26 Day Of AUGUST, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K Moncur

Title: TECHNICAL SUPERVISOR

A2

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin

FED EX ED TO
FOTH & VAN DYKE
9/2/92

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

Exploration Licensee Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Property Owner Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Date Started Drilling: 8/27/92
Date Finished Drilling: 9/1/92

County: RUSK
Drillhole Number: 22-164

Location: ~~NE~~ SW 1/4 Of The ~~SW~~ SE 1/4 Section 9 KJS 9-11-92
Township: 34 NORTH **Range:** 6 WEST

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: 55°
Direction (Azimuth): S 45° E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	34'	5.625"			
34'	47'	4.000"			
47'	201'	3.782"			

Total Depth of Drillhole: 201.0 Feet

Depth to Water: N/A Feet

Drillhole Is

☐ Temporarily Abandoned
☒ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap
☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	31'6"	GLACIAL TILL	0	201'	PORTLAND CEMENT	16 BAGS, 96 GALLONS
31'6"	201'0"	VOLCANICS				

Was Casing Left In Place
~~☐ Yes~~
☒ No

If Yes, To What Depth? ~~10' CASING BETWEEN 20-30'~~ NO CASING K.K.M.

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 1 Day Of SEPTEMBER, 1992.

At Ladysmith (City), Wisconsin (State).

Signature of Exploration Company Representative: Thomas K. Manaws

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

FED EXED TO
FOTH + VAN DYKE
9/3/92

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

RAL EXPLORATION DRILLHOLE ABANDONMENT REPORT
Rev. 3-89

County
RUSK

Exploration Licensee Name
FLAMBEAU MINING CO.

Street or Route
N 4095 HIGHWAY 27

City, State, Zip Code
LADYSMITH, WI 54848

Drilling Company Name
LONGYEAR DRILLING CO.

Street or Route
11364 EAST HIGHWAY 37

City, State, Zip Code
HIBBING, MN 55746

Property Owner Name
FLAMBEAU MINING CO.

Street or Route
N 4095 HIGHWAY 27

City, State, Zip Code
LADYSMITH, WI 54848

Date Started Drilling: 9/1/92
Date Finished Drilling: 9/2/92

Drillhole Number
22-165

Location
~~NE~~ SW 1/4 Of The ~~SW~~ SE 1/4 KDS 9-11-92 Section 9
Township 34 NORTH Range 6 WEST

Type of Drillhole (Core Drill, Rotary, Etc.)
CORE DRILL

Starting Angle of Hole: -70°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0'0"	28'0"	5.625"			
28'0"	32'0"	4.000"			
32'0"	168'6"	3.782"			

Total Depth of Drillhole: 168' 6" Feet

Depth to Water: N/A Feet

Drillhole Is

☐ Temporarily Abandoned

☒ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap

☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	18'	GLACIAL TILL	0	168'6"	PORTLAND CEMENT	11 BAGS, 66 GALLONS
18'	168'6"	VOLCANICS				

Was Casing Left In Place

☒ Yes

~~☒ No~~

If Yes, To What Depth? 10.5' CASING BETWEEN 20-30.5 FEET T.K.M.

Name of Person or Firm Doing Sealing Work
LONGYEAR DRILLING CO.

Street or Route
11364 EAST HIGHWAY 37

City, State, Zip Code
HIBBING, MN 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 2 Day Of SEPTEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative
Thomas K Mancuso

Title
TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

Flambeau Mining Company
N4095 Highway 27
Ladysmith, Wisconsin 54848
(715) 532-7620

September 17, 1992

Kennecott

Mr. Ken Markart
State of Wisconsin
Dept. of Natural Resources
107 Sutliff Ave.
Rhinelander, WI 54501

Dear Mr. Markart;

This letter is written in response to your concerns regarding the abandonment of drill hole 22-165. According to your calculations, 12.3 bags of cement were required to fill 22-165. This is correct utilizing the drill hole diameters and intervals thought to be relevant to drill hole 22-165. However after investigating the abandonment with Longyear, the driller stated that casing reported to have been left in 22-164 was actually left in 22-165.

As a result, using the actual drill hole diameters and intervals for 22-165, the calculated cement requirements for 22-165 would be approximately 11.6 bags of cement. As shown on the abandonment form, 11 sacks of cement were used to plug 22-165.

Please call if you have questions or require additional information.

Sincerely,

Toby Mancuso

Toby Mancuso
Technical Supervisor

cc: J.D.Tygesen
J.Murphy
J. Hutchison

Foth & Van Dyke
2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
Fax: 414/497-8516

LETTER OF TRANSMITTAL

DATE: 9-14-91 SCOPE I.D.: 91F6-2
ATTENTION: KEN MARKART
RE: Flambeau Project
Drillhole Aband. Forms

To: Ken Markart
WDNR
P.O. Box 818
Rhinelander, Wi 54501

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via ______ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ ______

COPIES	DATE	NO.	DESCRIPTION
1			Drillhole Abandonment Forms (Form 2700-2)
			Drillholes 22-166 & 22-167

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit ____ copies
☒ For your use ☐ Make corrections noted ☐ Submit ____ copies for distribution
☒ As requested ☐ Rejected (see remarks) ☐ Return ____ corrected copies
☐ For review and comment ☐ Other ______
☐ FOR BIDS DUE ______ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS: Here are the Drillhole Abandonment Report Forms for Drillhole numbers 22-166 and 22-167 for the Flambeau Project. I'm sending you Madison, State Geologists and Districts copies.

Thank you

COPY TO: file

A6 SIGNED: Jim Hutchison

FORM REC006 (1/91) *If enclosures are not as noted, kindly notify us at once.*

(4)

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT
Form 2700-2
Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-166

Location: SW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: 55°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	33	5.625			
33	140	3.782			

Property Owner Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 140 Feet

Date Started Drilling: 9-2-92
Date Finished Drilling: 9-8-92

Depth to Water: N/A Feet

Drillhole Is
- ☐ Temporarily Abandoned
- ☒ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
- ☐ Threaded Cap
- ☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	32	Glacial Till	0	140	Portland Cement	16 Bags, 96 gallons
32	140	Volcanics				

Was Casing Left In Place
- ☒ Yes
- ☐ No

If Yes, To What Depth? 33 feet

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 11 Day Of September, 19 92.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Karl Smith

Title: Mining Engineer

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.
EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2

Rev. 3-89

Exploration Licensee Name: FLAMBEAU MINING CO.	County: RUSK
Street or Route: N 4095 HIGHWAY 27	Drillhole Number: 22-167
City, State, Zip Code: LADYSMITH, WI 54848	Location: SW 1/4 Of The SE 1/4 Section 9; Township 34 NORTH Range 6 WEST
Drilling Company Name: LONGYEAR DRILLING CO.	Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL
Street or Route: 11364 EAST HIGHWAY 37	Starting Angle of Hole: 55° / Direction (Azimuth): S 45° E
City, State, Zip Code: HIBBING, MN 55746	Drillhole Diameter(s) and Interval(s)
Property Owner Name: FLAMBEAU MINING CO.	
Street or Route: N 4095 HIGHWAY 27	Total Depth of Drillhole: 130 Feet
City, State, Zip Code: LADYSMITH, WI 54848	Depth to Water: N/A Feet
Date Started Drilling: 9-9-92 / Date Finished Drilling: 9-10-92	

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	41	5.625			
41	130	3.782			

Drillhole Is

☐ Temporarily Abandoned

☒ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap

☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	41	Glacial Till	0	130	Portland Cement	15 bags, 90 gallons
41	130	Volcanics				

Was Casing Left In Place

☐ Yes

☒ No

If Yes, To What Depth?

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING CO.

Street or Route: 11364 EAST HIGHWAY 37

City, State, Zip Code: HIBBING, MN 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 11 Day Of September, 1992.

At LADYSMITH (City), WISCONSIN (State)

Signature of Exploration Company Representative: Karl Smith

Title: Mining Engineer

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

Foth & Van Dyke
2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
Fax: 414/497-8516

LETTER OF TRANSMITTAL

DATE: 9-25-92 | SCOPE I.D.: 91F6-2
ATTENTION: Ken Markart
RE:
FLAMBEAU PROJECT
Drillhole Abandonment Forms

To: Ken Markart
WDNR
P.O. Box 818
Rhinelander, WI 54501

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☒ _____

COPIES	DATE	NO.	DESCRIPTION
1			Drill Hole Abandonment Forms (Form 2700-2)

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit _____ copies
☒ For your use ☐ Make corrections noted ☐ Submit _____ copies for distribution
☒ As requested ☐ Rejected (see remarks) ☐ Return _____ corrected copies
☐ For review and comment ☐ Other _____
☐ FOR BIDS DUE _____ 19_____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS: Ken,
Here are the Drillhole Abandonment Forms FOR Drillhole No's 22-169 and 22-170 for the Flambeau Project in Ladysmith, WI. I am sending you Madison's, State Geologist's and District's copy.

Thank You!

COPY TO: FILE

A9

SIGNED: Jim Hutchison

FORM REG006 (1/91)

If enclosures are not as noted, kindly notify us at once.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

(7)

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2

Rev. 3-89

Field	Entry
Exploration Licensee Name	FLAMBEAU MINING CO.
Street or Route	N 4095 HIGHWAY 27
City, State, Zip Code	LADYSMITH, WI 54848
Drilling Company Name	LONGYEAR DRILLING CO.
Street or Route	11364 EAST HIGHWAY 37
City, State, Zip Code	HIBBING, MN 55746
Property Owner Name	FLAMBEAU MINING CO.
Street or Route	N 4095 HIGHWAY 27
City, State, Zip Code	LADYSMITH, WI 54848
Date Started Drilling	9/16/92
Date Finished Drilling	9/18/92

Field	Entry
County	RUSK
Drillhole Number	22-169
Location	SW 1/4 Of The SE 1/4 Section 9
Township	34 NORTH
Range	6 WEST
Type of Drillhole (Core Drill, Rotary, Etc.)	CORE DRILL
Starting Angle of Hole	-54°
Direction (Azimuth)	S 45° E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	34	5.624			
34	199	3.782			

Total Depth of Drillhole 199 Feet

Depth to Water N/A Feet

Drillhole Is

- ☐ Temporarily Abandoned
- ☒ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

- ☐ Threaded Cap
- ☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	28	GLACIAL TILL	0	199	PORTLAND CEMENT	16 BAGS, 96 GALLONS
28	199	VOLCANICS				

Was Casing Left In Place

- ☐ Yes
- ☒ No

If Yes, To What Depth? ______

Field	Entry
Name of Person or Firm Doing Sealing Work	LONGYEAR DRILLING CO.
Street or Route	11364 EAST HIGHWAY 37
City, State, Zip Code	HIBBING, MN 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 18 Day Of SEPTEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K. Manwar

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

(8)

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2

Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY

Street or Route: N4095 HIGHWAY 27

City, State, Zip Code: LADYSMITH, WISCONSIN 54848

Drillhole Number: 22-170

Location: NW 1/4 Of The SE 1/4 Section 9

Township: 34 NORTH Range: 6 WEST

Drilling Company Name: LONGYEAR DRILLING COMPANY

Street or Route: 11364 EAST HIGHWAY 37

City, State, Zip Code: HIBBING, MINNESOTA 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -71°

Direction (Azimuth): S45°E

Property Owner Name: FLAMBEAU MINING COMPANY

Street or Route: N4095 HIGHWAY 27

City, State, Zip Code: LADYSMITH, WISCONSIN 54848

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	72	5.629			
72	261	3.782			

Total Depth of Drillhole: 261 Feet

Date Started Drilling: 9/21/92

Date Finished Drilling: 9/23/92

Depth to Water: N/A Feet

Drillhole Is

☐ Temporarily Abandoned

☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap

☐ Welded Steel Plate

Depths		Type of Overburden And Rock	Depths		If Permanently Abandoned	
From	To		From	To	Sealing Material Used	Amount*
0	30	GLACIAL TILL	0	261	PORTLAND CEMENT	23 BAGS, 138 GALLONS
30	42	SANDSTONE				
42	261	VOLCANICS				

Was Casing Left In Place

☐ Yes

☑ No

If Yes, To What Depth?

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY

Street or Route: 11364 EAST HIGHWAY 37

City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 23 Day Of SEPTEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K. Mancuso

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

A11

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:

Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

Foth & Van Dyke
2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
Fax: 414/497-8516

LETTER OF TRANSMITTAL

DATE: 9-21-92 SCOPE I.D.: 91F6-2
ATTENTION: KEN MARKART
RE:
Flambeau Project
Drillhole Aband. Forms

To: Ken Markart
WDNR
P.O. Box 818
Rhinelander, Wi 54501

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via ________ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ ________

COPIES	DATE	NO.	DESCRIPTION
1			Drillhole Abandonment Forms (Form 2700-2)

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit ____ copies
☒ For your use ☐ Make corrections noted ☐ Submit ____ copies for distribution
☒ As requested ☐ Rejected (see remarks) ☐ Return ____ corrected copies
☐ For review and comment ☐ Other ________
☐ FOR BIDS DUE ________ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS: Ken,
Here is the drillhole Abandonment Form for Drillhole 22-168 for the Flambeau Project in Ladysmith, Wi. I'm sending your Madison's, State Geologists and Districts copies.

Regards

COPY TO: File

A1.2

SIGNED: Jim Hutchison

FORM REG006 (1/91)

If enclosures are not as noted, kindly notify us at once.

(6)

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-168

Location: SW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -56°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	63	5.624			
63	277	3.782			

Property Owner Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 277 Feet

Date Started Drilling: 9/10/92
Date Finished Drilling: 9/15/92

Depth to Water: N/A Feet

Drillhole Is
- ☐ Temporarily Abandoned
- ☒ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
- ☐ Threaded Cap
- ☐ Welded Steel Plate

Depths		Type of Overburden	Depths		If Permanently Abandoned	
From	To	And Rock	From	To	Sealing Material Used	Amount*
0	10	GLACIAL TILL				
10	48	SANDSTONE				
48	277	VOLCANICS				

Was Casing Left In Place
- ☐ Yes
- ☒ No

If Yes, To What Depth? ____

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 17 Day Of SEPTEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K. Manuel

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

AI3

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:

Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

Foth & Van Dyke
2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
Fax: 414/497-8516

LETTER OF TRANSMITTAL

DATE: 10/5/92	SCOPE I.D.: 91F6-2
ATTENTION: Ken Markart	
RE: Flambeau Project Drillhole abandonment Forms	

To: Ken Markart
WDNR
P.O. BOX 818
Rhinelander, WI 54501

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via ______ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ ______

COPIES	DATE	NO.	DESCRIPTION
3			Drillhole Abandonment Forms (Form 3300-5)

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit ____ copies
☒ For your use ☐ Make corrections noted ☐ Submit ____ copies for distribution
☒ As requested ☐ Rejected (see remarks) ☐ Return ____ corrected copies
☐ For review and comment ☐ Other ______
☐ FOR BIDS DUE ______ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:
Ken,
Here are the Drillhole Abandonment Forms for Drillholes No's 22-171, 22-172 and 22-173 for the Flambeau Mining Project in Ladysmith, WI. I am sending you Madison's, the State Geologist's and the District's copy.

Best Regards

COPY TO: File

A14

SIGNED: Jim Hutchison

FORM REG006 (1/91)

If enclosures are not as noted, kindly notify us at once.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2
Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WISCONSIN 54848

Drillhole Number: 22-171

Location: NW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: 70°
Direction (Azimuth): S 45° E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	74	5.624			
74	175	4.5			
175	220	2.984			

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WISCONSIN 54848

Total Depth of Drillhole: 220 Feet

Date Started Drilling: 9-21-92
Date Finished Drilling: 9-28-92

Depth to Water: N/A Feet

Drillhole Is
☐ Temporarily Abandoned
☒ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
☐ Threaded Cap
☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	35	Till	0	220	Portland Cement	20bags, 120gallons
35	49	Cambrian Sandstone				
49	220	Volcanics				

Was Casing Left In Place
☐ Yes
☒ No

If Yes, To What Depth?

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 30 Day Of September, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Karl Smith

Title: Mining Engineer

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin (10)
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT
Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WISCONSIN 54848

Drillhole Number: 22-172

Location: SW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: 90
Direction (Azimuth): S 45° E

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WISCONSIN 54848

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	82	5.624			
82	238	3.782			

Total Depth of Drillhole: 238 Feet

Date Started Drilling: 9-23-92
Date Finished Drilling: 9-29-92

Depth to Water: N/A Feet

Drillhole Is
☐ Temporarily Abandoned
☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
☐ Threaded Cap
☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	15	Till	0	238	PorTland CemenT	23 bags, 138 gallons
15	23	Cambrian SandsTone				
23	238	Volcanics				

Was Casing Left In Place
☐ Yes
☒ No
If Yes, To What Depth? ____

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 30 Day Of SepTember, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Paul Smith

Title: Mining Engineer

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

A16

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.
EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

(11)

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2

Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-173

Location: SW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: 54°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	33	5.624			
33	121	3.782			

Property Owner Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 121 Feet

Date Started Drilling: 9-28-92
Date Finished Drilling: 9-29-92

Depth to Water: N/A Feet

Drillhole Is

☐ Temporarily Abandoned
☒ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap
☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	29.5	Till	0	121	Portland Cement	11 bags, 66 gallons
29.5	121	Volcanics				

Was Casing Left In Place
☐ Yes
☒ No

If Yes, To What Depth?

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 1 Day Of October, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Paul Smith

Title: Mining Engineer

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

Foth & Van Dyke
2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
Fax: 414/497-8516

LETTER OF TRANSMITTAL

DATE: 10/9/92	SCOPE I.D.: 91F6-2
ATTENTION: KEN MARKART	
RE: Flambeau Project Drillhole Abandonment FORM	

To: Ken Markart
WDNR
P O BOX 818
Rhinelander, Wi 54501

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via ________ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ ________

COPIES	DATE	NO.	DESCRIPTION
3			Drillhole Abandonment Forms (Form 3700-2)

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit ____ copies
☐ For your use ☐ Make corrections noted ☐ Submit ____ copies for distribution
☐ As requested ☐ Rejected (see remarks) ☐ Return ____ corrected copies
☐ For review and comment ☐ Other ________
☐ FOR BIDS DUE ________ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:
Ken,
Here are the Drillhole Abandonment Forms for Drillholes No's 22-174 and 22-175 for the Flambeau Mining Project in Ladysmith, Wi. I am sending you Madison's, the State Geologists' and the Districts' copy.

Best Regards

COPY TO: File

A18 SIGNED: Jim Hutchinson

FORM REG006 (1/91)

If enclosures are not as noted, kindly notify us at once.

State of Wisconsin (12)
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT
Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-174

Location: SW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -68°
Direction (Azimuth): S45°E

Property Owner Name: FLAMBEAU MINING CO.
Street or Route: N 4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	37	5.625"			
37	260	3.782"			

Total Depth of Drillhole: 260 Feet

Date Started Drilling: 9/29/92
Date Finished Drilling: 10/5/92

Depth to Water: N/A Feet

Drillhole Is
☐ Temporarily Abandoned
☒ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
☐ Threaded Cap
☐ Welded Steel Plate

Depths		Type of Overburden	Depths		If Permanently Abandoned	
From	To	And Rock	From	To	Sealing Material Used	Amount*
0	7	GLACIAL TILL	0	260	PORTLAND CEMENT	21 BAGS, 126 GALLONS
7	20	SANDSTONE				
20	260	VOLCANICS				

Was Casing Left In Place
☐ Yes
☒ No
If Yes, To What Depth? ____

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 7 Day Of OCTOBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K. Marcus

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.
EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.), may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin (13)
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2

Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WISCONSIN 54848

Drillhole Number: 22-175

Location: NW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -48°
Direction (Azimuth): S45° E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	82	5.624"			
82	160	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WISCONSIN 54848

Total Depth of Drillhole: 160 Feet

Date Started Drilling: 9/30/92
Date Finished Drilling: 10/2/92

Depth to Water: N/A Feet

Drillhole Is
☐ Temporarily Abandoned
☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
☐ Threaded Cap
☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	49	GLACIAL TILL	0	160	PORTLAND CEMENT	17 BAGS, 102 GALLONS
49	65	SANDSTONE				
65	160	VOLCANICS				

Was Casing Left In Place
☐ Yes
☑ No

If Yes, To What Depth?

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 7 Day Of OCTOBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K. Manus

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

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2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

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4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

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Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:

Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

Foth & Van Dyke
2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
Fax: 414/497-8516

LETTER OF TRANSMITTAL

DATE: 10/16/92 SCOPE I.D.: 91F6-2
ATTENTION: KEN MARKART
RE: Flambeau Project
Drillhole Abandonment Form

To: Ken Markart
WDNR
P.O. BOX 818
Rhinelander Wi. 54501

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via ______ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ ______

COPIES	DATE	NO.	DESCRIPTION
3			Drillhole Abandonment Forms (Form 2700-2)

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit ____ copies
☒ For your use ☐ Make corrections noted ☐ Submit ____ copies for distribution
☐ As requested ☐ Rejected (see remarks) ☐ Return ____ corrected copies
☐ For review and comment ☐ Other ______
☐ FOR BIDS DUE ______ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:
Ken,
Here are the Drillhole Abandonment Forms for Drillhole's No's 22-176, 22-177, 22-178, and 22-179 for the Flambeau Mining Project in Ladysmith, Wi. I am sending you, Madison's, the State Geologists and the Districts copy.

Best regards

COPY TO: File

A21

SIGNED: Jim Hutchison

FORM REG006 (1/91)

If enclosures are not as noted, kindly notify us at once.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

14

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2

Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-176

Location: NW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -77°
Direction (Azimuth): S 45° E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	32	5.625"			
32	72	4.000"			
72	245	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 245 Feet

Date Started Drilling: 10/5/92
Date Finished Drilling: 10/8/92

Depth to Water: N/A Feet

Drillhole Is
- ☐ Temporarily Abandoned
- ☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
- ☐ Threaded Cap
- ☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	39	GLACIAL TILL	0	245	PORTLAND CEMENT	19 BAGS, 114 GALLONS
39	52	SANDSTONE				
52	245	VOLCANICS				

Was Casing Left In Place
- ☑ Yes
- ☐ No

If Yes, To What Depth? 32-72 FEET

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 15 Day Of OCTOBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K. Marcus

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:

Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

(15)

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-177

Location: SW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -72°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	70	5.625"			
70	268	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 268 Feet

Date Started Drilling: 10/5/92
Date Finished Drilling: 10/8/92

Depth to Water: N/A Feet

Drillhole Is
- ☐ Temporarily Abandoned
- ☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
- ☐ Threaded Cap
- ☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	21	GLACIAL TILL	0	268	PORTLAND CEMENT	23 BAGS, 138 GALLONS
21	47	SANDSTONE				
47	268	VOLCANICS				

Was Casing Left In Place
- ☐ Yes
- ☑ No

If Yes, To What Depth?

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 15 Day Of OCTOBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K Marcus

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

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METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-178

Location: NW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -60°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	70	5.625"			
70	114	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 114 Feet

Date Started Drilling: 10/12/92
Date Finished Drilling: 10/13/92

Depth to Water: N/A Feet

Drillhole Is

☐ Temporarily Abandoned
☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap
☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	33	GLACIAL TILL	0	114	PORTLAND CEMENT	16 BAGS, 96 GALLONS
33	59	SANDSTONE				
59	114	VOLCANICS				

Was Casing Left In Place

☐ Yes
☑ No

If Yes, To What Depth? ________

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 15 Day Of OCTOBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K Mancuso

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:

Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

Exploration Licensee Name: FLAMBEAU MINING COMPANY	County: RUSK
Street or Route: N4095 HIGHWAY 27	Drillhole Number: 22-179
City, State, Zip Code: LADYSMITH, WI 54848	Location: NE 1/4 Of The SE 1/4 Section 9; Township 34 NORTH Range 6 WEST
Drilling Company Name: LONGYEAR DRILLING CO.	Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL
Street or Route: 11364 EAST HIGHWAY 37	Starting Angle of Hole: -52° / Direction (Azimuth): S 45° E
City, State, Zip Code: HIBBING, MN 55746	Drillhole Diameter(s) and Interval(s) (see below)
Property Owner Name: FLAMBEAU MINING COMPANY	
Street or Route: N4095 HIGHWAY 27	
City, State, Zip Code: LADYSMITH, WI 54848	Total Depth of Drillhole: 138 Feet
Date Started Drilling: 10/8/92 / Date Finished Drilling: 10/13/92	Depth to Water: N/A Feet

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	67	5.625"			
67	138	3.782"			

Drillhole Is

☐ Temporarily Abandoned

☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap

☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	38	GLACIAL TILL	0	138	PORTLAND CEMENT	17 BAGS, 102 GALLONS
38	59	SANDSTONE				
59	138	VOLCANICS				

Was Casing Left In Place

☐ Yes

☑ No

If Yes, To What Depth? ____________

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY

Street or Route: 11364 EAST HIGHWAY 37

City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 15 Day Of OCTOBER, 1992.

At LADYSMITH (City), WISCONSIN (State)

Signature of Exploration Company Representative: Thomas K. Manuss

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

Foth & Van Dyke
2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
Fax: 414/497-8516

LETTER OF TRANSMITTAL

DATE: 10/27/92 SCOPE I.D.: 91F6-2
ATTENTION: KEN MARKART
RE:
Flambeau Project
Drillhole Abandonment forms

To: Ken Markart
WDNR
P.O. Box 818
Rhinelander, Wi 54501

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via ________ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ ________

COPIES	DATE	NO.	DESCRIPTION
3			Drillhole Abandonment Forms (Form 2700-2)

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit ____ copies
☒ For your use ☐ Make corrections noted ☐ Submit ____ copies for distribution
☐ As requested ☐ Rejected (see remarks) ☐ Return ____ corrected copies
☐ For review and comment ☐ Other ________
☐ FOR BIDS DUE ________ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:
Ken,
Here are the Drillhole Abandonment Forms for Drillholes No's 22-180, 22-181 and 22-183 for the Flambeau Mining Project in Ladysmith Wi.
I am sending you Madison's, the State Geologist's and the Districts' copy.

Best regards

COPY TO: File

A26 SIGNED: Jim Hutchison

If enclosures are not as noted, kindly notify us at once.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

18

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT
Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-180

Location: NE 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -64°
Direction (Azimuth): S45° E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	90'	5.625"			
90	260'	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 260 Feet

Date Started Drilling: 10/13/92
Date Finished Drilling: 10/19/92

Depth to Water: N/A Feet

Drillhole Is
- ☐ Temporarily Abandoned
- ☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
- ☐ Threaded Cap
- ☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	36	GLACIAL TILL	0	260	PORTLAND CEMENT	24 BAGS, 144 GALLONS
36	61	SANDSTONE				
61	260	VOLCANICS				

Was Casing Left In Place
- ☐ Yes
- ☑ No

If Yes, To What Depth? ____________

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 22 Day Of OCTOBER, 1992.

At LADYSMITH (City), WISCONSIN (State)

Signature of Exploration Company Representative: Thomas K Moran

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

(19)

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-181

Location: NE 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -78°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	70	5.625"			
70	270	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 270 Feet

Date Started Drilling: 10/14/92
Date Finished Drilling: 10/19/92

Depth to Water: N/A Feet

Drillhole Is
☐ Temporarily Abandoned
☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
☐ Threaded Cap
☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	30	GLACIAL TILL	0	270	PORTLAND CEMENT	27 BAGS, 162 GALLONS
30	54	SANDSTONE				
54	270	VOLCANICS				

Was Casing Left In Place
☑ Yes
☐ No

If Yes, To What Depth? 60-70'

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 22 Day Of OCTOBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K Marcus

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure, restrictions.

a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

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METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT
Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-183

Location: NE 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -75°
Direction (Azimuth): S45°E

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	93'	5.625"			
93	228'	3.782"			

Total Depth of Drillhole: 228 Feet

Date Started Drilling: 10/19/92
Date Finished Drilling: 10/21/92

Depth to Water: N/A Feet

Drillhole Is
- ☐ Temporarily Abandoned
- ☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
- ☐ Threaded Cap
- ☐ Welded Steel Plate

Depths		Type of Overburden	Depths		If Permanently Abandoned	
From	To	And Rock	From	To	Sealing Material Used	Amount*
0	30	GLACIAL TILL	0	228	PORTLAND CEMENT	23 BAGS, 138 GALLONS
30	52	SANDSTONE				
52	228	VOLCANICS				

Was Casing Left In Place
- ☐ Yes
- ☑ No

If Yes, To What Depth? ______

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 22 Day Of OCTOBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K Moran

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

Foth & Van Dyke
2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
Fax: 414/497-8516

LETTER OF TRANSMITTAL

DATE: 11/2/92 SCOPE I.D.: 91F6-2
ATTENTION: KEN MARKART
RE: Flambeau Project
Drillhole Abandonment Forms

To: Ken Markart
WDNR
PO BOX 818
Rhinelander, WI 54501

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via ________ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ ________

COPIES	DATE	NO.	DESCRIPTION
3			Drillhole Abandonment Forms (Form 3300-5)

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit ____ copies
☒ For your use ☐ Make corrections noted ☐ Submit ____ copies for distribution
☐ As requested ☐ Rejected (see remarks) ☐ Return ____ corrected copies
☐ For review and comment ☐ Other ________
☐ FOR BIDS DUE ________ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:
KEN,
Here are the Drillhole Abandonment Forms for Drillholes 22-182, 22-184 and 22-185 for the Flambeau Mining Project in Ladysmith, Wi.
I am sending you Madison's, the State Geologists' and the District's copy.

Best Regards

COPY TO: File

A30 SIGNED: Jim Hutchinson

FORM REG006 (1/91)

If enclosures are not as noted, kindly notify us at once.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

(21)

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County	RUSK
Exploration Licensee Name FLAMBEAU MINING COMPANY	**Drillhole Number** 22-182
Street or Route N4095 HIGHWAY 27	**Location** NE 1/4 Of The SE 1/4 Section 9
City, State, Zip Code LADYSMITH, WI 54848	**Township** 34 NORTH **Range** 6 WEST
Drilling Company Name LONGYEAR DRILLING CO.	**Type of Drillhole (Core Drill, Rotary, Etc.)** CORE DRILL
Street or Route 11364 EAST HIGHWAY 37	**Starting Angle of Hole** 74° **Direction (Azimuth)** S 45° E
City, State, Zip Code HIBBING, MN 55746	**Drillhole Diameter(s) and Interval(s)**
Property Owner Name FLAMBEAU MINING COMPANY	
Street or Route N4095 HIGHWAY 27	
City, State, Zip Code LADYSMITH, WI 54848	**Total Depth of Drillhole** 251 Feet
Date Started Drilling 10-20-92 **Date Finished Drilling** 10-29-92	**Depth to Water** N/A Feet

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	72	5.625"			
72	189	3.782			
189	251	2.984			

Drillhole Is

- ☐ Temporarily Abandoned
- ☒ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

- ☐ Threaded Cap
- ☐ Welded Steel Plate

Depths		Type of Overburden And Rock	Depths		If Permanently Abandoned	
From	To		From	To	Sealing Material Used	Amount*
0	36	Glacial Fill	0	251	Portland Cement	21 Bags, 126 gallons
36	52	Cambrian Sandstone				
52	251	Volcanics				

Was Casing Left In Place

- ☐ Yes
- ☒ No

If Yes, To What Depth? ______

Name of Person or Firm Doing Sealing Work LONGYEAR DRILLING COMPANY

Street or Route 11364 EAST HIGHWAY 37

City, State, Zip Code HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 30 Day Of October, 1992

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative Karl Smith

Title Mining Engineer

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

A31

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:

Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

(22)

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-184

Location: NE 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: 72°
Direction (Azimuth): S45E

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	80	5.624			
80	226	3.782			

Total Depth of Drillhole: 226 Feet

Date Started Drilling: 10-21-92
Date Finished Drilling: 10-26-92

Depth to Water: N/A Feet

Drillhole Is
- ☐ Temporarily Abandoned
- ☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
- ☐ Threaded Cap
- ☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	39	Glacial Till	0	226	PorTland Cement	21 Bags 126 gallons
39	64	Cambrian Sandstone				
64	226	Volcanics				

Was Casing Left In Place
- ☐ Yes
- ☑ No

If Yes, To What Depth? ______

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 30 Day Of October, 1992

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: [signature]

Title: Mining Engineer

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

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   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

(23)

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY

Drillhole Number: 22-185

Street or Route: N4095 HIGHWAY 27

Location: NE 1/4 Of The SE 1/4 Section 9

City, State, Zip Code: LADYSMITH, WI 54848

Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Street or Route: 11364 EAST HIGHWAY 37

Starting Angle of Hole: 75° Direction (Azimuth): S45°E

City, State, Zip Code: HIBBING, MN 55746

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	70	5.625			
70	243	3.782			

Property Owner Name: FLAMBEAU MINING COMPANY

Street or Route: N4095 HIGHWAY 27

City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 243 Feet

Date Started Drilling: 10-27-92 Date Finished Drilling: 10-29-92

Depth to Water: N/A Feet

Drillhole Is

☐ Temporarily Abandoned

☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap

☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	35	Glacial Till	0	243	Portland Cement	23 Bags, 138 gallons
35	42	Cambrian Sandstone				
42	243	Volcanics				

Was Casing Left In Place

☐ Yes

☑ No

If Yes, To What Depth?

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY

Street or Route: 11364 EAST HIGHWAY 37

City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 30 Day Of October, 1992

At LADYSMITH (City), WISCONSIN (State)

Signature of Exploration Company Representative: [signature]

Title: Mining Engineer

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

Foth & Van Dyke
2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
Fax: 414/497-8516

LETTER OF TRANSMITTAL

DATE: 11-9-92 SCOPE I.D.: 91F6-2
ATTENTION: KEN MARKART
RE:

To: KEN Markart
WDNR
P.O. BOX 818
Rhinelander, Wi 54501

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via ______ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ ______

COPIES	DATE	NO.	DESCRIPTION
1			letter res Drillhole # 22-187 abandonment
3			Drillhole abandonment Forms (FORM 2700-2)

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit ____ copies
☒ For your use ☐ Make corrections noted ☐ Submit ____ copies for distribution
☐ As requested ☐ Rejected (see remarks) ☐ Return ____ corrected copies
☐ For review and comment ☐ Other ______
☐ FOR BIDS DUE ______ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS: Ken

Here are the Drillhole Abandonment Forms for Drillholes 22-186 and 22-187 for The Flambeau Mining Project in Ladysmith, Wi. I am sending you Madison's, the State Geologists and the District's copy. Also included is a letter fom Toby Mancuso to you regarding the abandonment procedure for Drillhole 22-187.

Best Regards

COPY TO: ______

A34

SIGNED: Jim Hutchinson

FORM RECN6 (1/91)

If enclosures are not as noted, kindly notify us at once.

Flambeau Mining Company
N4095 Highway 27
Ladysmith, Wisconsin 54848
(715) 532-7620

November 6, 1992

Kennecott

Ken Markart
Department of Natural Resources
North Central District Headquarters
P.O. Box 818
Rhinelander, WI 54501

Dear Ken:

Drill hole # 22-187 encountered significant zones of cavitation between approximately 90 to 170 feet and circulation could not be maintained. As a result, special procedures were used to abandon the hole as you requested:

- HQ rods were dropped to the bottom of the hole and nine bags of cement were pumped between 90'-226'. Cement did not fill the hole to 90' because of the cavities.

- A two foot cedar plug was placed in the hole at approximately 90'.

- Thirteen bags of cement were pumped between 0'-90'. Cement reached the top of the hole.

Please call if you have questions or require additional information (715) 532-7620.

Sincerely,

Toby Mancuso

Toby Mancuso
Technical Supervisor

cg
cc: J. Hutchison
J. Tygesen
J. Murphy

Corporate Office: 10 East South Temple • P.O. Box 11248 • Salt Lake City, Utah 84147 • (801) 322-7000

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

27

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

Exploration Licensee Name: FLAMBEAU MINING COMPANY	County: RUSK
Street or Route: N4095 HIGHWAY 27	Drillhole Number: 22-186
City, State, Zip Code: LADYSMITH, WI 54848	Location: [redacted] SW 1/4 Of The SE 1/4 Section 9 Township 34 NORTH Range 6 WEST
Drilling Company Name: LONGYEAR DRILLING CO.	Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL
Street or Route: 11364 EAST HIGHWAY 37	Starting Angle of Hole: -64° / Direction (Azimuth): S45°E
City, State, Zip Code: HIBBING, MN 55746	Drillhole Diameter(s) and Interval(s): see table below
Property Owner Name: FLAMBEAU MINING COMPANY	
Street or Route: N4095 HIGHWAY 27	
City, State, Zip Code: LADYSMITH, WI 54848	Total Depth of Drillhole: 258 Feet
Date Started Drilling: 10/29/92 / Date Finished Drilling: 11/4/92	Depth to Water: N/A Feet

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	62	5.625"			
62	258	3.782"			

Drillhole Is

☐ Temporarily Abandoned

☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap

☐ Welded Steel Plate

Depths		Type of Overburden And Rock	Depths		If Permanently Abandoned	
From	To		From	To	Sealing Material Used	Amount*
0	22	GLACIAL TILL	0	258	PORTLAND CEMENT	20 BAGS, 120 GALLONS
22	34	SANDSTONE				
34	258	VOLCANICS				

Was Casing Left In Place

☐ Yes

☑ No

If Yes, To What Depth? ______

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY	I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.
Street or Route: 11364 EAST HIGHWAY 37	Dated This 11 Day Of NOVEMBER, 1992.
City, State, Zip Code: HIBBING, MINNESOTA 55746	At LADYSMITH (City), WISCONSIN (State)
	Signature of Exploration Company Representative: Thomas K. Marcus
	Title: TECHNICAL SUPERVISOR

*If neat cement, indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:

Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

(22)

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT
Form 2700-2 Rev. 3-89

Exploration Licensee Name
FLAMBEAU MINING COMPANY

Street or Route
N4095 HIGHWAY 27

City, State, Zip Code
LADYSMITH, WI 54848

Drilling Company Name
LONGYEAR DRILLING CO.

Street or Route
11364 EAST HIGHWAY 37

City, State, Zip Code
HIBBING, MN 55746

Property Owner Name
FLAMBEAU MINING COMPANY

Street or Route
N4095 HIGHWAY 27

City, State, Zip Code
LADYSMITH, WI 54848

Date Started Drilling 10/29/92 | Date Finished Drilling 11/3/92

Drillhole Is
☐ Temporarily Abandoned
☑ Permanently Abandoned

County
RUSK

Drillhole Number
22-187

Location
NE 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Type of Drillhole (Core Drill, Rotary, Etc.)
CORE DRILL

Starting Angle of Hole: -64° | Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	79	5.625"			
79	226	3.782"			

Total Depth of Drillhole 226 Feet

Depth to Water N/A Feet

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
☐ Threaded Cap
☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	36	GLACIAL TILL	0	226	PORTLAND CEMENT	★ 22 BAGS, 132 GALLONS
36	55	SANDSTONE				(SEE ATTACHMENT)
55	226	VOLCANICS				

Was Casing Left In Place
☐ Yes
☑ No
If Yes, To What Depth? ________

Name of Person or Firm Doing Sealing Work
LONGYEAR DRILLING COMPANY

Street or Route
11364 EAST HIGHWAY 37

City, State, Zip Code
HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 11 Day Of NOVEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative
Thomas K. Marcus

Title
TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

A37

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.
EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under arte[illegible] pressure such that ground water flows at the ground surface, approval of the method of containment of [illegible] flow and the method of eventual abandonment of the drillhole must be obtained from the Departm[illegible] of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

Foth & Van Dyke
2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
Fax: 414/497-8516

LETTER OF TRANSMITTAL

DATE: 11/13/92 SCOPE I.D.: 91F6-2

ATTENTION: KEN MarKart

RE: Flambeau Project
Drillhole abandonment

To: KEN MarKart
WDNR
P.O. BOX 818
Rhinelander, Wi. 54501

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via ______ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ ______

COPIES	DATE	NO.	DESCRIPTION
1			letter re: Drillhole # 22-190 abandonment
3			Drillhole abandonment Forms (Form 3700-2)

THESE ARE TRANSMITTED as checked below:

☐ For your information ☐ No exceptions taken ☐ Resubmit ______ copies
☐ For your use ☐ Make corrections noted ☐ Submit ______ copies for distribution
☐ As requested ☐ Rejected (see remarks) ☐ Return ______ corrected copies
☐ For review and comment ☐ Other ______
☐ FOR BIDS DUE ______ 19______ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:
KEN,
Here are the drillhole abandonment forms for Drillholes 22-188 thru 22-192 for the Flambeau Mining Project in Ladysmith, Wi. I am sending you Madison's, the state Geologists and the District's copy. Also included is a letter from Toby Mancuso to you regarding the abandonment of Drillhole 22-190.

Best Regards,

COPY TO: file

A38

SIGNED: Jim Hutchison

FORM REG006 (1/91)

If enclosures are not as noted, kindly notify us at once.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2

Rev. 3-89

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Date Started Drilling: 11/3/92
Date Finished Drilling: 11/6/92

County: RUSK

Drillhole Number: 22-188

Location: NW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -71°
Direction (Azimuth): S 45° E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	67'	5.625"			
67	308'	3.782"			

Total Depth of Drillhole: 308 Feet

Depth to Water: N/A Feet

Drillhole Is

☐ Temporarily Abandoned

☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap

☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	34	GLACIAL TILL	0	308	PORTLAND CEMENT	30 BAGS, 180 GALLONS
34	52	SANDSTONE				
52	308	VOLCANICS				

Was Casing Left In Place

☐ Yes

☑ No

If Yes, To What Depth? ______

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 12 Day Of NOVEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K Mancuso

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-189

Location: NW 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -45°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	83	5.625"			
83	161	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 161 Feet

Date Started Drilling: 11/4/92
Date Finished Drilling: 11/9/92

Depth to Water: N/A Feet

Drillhole Is
☐ Temporarily Abandoned
☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
☐ Threaded Cap
☐ Welded Steel Plate

Depths		Type of Overburden	Depths		If Permanently Abandoned	
From	To	And Rock	From	To	Sealing Material Used	Amount*
0	43	GLACIAL TILL	0	161	PORTLAND CEMENT	20 BAGS, 120 GALLONS
43	60	SANDSTONE				
60	161	VOLCANICS				

Was Casing Left In Place
☐ Yes
☑ No
If Yes, To What Depth?

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 12 Day Of NOVEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State)

Signature of Exploration Company Representative: Thomas K. Marcus

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.
EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848
Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746
Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848
Date Started Drilling: 11/8/92
Date Finished Drilling: 11/9/92

Drillhole Is
☐ Temporarily Abandoned
☑ Permanently Abandoned

County: RUSK
Drillhole Number: 22-190
Location: NE 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST
Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL
Starting Angle of Hole: -60°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	82	5.625"			
82	114	3.782"			

Total Depth of Drillhole: 114 Feet
Depth to Water: N/A Feet

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
☐ Threaded Cap
☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	36	GLACIAL TILL	0	36*	PORTLAND CEMENT	14 BAGS, 84 GALLONS
36	58	SANDSTONE				* SEE ATTACHMENT
58	114	VOLCANICS				

Was Casing Left In Place
☐ Yes
☑ No
If Yes, To What Depth? ______

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 12 Day Of NOVEMBER, 1992.
At LADYSMITH (City), WISCONSIN (State)
Signature of Exploration Company Representative: Thomas K Manuwa
Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.
EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY

Drillhole Number: 22-191

Street or Route: N4095 HIGHWAY 27

Location: NE 1/4 Of The SE 1/4 Section 9

City, State, Zip Code: LADYSMITH, WI 54848

Township: 34 NORTH Range: 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Street or Route: 11364 EAST HIGHWAY 37

Starting Angle of Hole: -60°

Direction (Azimuth): S45°E

City, State, Zip Code: HIBBING, MN 55746

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	80	5.625"			
80	142	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY

Street or Route: N4095 HIGHWAY 27

City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 142 Feet

Date Started Drilling: 11/9/92

Date Finished Drilling: 11/11/92

Depth to Water: N/A Feet

Drillhole Is

☐ Temporarily Abandoned

☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap

☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	34	GLACIAL TILL	0	142	PORTLAND CEMENT	16 BAGS, 96 GALLONS
34	57	SAND STONE				
57	142	VOLCANICS				

Was Casing Left In Place

☐ Yes

☑ No

If Yes, To What Depth?

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY

Street or Route: 11364 EAST HIGHWAY 37

City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 12 Day Of NOVEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State)

Signature of Exploration Company Representative: Thomas K Mancuso

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:

Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-192

Location: NE 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -54°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	80	5.625"			
80	118	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 118 Feet

Date Started Drilling: 11/10/92
Date Finished Drilling: 11/11/92

Depth to Water: N/A Feet

Drillhole Is
- ☐ Temporarily Abandoned
- ☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
- ☐ Threaded Cap
- ☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	41	GLACIAL TILL	0	118	PORTLAND CEMENT	16 BAGS, 96 GALLONS
41	52	SANDSTONE				
52	118	VOLCANICS				

Was Casing Left In Place
- ☐ Yes
- ☑ No

If Yes, To What Depth? ____

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 12 Day Of NOVEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K. Manuel

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

A43

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

Abandonment of Metallic Mineral Exploration Drillholes Pursuant to NR 130.06(1), Wis. Adm. Code

(a) Permanent Abandonment.

1. All drillholes 4 inch in diameter and smaller shall be filled from the bottom of the hole upward to the ground surface with concrete or neat cement grout.

2. Drillholes larger than 4 inches in diameter preferably should be filled in a manner similar to that described in 1. above. However, the following alternative methods of filling such holes are acceptable:

   a. Drillholes constructed in limestone, dolomite, shale, or pre-Cambrian formations (granite, gabbro, gneiss, schist, slate, greenstone, quartzite, etc.) may be filled with gravel or crushed rock from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the gravel or crushed stone to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use gravel or crushed rock, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   b. Drillholes constructed in sandstone formation may be filled with disinfected sand or pea gravel from the bottom upward to a point 20 feet below the top of the first rock formation encountered below the surface or to a depth 40 feet below the ground surface, whichever is the greater depth, and the remainder of the drillhole from the top of the sand or pea gravel to the ground surface shall then be filled with concrete or neat cement grout. If it is physically impractical to use sand or pea gravel, the explorer may use clay slurry as a filling material after receiving approval from the Department.

   c. Drillholes constructed in glacial drift or other unconsolidated formation may be filled with clean clay slurry from the bottom upward to a point 20 feet below the ground surface, and the remainder of the drillhole must then be filled from the top of the clay slurry to the ground surface with concrete or neat cement grout.

   d. Drillholes constructed in mixed rock types may be filled in accordance with 2. a., b., and c. above. Where the alternative methods to filling the drillhole completely with concrete or neat cement grout are selected, concrete or neat cement grout plugs at least 40 feet in depth, extending at least 20 feet above and below the point of surface contact between every recognized geologic rock type shall be provided.

3. Filling procedure restrictions.

   a. Filling material shall be applied through a conductor pipe, except that when practical a dump bailer may be used. When concrete is placed under water by a conductor pipe, the bottom end of the conductor pipe shall be submerged in the concrete at all times.

   b. When it is desired to remove all or part of the casing from an unconsolidated formation that will not stand open (such as sand or gravel) upon abandonment of a drillhole, the casing must be removed concurrently with the filling of the drillhole, and the bottom end of the casing shall be kept below the surface of the fill material throughout the operation.

4. Flowing drillhole. If a drillhole penetrates an aquifer under artesian pressure such that ground water flows at the ground surface, approval of the method of containment of such flow and the method of eventual abandonment of the drillhole must be obtained from the Department of Natural Resources.

(b) Temporary Abandonment.

If it is desired to temporarily retain a drillhole for further exploration, the casing shall be left in place, and the upper terminal of the casing must be sealed with a watertight threaded or welded cap.

Filing of Abandonment Reports pursuant to NR 130.11, Wis. Adm. Code

(1) The explorer shall file duplicate original exploration abandonment reports on forms supplied by the Department and signed by an authorized representative of the explorer attesting to the accuracy of the information contained therein with the Department within 10 days after completion of temporary or permanent abandonment of a drillhole.

Note:
Where an exploration drillhole has been constructed on land normally used as cultivated agricultural cropland, it will be acceptable to terminate the required fill material below plow depth and to fill the balance of the opening with native soil to ground level.

Flambeau Mining Company
N4095 Highway 27
Ladysmith, Wisconsin 54848
(715) 532-7620

November 11, 1992

Kennecott

Ken Markart
Department of Natural Resources
North Central District Headquarters
P.O. Box 818
Rhinelander, WI 54501

Dear Ken,

Drill hole # 22-190 encountered significant zones of cavitation between approximately 90 to 107 feet and circulation was lost. An attempt was made to abandon the hole by placing a maple plug directly above the cavity and pump cement from 90' to ground surface. However, the maple plug jammed at 36' and could not be pushed any further down the borehole. As a result, fourteen bags of cement were used to abandon 22-190 from 36' to ground surface as you requested.

Please call if you have any questions or require additional information.

Sincerely,

Toby Mancuso

Toby Mancuso
Technical Supervisor

cmg

cc: J. Hutchison
J. Tygesen
J. Murphy

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY

Drillhole Number: 22-188

Street or Route: N4095 HIGHWAY 27

Location: NW 1/4 Of The SE 1/4 Section 9

City, State, Zip Code: LADYSMITH, WI 54848

Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Street or Route: 11364 EAST HIGHWAY 37

Starting Angle of Hole: -71°

Direction (Azimuth): S 45° E

City, State, Zip Code: HIBBING, MN 55746

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	67'	5.625"			
67	308'	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY

Street or Route: N4095 HIGHWAY 27

City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 308 Feet

Date Started Drilling: 11/3/92

Date Finished Drilling: 11/6/92

Depth to Water: N/A Feet

Drillhole Is

☐ Temporarily Abandoned

☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap

☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	34	GLACIAL TILL	0	308	PORTLAND CEMENT	30 BAGS, 180 GALLONS
34	52	SANDSTONE				
52	308	VOLCANICS				

Was Casing Left In Place

☐ Yes

☑ No

If Yes, To What Depth? ____

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY

Street or Route: 11364 EAST HIGHWAY 37

City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 12 Day Of NOVEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State)

Signature of Exploration Company Representative: Thomas K Mancuso

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY

Drillhole Number: 22-189

Street or Route: N4095 HIGHWAY 27

Location: NW 1/4 Of The SE 1/4 Section 9

City, State, Zip Code: LADYSMITH, WI 54848

Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Street or Route: 11364 EAST HIGHWAY 37

Starting Angle of Hole: -45°

Direction (Azimuth): S45°E

City, State, Zip Code: HIBBING, MN 55746

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	83	5.625"			
83	161	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY

Street or Route: N4095 HIGHWAY 27

City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 161 Feet

Date Started Drilling: 11/4/92

Date Finished Drilling: 11/9/92

Depth to Water: N/A Feet

Drillhole Is

☐ Temporarily Abandoned

☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap

☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	43	GLACIAL TILL	0	161	PORTLAND CEMENT	20 BAGS, 120 GALLONS
43	60	SANDSTONE				
60	161	VOLCANICS				

Was Casing Left In Place

☐ Yes

☑ No

If Yes, To What Depth? ____

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY

Street or Route: 11364 EAST HIGHWAY 37

City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 12 Day Of NOVEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K. Marcus

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 — Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-190

Location: NE 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -60°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	82	5.625"			
82	114	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 114 Feet

Date Started Drilling: 11/8/92
Date Finished Drilling: 11/9/92

Depth to Water: N/A Feet

Drillhole Is
☐ Temporarily Abandoned
☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
☐ Threaded Cap
☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	36	GLACIAL TILL	0	36*	PORTLAND CEMENT	14 BAGS, 84 GALLONS
36	58	SANDSTONE				* SEE ATTACHMENT
58	114	VOLCANICS				

Was Casing Left In Place
☐ Yes
☑ No
If Yes, To What Depth?

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 12 Day Of NOVEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K Moran

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK

Exploration Licensee Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Drillhole Number: 22-191

Location: NE 1/4 Of The SE 1/4 Section 9
Township 34 NORTH Range 6 WEST

Drilling Company Name: LONGYEAR DRILLING CO.
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MN 55746

Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL

Starting Angle of Hole: -60°
Direction (Azimuth): S45°E

Drillhole Diameter(s) and Interval(s)

From	To	Diameter	From	To	Diameter
0	80	5.625"			
80	142	3.782"			

Property Owner Name: FLAMBEAU MINING COMPANY
Street or Route: N4095 HIGHWAY 27
City, State, Zip Code: LADYSMITH, WI 54848

Total Depth of Drillhole: 142 Feet

Date Started Drilling: 11/9/92
Date Finished Drilling: 11/11/92

Depth to Water: N/A Feet

Drillhole Is
- ☐ Temporarily Abandoned
- ☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:
- ☐ Threaded Cap
- ☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	34	GLACIAL TILL	0	142	PORTLAND CEMENT	16 BAGS, 96 GALLONS
34	57	SANDSTONE				
57	142	VOLCANICS				

Was Casing Left In Place
- ☐ Yes
- ☑ No

If Yes, To What Depth? ____

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 12 Day Of NOVEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K Mancuso

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

State of Wisconsin
Department of Natural Resources
Box 818
Rhinelander, Wisconsin 54501

METALLIC MINERAL EXPLORATION DRILLHOLE ABANDONMENT REPORT

Form 2700-2 Rev. 3-89

County: RUSK	
Exploration Licensee Name: FLAMBEAU MINING COMPANY	Drillhole Number: 22-192
Street or Route: N4095 HIGHWAY 27	Location: NE 1/4 Of The SE 1/4 Section 9
City, State, Zip Code: LADYSMITH, WI 54848	Township 34 NORTH Range 6 WEST
Drilling Company Name: LONGYEAR DRILLING CO.	Type of Drillhole (Core Drill, Rotary, Etc.): CORE DRILL
Street or Route: 11364 EAST HIGHWAY 37	Starting Angle of Hole: -54° / Direction (Azimuth): S45°E
City, State, Zip Code: HIBBING, MN 55746	Drillhole Diameter(s) and Interval(s)
Property Owner Name: FLAMBEAU MINING COMPANY	
Street or Route: N4095 HIGHWAY 27	
City, State, Zip Code: LADYSMITH, WI 54848	Total Depth of Drillhole: 118 Feet
Date Started Drilling: 11/10/92 / Date Finished Drilling: 11/11/92	Depth to Water: N/A Feet

Drillhole Diameter(s) and Interval(s):

From	To	Diameter	From	To	Diameter
0	80	5.625"			
80	118	3.782"			

Drillhole Is

☐ Temporarily Abandoned

☑ Permanently Abandoned

If Temporarily Abandoned: Upper Terminal of Casing Sealed Watertight With:

☐ Threaded Cap

☐ Welded Steel Plate

Depths From	Depths To	Type of Overburden And Rock	Depths From	Depths To	If Permanently Abandoned: Sealing Material Used	Amount*
0	41	GLACIAL TILL	0	118	PORTLAND CEMENT	16 BAGS, 96 GALLONS
41	52	SANDSTONE				
52	118	VOLCANICS				

Was Casing Left In Place

☐ Yes

☑ No

If Yes, To What Depth? ____

Name of Person or Firm Doing Sealing Work: LONGYEAR DRILLING COMPANY
Street or Route: 11364 EAST HIGHWAY 37
City, State, Zip Code: HIBBING, MINNESOTA 55746

I hereby certify that the information in this report is true and correct to the best of my knowledge and belief.

Dated This 12 Day Of NOVEMBER, 1992.

At LADYSMITH (City), WISCONSIN (State).

Signature of Exploration Company Representative: Thomas K. Manus

Title: TECHNICAL SUPERVISOR

*If neat cement - indicate number of 94 lb. bags, volume of water. If clay, sand, concrete or gravel - indicate cubic yards.

SEE REVERSE SIDE FOR REQUIRED ABANDONMENT PROCEDURES.

EXPLORATION CO. COPY

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: RUSK

SW 1/4 of SE 1/4 of Sec. 9 ; T. 34 N; R. 6 ☐ E ☒ W

(If applicable) ____ Gov't Lot ____ Grid Number

Grid Location: 39,901.18 ft. ☒ N. ☐ S., 39,048.05 ft. ☒ E. ☐ W.

Civil Town Name: GRANT

Street Address of Well: 4100 STH 27

City, Village: LADYSMITH, WI

(2) FACILITY NAME

Original Well Owner (If Known): FLAMBEAU MINING CORP

Present Well Owner: As Above

Street or Route: 4100 STH 27

City, State, Zip Code: LADYSMITH, WIS. 54848

Facility Well No. and/or Name (If Applicable): OW-40

WI Unique Well No.: — — — — —

Reason For Abandonment: DISCONTINUED USE

Date of Abandonment: 16 NOV 1992

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date): 9-7-72

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ____

Formation Type:
☐ Unconsolidated Formation ☒ Bedrock

Total Well Depth (ft.) (From groundsurface): 29 Casing Diameter (ins.): 4

Casing Depth (ft.): 29

Was Well Annular Space Grouted? ☐ Yes ☐ No ☒ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet): 5'

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☒ No ☐ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☒ Yes ☐ No
If No, Explain ____

Was Casing Cut Off Below Surface? ☐ Yes ☒ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
2 1/2 BAGS NEAT PRESS CEMENT	Surface	29	2.5	5.5/6.0 to ONE

(8) Comments: ____

(9) Name of Person or Firm Doing Sealing Work: OLSON BROS WELL Co.

Signature of Person Doing Work: James Olson
Date Signed: 25 Jan 93

Street or Route: 4625 OLSON DR.
Telephone Number: (715) 832-6068

City, State, Zip Code: EAU CLAIRE, WI. 54703

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	
Follow-up Necessary	

A50

DNR/COUNTY

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 department instructions).
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 benonite 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 or concrete. 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. 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 3300-5B, 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.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: RUSK

SW 1/4 of SE 1/4 of Sec. 9 ; T. 34 N; R. 6 ☐ E ☒ W

(If applicable) Gov't Lot ______ Grid Number ______

Grid Location ______ ft. ☐ N. ☐ S., ______ ft. ☐ E. ☐ W.

Civil Town Name: GRANT

Street Address of Well: 4100 STH 27

City, Village:

(2) FACILITY NAME

Original Well Owner (If Known): FLAMBEAU MINING CORP.

Present Well Owner: SAME

Street or Route: 4100 STH 27

City, State, Zip Code: LADYSMITH WIS 54848

Facility Well No. and/or Name (If Applicable): PZ-K8 | WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: NOT Needed

Date of Abandonment: 16 NOV 1992

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date): 9-21-88

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify)

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 27 (From groundsurface) Casing Diameter (ins.) 2

Casing Depth (ft.) 27

Was Well Annular Space Grouted? ☒ Yes ☐ No ☐ Unknown
If Yes, To What Depth? 16 Feet

(4) Depth to Water (Feet) 3.3

	Yes	No	Not Applicable
Pump & Piping Removed?	☐	☐	☒
Liner(s) Removed?	☐	☐	☒
Screen Removed?	☐	☐	☒
Casing Left in Place?	☒	☐	

If No, Explain

	Yes	No
Was Casing Cut Off Below Surface?	☐	☒
Did Sealing Material Rise to Surface?	☒	☐
Did Material Settle After 24 Hours?	☐	☒
If Yes, Was Hole Retopped?	☐	☐

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Neat Cement Groute	Surface	27	2.3	5.8 gals Per Bags

(8) Comments:

(9) Name of Person or Firm Doing Sealing Work: OLSON BROS WELL CO INC.

Signature of Person Doing Work: Pete Olson | Date Signed: 11/16/92

Street or Route: 4625 OLSON DR | Telephone Number: (715) 832-6068

City, State, Zip Code: EAU CLAIRE, WIS 54848

A51

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected | District/County
Reviewer/Inspector
Follow-up Necessary

DNR/COUNTY

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 department instructions).
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 benonite 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 or concrete. 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. 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 3300-5B, 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.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: RUSK

SW 1/4 of SE 1/4 of Sec. 9 ; T. 34 N; R. 6 ☐ E ☒ W

(If applicable) ______ Gov't Lot ______ Grid Number

Grid Location ______ ft. ☐ N. ☐ S., ______ ft. ☐ E. ☐ W.

Civil Town Name: GRANT

Street Address of Well: 4100 STH 27

City, Village: LADYSMITH, WI 54848

(2) FACILITY NAME

Original Well Owner (If Known): Flambeau Mining Co.

Present Well Owner: As Above

Street or Route: 4100 STH 27

City, State, Zip Code: LADYSMITH, WI. 54848

Facility Well No. and/or Name (If Applicable): PZ- R5

WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: DISCONTINUED USE

Date of Abandonment: 17 NOV 92

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date): 1-6-88

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) ______

Formation Type: ☐ Unconsolidated Formation ☒ Bedrock

Total Well Depth (ft.) 120 (From groundsurface) Casing Diameter (ins.) 1.25

Casing Depth (ft.) 85

Was Well Annular Space Grouted? ☒ Yes ☐ No ☐ Unknown
If Yes, To What Depth? 85 Feet

(4) Depth to Water (Feet) 18

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☒ Yes ☐ No
If No, Explain ______

Was Casing Cut Off Below Surface? ☐ Yes ☒ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
NEAT CEMENT	Surface	120	2.0	5.8 to ONE

(8) Comments: ______

(9) Name of Person or Firm Doing Sealing Work: OLSON BROS WELL DRILLING Co. INC

Signature of Person Doing Work: James N Olson
Date Signed: 25 Jan 93

Street or Route: 4625 OLSON DRIVE
Telephone Number: (715) 832-6068

City, State, Zip Code: EAU CLAIRE WI 54703

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected | District/County
Reviewer/Inspector
Follow-up Necessary

A52

DNR/COUNTY

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 department instructions).
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 benonite 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 or concrete. 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. 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 3300-5B, 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.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: RUSK

NE 1/4 of SE 1/4 of Sec. 9 ; T. 34 N; R. 6 ☐ E ☒ W

(If applicable) Gov't Lot ____ Grid Number ____

Grid Location: 41290.2697 ft. ☒ N. ☐ S., 40,4763.052 ft. ☒ E. ☐ W.

Civil Town Name: GRANT

Street Address of Well: 4100 STH 27

City, Village: LADYSMITH, WIS. 54848

(2) FACILITY NAME

Original Well Owner (If Known): FLAMBEAU MINING

Present Well Owner: AS ABOVE

Street or Route: 4100 STH 27

City, State, Zip Code: LADYSMITH, WIS. 54848

Facility Well No. and/or Name (If Applicable): PZ-R7

WI Unique Well No.:

Reason For Abandonment: DISCONTINUED USE

Date of Abandonment: 17 NOV 92

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date): 1-12-88

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify)

Formation Type: ☐ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) (From groundsurface): 120 Casing Diameter (ins.): 1.25

Casing Depth (ft.): 80

Was Well Annular Space Grouted? ☒ Yes ☐ No ☐ Unknown

If Yes, To What Depth? 80 Feet

(4) Depth to Water (Feet): 23

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☒ Yes ☐ No
If No, Explain

Was Casing Cut Off Below Surface? ☐ Yes ☒ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
NEAT CEMENT GROUTE	Surface	120	2.2	5.8 to 94 #

(8) Comments:

(9) Name of Person or Firm Doing Sealing Work: OLSON BROS WELL CO INC

Signature of Person Doing Work: James Olson Date Signed: 25 Jan 93

Street or Route: 4625 OLSON DR. Telephone Number: (715) 832-6068

City, State, Zip Code: EAU CLAIRE WI 54703

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

A53

DNR/COUNTY

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 department instructions).
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 benonite 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 or concrete. 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. 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 3300-5B, 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.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: RUSK

NE 1/4 of SE 1/4 of Sec. 9; T. 34 N; R. 6 ☐ E ☒ W

(If applicable) ________ Gov't Lot ________ Grid Number

Grid Location ________ ft. ☐ N. ☐ S., ________ ft. ☐ E. ☐ W.

Civil Town Name: GRANT

Street Address of Well: 4100 STH 27

City, Village: Ladysmith

(2) FACILITY NAME

Original Well Owner (If Known): FLAMbeau Mining CORP

Present Well Owner: SAME

Street or Route: 4100 STH 27

City, State, Zip Code: LAdySMITH, WIS 54848

Facility Well No. and/or Name (If Applicable): ST-9-2

WI Unique Well No.: -----

Reason For Abandonment: NOT NEEDED

Date of Abandonment: 16 Nov 92

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date): 10-24-72

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) ________

Formation Type: ☐ Unconsolidated Formation ☒ Bedrock

Total Well Depth (ft.) (From groundsurface): 77 Casing Diameter (ins.): 5

Casing Depth (ft.): 65

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown
If Yes, To What Depth? ________ Feet

(4) Depth to Water (Feet): DRY

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☒ Yes ☐ No
If No, Explain ________

Was Casing Cut Off Below Surface? ☐ Yes ☒ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite

(7)

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
neat Pressure Cement	Surface	77	10	5.8 to One

(8) Comments: filled out by James D Olson 158

(9) Name of Person or Firm Doing Sealing Work: Olson Bros Well Co Inc

Signature of Person Doing Work: Pete Olson — Date Signed: 11/16/92

Street or Route: 4625 Olson Dr — Telephone Number: (715) 832-6068

City, State, Zip Code: Eau Claire, Wi 54703

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected	District/County

Reviewer/Inspector

Follow-up Necessary

A54

DNR/COUNTY

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:

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- 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 department instructions).

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 benonite 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 or concrete. 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. 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 3300-5B, 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.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: RUSK

NW 1/4 of SE 1/4 of Sec. 9 ; T. 34 N; R. 6 ☐ E ☒ W

(If applicable) ______ Gov't Lot ______ Grid Number

Grid Location ______ ft. ☐ N. ☐ S., ______ ft. ☐ E. ☐ W.

Civil Town Name: GRANT

Street Address of Well: N4100 STH 27 LADYSMITH

City, Village:

(2) FACILITY NAME

Original Well Owner (If Known): FLAMbeau MINING CORP.

Present Well Owner: FLAMbeau MINING

Street or Route: N4100 STH 27

City, State, Zip Code: LADYSMITH WIS 54848

Facility Well No. and/or Name (If Applicable) | WI Unique Well No. _ _ _ _ _

Reason For Abandonment: NOT Needed-

Date of Abandonment: 17 November 92

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ?

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☒ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ______

Formation Type:
☐ Unconsolidated Formation ☒ Bedrock

Total Well Depth (ft.) 230 (From groundsurface) Casing Diameter (ins.) 4

Casing Depth (ft.) ?

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ______ Feet

(4) Depth to Water (Feet) 30

Pump & Piping Removed?	☐ Yes	☐ No	☒ Not Applicable
Liner(s) Removed?	☐ Yes	☐ No	☒ Not Applicable
Screen Removed?	☐ Yes	☐ No	☒ Not Applicable
Casing Left in Place?	☒ Yes	☐ No	

If No, Explain ______

Was Casing Cut Off Below Surface?	☐ Yes	☒ No
Did Sealing Material Rise to Surface?	☒ Yes	☐ No
Did Material Settle After 24 Hours?	☐ Yes	☒ No
If Yes, Was Hole Retopped?	☐ Yes	☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
20 Bags neat Cement groute	Surface	230	20	5.7 to One

(8) Comments: ______

(9) Name of Person or Firm Doing Sealing Work: OLSON BROS WELL CO, INC.

Signature of Person Doing Work: [signature] | Date Signed: 11/17/92

Street or Route: 4625 OLSON DR | Telephone Number: (715) 832-6068

City, State, Zip Code: EAU CLAIRE WIS 54703

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	
Follow-up Necessary	

A55

DNR/COUNTY

REASONS FOR WELL/DRILLHOLE/BOREHOLE ABANDONMENT

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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 department instructions).

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- 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.

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REPORT TO DNR

The Well/Drillhole/Borehole Abandonment Form 3300-5B, 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.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Rusk

NE 1/4 of SE 1/4 of Sec. 9 ; T. 34 N; R. 6 ☐ E ☒ W

(If applicable) ______ Gov't Lot ______ Grid Number

Grid Location ______ ft. ☐ N. ☐ S., ______ ft. ☐ E. ☐ W.

Civil Town Name: Grant

Street Address of Well: 4100 STH 27

City, Village: Ladysmith

(2) FACILITY NAME

Original Well Owner (If Known): Flambeau Mining Corp

Present Well Owner: Same

Street or Route: 4100 STH 27

City, State, Zip Code: Ladysmith WI 54848

Facility Well No. and/or Name (If Applicable): Scrapper Well | WI Unique Well No. _____

Reason For Abandonment: Not Needed

Date of Abandonment: 17 Nov. 92

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ?

☒ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☐ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ______

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 22 (From groundsurface) Casing Diameter (ins.) 4

Casing Depth (ft.) 22

Was Well Annular Space Grouted? ☐ Yes ☐ No ☒ Unknown
If Yes, To What Depth? ______ Feet

(4) Depth to Water (Feet) DRY

Pump & Piping Removed? ☐ Yes ☒ No ☐ Not Applicable
Liner(s) Removed? ☐ Yes ☒ No ☐ Not Applicable
Screen Removed? ☐ Yes ☒ No ☐ Not Applicable
Casing Left in Place? ☒ Yes ☐ No
If No, Explain ______

Was Casing Cut Off Below Surface? ☐ Yes ☒ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Neat Cement Groute	Surface	22	2.5	5.9 gals to 94 lbs

(8) Comments: filled in by Jim Olson - 8 Dec 92

(9) Name of Person or Firm Doing Sealing Work: Olson Bros Well Co Inc

Signature of Person Doing Work: [signature] Olson | Date Signed: 11/17/92

Street or Route: 4625 Olson Dr. | Telephone Number: (715 832-6068

City, State, Zip Code: Eau Claire, Wi 54701

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

A56

DNR/COUNTY

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 department instructions).

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 benonite 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 or concrete. 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. 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 3300-5B, 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.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location
County: RUSK

SE 1/4 of NE 1/4 of Sec. 9 ; T. 34 N; R. 6 ☐ E ☒ W

(If applicable)
Gov't Lot: ______ Grid Number: ______

Grid Location: ______ ft. ☐ N. ☐ S., ______ ft. ☐ E. ☐ W.

Civil Town Name: GRANT

Street Address of Well: CORNER BLACKBERRY LANE ; STH 27

City, Village: LADYSMITH WI. 54848

(2) FACILITY NAME

Original Well Owner (If Known): BRASHIR PROPERTY

Present Well Owner: FLAMBEAU MINING CORP

Street or Route: N 4095 STH 27

City, State, Zip Code: LADYSMITH, WIS 54848

Facility Well No. and/or Name (If Applicable): #6 FLAMBEAU MINE
WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: DISCONTINUED USE

Date of Abandonment: 17 NOV. 92

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ______

☐ Monitoring Well
☒ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☒ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ______

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) (From groundsurface): 75
Casing Diameter (ins.): 4

Casing Depth (ft.): 75

Was Well Annular Space Grouted? ☐ Yes ☐ No ☒ Unknown
If Yes, To What Depth? ______ Feet

(4) Depth to Water (Feet): 22

Pump & Piping Removed? ☒ Yes ☐ No ☐ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☒ Yes ☐ No
If No, Explain ______

Was Casing Cut Off Below Surface? ☒ Yes ☐ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
SEVEN SACKS NEAT PRESSURE CEMENT	Surface	75	7	5.5 to ONE

(8) Comments: SUBMERSIBLE PUMP PULLED FROM WELL, WELL CLEANED WITH COMPRESSED AIR, SMALL GRAVEL, SANDSTONE PIECES ASST SMALL NUTS 100 29Oct 92

(9) Name of Person or Firm Doing Sealing Work: OLSON BROS WELL CO INC

Signature of Person Doing Work: James Olsen
Date Signed: 25 Jan 93

Street or Route: 4625 OLSON DRIVE
Telephone Number: (715) 832-6068

City, State, Zip Code: EAU CLAIRE, WIS. 54703

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected | District/County
Reviewer/Inspector
Follow-up Necessary

A57

DNR/COUNTY

REASONS FOR WELL/DRILLHOLE/BOREHOLE ABANDONMENT

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- 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 department instructions).
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 benonite 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 or concrete. 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. 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 3300-5B, 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.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: RUSK

SE 1/4 of SE 1/4 of Sec. 9; T. 34 N; R. 6 ☐ E ☒ W

(If applicable) Gov't Lot ____ Grid Number ____

Grid Location ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name: GRANT

Street Address of Well: JANSEN Road & STH 27

City, Village:

(2) FACILITY NAME

Original Well Owner (If Known):

Present Well Owner: FLAMbeau MINING CORP.

Street or Route: N 4095 Hwy 27

City, State, Zip Code: LADYSMITH WIS

Facility Well No. and/or Name (If Applicable): #21 FLAMBEAU MINE — WI Unique Well No.: _____

Reason For Abandonment: NOT SUITABLE LOCATION OR CONST.

Date of Abandonment: 16 November 1992

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ____

☐ Monitoring Well
☒ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☒ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) ____

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) (From groundsurface): 50 — Casing Diameter (ins.) ____

Casing Depth (ft.): 50

Was Well Annular Space Grouted? ☐ Yes ☐ No ☒ Unknown
If Yes, To What Depth? ____ Feet

(4) Depth to Water (Feet): 15

Pump & Piping Removed? ☒ Yes ☐ No ☐ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☒ Yes ☐ No
If No, Explain ____

Was Casing Cut Off Below Surface? ☐ Yes ☒ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
Neat Cement	Surface	50	6	6 gals per 94 lb.

(8) Comments: Well Cleaned w/ Compressed air 17 gpm rust & scale blew out well termination

(9) Name of Person or Firm Doing Sealing Work: OLSON BROS Well Drilling Co, Inc.

Signature of Person Doing Work: [signature] — Date Signed: 11/16/92

Street or Route: 4625 OLSON Drive — Telephone Number: (800 257 0324

City, State, Zip Code: EAU CLAIRE WI 54703

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(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	
Follow-up Necessary	

DNR/COUNTY

REASONS FOR WELL/DRILLHOLE/BOREHOLE ABANDONMENT

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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 department instructions).

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 benonite 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 or concrete. 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.

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TEMPORARY ABANDONMENT

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REPORT TO DNR

The Well/Drillhole/Borehole Abandonment Form 3300-5B, 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.

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State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: RUSK

NE 1/4 of NW 1/4 of Sec. 10 ; T. 34 N; R. 6 ☐ E ☒ W

(If applicable) Gov't Lot ______ Grid Number ______

Grid Location ______ ft. ☐ N. ☐ S., ______ ft. ☐ E. ☐ W.

Civil Town Name: GRANT

Street Address of Well: NORTH END OF BARITE ROAD

City, Village:

(2) FACILITY NAME

Original Well Owner (If Known): Robinson FARM

Present Well Owner: FLAMbeau MINE

Street or Route: N4095 Hwy 27

City, State, Zip Code: LADYSMITH

Facility Well No. and/or Name (If Applicable): #65 FLAMbeau MINE

WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: Dwelling BURNT Down

Date of Abandonment: 17 November 1992

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ______

☐ Monitoring Well
☒ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☐ Yes ☒ No

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (Specify) ______

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 75 (From groundsurface) Casing Diameter (ins.) 4

Casing Depth (ft.) 75

Was Well Annular Space Grouted? ☐ Yes ☐ No ☐ Unknown
If Yes, To What Depth? ______ Feet

(4) Depth to Water (Feet) 39

Pump & Piping Removed? ☒ Yes ☐ No ☐ Not Applicable
Liner(s) Removed? ☐ Yes ☐ No ☒ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☒ Yes ☐ No
If No, Explain ______

Was Casing Cut Off Below Surface? ☐ Yes ☒ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite

(7) Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
NeAT CemeNT GRouTe	Surface		7	6to94#

(8) Comments: well Cleaned w/ Compressed air after pump removed Pract. By J.D.O.
2.3 gals of gravel sand & rust removed from Borehole - water then Clean -

(9) Name of Person or Firm Doing Sealing Work: OLSON BROS Well Drilling Co, Inc.

Signature of Person Doing Work: Peter Olson
Date Signed: 11/17/92

Street or Route: 4625 OLSON DR.
Telephone Number: (715) 832-6068

City, State, Zip Code: EAU CLAIRE WIS 54703

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	
Follow-up Necessary	

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DNR/COUNTY

REASONS FOR WELL/DRILLHOLE/BOREHOLE ABANDONMENT

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PROCEDURE

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REPORT TO DNR

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State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 7-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: Rusk

SE 1/4 of NW 1/4 of Sec. 10; T. 34 N; R. 6 ☐ E ☒ W

(If applicable) Gov't Lot ____ Grid Number ____

Grid Location ____ ft. ☐ N. ☐ S., ____ ft. ☐ E. ☐ W.

Civil Town Name: Grant

Street Address of Well: Meadowbrook & Doughty

City, Village:

(2) FACILITY NAME

Original Well Owner (If Known): Lindahl Farm

Present Well Owner: Flambeau Mining Corp.

Street or Route: N 4095 STH 27

City, State, Zip Code: Ladysmith WI 54848

Facility Well No. and/or Name (If Applicable): #71 Flambeau Mine

WI Unique Well No.: _ _ _ _ _

Reason For Abandonment:

Date of Abandonment:

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date): June 30, Will Figuiana Bruce Ulias

☐ Monitoring Well
☒ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) ____

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) 95 (From groundsurface) Casing Diameter (ins.) 5

Casing Depth (ft.) 7

Was Well Annular Space Grouted? ☒ Yes ☐ No ☐ Unknown
If Yes, To What Depth? 23 Feet

(4) Depth to Water (Feet) 27

	Yes	No	Not Applicable
Pump & Piping Removed?	☒	☐	☐
Liner(s) Removed?	☐	☐	☒
Screen Removed?	☐	☐	☒
Casing Left in Place?	☒	☐	

If No, Explain ____

	Yes	No
Was Casing Cut Off Below Surface?	☐	☒
Did Sealing Material Rise to Surface?	☒	☐
Did Material Settle After 24 Hours?	☐	☒
If Yes, Was Hole Retopped?	☐	☐

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite

(7)

Sealing Material Used	From (Ft.)	To (Ft.)	~~No.~~ Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
neat Press. Cement	Surface	95	nine	5.5 to 6 to One

(8) Comments: Borehole filled in with debris, drilled out Nov 11, 92 with rotary rig & capped —

(9) Name of Person or Firm Doing Sealing Work: OLSON BROS WELL Co INC.

Signature of Person Doing Work: Pete Olson
Date Signed: 11/17/92

Street or Route: 4625 OLSON DR
Telephone Number: (715) 832 6068

City, State, Zip Code: EAU CLAIRE Wi 54703

(10) FOR DNR OR COUNTY USE ONLY	
Date Received/Inspected	District/County
Reviewer/Inspector	
Follow-up Necessary	

A60

DNR/COUNTY

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 department instructions).

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 benonite 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 or concrete. 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. 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 3300-5B, 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.

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: RUSK

SW 1/4 of NE 1/4 of Sec. 10 ; T. 34 N; R. 6 [ ] E [X] W

(If applicable) ______ Gov't Lot ______ Grid Number

Grid Location ______ ft. [ ] N. [ ] S., ______ ft. [ ] E. [ ] W.

Civil Town Name: GRANT

Street Address of Well: CORNER - MEADOWBROOK & DOUGHTY

City, Village: LADYSMITH, WI 54848

(2) FACILITY NAME

Original Well Owner (If Known): DRUM FARM

Present Well Owner: FLAMBEAU MINING CORP

Street or Route: N 4095 STH 27

City, State, Zip Code: LADYSMITH, WIS. 54848

Facility Well No. and/or Name (If Applicable): #72 FLAMBEAU MINING CORP

WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: FARM SITE ABANDONED

Date of Abandonment: 16 NOV 92

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) ______

[X] Monitoring Well
[ ] Water Well
[ ] Drillhole
[ ] Borehole

Construction Report Available? [ ] Yes [X] No

Construction Type: [X] Drilled [ ] Driven (Sandpoint) [X] Dug [ ] Other (Specify) ______

Formation Type: [X] Unconsolidated Formation [ ] Bedrock

Total Well Depth (ft.) (From groundsurface): 40 Casing Diameter (ins.): 24/4

Casing Depth (ft.): 40

Was Well Annular Space Grouted? [ ] Yes [ ] No [X] Unknown
If Yes, To What Depth? ______ Feet

(4) Depth to Water (Feet): DRY

Pump & Piping Removed? [ ] Yes [ ] No [X] Not Applicable
Liner(s) Removed? [ ] Yes [ ] No [X] Not Applicable
Screen Removed? [ ] Yes [ ] No [X] Not Applicable
Casing Left in Place? [X] Yes [ ] No
If No, Explain ______

Was Casing Cut Off Below Surface? [ ] Yes [X] No
Did Sealing Material Rise to Surface? [X] Yes [ ] No
Did Material Settle After 24 Hours? [ ] Yes [X] No
If Yes, Was Hole Retopped? [ ] Yes [ ] No

(5) Required Method of Placing Sealing Material
[ ] Conductor Pipe-Gravity [X] Conductor Pipe-Pumped
[ ] Dump Bailer [ ] Other (Explain)

(6) Sealing Materials
[X] Neat Cement Grout
[ ] Sand-Cement (Concrete) Grout
[ ] Concrete
[ ] Clay-Sand Slurry
[ ] Bentonite-Sand Slurry
[ ] Chipped Bentonite

For monitoring wells and monitoring well boreholes only
[ ] Bentonite Pellets
[ ] Granular Bentonite
[ ] Bentonite - Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
NEAT PRESS CEMENT	Surface	40	20	5.8 GAL PER BAG

(8) Comments: DRILLED OUT 22X24 DUG & CURB SECTION, CONTINUED DOWN LOWER CASED AREA PUMPED NEAT GROUTE DOWN FROM BOTTOM-UP - TREMIE

(9) Name of Person or Firm Doing Sealing Work: OLSON BROS WELL CO INC

Signature of Person Doing Work: James Olson — Date Signed: 25 Jan 93

Street or Route: 4625 OLSON DR — Telephone Number: (715) 832-6068

City, State, Zip Code: EAU CLAIRE, WIS. 54703

(10) FOR DNR OR COUNTY USE ONLY
Date Received/Inspected | District/County
Reviewer/Inspector
Follow-up Necessary

A61

DNR/COUNTY

REASONS FOR WELL/DRILLHOLE/BOREHOLE ABANDONMENT

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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 department instructions).

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 benonite 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 or concrete. 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. 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.

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REPORT TO DNR

The Well/Drillhole/Borehole Abandonment Form 3300-5B, 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.

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Well Construction Report For
WISCONSIN UNIQUE WELL NUMBER DN 736

State of Wisconsin
Department of Natural Resources
Private Water Supply — WS/2
Box 7921
Madison, WI 53707

Property Owner: Kennecott
Telephone Number: (715) 532-7620
Mailing Address: Ladysmith Mine
City: Ladysmith State: WI Zip Code: 54848
County of Well Location: Rusk
County Well Location Permit No.: W
Well Completion Date: 11-08-92 (M M D D Y Y)

Well Constructor (Business Name): Olson Bros.
Registration #: 146
Address: 4625 Olson Dr.
City: Eau Claire State: WI Zip Code: 54703

1. Location (Please type or print using a black pen.)
☑ Town ☐ City ☐ Village of Grant
Fire # (if available)
Grid or Street Address or Road Name and Number (if available): N4695 Highway 27
Subdivision Name Lot # Block #

2. Mark well location in correct 40-acre parcel of section.
N / W / E / S

Gov't Lot # ____ or SE ¼ of SE ¼ of Section 9; T 34 N; R 6 ☐ E ☑ W

3. Well Type ☑ New ☐ Replacement ☐ Reconstruction
of unique well # ______ constructed in 19____
Reason for new, replaced or reconstructed well?

4. Well serves 1 # of ~~homes and~~/or mining company
(ex: barn, restaurant, church, school, industry, etc.)
High Capacity Well? ☐ Yes ☑ No
High Capacity 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	X	9. Downspout/Yard Hydrant		17. Wastewater Sump
300+	2. Building Overhang	X	10. Privy		18. Paved Animal Barn Pen
300+	3. Septic or Holding Tank	X	11. Foundation Drain to Clearwater		19. Animal Yard or Shelter
300+	4. Sewage Absorption Unit	X	12. Foundation Drain to Sewer		20. Silo — Type
X	5. Nonconforming Pit	X	13. Building Drain ☐ Cast Iron or Plastic ☐ Other		21. Barn Gutter
X	6. Buried Home Heating Oil Tank	X	14. Building Sewer ☐ Gravity ☐ Pressure ☐ Cast Iron or Plastic ☐ Other		22. Manure Pipe ☐ Gravity ☐ Pressure ☐ Cast Iron or Plastic ☐ Other
X	7. Buried Petroleum Tank	X	15. Collector or Street Sewer		23. Other Manure Storage / Other NR 112 Waste Source
X	8. Shoreline/Swimming Pool	X	16. Clearwater Sump		24.

Drillhole Dimensions

Dia. (in.)	From (ft.)	To (ft.)
10	surface	30
6	30	61

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 (DNR USE ONLY)

Type, Caving/Noncaving, Color, Hardness, Etc.	From (ft.)	To (ft.)
Hardpan & boulders	surface	34
Grey clay w/sand & gravel	34	55
Brown sand gravel & clay	55	61

7. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification Mfg. & Method of Assembly	From (ft.)	To (ft.)
6	steel A53 PE .280 18.97 Maverick	surface	55

Dia. (in.) screen type and material	From	To
5 3/4 stainless steel	55	61

8. Grout or Other Sealing Material
Method: pressure grout

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
~~Bentonite~~ Cement	surface	30	10

10. Static Water Level
____ ft. above ground level
8 ft. below ground surface

11. Pump Test
Pumping Level 46 ft. below surface
Pumping at 45 GPM for 6 hours

12. Well Is:
24 in. ☑ Above ☐ Below Grade
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 Registered Driller: James Olson Date Signed: 8 Dec 92
Signature of Drill Rig Operator: Jerry J. Olson Date Signed: 11/16/92

Make additional comments on reverse side about geology, etc.

A62 DNR

WELL CONSTRUCTION REPORT
Form 3300-77A Rev. 9-88

State of Wisconsin
Department of Natural Resources

WELL/DRILLHOLE/BOREHOLE ABANDONMENT
Form 3300-5B Rev. 8-89

All abandonment work shall be performed in accordance with the provisions of Chapters NR 111, NR 112 or NR 141, Wis. Admin. Code, whichever is applicable. Also, see instructions on back.

(1) GENERAL INFORMATION

Well/Drillhole/Borehole Location — County: RUSK

SW 1/4 of SE 1/4 of Sec. 9 ; T. 34 N; R. 6 ☐ E ☒ W

(If applicable) ______ Gov't Lot ______ Grid Number

Grid Location: 39,725.52 ft. ☒ N. ☐ S., 38,958.7 ☒ E. ☐ W.

Civil Town Name: GRANT

Street Address of Well: 4100 STH 27

City, Village: LADYSMITH WI. 54848

(2) FACILITY NAME

Original Well Owner (If Known): FLAMBEAU MINING CORP

Present Well Owner: AS ABOVE

Street or Route: 4100 STH 27

City, State, Zip Code: LADYSMITH , WIS. 54848

Facility Well No. and/or Name (If Applicable): MW-1000

WI Unique Well No.: _ _ _ _ _

Reason For Abandonment: DISCONTINUED USE

Date of Abandonment: 17 NOV 92

WELL/DRILLHOLE/BOREHOLE INFORMATION

(3) Original Well/Drillhole/Borehole Construction Completed On (Date) 10/01/87

☐ Monitoring Well
☐ Water Well
☐ Drillhole
☐ Borehole

Construction Report Available? ☒ Yes ☐ No

Construction Type: ☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (Specify) ______

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth (ft.) (From groundsurface) 22 Casing Diameter (ins.) 4

Casing Depth (ft.) 22.

Was Well Annular Space Grouted? ☐ Yes ☒ No ☐ Unknown
If Yes, To What Depth? ______ Feet

(4) Depth to Water (Feet) 7

Pump & Piping Removed? ☐ Yes ☐ No ☒ Not Applicable
Liner(s) Removed? ☐ Yes ☒ No ☐ Not Applicable
Screen Removed? ☐ Yes ☐ No ☒ Not Applicable
Casing Left in Place? ☒ Yes ☐ No
If No, Explain ______

Was Casing Cut Off Below Surface? ☐ Yes ☒ No
Did Sealing Material Rise to Surface? ☒ Yes ☐ No
Did Material Settle After 24 Hours? ☐ Yes ☒ No
If Yes, Was Hole Retopped? ☐ Yes ☐ No

(5) Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☐ Dump Bailer ☐ Other (Explain)

(6) Sealing Materials
☒ Neat Cement Grout
☐ Sand-Cement (Concrete) Grout
☐ Concrete
☐ Clay-Sand Slurry
☐ Bentonite-Sand Slurry
☐ Chipped Bentonite

For monitoring wells and monitoring well boreholes only
☐ Bentonite Pellets
☐ Granular Bentonite
☐ Bentonite - Cement Grout

(7)

Sealing Material Used	From (Ft.)	To (Ft.)	No. Yards, Sacks Sealant or Volume	Mix Ratio or Mud Weight
NEAT CEMENT PRESS	Surface	22	2.2	6 to ONE

(8) Comments: ______

(9) Name of Person or Firm Doing Sealing Work: OLSON BROS WELL CO INC.

Signature of Person Doing Work: James Olson
Date Signed: 25 Jan 93

Street or Route: 4625 OLSON DRIVE
Telephone Number: (715) 832-6068

City, State, Zip Code: EAU CLAIRE , WIS. 54703

(10) FOR DNR OR COUNTY USE ONLY

Date Received/Inspected | District/County

Reviewer/Inspector

Follow-up Necessary

A63

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 4-90

Facility/Project Name: Flambeau Mining Co	Local Grid Location of Well: 39 667.1 ft. ☒ N. ☐ S. 39 058.0 ft. ☒ E. ☐ W.	Well Name: MW-1000R
Facility License, Permit or Monitoring Number: 03180	Grid Origin Location: Lat. ______ Long. ______ or St. Plane ______ ft. N, ______ ft. E.	Wis. Unique Well Number / DNR Well Number
Type of Well: Water Table Observation Well ☒ 11; Piezometer ☐ 12		Date Well Installed: 11/12/92 (m m / d d / y y)
Distance Well Is From Waste/Source Boundary: ______ ft.	Section Location of Waste/Source: __ 1/4 of SE 1/4 of Sec. 9, T. 34 N, R. 6 ☐ E. ☒ W.	Well Installed By: (Person's Name and Firm) Olson Bros. Drilling; Pete Olson
Is Well A Point of Enforcement Std. Application? ☐ Yes ☐ No	Location of Well Relative to Waste/Source: u ☐ Upgradient; s ☐ Sidegradient; d ☐ Downgradient; n ☐ Not Known	

A. Protective pipe, top elevation ___ ft. MSL

B. Well casing, top elevation 1103.20 ft. MSL

C. Land surface elevation 1100.9 ft. MSL

D. Surface seal, bottom 1099.9 ft. MSL or 1.0 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 ☒ 50; Hollow Stem Auger ☐ 41; Other ☐ ______

15. Drilling fluid used: Water ☐ 02; Air ☒ 01; Drilling Mud ☐ 03; None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe ______

17. Source of water (attach analysis): ______

E. Bentonite seal, top 1098.9 ft. MSL or 1.0 ft.

F. Fine sand, top - - - ft. MSL or - - ft.

G. Filter pack, top 1096.7 ft. MSL or 4.2 ft.

H. Screen joint, top 1095.2 ft. MSL or 5.7 ft.

I. Well bottom 1085.2 ft. MSL or 15.7 ft.

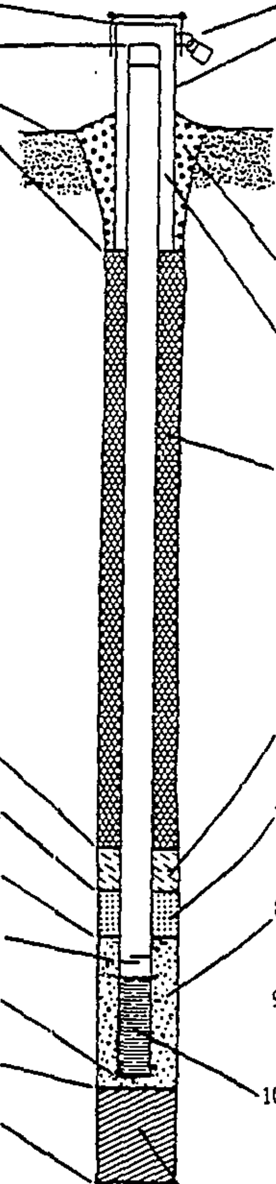
J. Filter pack, bottom 1082.8 ft. MSL or 18.1 ft.

K. Borehole, bottom 1080.9 ft. MSL or 20.0 ft.

L. Borehole, diameter 7.2 in.

M. O.D. well casing 2.08 in.

N. I.D. well casing 1.94 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
   a. Inside diameter: 6.0 in.
   b. Length: 6.5 ft.
   c. Material: Steel ☒ 04; Other ☐
   d. Additional protection? ☐ Yes ☐ No; If yes, describe: ______
3. Surface seal: Bentonite ☐ 30; Concrete ☐ 01; Native Other ☒
4. Material between well casing and protective pipe: Bentonite ☒ 30; Annular space seal ☐; Other ☐
5. Annular space seal: a. Granular Bentonite ☒ 33
   b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
   c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
   d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
   e. ____ Ft^3 volume added for any of the above
   f. How installed: Tremie ☐ 01; Tremie pumped ☐ 02; Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☒ 33
   b. ☐ 1/4 in. ☐ 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ 32
   c. ______ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
   a. ______
   b. Volume added ______ ft^3
8. Filter pack material: Manufacturer, product name and mesh size
   a. Red Flint Filter Sand 45/55
   b. Volume added ______ ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23; Flush threaded PVC schedule 80 ☐ 24; Other ☐
10. Screen material: PVC
   a. Screen type: Factory cut ☒ 11; Continuous slot ☐ 01; Other ☐
   b. Manufacturer Northern Air
   c. Slot size: 0.100 in.
   d. Slotted length: 10.0 ft.
11. Backfill material (below filter pack): None ☒ 14; Other ☐

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

Signature: [signature] 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. Stats., 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. Stats., 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.

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT
Form 4400-113B Rev. 4-90

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

Facility/Project Name	County Name	Well Name	
Flambeau Mining Co.	Rusk	MW-1000R	
Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well Number
03180	55		

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method
   - surged with bailer and bailed ☐ 41
   - surged with bailer and pumped ☐ 61
   - surged with block and bailed ☐ 42
   - surged with block and pumped ☐ 62
   - surged with block, bailed and pumped ☐ 70
   - compressed air ☐ 20
   - bailed only ☒ 10
   - pumped only ☐ 51
   - pumped slowly ☐ 50
   - Other ________ ☐

3. Time spent developing well 87 min.

4. Depth of well (from top of well casisng) 18.7 ft.

5. Inside diameter of well 1.94 in.

6. Volume of water in filter pack and well casing 11.4 gal.

7. Volume of water removed from well 98.0 gal.

8. Volume of water added (if any) 0.0 gal.

9. Source of water added N/A

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. 10.70 ft.	dry ft.
Date	b. 11/13/92 (mm dd yy)	11/17/92 (mm dd yy)
Time	c. ~~9:50~~ 15:14 ☐ a.m. ☒ p.m.	8:16 ☒ a.m. ☐ p.m.
12. Sediment in well bottom	2.0 inches	0.2 inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15	Clear ☐ 20 Turbid ☒ 25
(Describe)	Brown, High Turbidity	Lt. Brown, Mod. Turbidity

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:

Date	Gallons Removed	Time	Final Water Level
11/13/92	33	1514-1536	DRY
11/14/92	17	958-1013	DRY
11/16/92	13	1324-1335	DRY
11/16/92	13	1401-1414	DRY
11/16/92	10	1515-1525	DRY
11/17/92	12	0800-0816	DRY

Well developed by: Person's Name and Firm

Name: Jack Christman

Firm: Flambeau Mining Co.

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

Signature: Jana E. Murphy

Print Initials: JEM

Firm: Flambeau Mining Co.

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

Huntingdon
Consulting Engineers Environmental Scientists

Twin City Testing Corporation
555 South 72nd Avenue (54401)
Post Office Box 1817
Wausau, Wisconsin 54402-1817
(715)845-4100
Fax (715)842-0391

November 13, 1992

Flambeau Mining Company
Ms. Jana Murphy
N4095 Highway 27
Ladysmith, WI 54848

Subj: MW-1010P Repair
Flambeau Mining Site
Ladysmith, Wisconsin
TCT #8100-93-0079

Dear Ms. Murphy:

We have repaired the monitoring well for the above referenced project as per your request. This work was performed in accordance with our quotation dated October 26, 1992. Two copies of the Monitoring Well Construction Report are being transmitted herewith.

Monitoring well #MW-1010P had been run over a piece of heavy equipment during construction. The repair was made on October 27, 1992 by digging down to approximately 11 feet, unscrewing the damaged piece of riser and replacing it with a new 10 foot piece. As the hole was being backfilled, the Huntingdon - Twin City Testing Corporation on-site representative poured bentonite around the riser, up to the ground surface. The original 4 inch protection top was then set in place and cemented in. There was no apparent damage to the protector top or to the riser below the damaged section.

Elevations of top of riser, land surface, and protector pipe were not available at the time of this report and will have to be provided by Flambeau Mining Company.

If you have any questions concerning this project, or if we can be of further assistance, please contact us at 715/845-4100.

Sincerely,

HUNTINGDON - TWIN CITY TESTING CORPORATION

Robert J. Levra

Robert J. Levra
Drilling Coordinator

RJL/tcl

Enclosures

Appendix B

Construction Documentation Testing

Cooper Engineering Company, Inc.
ENGINEERS, SURVEYORS & PLANNERS
100 WEST ORCHARD BEACH LANE • RICE LAKE, WI 54868-2899
TELEPHONE (715) 234-7008 FAX (715) 234-1025

January 28, 1993

Ms. Jana Murphy
Flambeau Mine Company
N4100 Hwy 27
Ladysmith, WI 54848

RE: 1992 Annual Construction Report

Dear Ms. Murphy:

Enclosed are the test results performed on the material supplied and incorporated into the development of the site for the Flambeau Mine for the construction performed in 1992. The results contained within this report are for insertion into the 1992 Annual Construction Report prepared by Foth and Van Dyke.

Previously we submitted the documentation for the Type II stockpile area. Those results and inspectors daily notes are contained in our report dated January 13, 1993, and are not duplicated in this report. The reader should refer to that report for more detailed information and testing procedures.

The work performed by the personnel of Cooper Engineering Company, Inc., was under the direct supervision of Daniel J. Willenbring, P.E., Wisconsin Registration Number E-27561.

Test reports are presented in the following sequence.

- Soil Compaction Tests

#649-784	Access Road
785-839	Administration Building
840-1301	Railroad Spur
1302-1371	Facilities Area
1372-1482	Piping Trenches & Sumps
1483-1556	Type II Phase II Berm
1557-1594	Type I Berm
1595-1738	Miscellaneous Subbase & Base Course
1739-1899	Piping
1900-1971	Visitor Parking, Turning Lanes
1972-1994	WWTP & Fire Tank

- Maximum Proctor Densities
- Grain Size Analyses
- Concrete Compression Tests
- Bituminous Pavement Tests
- Inspectors Daily Reports

Sincerely,

Daniel J. Willenbring, P.E.

WISCONSIN
DANIEL J.
WILLENBRING
E-27561
RICE LAKE.
WIS.
PROFESSIONAL ENGINEER

cc Jim Hutchinson

murphy.1\cb

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/30/92 EBS ON ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
649	N39145,E40890	1,132.1	130.2	9.1	119.3	120.9	P-50	98.7%
650	N39145,E40790	1,133.6	143.8	3	139.6	120.9	P-50	115.5%
651	N39145,E40890	1,132.6	134	7.2	125	120.9	P-50	103.4%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-50	6/19/92	ASTM D1557-A	SM Silty sand	120.9	10.1
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/6/92 EBS ON ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
678	N39145,E40390	1,140.2	142.0	4.9	135.4	132.1	SA10-92	102.5%
679	N39145,E40290	1,139.6	143.9	4.6	137.6	132.1	SA10-92	104.2%
680	N39145,E40190	1,140.9	146.4	5.4	138.9	132.1	SA10-92	105.1%
681	N39145,E40390	1,141.2	149.1	5.1	141.8	132.1	SA10-92	107.3%
682	N39145,E40290	1,140.6	147.6	6.6	138.4	132.1	SA10-92	104.8%
683	N39145,E40190	1,141.9	152.1	5.1	144.7	132.1	SA10-92	109.5%
684	N39145,E40390	1,142.2	150.0	5.5	142.2	132.1	SA10-92	107.6%
685	N39145,E40290	1,141.6	143.7	3.5	138.8	132.1	SA10-92	105.1%
686	N39145,E40190	1,142.9	141.8	4.4	135.8	132.1	SA10-92	102.8%
687	N39145,E40390	1,143.2	146.4	5.2	139.2	132.1	SA10-92	105.4%
688	N39145,E40290	1,142.6	139.1		123.0	132.1	SA10-92	93.1%
689	N39145,E40190	1,143.9	140.6	6.9	131.6	132.1	SA10-92	99.6%
690	N39145,E40290	1,143.6	137.8	6.4	129.6	132.1	SA10-92	98.1%
691	N39145,E40290	1,144.6	144.5	6.3	135.9	132.1	SA10-92	102.9%
692	N39145,E40390	1,144.2	139.9	5.8	132.9	132.1	SA10-92	100.6%
693	N39145,E40290	1,145.6	148.3	5.1	141.1	132.1	SA10-92	106.8%
694	N39145,E40190	1,144.9	147.5	5.0	140.5	132.1	SA10-92	106.4%
695	N39145,E40490	1,141.5	138.4	6.4	130.1	132.1	SA10-92	98.5%
696	N39145,E40590	1,140.1	143.1	6.8	134.0	132.1	SA10-92	101.4%
697	N39145,E40490	1,142.5	141.4	4.8	134.9	132.1	SA10-92	102.1%
698	N39145,E40590	1,141.1	142.9	4.9	136.2	132.1	SA10-92	103.1%
699	N39145,E40190	1,145.9	143.4	5.1	136.4	132.1	SA10-92	103.3%
700	N39145,E40290	1,146.6	145.5	4.2	139.7	132.1	SA10-92	105.8%
701	N39145,E40390	1,145.2	140.0	3.1	135.8	132.1	SA10-92	102.8%
702	N39145,E40490	1,143.5	133.3	5.6	126.2	132.1	SA10-92	95.5%
703	N39145,E40390	1,142.1	143.4	7.1	133.9	132.1	SA10-92	101.4%
704	N39145,E40690	1,138.5	134.8	5.0	128.4	120.9	P-50	106.2%
705	N39145,E40690	1,139.5	137.9	6.6	129.4	120.9	P-50	107.0%
706	N39145,E40690	1,140.5	142.0	4.8	135.5	120.9	P-50	112.1%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0
P-50	6/19/92	ASTM D1557-A	SM Silty sand	120.9	10.1

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/7/92 EBS ON ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
707	N39135,E40990	1,129.2	129.3	5.3	122.8	132.1	SA10-92	93.0%
708	N39135,E40990	1,129.7	134.9	4.0	129.8	132.1	SA10-92	98.3%
709	N39135,E40990	1,130.2	142.0	5.4	134.7	132.1	SA10-92	102.0%
710	N39135,E40990	1,130.7	142.6	4.1	136.9	132.1	SA10-92	103.6%
711	N39135,E40990	1,131.2	145.5	4.4	139.4	132.1	SA10-92	105.5%
712	N39135,E40990	1,131.7	143.9	4.7	137.5	132.1	SA10-92	104.1%
713	N39135,E40990	1,132.2	142.8	5.3	135.7	132.1	SA10-92	102.7%
714	N39135,E40990	1,132.7	140.5	5.8	132.8	132.1	SA10-92	100.5%
715	N39135,E40990	1,133.2	148.0	6.4	139.1	132.1	SA10-92	105.3%
716	N39135,E40990	1,134.2	150.8	4.9	143.8	132.1	SA10-92	108.9%
717	N39135,E40990	1,135.2	142.4	5.1	135.5	132.1	SA10-92	102.6%
718	N39135,E40990	1,136.2	141.4	5.6	133.9	132.1	SA10-92	101.4%
719	N39135,E40990	1,137.2	145.7	6.4	136.9	132.1	SA10-92	103.6%
720	N39145,E40090	1,143.9	145.2	6.0	137.0	132.1	SA10-92	103.7%
721	N39145,E40090	1,144.9	143.9	3.9	138.5	132.1	SA10-92	104.8%
722	N39145,E40090	1,145.9	145.0	5.0	138.1	132.1	SA10-92	104.5%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/7/92 48" PIPE CULVERT INSTALLATION ON ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
723	N39160,E41010	1,134.0	127.2	9.8	115.9	119.1	P-42	97.3%
724	N39115,E40980	1,133.0	141.9	6.4	133.5	119.1	P-42	112.1%
725	N39160,E41010	1,134.5	131.3	4.5	125.6	123.2	P-26	101.9%
726	N39115,E40980	1,133.5	124.1	7.5	115.5	119.1	P-42	97.0%
727	N39115,E40980	1,134.0	131.3	3.4	127.0	123.2	P-26	103.1%
728	N39160,E41010	1,135.0	128.9	3.6	124.3	123.2	P-26	100.9%
729	N39160,E41010	1,135.5	130.9	4.3	125.5	123.2	P-26	101.9%
730	N39115,E40980	1,134.5	127.8	2.5	124.7	123.2	P-26	101.2%
731	N39115,E40980	1,135.0	131.5	4.0	126.5	123.2	P-26	102.7%
732	N39160,E41010	1,136.0	132.7	3.4	128.3	123.2	P-26	104.1%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf	OPTIMUM MOISTURE PERCENT
P-42	6/17/92	ASTM D1557-A	SM Silty sand	119.1	7.8
P-26	8/26/91	ASTM D1557-C	SM Silty sand	123.2	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/8/92 EBS ON ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
733	N39145,E40190	1,146.9	138.2	8.6	127.3	132.1	SA10-92	96.4%
734	N39145,E40290	1,147.6	133.2	7.2	124.2	132.1	SA10-92	94.0%
735	N39145,E40390	1,146.2	139.0	8.4	128.2	132.1	SA10-92	97.0%
736	N39145,E40490	1,144.5	140.6	6.6	131.9	132.1	SA10-92	99.8%
737	N39145,E40590	1,143.1	145.7	7.0	136.2	132.1	SA10-92	103.1%
738	N39145,E40690	1,141.5	134.3	9.6	122.6	132.1	SA10-92	92.8%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/8/92 48" PIPE CULVERT INSTALLATION ON ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
739	N39160,E41010	1,136.5	131.9	4.6	126.2	123.2	P-26	102.4%
740	N39115,E40980	1,135.5	135.4	5.8	128.0	123.2	P-26	103.9%
741	N39115,E40980	1,136.0	137.2	4.0	131.9	123.2	P-26	107.1%
742	N39160,E41010	1,137.0	120.0	6.3	113.7	119.1	P-42	95.5%
743	N39160,E41010	1,137.5	118.8	9.6	108.5	119.1	P-42	91.1%
744	N39115,E40980	1,136.5	119.1	10.4	107.9	119.1	P-42	90.6%
745	N39115,E40980	1,137.0	122.1	6.1	115.1	119.1	P-42	96.6%
746	N39160,E41010	1,138.0	118.5	9.0	108.8	119.1	P-42	91.4%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-26	8/26/91	ASTM D1557-C	SM Silty sand	123.2	8.4
P-42	6/17/92	ASTM D1557-A	SM Silty sand	119.1	7.8

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/14/92 EBS ON ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
747	N39115,E41390	1,142.4	135.4	3.6	130.6	136.5	P-30	95.7%
748	N39115,E41390	1,142.9	136.1	3.4	131.6	136.5	P-30	96.4%
749	N39115,E41390	1,143.4	136.0	3.1	131.9	136.5	P-30	96.6%
750	N39115,E41390	1,143.9	143.5	5.6	135.9	136.5	P-30	99.6%
751	N39115,E41390	1,144.4	144.0	5.4	136.6	136.5	P-30	100.1%
752	N39115,E41290	1,141.5	135.6	3.6	130.8	136.5	P-30	95.8%
753	N39115,E41290	1,142.0	140.2	8.4	129.3	136.5	P-30	94.7%
754	N39115,E41290	1,142.5	137.5	6.2	129.5	136.5	P-30	94.9%
755	N39120,E41190	1,139.6	140.8	5.7	133.1	136.5	P-30	97.5%
756	N39120,E41190	1,140.1	136.0	9.1	124.7	136.5	P-30	91.4%
757	N39120,E41190	1,140.6	140.4	3.4	135.8	136.5	P-30	99.5%
758	N39125,E41090	1,138.6	128.8	5.2	122.9	136.5	P-30	90.0%
759	N39125,E41090	1,139.1	148.4	3.9	135.2	136.5	P-30	99.0%
760	N39125,E41090	1,139.6	147.3	5.9	139.1	136.5	P-30	101.9%
761	N39125,E41090	1,140.1	145.1	5.3	137.8	136.5	P-30	101.0%
762	N39125,E41090	1,140.6	135.3	5.1	128.7	136.5	P-30	94.3%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/9/92 SUBBASE ON ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
763	N39115,E41390	1,145.3	134.1	5.2	127.4	136.5	P-30	93.3%
764	N39115,E41290	1,144.2	137.3	5.0	130.8	136.5	P-30	95.8%
765	N39120,E41190	1,141.5	137.2	4.0	131.9	136.5	P-30	96.6%
766	N39125,E41090	1,140.5	141.3	5.0	134.5	141.4	BM2-92	95.1%
767	N39135,E40990	1,138.0	146.1	4.6	139.6	141.4	BM2-92	98.7%
768	N39145,E40890	1,140.3	139.2	5.5	131.9	141.4	BM2-92	93.3%
769	N39145,E40790	1,140.9	141.3	5.9	133.4	141.4	BM2-92	94.3%
770	N39145,E40690	1,143.2	132.0	5.9	124.6	136.5	P-30	91.3%
771	N39145,E40590	1,143.9	133.6	5.8	126.3	136.5	P-30	92.5%
772	N39145,E40490	1,146.2	140.2	4.1	134.7	136.5	P-30	98.7%
773	N39145,E40390	1,147.0	129.7	3.4	125.4	136.5	P-30	91.9%
774	N39145,E40290	1,149.3	131.0	4.6	125.2	136.5	P-30	91.7%
775	N39145,E40190	1,147.7	134.0	8.3	123.8	136.5	P-30	90.7%
776	N39145,E40090	1,147.6	136.2	5.6	129.1	136.5	P-30	94.6%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4
BM2-92	8/26/92	ASTM D1557-D	SP-SM Poorly graded sand with silt & gravel	141.4	7.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/12/92 BASE COURSE ON ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
777	N39115,E41390	1,146.6	142.5	4.1	136.9	142.1	BC2-92	96.3%
778	N39120,E41190	1,142.8	142.5	4.3	136.7	142.1	BC2-92	96.2%
779	N39135,E40990	1,139.3	142.7	3.4	138.0	142.1	BC2-92	97.1%
780	N39145,E40790	1,142.2	140.2	3.9	135.0	142.1	BC2-92	95.0%
781	N39145,E40590	1,145.2	146.0	5.7	138.1	142.1	BC2-92	97.2%
782	N39145,E40390	1,148.5	149.3	4.5	142.9	142.1	BC2-92	100.6%
783	N39145,E40190	1,149.2	146.3	4.2	140.4	142.1	BC2-92	98.8%
784	N39145,E40090	1,148.3	147.3	4.7	141.1	142.1	BC2-92	99.3%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/17/92 LAB & ADMINISTRATION BUILDING - PAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
785	N39200,E40510	1,144.0	121.3	6.7	113.7	116.1	SA7-92	97.9%
786	N39240,E40510	1,144.0	125.4	13.6	110.5	116.1	SA7-92	95.2%
787	N39275,E40515	1,144.0	121.6	3.5	117.5	116.1	SA7-92	101.2%
788	N39275,E40495	1,144.0	120.2	6.1	113.2	116.1	SA7-92	97.5%
789	N39200,E40510	1,145.0	121.4	7.3	113.1	116.1	SA7-92	97.4%
790	N39240,E40510	1,145.0	122.0	5.4	115.8	116.1	SA7-92	99.7%
791	N39275,E40515	1,145.0	124.8	4.4	119.5	116.1	SA7-92	102.9%
792	N39275,E40495	1,145.0	123.6	5.8	116.9	116.1	SA7-92	100.7%
793	N39200,E40510	1,146.0	122.7	4.9	117.0	116.1	SA7-92	100.8%
794	N39240,E40510	1,146.0	122.4	7.4	113.9	116.1	SA7-92	98.1%
795	N39275,E40515	1,146.0	118.2	6.8	110.7	116.1	SA7-92	95.3%
796	N39275,E40495	1,146.0	120.2	7.5	111.8	116.1	SA7-92	96.3%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/17/92 LAB & ADMINISTRATION BUILDING - BACKFILL FOR FOOTINGS

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
797	N39235,E40530	1,144.5	122.9	4.4	117.8	116.1	SA7-92	101.5%
798	N39235,E40535	1,144.5	125.5	6.8	117.5	116.1	SA7-92	101.2%
799	N39170,E40510	1,144.5	127.9	7.7	118.8	116.1	SA7-92	102.3%
800	N39165,E40510	1,144.5	121.8	7.9	112.9	116.1	SA7-92	97.2%
801	N39235,E40490	1,144.5	132.2	6.9	123.6	116.1	SA7-92	106.5%
802	N39235,E40485	1,144.5	120.8	6.8	113.1	116.1	SA7-92	97.4%
803	N39300,E40500	1,144.5	122.4	7.1	114.3	116.1	SA7-92	98.4%
804	N39305,E40500	1,144.5	128.8	9.1	118.0	116.1	SA7-92	101.6%
805	N39305,E40500	1,145.5	136.4	10.1	123.9	116.1	SA7-92	106.7%
806	N39300,E40500	1,145.5	128.9	8.4	118.9	116.1	SA7-92	102.4%
807	N39300,E40500	1,146.5	120.0	5.3	111.4	116.1	SA7-92	96.0%
808	N39305,E40500	1,146.5	125.8	5.6	119.1	116.1	SA7-92	102.6%
809	N39235,E40530	1,145.5	116.3	5.0	110.8	116.1	SA7-92	95.4%
810	N39235,E40535	1,145.5	130.0	6.0	122.7	116.1	SA7-92	105.7%
811	N39235,E40530	1,146.5	120.0	5.9	113.4	116.1	SA7-92	97.7%
812	N39235,E40535	1,146.5	120.9	8.1	111.9	116.1	SA7-92	96.4%
813	N39235,E40485	1,146.5	125.2	12.0	111.8	116.1	SA7-92	96.3%
814	N39235,E40490	1,146.5	126.8	7.2	118.3	116.1	SA7-92	101.9%
815	N39170,E40510	1,145.5	118.2	5.4	112.1	116.1	SA7-92	96.6%
816	N39165,E40510	1,145.5	121.4	5.2	115.4	116.1	SA7-92	99.4%
817	N39170,E40510	1,146.5	122.2	5.5	115.9	116.1	SA7-92	99.8%
818	N39165,E40510	1,146.5	117.8	4.7	112.5	116.1	SA7-92	96.9%
819	N39235,E40485	1,145.5	122.5	6.1	115.2	116.1	SA7-92	99.2%
820	N39235,E40490	1,145.5	117.3	5.8	110.9	116.1	SA7-92	95.5%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/9/92 FILL FOR PARKING LOT BY ADMINISTRATION LAB

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
821	N39290,E40680	1,141.0	141.7	8.5	130.6	139.3	RS7-92	93.8%
822	N39290,E40555	1,143.5	141.5	7.1	132.1	139.3	RS7-92	94.8%
823	N39165,E40555	1,143.3	136.8	5.0	130.4	139.3	RS7-92	93.6%
824	N39165,E40680	1,141.3	139.6	7.2	130.2	139.3	RS7-92	93.5%
825	N39290,E40555	1,144.5	140.7	6.9	131.7	139.3	RS7-92	94.5%
826	N39290,E40680	1,142.0	143.3	6.8	134.1	139.3	RS7-92	96.3%
827	N39165,E40555	1,144.3	138.2	5.2	131.3	139.3	RS7-92	94.3%
828	N39165,E40680	1,142.3	126.5	6.2	119.1	123.2	P-26	96.7%
829	N39165,E40680	1,143.3	124.8	5.7	118.1	123.2	P-26	95.9%
830	N39165,E40555	1,145.3	135.7	6.9	126.9	136.5	P-30	93.0%
831	N39290,E40555	1,145.5	121.5	6.7	113.9	123.2	P-26	92.5%
832	N39290,E40680	1,143.0	127.4	4.5	121.9	123.2	P-26	98.9%
834	N39165,E40555	1,145.3	124.2	5.1	118.2	123.2	P-26	95.9%
835	N39165,E40680	1,143.3	123.8	6.4	116.3	123.2	P-26	94.4%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS7-92	7/20/92	ASTM D1557-D	SP Poorly graded sand with gravel	139.3	7.4
P-26	8/26/91	ASTM D1557-C	SM Silty sand	123.2	8.4
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/9/92 BASE COURSE FOR PARKING LOT BY ADMINISTRATION LAB

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
836	N39290,E40555	1,146.0	146.4	5.2	139.3	142.1	BC2-92	98.0%
837	N39290,E40680	1,143.5	142.1	4.0	136.6	142.1	BC2-92	96.1%
838	N39165,E40555	1,145.8	145.5	6.0	137.3	142.1	BC2-92	96.6%
839	N39165,E40680	1,143.8	141.9	5.1	135.1	142.1	BC2-92	95.1%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/16/92 RAILROAD SPUR FILL ORIGINAL GROUND

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
840	49+00	1,162.0	137.9	11.0	124.2	137.4	RS2-92	90.4%
841	52+00	1,155.9	139.2	9.6	127.1	137.4	RS2-92	92.5%
842	51+00	1,159.9	133.4	11.4	119.7	137.4	RS2-92	*87.1%
Retest	51+00	1,159.9	139.0	12.1	124.0	137.4	RS2-92	90.2%
843	56+00	1,148.9	140.4	9.7	128.0	137.4	RS2-92	93.2%
844	57+00	1,147.9	142.5	9.2	130.4	137.4	RS2-92	94.9%
845	58+00	1,146.9	140.9	9.7	128.4	137.4	RS2-92	93.4%
846	45+00	1,160.5	137.2	8.1	126.9	127.4	P-12	99.6%
847	59+00	1,146.9	144.3	10.1	131.1	137.4	RS2-92	95.4%
848	60+00	1,145.9	144.0	9.3	131.7	137.4	RS2-92	95.9%
849	61+00	1,144.9	139.0	11.1	125.1	137.4	RS2-92	91.0%
850	62+00	1,144.9	140.4	9.5	128.3	137.4	RS2-92	93.4%
851	46+00	1,160.3	142.6	11.3	128.0	137.4	RS2-92	93.2%
852	47+00	1,160.8	139.4	8.7	128.2	137.4	RS2-92	93.3%
853	48+00	1,162.3	137.1	10.0	124.6	137.4	RS2-92	90.7%
854	44+00	1,155.2	146.9	9.7	133.8	137.4	RS2-92	97.4%
855	19+00	1,138.7	139.1	11.5	124.8	137.4	RS2-92	90.8%
856	20+00	1,139.9	139.8	12.0	124.8	137.4	RS2-92	90.8%
857	42+00	1,155.0	139.5	11.3	125.3	137.4	RS2-92	91.2%
858	43+00	1,155.0	140.6	10.6	127.2	137.4	RS2-92	92.6%
859	18+00	1,138.7	141.9	7.2	132.3	137.4	RS2-92	96.3%
860	41+00	1,152.3	149.5	9.3	136.8	137.4	RS2-92	99.6%
861	21+00	1,140.0	139.4	9.8	127.0	137.4	RS2-92	92.4%
862	40+00	1,150.5	139.9	9.3	128.1	137.4	RS2-92	93.2%
863	24+00	1,140.4	142.5	9.1	130.6	137.4	RS2-92	95.1%

*Does not meet project specification. Test areas not meeting project specifications were reworked, recompacted, and retested until minimum project specifications were achieved.
Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf	OPTIMUM MOISTURE PERCENT
RS2-92	7/16/92	ASTM D1557-A	SM Silty sand	137.4	6.8

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/16/92 RAILROAD SPUR FILL ORIGINAL GROUND

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
864	25+00	1,141.1	137.6	14.4	120.3	137.4	RS2-92	*87.6%
Retest	25+00	1,141.1	135.1	10.5	122.1	137.4	RS2-92	*88.9%
Retest	25+00	1,141.1	135.7	9.2	124.3	137.4	RS2-92	90.5%
865	23+00	1,140.0	142.4	7.3	132.7	137.4	RS2-92	96.6%
866	37+00	1,152.0	141.0	13.0	124.8	137.4	RS2-92	90.8%
867	38+00	1,153.0	140.5	9.6	128.2	137.4	RS2-92	93.3%
868	39+00	1,150.7	133.0	6.8	124.6	137.4	RS2-92	90.7%
869	26+00	1,142.4	136.4	9.4	124.7	137.4	RS2-92	90.8%
Retest	26+00	1,142.4	138.8	10.3	125.9	137.4	RS2-92	91.6%
Retest	26+00	1,142.4	145.0	9.4	132.5	137.4	RS2-92	96.4%
870	36+00	1,151.9	134.0	9.0	122.9	137.4	RS2-92	*89.4%
Retest	36+00	1,151.9	136.6	7.0	127.6	137.4	RS2-92	92.9%
871	27+00	1,142.7	141.2	9.4	129.1	137.4	RS2-92	94.0%
872	34+00	1,149.8	139.2	7.8	129.2	137.4	RS2-92	94.0%
873	35+00	1,150.5	140.5	10.6	127.1	137.4	RS2-92	92.5%
874	28+00	1,143.0	139.9	9.5	127.7	137.4	RS2-92	92.9%
875	29+00	1,141.8	139.3	9.2	127.6	137.4	RS2-92	92.9%
876	32+00	1,149.2	142.8	10.0	129.8	137.4	RS2-92	94.5%
877	33+00	1,150.0	137.4	9.0	126.1	137.4	RS2-92	91.8%
878	55+00	1,149.9	141.1	8.6	129.9	137.4	RS2-92	94.5%
879	54+00	1,150.9	136.3	6.7	127.7	137.4	RS2-92	92.9%
880	53+00	1,152.9	134.0	6.8	125.5	137.4	RS2-92	91.3%
881	30+00	1,147.1	145.9	7.9	135.2	137.4	RS2-92	98.4%
882	31+00	1,148.9	143.1	8.9	131.4	137.4	RS2-92	95.6%
883	63+00	1,144.9	137.2	9.1	125.7	137.4	RS2-92	91.5%
884	64+00	1,144.1	139.3	10.1	126.6	137.4	RS2-92	92.1%
885	50+00	1,160.7	145.6	7.3	135.6	137.4	RS2-92	98.7%

*Does not meet project specification. Test areas not meeting project specifications were reworked, recompacted, and retested until minimum project specifications were achieved.
Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS2-92	7/16/92	ASTM D1557-A	SM Silty sand	137.4	6.8

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/19/92 RAILROAD SPUR FILL ORIGINAL GROUND

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
886	12+0	1,132.7	132.8	17.2	113.3	123.2	P-26	92.0%
887	13+0	1,133.7	134.0	13.9	117.6	123.2	P-26	95.5%
888	14+0	1,134.7	135.4	3.6	139.6	136.5	P-30	102.3%
889	15+0	1,135.7	143.1	5.4	135.7	141.4	BM2-92	96.0%
890	16+0	1,133.7	146.9	5.6	139.2	141.4	BM2-92	98.4%
891	11+00	1,139.7	135.8	3.5	131.2	136.5	P-26	96.1%
892	10+0	1,141.7	140.0	3.8	134.9	136.5	P-26	98.8%
893	9+0	1,142.7	136.8	5.0	130.3	136.5	P-26	95.5%
894	17+0	1,140.5	143.1	5.4	135.7	141.4	BM2-92	96.0%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-26	8/26/91	ASTM D1557-C	SM Silty sand	123.2	8.4
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4
BM2-92	8/26/92	ASTM D1557-D	SP-SM Poorly graded sand with silt & gravel	141.4	7.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/16/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
895	49+00	1,163.0	145.0	5.2	137.8	143.0	P-16	96.4%
896	49+00	1,164.0	144.9	6.4	136.2	143.0	P-16	95.2%
897	52+00	1,156.9	142.2	8.3	131.3	136.5	P-30	96.2%
898	52+00	1,157.9	141.3	8.5	130.2	136.5	P-30	95.4%
899	52+00	1,158.9	141.8	9.9	129.1	136.5	P-30	94.6%
900	52+00	1,159.9	142.3	9.5	130.0	136.5	P-30	95.2%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-16	8/20/91	ASTM D1557-D	GW Well-graded gravel	143.0	7.4
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/20/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
901	56+00	1,149.9	143.0	5.1	136.1	126.5	RS6-92	107.6%
902	57+00	1,148.9	134.6	4.6	128.6	126.5	RS6-92	101.7%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS6-92	7/18/92	ASTM D1557-A	SP Poorly graded sand with gravel	126.5	10.9

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/21/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
903	58+00	1,147.9	137.9	5.1	131.2	136.5	P-30	96.1%
904	56+00	1,150.9	138.7	5.2	131.9	136.5	P-30	96.6%
905	57+00	1,149.9	136.4	5.0	129.9	136.5	P-30	95.2%
906	58+00	1,148.9	140.0	5.8	132.3	136.5	P-30	96.9%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/22/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
907	58+00	1,146.9	144.3	10.7	130.4	137.4	RS2-92	94.9%
908	59+00	1,147.9	136.5	7.4	127.0	127.4	P-12	99.7%
909	60+00	1,146.9	130.9	7.6	121.6	127.4	P-12	95.4%
910	59+00	1,148.9	137.0	8.3	126.3	127.4	P-12	99.1%
911	60+00	1,147.9	130.4	8.3	120.5	127.4	P-12	94.6%
912	59+00	1,149.9	132.3	7.2	123.5	127.4	P-12	96.9%
913	60+00	1,148.9	132.5	6.5	124.5	127.4	P-12	97.7%
914	59+00	1,150.9	136.9	6.8	128.2	127.4	P-12	100.6%
915	60+00	1,148.9	136.6	6.4	128.3	127.4	P-12	100.7%
916	45+00	1,155.5	134.4	8.3	124.0	137.4	RS2-92	90.2%
917	45+00	1,156.5	131.3	8.4	121.1	127.4	P-12	95.1%
918	45+00	1,157.5	131.7	8.8	121.1	127.4	P-12	95.1%
919	45+00	1,158.5	131.8	6.7	123.5	127.4	P-12	96.9%
920	45+00	1,159.5	133.2	8.3	123.0	127.4	P-12	96.5%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS2-92	7/16/92	ASTM D1557-A	SM Silty sand	137.4	6.8
P-12	8/14/91	ASTM D1557-A	SM Silty sand	127.4	9.2

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/23/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
921	61+00	1,145.9	136.9	7.9	126.9	127.4	P-12	99.6%
922	62+00	1,145.9	135.1	7.0	126.3	127.4	P-12	99.1%
923	61+00	1,146.9	132.9	6.2	125.1	129.2	RS8-92	96.8%
924	62+00	1,146.9	133.4	7.3	124.3	129.2	RS8-92	96.2%
925	61+00	1,147.9	122.9	5.4	116.6	121.4	P-1	96.0%
926	62+00	1,147.9	131.6	6.1	124.1	129.2	RS8-92	96.1%
927	61+00	1,148.9	128.0	7.1	119.5	121.4	P-1	98.4%
928	62+00	1,148.9	125.9	6.0	118.7	121.4	P-1	97.8%
929	61+00	1,149.9	129.5	6.9	121.1	121.4	P-1	99.8%
930	62+00	1,149.9	126.2	7.3	117.6	121.4	P-1	96.9%
931	61+00	1,150.9	125.4	6.4	117.8	122.5	RS10-92	96.2%
932	62+00	1,150.9	127.5	7.4	118.6	122.5	RS10-92	96.8%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-12	8/14/91	ASTM D1557-A	SM Silty sand	127.4	9.2
RS8-92	7/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	129.2	11.3
P-1	8/1/91	ASTM D1557-C	SP-SM Poorly graded sand with silt	121.4	11.6
RS10-92	7/24/92	ASTM D1557-C	SP Poorly graded sand with gravel	122.5	12.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/25/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
933	47+00	1,161.8	132.6	5.6	125.6	127.4	P-12	98.6%
934	46+00	1,161.3	123.0	5.9	116.1	122.5	RS10-92	94.8%
935	46+00	1,162.3	136.6	5.1	130.1	127.4	P-12	102.1%
936	47+00	1,162.8	130.1	6.3	122.4	127.4	P-12	96.1%
937	46+00	1,163.3	128.0	6.1	120.6	127.4	P-12	94.7%
938	47+00	1,163.8	135.1	5.7	127.8	127.4	P-12	100.3%
939	44+00	1,155.7	129.3	7.1	120.7	127.4	P-12	94.7%
940	44+00	1,156.2	134.4	5.7	127.2	127.4	P-12	99.8%
941	44+00	1,156.7	132.7	6.6	124.5	127.4	P-12	97.7%
942	44+00	1,157.7	132.7	6.5	124.6	127.4	P-12	97.8%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-12	8/14/91	ASTM D1557-A	SM Silty sand	127.4	9.2
RS10-92	7/24/92	ASTM D1557-C	SP Poorly graded sand with gravel	122.5	12.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/28/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
943	19+00	1,139.7	135.7	7.5	126.2	127.4	P-12	99.1%
944	20+00	1,140.9	128.7	6.2	121.2	127.4	P-12	95.1%
945	19+00	1,140.7	132.6	4.9	126.4	127.4	P-12	99.2%
946	20+00	1,141.9	126.4	7.8	117.2	127.4	P-12	92.0%
947	42+00	1,155.5	130.2	6.7	122.0	127.4	P-12	95.8%
948	43+00	1,155.5	132.4	5.9	125.0	127.4	P-12	98.1%
949	42+00	1,156.0	131.7	6.3	123.9	127.4	P-12	97.3%
950	43+00	1,156.0	129.1	6.3	121.5	127.4	P-12	95.4%
951	42+00	1,156.5	134.4	6.8	125.9	127.4	P-12	98.8%
952	43+00	1,156.5	130.3	6.5	122.4	127.4	P-12	96.1%
953	42+00	1,157.0	134.5	7.1	125.6	127.4	P-12	98.6%
954	43+00	1,157.0	135.1	6.8	126.5	127.4	P-12	99.3%
955	19+00	1,142.7	130.3	7.6	121.1	127.4	P-12	95.1%
956	19+00	1,141.7	128.5	5.1	122.3	127.4	P-12	96.0%
957	20+00	1,142.9	127.6	5.0	121.5	127.4	P-12	95.4%
958	18+00	1,139.7	132.1	7.2	123.3	127.4	P-12	96.8%
959	18+00	1,140.7	136.6	4.9	130.3	127.4	P-12	102.3%
960	18+00	1,141.2	133.6	10.0	121.5	127.4	P-12	95.4%
961	18+00	1,141.7	130.9	5.7	123.7	127.4	P-12	97.1%
962	18+00	1,142.2	134.6	8.4	124.1	127.4	P-12	97.4%
963	18+00	1,142.7	134.5	9.0	123.4	127.4	P-12	96.9%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-12	8/14/91	ASTM D1557-A	SM Silty sand	127.4	9.2

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/30/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
694	41+00	1,153.3	132.8	6.3	125.0	127.4	P-12	98.1%
965	41+00	1,154.3	134.2	6.8	125.6	127.4	P-12	98.6%
966	41+00	1,155.3	133.1	5.7	125.9	127.4	P-12	98.8%
967	41+00	1,156.3	135.6	5.3	128.8	127.4	P-12	101.1%
968	21+00	1,141.0	129.2	6.0	121.8	127.4	P-12	95.6%
969	22+00	1,142.3	130.9	5.6	124.0	127.4	P-12	97.3%
970	21+00	1,142.0	128.4	6.4	120.6	127.4	P-12	94.7%
971	22+00	1,143.3	131.0	6.6	123.0	127.4	P-12	96.5%
972	21+00	1,143.0	132.8	5.0	126.4	127.4	P-12	99.2%
973	22+00	1,143.8	128.4	6.5	120.6	122.5	RS10-92	98.4%
974	21+00	1,143.5	125.2	7.2	116.8	122.5	RS10-92	95.3%
975	22+00	1,144.3	124.7	7.4	116.1	122.5	RS10-92	94.8%
976	40+00	1,151.5	129.3	6.4	121.5	127.4	P-12	95.4%
977	40+00	1,152.5	132.5	8.4	122.2	127.4	P-12	95.9%
978	40+00	1,153.5	130.7	7.0	122.1	122.5	RS10-92	99.7%
979	40+00	1,154.5	128.3	7.7	119.1	122.5	RS10-92	97.2%
980	40+00	1,155.5	127.6	9.4	116.6	122.5	RS10-92	95.2%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-12	8/14/91	ASTM D1557-A	SM Silty sand	127.4	9.2
RS10-92	7/24/92	ASTM D1557-C	SP Poorly graded sand with gravel	122.5	12.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/1/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
981	24+00	1,141.4	129.8	5.8	122.6	127.4	P-12	96.2%
982	24+00	1,142.4	130.6	7.5	121.5	127.4	P-12	95.4%
983	24+00	1,143.4	127.0	5.0	121.1	127.4	P-12	95.1%
984	24+00	1,143.9	132.1	4.6	126.3	127.4	P-12	99.1%
985	24+00	1,144.4	134.1	5.9	126.6	127.4	P-12	99.4%
986	24+00	1,144.9	133.7	5.5	126.8	127.4	P-12	99.5%
987	24+00	1,145.4	134.5	9.4	122.9	127.4	P-12	96.5%
988	24+00	1,145.9	134.2	8.5	123.7	127.4	P-12	97.1%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-12	8/14/91	ASTM D1557-A	SM Silty sand	127.4	9.2

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/3/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
989	25+00	1,142.1	124.1	6.9	116.0	122.5	RS10-92	94.7%
990	25+00	1,143.1	131.3	8.0	121.6	122.5	RS10-92	99.3%
991	25+00	1,144.1	126.5	6.7	118.5	122.5	RS10-92	96.7%
992	25+00	1,145.1	120.5	7.5	112.1	116.1	SA7-92	96.6%
993	25+00	1,145.6	120.1	5.8	113.6	116.1	SA7-92	97.8%
994	25+00	1,146.1	121.9	8.6	112.3	116.1	SA7-92	96.7%
995	25+00	1,146.6	118.1	7.3	110.1	116.1	SA7-92	94.8%
996	23+00	1,141.0	128.8	6.4	121.0	122.5	RS10-92	98.8%
997	23+00	1,142.0	129.6	9.2	118.7	122.5	RS10-92	96.9%
998	23+00	1,143.0	128.2	8.3	118.4	122.5	RS10-92	96.7%
999	23+00	1,144.0	128.9	8.1	119.3	122.5	RS10-92	97.4%
1,000	23+00	1,145.0	126.9	9.0	116.4	122.5	RS10-92	95.0%
1,001	37+00	1,153.0	127.3	8.4	117.5	116.1	SA7-92	101.2%
1,002	37+00	1,153.5	125.9	11.0	113.4	116.1	SA7-92	97.7%
1,003	37+00	1,154.0	118.4	6.4	111.3	116.1	SA7-92	95.9%
1,004	37+00	1,154.5	119.2	6.2	112.2	116.1	SA7-92	96.6%
1,005	37+00	1,155.0	128.8	10.0	117.1	122.5	RS10-92	95.6%
1,006	37+00	1,155.5	127.8	9.7	116.5	122.5	RS10-92	95.1%
1,007	37+00	1,156.0	128.9	10.3	116.9	122.5	RS10-92	95.4%
1,008	38+00	1,154.0	127.9	7.9	118.6	122.5	RS10-92	96.8%
1,009	39+00	1,151.7	127.7	9.5	117.7	122.5	RS10-92	96.1%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS10-92	7/24/92	ASTM D1557-C	SP Poorly graded sand with gravel	122.5	12.7
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/3/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,010	38+00	1,155.0	131.7	6.3	123.9	127.4	P-12	97.3%
1,011	39+00	1,152.7	136.9	9.0	125.6	127.4	P-12	98.6%
1,012	38+00	1,155.5	129.5	11.3	116.4	122.5	RS10-92	95.0%
1,013	39+00	1,153.7	131.4	11.8	117.5	122.5	RS10-92	95.9%
1,014	38+00	1,156.0	130.1	9.8	118.5	122.5	RS10-92	96.7%
1,015	39+00	1,154.7	136.8	9.0	116.4	122.5	RS10-92	95.0%
1,016	38+00	1,156.5	126.7	6.7	118.8	122.5	RS10-92	97.0%
1,017	39+00	1,155.7	128.2	6.9	120.0	122.5	RS10-92	98.0%
1,018	38+00	1,157.0	131.3	7.9	121.7	122.5	RS10-92	99.3%
1,019	39+00	1,156.7	135.3	11.1	121.8	122.5	RS10-92	99.4%
1,020	40+00	1,156.5	140.5	8.0	130.0	127.4	P-12	102.0%
1,021	40+00	1,157.5	137.9	6.1	130.0	127.4	P-12	102.0%
1,022	41+00	1,157.3	138.0	10.5	124.9	127.4	P-12	98.0%
1,023	41+00	1,158.3	136.3	9.3	124.7	127.4	P-12	97.9%
1,024	42+00	1,157.5	133.1	9.2	121.9	127.4	P-12	95.7%
1,025	42+00	1,158.0	140.1	9.3	128.2	127.4	P-12	100.6%
1,026	43+00	1,158.0	135.8	7.5	126.3	127.4	P-12	99.1%
1,027	43+00	1,159.0	134.4	6.9	125.7	127.4	P-12	98.7%
1,028	44+00	1,158.7	132.7	9.0	121.8	127.4	P-12	95.6%
1,029	44+00	1,159.7	129.8	6.8	121.6	127.4	P-12	95.4%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-12	8/14/91	ASTM D1557-A	SM Silty sand	127.4	9.2
RS10-92	7/24/92	ASTM D1557-C	SP Poorly graded sand with gravel	122.5	12.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/4/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,030	26+00	1,143.4	126.1	6.5	118.3	122.5	RS10-92	96.6%
1,031	26+00	1,144.4	125.1	4.4	119.8	122.5	RS10-92	97.8%
1,032	26+00	1,145.4	125.0	6.8	117.1	122.5	RS10-92	95.6%
1,033	26+00	1,145.9	124.8	5.8	117.9	122.5	RS10-92	96.2%
1,034	26+00	1,146.4	127.2	6.6	119.3	122.5	RS10-92	97.4%
1,035	26+00	1,146.9	129.3	5.6	122.4	122.5	RS10-92	99.9%
1,036	36+00	1,152.4	131.1	4.9	125.0	127.4	P-12	98.1%
1,037	36+00	1,152.9	130.7	6.4	122.9	127.4	P-12	96.5%
1,038	36+00	1,153.4	127.7	5.5	121.1	127.4	P-12	95.1%
1,039	36+00	1,153.9	130.0	6.8	121.7	127.4	P-12	95.5%
1,040	36+00	1,154.4	131.2	6.7	122.9	127.4	P-12	96.5%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS10-92	7/24/92	ASTM D1557-C	SP Poorly graded sand with gravel	122.5	12.7
P-12	8/14/91	ASTM D1557-A	SM Silty sand	127.4	9.2

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/5/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,041	36+00	1,154.9	130.9	6.9	122.4	127.4	P-12	96.1%
1,042	36+00	1,155.4	130.8	6.6	122.7	127.4	P-12	96.3%
1,043	27+00	1,143.7	128.1	5.3	121.7	127.4	P-12	95.5%
1,044	27+00	1,144.7	129.4	5.4	122.8	127.4	P-12	96.4%
1,045	27+00	1,145.7	134.2	6.5	126.4	127.4	P-12	99.2%
1,046	27+00	1,146.7	135.0	7.5	125.5	127.4	P-12	98.5%
1,047	27+00	1,147.2	131.9	5.8	124.7	127.4	P-12	97.9%
1,048	27+00	1,147.7	135.6	6.2	127.7	129.2	RS8-92	98.8%
1,049	27+00	1,148.2	142.6	4.9	136.0	139.3	RS7-92	97.6%
1,050	26+00	1,147.4	142.3	5.4	135.0	139.3	RS7-92	96.9%
1,051	34+00	1,150.3	130.9	4.4	125.4	137.4	RS2-92	*91.3%
1,052	35+00	1,151.0	128.7	5.9	121.5	137.4	RS2-92	*88.4%
1,053	34+00	1,150.8	128.8	3.8	124.1	137.4	RS2-92	*90.3%
1,054	35+00	1,151.5	129.5	4.3	124.1	137.4	RS2-92	*90.3%
1,055	34+00	1,151.3	133.6	4.0	128.4	129.2	RS8-92	99.4%

*Does not meet project specification. Test areas not meeting project specifications were reworked, recompacted, and retested until minimum project specifications were achieved.
Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-12	8/14/91	ASTM D1557-A	SM Silty sand	127.4	9.2
RS8-92	7/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	129.2	11.3
RS7-92	7/20/92	ASTM D1557-D	SP Poorly graded sand with gravel	139.3	7.4
RS2-92	7/16/92	ASTM D1557-A	SM Silty sand	137.4	6.8

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/5/92 RAILROAD SPUR FILL

	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,056	35+00	1,152.0	139.8	4.5	133.8	132.1	SA10-92	101.3%
1,057	34+00	1,151.8	133.6	5.5	126.6	132.1	SA10-92	95.8%
1,058	35+00	1,152.5	131.6	4.6	125.8	132.1	SA10-92	95.2%
1,059	34+00	1,152.3	140.6	5.8	133.0	132.1	SA10-92	100.7%
1,060	35+00	1,153.0	134.1	4.3	128.6	132.1	SA10-92	97.4%
1,061	56+00	1,153.9	136.2	4.6	130.2	127.4	P-12	102.2%
1,062	56+00	1,154.9	138.9	4.8	132.5	139.4	RS9-92	95.1%
1,063	57+00	1,152.9	135.0	5.9	127.4	127.4	P-12	100.0%
1,064	57+00	1,153.9	142.4	5.0	135.7	139.4	RS9-92	97.3%
1,065	58+00	1,151.9	131.1	5.1	124.8	127.4	P-12	98.0%
1,066	58+00	1,152.9	138.8	5.0	132.2	132.1	SA10-92	100.1%
1,067	58+00	1,153.9	129.3	5.1	123.0	129.2	RS8-92	95.2%
1,068	59+00	1,151.9	134.2	5.8	126.9	129.2	RS8-92	98.2%
1,069	59+00	1,152.9	132.8	5.5	125.9	129.2	RS8-92	97.4%
1,070	60+00	1,150.9	132.5	5.8	125.3	129.2	RS8-92	97.0%
1,071	60+00	1,151.9	130.5	5.5	123.7	129.2	RS8-92	95.7%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0
P-12	8/14/91	ASTM D1557-A	SM Silty sand	127.4	9.2
RS9-92	7/22/92	ASTM D1557-D	SP Poorly graded sand with gravel	139.4	8.0
RS8-92	7/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	129.2	11.3

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/6/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,072	34+00	1,152.8	142.8	6.0	134.8	132.1	SA10-92	102.0%
1,073	35+00	1,153.5	134.5	5.2	127.9	132.1	SA10-92	96.8%
1,074	34+00	1,153.3	135.5	5.3	128.7	132.1	SA10-92	97.4%
1,075	35+00	1,154.0	132.0	5.6	125.0	132.1	SA10-92	*94.6%
1,076	34+00	1,153.8	133.5	6.0	126.0	132.1	SA10-92	95.4%
1,077	35+00	1,154.5	131.3	5.0	125.0	132.1	SA10-92	*94.6%
1,078	28+00	1,144.0	132.4	6.0	124.9	132.1	SA10-92	*94.5%
1,079	29+00	1,142.8	131.9	5.4	125.2	132.1	SA10-92	94.8%
1,080	28+00	1,145.0	133.9	5.4	127.0	132.1	SA10-92	96.1%
1,081	29+00	1,143.8	132.9	5.8	125.6	132.1	SA10-92	95.1%
1,082	28+00	1,146.0	133.2	5.8	125.8	132.1	SA10-92	95.2%
1,083	29+00	1,144.8	137.8	6.0	130.1	132.1	SA10-92	98.5%
1,084	28+00	1,147.0	134.6	8.2	124.4	129.2	RS8-92	96.3%
1,085	29+00	1,145.8	133.1	7.6	123.7	129.2	RS8-92	95.7%
1,086	28+00	1,147.5	145.3	7.3	135.5	132.1	SA10-92	102.6%

*Does not meet project specification. Test areas not meeting project specifications were reworked, recompacted, and retested until minimum project specifications were achieved.
Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf	OPTIMUM MOISTURE PERCENT
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0
RS8-92	7/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	129.2	11.3

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/6/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,087	29+00	1,146.8	127.7	4.2	122.6	129.2	RS8-92	94.9%
1,088	28+00	1,148.0	134.2	8.5	123.7	129.2	RS8-92	95.7%
1,089	29+00	1,147.8	129.8	4.6	124.1	129.2	RS8-92	96.1%
1,090	28+00	1,148.5	142.8	4.5	136.6	132.1	SA10-92	103.4%
1,091	29+00	1,148.8	135.1	4.0	129.9	132.1	SA10-92	98.3%
1,092	28+00	1,149.0	137.9	4.2	132.3	132.1	SA10-92	100.2%
1,093	29+00	1,149.8	135.0	4.3	129.5	132.1	SA10-92	98.0%
1,094	42+00	1,159.0	136.3	6.2	128.4	132.1	SA10-92	97.2%
1,095	42+00	1,160.0	134.9	6.3	126.9	132.1	SA10-92	96.1%
1,096	43+00	1,160.0	138.9	6.2	130.8	132.1	SA10-92	99.0%
1,097	43+00	1,161.0	140.7	4.0	135.3	132.1	SA10-92	102.4%
1,098	44+00	1,160.7	139.1	5.1	132.3	132.1	SA10-92	100.2%
1,099	44+00	1,161.7	135.1	6.0	127.5	132.1	SA10-92	96.5%
1,100	45+00	1,160.5	137.9	6.0	130.2	132.1	SA10-92	98.6%
1,101	45+00	1,161.5	137.7	5.5	130.6	132.1	SA10-92	98.9%
1,102	45+00	1,162.5	132.5	4.8	126.4	132.1	SA10-92	95.7%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS8-92	7/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	129.2	11.3
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/7/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,103	56+00	1,151.9	145.9	6.3	137.3	136.5	P-30	100.6%
1,104	57+00	1,150.9	147.4	5.1	140.2	136.5	P-30	102.7%
1,105	58+00	1,149.9	149.9	4.3	143.8	136.5	P-30	105.3%
1,106	56+00	1,152.9	146.1	5.1	139.0	136.5	P-30	101.8%
1,107	57+00	1,151.9	147.4	5.5	139.8	136.5	P-30	102.4%
1,108	58+00	1,150.9	149.8	4.2	143.8	136.5	P-30	105.3%
1,109	60+00	1,152.9	145.4	4.7	138.9	129.2	RS8-92	107.5%
1,110	60+00	1,153.9	144.0	4.5	137.8	129.2	RS8-92	106.7%
1,111	61+00	1,151.9	148.9	5.3	141.3	136.5	P-30	103.5%
1,112	61+00	1,152.9	148.7	4.5	142.3	136.5	P-30	104.2%
1,113	32+00	1,149.7	135.1	6.1	127.3	132.1	SA10-92	96.4%
1,114	33+00	1,150.5	137.0	7.7	127.2	132.1	SA10-92	96.3%
1,115	32+00	1,150.2	135.8	6.7	127.3	132.1	SA10-92	96.4%
1,116	33+00	1,151.0	140.5	7.5	130.7	132.1	SA10-92	98.9%
1,117	32+00	1,150.7	140.5	6.5	131.8	132.1	SA10-92	99.8%
1,118	33+00	1,151.5	136.8	3.7	131.9	132.1	SA10-92	99.8%
1,119	32+00	1,151.2	139.0	5.5	131.7	132.1	SA10-92	99.7%
1,120	33+00	1,152.0	144.9	5.0	138.0	143.8	BM1-92	96.0%
1,121	32+00	1,151.7	146.9	4.7	140.4	143.8	BM1-92	97.6%
1,122	33+00	1,152.5	143.9	5.3	136.6	143.8	BM1-92	95.0%
1,123	32+00	1,152.2	145.2	3.9	139.8	143.8	BM1-92	97.2%
1,124	33+00	1,153.0	149.8	3.6	144.6	143.8	BM1-92	100.6%
1,125	56+00	1,155.9	146.8	4.9	139.9	136.5	P-30	102.5%
1,126	56+00	1,156.9	145.8	5.1	138.6	136.5	P-30	101.5%
1,127	57+00	1,154.9	144.2	6.0	136.1	136.5	P-30	99.7%
1,128	57+00	1,155.9	148.7	5.1	141.5	136.5	P-30	103.7%
1,129	58+00	1,154.9	146.3	7.8	135.8	136.5	P-30	99.5%
1,130	58+00	1,155.9	147.1	4.5	140.7	136.5	P-30	103.1%
1,131	59+00	1,153.9	148.3	5.1	141.0	136.5	P-30	103.3%
1,132	59+00	1,154.9	145.6	3.9	140.1	136.5	P-30	102.6%

Project Specification: Minimum of 95% relative compaction.

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/11/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,133	55+00	1,150.9	154.4	6.2	145.3	139.3	RS7-92	104.3%
1,134	55+00	1,151.9	146.9	4.0	141.3	139.3	RS7-92	101.4%
1,135	55+00	1,152.9	142.4	5.3	135.3	139.3	RS7-92	97.1%
1,136	55+00	1,153.9	150.0	3.8	144.5	139.3	RS7-92	103.7%
1,137	55+00	1,154.9	150.3	5.1	143.0	143.8	BM1-92	99.4%
1,138	55+00	1,155.9	151.6	4.9	144.6	143.8	BM1-92	100.6%
1,139	54+00	1,151.9	144.4	7.3	134.6	136.5	P-30	98.6%
1,140	53+00	1,153.9	145.7	6.5	136.8	136.5	P-30	100.2%
1,141	54+00	1,152.9	150.7	7.0	140.9	136.5	P-30	103.2%
1,142	53+00	1,154.9	140.4	7.1	131.1	136.5	P-30	96.0%
1,143	54+00	1,153.9	135.8	7.9	125.9	132.1	SA10-92	95.3%
1,144	53+00	1,155.9	145.3	6.7	136.2	136.5	P-30	99.8%
1,145	54+00	1,154.9	142.6	5.9	134.6	136.5	P-30	98.6%
1,146	53+00	1,156.9	145.4	7.0	135.8	136.5	P-30	99.5%
1,147	54+00	1,155.9	143.8	5.5	136.2	136.5	P-30	99.8%
1,148	53+00	1,157.9	146.9	6.1	138.5	136.5	P-30	101.5%
1,149	54+00	1,156.9	140.7	6.0	132.8	136.5	P-30	97.3%
1,150	53+00	1,158.9	147.5	7.9	136.7	136.5	P-30	100.1%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS7-92	7/20/92	ASTM D1557-D	SP Poorly graded sand with gravel	139.3	7.4
BM1-92	7/7/92	ASTM D1557-D	SP Poorly graded gravely sand	143.8	6.9
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/12/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,151	30+00	1,147.6	144.5	6.7	135.4	136.5	P-30	99.2%
1,152	31+00	1,148.4	140.8	7.7	130.6	136.5	P-30	95.7%
1,153	30+00	1,148.1	140.8	8.0	130.4	136.5	P-30	95.5%
1,154	31+00	1,148.9	139.7	5.9	131.9	136.5	P-30	96.6%
1,155	30+00	1,148.6	152.1	3.1	147.6	143.8	BM1-92	102.6%
1,156	31+00	1,149.4	145.6	4.9	138.8	143.8	BM1-92	96.5%
1,157	30+00	1,149.1	148.6	4.9	141.7	143.8	BM1-92	98.5%
1,158	31+00	1,149.9	147.5	4.6	141.1	143.8	BM1-92	98.1%
1,159	30+00	1,149.6	136.5	4.9	130.1	132.1	SA10-92	98.5%
1,160	31+00	1,150.4	140.1	3.4	135.5	132.1	SA10-92	102.6%
1,161	30+00	1,150.1	144.7	4.0	139.1	139.3	RS7-92	99.9%
1,162	31+00	1,150.9	143.6	3.8	138.3	139.3	RS7-92	99.3%
1,163	30+00	1,150.6	152.9	5.3	145.2	143.8	BM1-92	101.0%
1,164	31+00	1,151.4	153.9	5.2	146.3	143.8	BM1-92	101.7%
1,165	63+00	1,145.9	141.2	6.8	132.2	132.1	SA10-92	100.1%
1,166	64+00	1,145.1	139.9	9.3	128.0	132.1	SA10-92	96.9%
1,167	63+00	1,146.9	142.6	7.8	132.3	132.1	SA10-92	100.2%
1,168	64+00	1,146.1	141.1	10.2	128.0	132.1	SA10-92	96.9%
1,169	63+00	1,147.9	147.9	4.0	142.2	143.8	BM1-92	98.9%
1,170	64+00	1,147.1	143.4	3.3	138.9	143.8	BM1-92	96.6%
1,171	63+00	1,148.9	149.0	4.5	142.6	143.8	BM1-92	99.2%
1,172	64+00	1,148.1	146.8	6.4	137.9	143.8	BM1-92	95.9%
1,173	63+00	1,149.9	148.7	4.8	142.0	143.8	BM1-92	98.7%
1,174	64+00	1,149.1	148.1	3.7	142.8	143.8	BM1-92	99.3%
1,175	63+00	1,150.9	150.2	3.2	145.5	143.8	BM1-92	101.2%
1,176	64+00	1,150.1	144.0	3.0	139.8	143.8	BM1-92	97.2%
1,177	62+00	1,151.9	145.3	2.8	141.4	143.8	BM1-92	98.3%

Project Specification: Minimum of 95% relative compaction.

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/13/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,178	51+00	1,159.9	140.6	5.6	133.1	137.4	RS2-92	96.9%
1,179	50+00	1,161.2	154.0	4.8	146.9	143.8	BM1-92	102.2%
1,180	51+00	1,160.4	147.9	8.6	136.1	143.8	BM1-92	*94.6%
1,181	50+00	1,161.7	152.0	5.1	144.6	143.8	BM1-92	100.6%
1,182	51+00	1,160.9	150.5	4.6	143.9	143.8	BM1-92	100.1%
1,183	50+00	1,162.2	149.7	6.3	140.8	143.8	BM1-92	97.9%
1,184	51+00	1,161.4	156.2	5.6	148.0	143.8	BM1-92	102.9%
1,185	50+00	1,162.7	141.0	4.7	134.6	139.3	RS7-92	96.6%
1,186	51+00	1,161.9	139.1	5.2	132.2	139.3	RS7-92	94.9%
1,187	50+00	1,163.2	135.9	4.9	129.6	132.1	SA10-92	98.1%
1,188	51+00	1,162.4	133.5	3.9	128.5	132.1	SA10-92	97.3%

*Does not meet project specification. Test areas not meeting project specifications were reworked, recompacted, and retested until minimum project specifications were achieved.
Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS2-92	7/16/92	ASTM D1557-A	SM Silty sand	137.4	6.8
BM1-92	7/7/92	ASTM D1557-D	SP Poorly graded gravely sand	143.8	6.9
RS7-92	7/20/92	ASTM D1557-D	SP Poorly graded sand with gravel	139.3	7.4
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/14/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,189	56+00	1,156.7	137.7	4.0	132.4	135.8	BF2-92	97.5%
1,190	56+00	1,157.7	134.7	3.2	130.5	135.8	BF2-92	96.1%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BF2-92	8/11/92	ASTM D1557-C	SC-SM Silty, Clayey sand with gravel	135.8	7.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/14/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,191	56+00	1,156.7	137.7	4.0	132.4	135.8	BF2-92	97.5%
1,192	56+00	1,157.7	134.7	3.2	130.5	135.8	BF2-92	96.1%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BF2-92	8/11/92	ASTM D1557-C	SC-SM Silty, Clayey sand with gravel	135.8	7.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/15/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,193	56+00	1,156.8	133.0	3.6	128.3	140.3	BC1-92	*91.4%
1,194	56+00	1,157.8	136.1	3.6	131.4	140.3	BC1-92	*93.7%
1,195	32+00	1,151.0	137.9	4.9	131.5	140.3	BC1-92	*93.7%
1,196	32+00	1,152.0	139.1	5.3	132.2	140.3	BC1-92	*94.2%
1,197	26+00	1,146.5	133.9	2.7	130.3	140.3	BC1-92	*92.9%
1,198	26+00	1,147.5	134.5	4.5	128.7	140.3	BC1-92	*91.7%

*Does not meet project specification. Test areas not meeting project specifications were reworked, recompacted, and retested until minimum project specifications were achieved.
Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC1-92	7/13/92	ASTM D1557-C	SP Poorly graded sand with gravel	140.3	8.2

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/19/92 RAILROAD SPUR FILL

TESt #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,199	12+0	1,136.7	135.2	8.3	125.3	123.2	P-26	101.7%
1,200	13+0	1,134.7	141.9	4.8	135.4	123.2	P-26	109.9%
1,201	12+0	1,138.7	143.3	4.5	137.2	142.1	BC2-92	96.6%
1,202	13+0	1,135.7	150.7	4.6	144.1	142.1	BC2-92	101.4%
1,203	12+0	1,139.7	146.2	7.2	136.3	142.1	BC2-92	95.9%
1,204	13+0	1,136.7	149.8	5.8	141.6	142.1	BC2-92	99.6%
1,205	12+0	1,140.7	142.4	5.0	135.7	142.1	BC2-92	95.5%
1,206	13+0	1,138.7	148.4	3.7	143.6	142.1	BC2-92	101.1%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-26	8/26/91	ASTM D1557-C	SM Silty sand	123.2	8.4
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/20/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,207	53+00	1,159.9	146.9	5.5	139.2	136.5	P-30	102.0%
1,208	54+00	1,157.9	146.7	4.7	140.1	136.5	P-30	102.6%
1,209	55+00	1,156.9	151.7	5.2	144.2	143.8	BM1-92	100.3%
1,210	55+00	1,158.9	144.9	4.0	139.3	143.8	BM1-92	96.9%
1,211	54+00	1,159.9	150.5	4.2	144.3	143.8	BM1-92	100.3%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4
BM1-92	7/7/92	ASTM D1557-D	SP Poorly graded gravely sand	143.8	6.9

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/21/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,212	13+00	1,135.7	149.1	5.9	140.8	143.8	BM1-92	97.9%
1,213	12+00	1,138.7	148.7	6.6	139.5	143.8	BM1-92	97.0%
1,214	13+00	1,137.7	150.4	5.9	142.0	143.8	BM1-92	98.7%
1,215	12+00	1,140.7	148.4	5.7	140.4	143.8	BM1-92	97.6%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BM1-92	7/7/92	ASTM D1557-D	SP Poorly graded gravely sand	143.8	6.9

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/24/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,216	12+0	1,141.7	144.2	4.2	138.4	142.1	BC2-92	97.4%
1,217	13+0	1,139.7	143.4	5.3	136.2	142.1	BC2-92	95.8%
1,218	12+0	1,142.7	143.6	5.8	135.7	142.1	BC2-92	95.5%
1,219	13+0	1,140.7	143.9	5.2	136.7	142.1	BC2-92	96.2%
1,220	50+00	1,163.7	148.0	3.5	143.0	142.1	BC2-92	100.6%
1,221	51+00	1,162.9	146.2	5.3	139.2	142.1	BC2-92	98.0%
1,222	52+00	1,161.9	147.3	4.9	140.4	142.1	BC2-92	98.8%
1,223	53+00	1,160.9	147.0	4.3	140.9	142.1	BC2-92	99.2%
1,224	54+00	1,158.9	146.2	4.0	140.6	142.1	BC2-92	98.9%
1,225	55+00	1,157.9	147.4	5.2	140.1	142.1	BC2-92	98.6%
1,226	56+00	1,157.9	144.6	4.0	139.1	142.1	BC2-92	97.9%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/25/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,227	57+00	1,156.9	139.8	2.9	135.9	142.1	BC2-92	95.6%
1,228	13+00	1,139.7	138.7	4.6	132.6	136.5	P-30	97.1%
1,229	13+00	1,140.7	140.3	4.2	134.7	136.5	P-30	98.7%
1,230	13+00	1,141.7	136.0	4.2	130.5	136.5	P-30	95.6%
1,231	13+00	1,142.7	134.8	3.8	129.8	136.5	P-30	95.1%
1,232	39+00	1,157.7	139.9	4.4	134.0	136.5	P-30	98.2%
1,233	40+00	1,158.5	137.6	3.7	132.7	136.5	P-30	97.2%
1,234	41+00	1,159.3	139.9	5.0	133.2	136.5	P-30	97.6%
1,235	42+00	1,158.5	145.2	4.8	138.6	136.5	P-30	101.5%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/29/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,236	14+0	1,136.7	136.1	3.4	131.6	136.5	P-30	96.4%
1,237	14+0	1,138.7	136.0	3.1	131.9	136.5	P-30	96.6%
1,238	14+0	1,140.7	143.5	5.6	135.9	136.5	P-30	99.6%
1,239	14+0	1,142.7	144.0	5.4	136.6	136.5	P-30	100.1%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/31/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,240	15+0	1,139.7	143.2	6.4	134.6	141.4	BM2-92	95.2%
1,241	15+0	1,142.7	144.7	5.9	136.6	141.4	BM2-92	96.6%
1,242	16+0	1,137.7	147.7	5.2	140.4	141.4	BM2-92	99.3%
1,243	16+0	1,139.7	148.1	5.9	139.9	141.4	BM2-92	98.9%
1,244	16+0	1,142.7	155.2	5.4	147.3	141.4	BM2-92	104.2%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BM2-92	8/26/92	ASTM D1557-D	SP-SM Poorly graded sand with silt & gravel	141.4	7.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/21/92 RAILROAD SPUR FILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,251	11+00	1,140.7	138.4	5.8	130.8	136.5	P-30	95.8%
1,252	11+00	1,141.7	140.9	6.9	131.8	136.5	P-30	96.6%
1,253	11+00	1,142.7	140.9	6.3	132.5	136.5	P-30	97.1%
1,254	10+0	1,142.7	140.1	3.5	135.4	136.5	P-30	99.2%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/21/92 RAIL SPUR SUB BALLAST

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,256	50+0	1,164.4	148.8	4.5	142.4	144.9	RS12-92	98.3%
1,257	53+0	1,161.6	145	4	139.5	144.9	RS12-92	96.3%
1,258	56+0	1,158.6	143	3.6	138.1	144.9	RS12-92	95.3%
1,259	62+0	1,152.6	145.8	3.8	140.5	144.9	RS12-92	97.0%
1,260	59+0	1,155.6	144.5	4.3	138.5	144.9	RS12-92	95.6%
1,261	64+0	1,150.9	147.8	3.8	142.4	144.9	RS12-92	98.3%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS12-92	8/14/92	ASTM D1557-D	GP Poorly graded gravel with sand	144.9	6.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/24/92 RAIL SPUR SUB BALLAST

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,262	63+0	1,152.4	144.6	3.3	140.0	144.9	RS12-92	96.6%
1,263	61+0	1,154.4	141.7	2.8	137.7	144.9	RS12-92	95.0%
1,264	58+0	1,157.4	142.1	3.1	137.9	144.9	RS12-92	95.2%
1,265	55+0	1,160.4	144.9	4.3	138.8	144.9	RS12-92	95.8%
1,266	52+0	1,163.4	145.5	4.8	138.8	144.9	RS12-92	95.8%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS12-92	8/14/92	ASTM D1557-D	GP Poorly graded gravel with sand	144.9	6.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/3/92 RAIL SPUR SUB BALLAST

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,267	46+0	1,164.0	146.1	4.6	139.7	145.1	RS15-92	96.3%
1,268	41+0	1,160.1	144.5	4.0	139.0	145.1	RS15-92	95.8%
1,269	37+0	1,156.9	148.5	4.9	145.1	145.1	RS15-92	100.0%
1,270	33+0	1,153.7	147.9	4.9	141.0	145.1	RS15-92	97.2%
1,271	30+0	1,151.4	147.0	5.4	139.5	145.1	RS15-92	96.1%
1,272	26+0	1,148.2	145.8	4.6	139.4	145.1	RS15-92	96.1%
1,273	22+0	1,145.0	148.7	3.9	143.2	145.1	RS15-92	98.7%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf	OPTIMUM MOISTURE PERCENT
RS15-92	8/27/92	ASTM D1557-D	GP Poorly graded gravel with sand	145.1	6.6

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/8/92 RAIL SPUR SUB BALLAST

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,274	47+0	1,164.6	143.5	3.9	138.1	145.1	RS15-92	95.2%
1,275	42+0	1,161.6	147.8	4.8	141.0	145.1	RS15-92	97.2%
1,276	38+0	1,158.4	147.7	4.8	140.9	145.1	RS15-92	97.1%
1,277	34+0	1,155.3	149.2	3.9	143.6	145.1	RS15-92	99.0%
1,278	31+0	1,152.9	145.7	4.2	139.9	145.1	RS15-92	96.4%
1,279	28+0	1,150.5	143.4	3.1	145.2	145.1	RS15-92	100.1%
1,280	24+0	1,147.4	143.8	3.7	138.7	145.1	RS15-92	95.6%
1,281	21+0	1,145.0	144.0	4.2	138.2	145.1	RS15-92	95.2%
1,282	18+0	1,144.2	148.0	4.2	142.0	145.1	RS15-92	97.9%
1,283	19+0	1,143.4	147.9	3.8	142.5	145.1	RS15-92	98.2%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf	OPTIMUM MOISTURE PERCENT
RS15-92	8/27/92	ASTM D1557-D	GP Poorly graded gravel with sand	145.1	6.6

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/29/92 RAIL SPUR SUB BALLAST

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,284	18+0	1,143.4	144.9	3.2	140.4	145.1	RS15-92	96.8%
1,285	18+0	1,144.2	143.9	4.4	137.9	145.1	RS15-92	95.0%
1,286	19+0	1,143.4	145.5	4.2	139.6	145.1	RS15-92	96.2%
1,287	19+0	1,144.2	148.3	3.7	143.0	145.1	RS15-92	98.6%
1,288	20+0	1,143.6	147.6	4.3	141.5	145.1	RS15-92	97.5%
1,289	20+0	1,144.4	147.4	4.5	141.0	145.1	RS15-92	97.2%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS15-92	8/27/92	ASTM D1557-D	GP Poorly graded gravel with sand	145.1	6.6

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

10/2/92 RAIL SPUR SUB BALLAST

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,290	16+0	1,143.4	144.9	4.3	138.9	144.2	RS17-92	96.3%
1,291	14+0	1,143.4	145.7	3.3	141.4	144.2	RS17-92	98.1%
1,292	12+0	1,143.4	145.8	4.5	139.6	144.2	RS17-92	96.8%
1,293	10+0	1,143.4	144.9	3.1	140.6	144.2	RS17-92	97.5%
1,294	8+0	1,143.4	142.3	3.1	138.1	144.2	RS17-92	95.8%
1,295	6+0	1,143.4	142.8	3.0	138.6	144.2	RS17-92	96.1%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS17-92	9/28/92	ASTM D1557-D	GP Poorly graded gravel with sand	144.2	6.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

10/5/92 RAIL SPUR SUB BALLAST

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,296	15+0	1,144.2	142.3	3.7	137.3	144.2	RS17-92	95.2%
1,297	13+0	1,144.2	143.2	2.8	139.3	144.2	RS17-92	96.6%
1,298	11+0	1,144.2	143.5	3.1	139.1	144.2	RS17-92	96.5%
1,299	9+0	1,144.2	143.7	3.7	138.6	144.2	RS17-92	96.1%
1,300	7+0	1,144.2	142.4	3.1	138.1	144.2	RS17-92	95.8%
1,301	17+0	1,144.2	149.2	5.3	141.7	144.2	RS17-92	98.3%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS17-92	9/28/92	ASTM D1557-D	GP Poorly graded gravel with sand	144.2	6.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/24/92 FACILITIES AREA SUB-BASE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,302	N39450,E40540	1,144.2	135.3	3.7	130.6	141.4	BM2-92	92.4%
1,303	N39450,E40550	1,144.2	145.4	3.8	140.1	141.4	BM2-92	99.1%
1,304	N39450,E40540	1,144.8	141.2	6.0	133.3	141.4	BM2-92	94.3%
1,305	N39450,E40550	1,144.8	142.0	7.5	132.1	141.4	BM2-92	93.4%
1,306	N39350,E40650	1,144.2	144.6	3.8	139.3	141.4	BM2-92	98.5%
1,307	N39350,E40550	1,144.2	140.2	3.5	135.5	141.4	BM2-92	95.8%
1,308	N39350,E40650	1,144.8	145.5	5.0	138.6	141.4	BM2-92	98.0%
1,309	N39350,E40550	1,144.8	138.3	3.5	133.6	141.4	BM2-92	94.5%
1,310	N39350,E40550	1,145.4	136.3	3.3	131.9	141.4	BM2-92	93.3%
1,311	N39450,E40550	1,145.4	142.2	8.2	131.4	141.4	BM2-92	92.9%
1,312	N39350,E40650	1,145.4	140.1	3.0	136.1	141.4	BM2-92	96.3%
1,313	N39450,E40650	1,145.4	137.2	5.8	129.7	141.4	BM2-92	91.7%
1,314	N39250,E40450	1,142.2	141.3	3.0	137.2	141.4	BM2-92	97.0%
1,315	N39250,E40450	1,143.8	139.0	3.0	135.0	141.4	BM2-92	95.5%
1,316	N39350,E40450	1,143.2	142.2	5.0	135.4	141.4	BM2-92	95.8%
1,317	N39350,E40450	1,143.8	137.3	5.5	130.1	141.4	BM2-92	92.0%
1,318	N39250,E40450	1,144.4	137.7	3.1	133.5	141.4	BM2-92	94.4%
1,319	N39450,E40450	1,143.2	140.6	4.1	135.1	141.4	BM2-92	95.5%
1,320	N39250,E40450	1,144.4	144.3	4.1	138.6	141.4	BM2-92	98.0%
1,321	N39450,E40450	1,143.8	145.7	4.8	138.9	141.4	BM2-92	98.2%
1,322	N39450,E40450	1,144.4	143.0	4.5	136.9	141.4	BM2-92	96.8%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BM2-92	8/26/92	ASTM D1557-D	SP-SM Poorly graded sand with silt & gravel	141.4	7.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/25/92 FACILITIES AREA SUB-BASE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,323	N39450,E40350	1,144.2	143.0	6.7	134.1	141.4	BM2-92	94.8%
1,324	N39450,E40350	1,144.8	143.1	6.1	134.9	141.4	BM2-92	95.4%
1,325	N39450,E40350	1,145.4	134.9	4.1	129.6	141.4	BM2-92	91.7%
1,326	N39350,E40350	1,144.2	143.9	3.8	138.7	141.4	BM2-92	98.1%
1,327	N39350,E40350	1,144.8	137.8	3.9	132.6	141.4	BM2-92	93.8%
1,328	N39350,E40350	1,145.4	142.3	2.8	138.5	141.4	BM2-92	97.9%
1,329	N39250,E40350	1,144.2	143.8	2.8	139.9	141.4	BM2-92	98.9%
1,330	N39250,E40350	1,144.8	140.5	2.7	136.8	141.4	BM2-92	96.7%
1,331	N39250,E40350	1,145.4	143.2	2.4	139.9	141.4	BM2-92	98.9%
1,332	N39450,E40250	1,144.2	135.4	5.6	128.2	141.4	BM2-92	90.7%
1,333	N39450,E40250	1,144.8	139.2	4.4	133.3	141.4	BM2-92	94.3%
1,334	N39450,E40250	1,145.4	134.8	5.8	127.4	141.4	BM2-92	90.1%
1,335	N39350,E40250	1,144.2	139.6	6.1	131.5	141.4	BM2-92	93.0%
1,336	N39350,E40250	1,144.8	141.7	6.9	132.6	141.4	BM2-92	93.8%
1,337	N39350,E40250	1,145.4	138.7	6.8	129.8	141.4	BM2-92	91.8%
1,338	N39250,E40250	1,144.2	136.4	5.9	128.8	141.4	BM2-92	91.1%
1,339	N39250,E40250	1,144.8	136.4	6.7	127.8	141.4	BM2-92	90.4%
1,340	N39250,E40250	1,145.4	135.7	5.5	128.6	141.4	BM2-92	90.9%
1,341	N39250,E39950	1,143.8	142.9	5.5	135.5	141.4	BM2-92	95.8%
1,342	N39250,E39950	1,144.4	141.3	5.9	133.4	141.4	BM2-92	94.3%
1,343	N39250,E39950	1,145.0	143.1	5.5	135.6	141.4	BM2-92	95.9%
1,344	N39250,E39850	1,143.8	136.5	6.1	128.7	141.4	BM2-92	91.0%
1,345	N39250,E39850	1,144.4	136.9	6.0	129.2	141.4	BM2-92	91.4%
1,346	N39250,E39850	1,145.0	139.6	6.1	131.5	141.4	BM2-92	93.0%
1,347	N39450,E39750	1,143.8	141.9	6.1	133.7	141.4	BM2-92	94.6%
1,348	N39450,E39750	1,144.4	141.9	5.7	134.2	141.4	BM2-92	94.9%
1,349	N39450,E39750	1,145.0	139.6	6.0	131.7	141.4	BM2-92	93.1%
1,350	N39350,E39750	1,143.8	135.2	5.5	128.2	141.4	BM2-92	90.7%
1,351	N39350,E39750	1,144.4	142.9	5.1	136.0	141.4	BM2-92	96.2%
1,352	N39350,E39750	1,145.0	136.1	6.1	128.2	141.4	BM2-92	90.7%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BM2-92	8/26/92	ASTM D1557-D	SP-SM Poorly graded sand with silt & gravel	141.4	7.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/29/92 FACILITIES AREA BASE COURSE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,353	N39450,E40650	1,146.0	151.4	4.9	144.4	140.3	BC1-92	102.9%
1,354	N39350,E40650	1,146.0	149.2	3.9	143.6	140.3	BC1-92	102.4%
1,355	N39450,E40550	1,146.0	146.0	3.8	140.7	140.3	BC1-92	100.3%
1,356	N39350,E40550	1,146.0	145.2	4.6	138.8	140.3	BC1-92	98.9%
1,357	N39450,E40450	1,145.0	144.2	5.2	137.0	140.3	BC1-92	97.6%
1,358	N39350,E40450	1,145.0	148.1	6.2	139.4	140.3	BC1-92	99.4%
1,359	N39250,E40450	1,145.0	147.0	5.2	139.8	140.3	BC1-92	99.6%
1,360	N39450,E40350	1,146.0	145.0	5.3	137.7	140.3	BC1-92	98.1%
1,361	N39350,E40350	1,146.0	147.1	5.8	139.0	140.3	BC1-92	99.1%
1,362	N39250,E40350	1,146.0	145.4	6.2	137.0	140.3	BC1-92	97.6%
1,363	N39450,E40250	1,146.0	146.8	6.6	137.7	140.3	BC1-92	98.1%
1,364	N39350,E40250	1,146.0	147.6	5.5	139.8	140.3	BC1-92	99.6%
1,365	N39250,E40250	1,146.0	140.7	3.5	136.0	140.3	BC1-92	96.9%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC1-92	7/13/92	ASTM D1557-C	SP Poorly graded sand with gravel	140.3	8.2

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

10/2/92 FACILITIES AREA SUB-BASE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,366	N39250,E40150	1,144.8	137.8	4.2	132.3	141.4	BM2-92	93.6%
1,367	N39250,E40150	1,145.4	144.0	6.1	135.7	141.4	BM2-92	96.0%
1,368	N39250,E40150	1,146.0	143.2	6.4	134.6	141.4	BM2-92	95.2%
1,369	N39250,E40050	1,143.8	138.5	4.0	133.2	141.4	BM2-92	94.2%
1,370	N39250,E40050	1,144.4	146.9	5.6	139.2	141.4	BM2-92	98.4%
1,371	N39250,E40050	1,145.0	138.1	4.0	132.7	141.4	BM2-92	93.8%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BM2-92	8/26/92	ASTM D1557-D	SP-SM Poorly graded sand with silt & gravel	141.4	7.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/26/92 SUMPS 1-2 & PIPING

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,372	N39360,E40055	1,116.5	139.8	11.7	125.2	123.2	P-26	101.6%
1,374	N39373,E40055	1,116.7	139.8	12.1	124.7	123.2	P-26	101.2%
1,375	N39365,E40020	1,121.3	135.7	14.4	118.7	123.2	P-26	96.3%
1,376	N39360,E40055	1,118.5	118.2	9.5	107.9	116.1	SA7-92	92.9%
1,377	N39373,E40055	1,118.7	118.5	6.0	111.9	116.1	SA7-92	96.4%
1,378	N39365,E40020	1,123.3	118.8	7.3	110.7	116.1	SA7-92	95.3%
1,379	N39360,E40055	1,120.5	127.6	8.8	117.3	116.1	SA7-92	101.0%
1,380	N39373,E40055	1,120.7	125.2	8.5	115.4	116.1	SA7-92	99.4%
1,381	N39365,E40020	1,125.3	117.3	5.8	110.9	116.1	SA7-92	95.5%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-26	8/26/91	ASTM D1557-C	SM Silty sand	123.2	8.4
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/28/92 SUMPS 1-2 & PIPING

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,382	N39360,E40055	1,123.0	139.6	5.2	132.7	136.5	P-30	97.2%
1,383	N39373,E40055	1,122.7	133.3	7.9	123.5	136.5	P-30	90.5%
1,384	N39365,E40020	1,127.3	135.7	9.5	123.5	136.5	P-30	90.5%
1,385	N39360,E40055	1,125.0	142.3	6.5	133.7	136.5	P-30	97.9%
1,386	N39373,E40055	1,124.7	141.7	6.2	133.4	136.5	P-30	97.7%
1,387	N39365,E40020	1,129.3	143.7	5.3	136.5	136.5	P-30	100.0%
1,388	N39360,E40055	1,127.0	143.1	5.8	135.3	136.5	P-30	99.1%
1,389	N39373,E40055	1,126.7	142.4	5.7	134.8	136.5	P-30	98.8%
1,390	N39365,E40020	1,131.3	147.2	3.8	141.7	136.5	P-30	103.8%
1,391	N39360,E40055	1,129.0	147.7	4.2	141.1	136.5	P-30	103.4%
1,392	N39373,E40055	1,129.0	143.4	6.7	134.4	136.5	P-30	98.5%
1,393	N39365,E40020	1,133.3	140.5	4.5	134.5	136.5	P-30	98.5%
'1394	N39360,E40055	1,131.0	141.0	7.0	131.8	136.5	P-30	96.6%
1,395	N39373,E40055	1,131.0	139.0	4.0	133.6	136.5	P-30	97.9%
1,396	N39365,E40020	1,135.3	137.9	4.6	131.9	136.5	P-30	96.6%
1,397	N39360,E40055	1,133.0	140.8	7.6	130.9	136.5	P-30	95.9%
1,398	N39373,E40055	1,133.0	142.8	6.9	133.6	136.5	P-30	97.9%
1,399	N39360,E40055	1,135.0	139.2	5.8	131.6	142.1	BC2-92	92.6%
1,400	N39373,E40055	1,135.0	139.8	6.2	131.7	142.1	BC2-92	92.7%
1,401	N39360,E40055	1,137.0	138.9	5.0	132.3	142.1	BC2-92	93.1%
1,402	N39373,E40055	1,137.0	148.4	5.7	140.4	142.1	BC2-92	98.8%
1,403	N39360,E40055	1,140.0	142.3	5.2	135.3	142.1	BC2-92	95.2%
1,404	N39373,E40055	1,140.0	149.1	6.5	140.0	142.1	BC2-92	98.5%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/17/92 SURGE POND PIPE - 6" DW 2201, 4" DW 2202, 12" CD 405

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,405	N39390,E40760	1,117.5	131.4	12.3	117.0	114.0	UM4-92	102.6%
1,406	N39380,E40770	1,117.5	129.1	11.9	115.3	114.0	UM4-92	101.1%
1,407	N39380,E40730	1,117.5	129.1	11.0	116.3	114.0	UM4-92	102.0%
1,408	N39390,E40760	1,118.0	125.7	11.7	112.5	114.0	UM4-92	98.7%
1,409	N39380,E40770	1,118.0	127.9	11.7	114.5	114.0	UM4-92	100.4%
1,410	N39380,E40730	1,118.0	129.5	12.0	115.7	114.0	UM4-92	101.5%
1,411	N39390,E40720	1,113.0	133.8	9.6	122.1	117.6	UM5-92	103.8%
1,412	N39380,E40690	1,113.5	126.7	11.9	113.2	117.6	UM5-92	96.3%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf	OPTIMUM MOISTURE PERCENT
UM4-92	7/9/92	ASTM D1557-A	ML Silt with sand, Brown	114.0	8.5
UM5-92	7/21/92	ASTM D1557-A	ML Silt with sand, Brown	117.6	11.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/24/92 SURGE POND PIPE - 6" DW 2201, 4" DW 2202, 12" CD 405

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,413	N39390,E40760	1,118.5	125.5	5.9	118.5	122.5	RS10-92	96.7%
1,414	N39380,E40770	1,118.5	129.5	6.2	121.9	122.5	RS10-92	99.5%
1,415	N39380,E40730	1,118.5	123.0	4.6	117.6	122.5	RS10-92	96.0%
1,416	N39390,E40760	1,119.0	127.5	4.9	121.6	122.5	RS10-92	99.3%
1,417	N39380,E40770	1,119.0	123.5	5.4	117.2	122.5	RS10-92	95.7%
1,418	N39380,E40730	1,119.0	128.5	5.4	121.9	122.5	RS10-92	99.5%
1,419	N39390,E40760	1,119.5	123.0	4.7	117.5	122.5	RS10-92	95.9%
1,420	N39380,E40770	1,119.5	126.5	5.8	119.5	122.5	RS10-92	97.6%
1,421	N39380,E40730	1,119.5	124.3	6.2	117.1	122.5	RS10-92	95.6%
1,422	N39390,E40760	1,121.0	128.1	5.1	121.9	127.4	P-12	95.7%
1,423	N39380,E40770	1,121.0	132.3	8.9	121.5	127.4	P-12	95.4%
1,424	N39380,E40730	1,121.0	130.8	5.6	123.8	127.4	P-12	97.2%
1,425	N39390,E40760	1,122.0	130.7	8.1	121.0	127.4	P-12	95.0%
1,426	N39380,E40770	1,122.0	133.2	6.6	125.0	127.4	P-12	98.1%
1,427	N39380,E40730	1,123.0	126.9	3.7	122.4	127.4	P-12	96.1%
1,428	N39390,E40760	1,124.0	132.8	5.3	126.2	127.4	P-12	99.1%
1,429	N39380,E40770	1,123.0	121.9	5.3	115.8	127.4	P-12	90.9%
1,430	N39380,E40730	1,125.0	131.5	5.9	124.2	127.4	P-12	97.5%
1,431	N39390,E40760	1,125.0	137.6	6.7	128.9	127.4	P-12	101.2%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS10-92	7/24/92	ASTM D1557-C	SP Poorly graded sand	122.5	12.7
P-12	8/14/91	ASTM D1557-A	SM Silty sand	127.4	9.2

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method; ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/25/92 SURGE POND PIPE - 6" DW 2201, 4" DW 2202, 12" CD 405

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,432	N39380,E40770	1,124.0	131.7	11.5	118.1	117.6	UM5-92	100.4%
1,433	N39380,E40730	1,126.0	127.9	11.3	114.7	117.6	UM5-92	97.5%
1,434	N39390,E40760	1,127.0	131.2	12.0	117.1	117.6	UM5-92	99.6%
1,435	N39380,E40770	1,126.0	127.8	11.2	114.9	117.6	UM5-92	97.7%
1,436	N39380,E40730	1,128.0	140.3	6.2	132.2	135.5	BF1-92	97.6%
1,437	N39390,E40760	1,129.0	141.8	5.5	134.4	135.5	BF1-92	99.2%
1,438	N39380,E40770	1,128.0	136.0	6.3	128.0	135.5	BF1-92	94.5%
1,439	N39380,E40730	1,130.0	140.9	7.4	131.2	135.5	BF1-92	96.8%
1,440	N39390,E40760	1,131.0	139.0	8.1	128.6	135.5	BF1-92	94.9%
1,441	N39380,E40770	1,129.0	136.4	7.7	126.7	135.5	BF1-92	93.5%
1,442	N39380,E40730	1,132.0	138.4	7.9	128.3	135.5	BF1-92	94.7%
1,443	N39390,E40760	1,133.0	140.2	8.0	129.7	135.5	BF1-92	95.7%
1,444	N39380,E40770	1,130.0	138.3	8.8	127.1	135.5	BF1-92	93.8%
1,445	N39380,E40730	1,134.0	136.9	10.7	124.2	135.5	BF1-92	91.7%
1,446	N39390,E40760	1,135.0	137.1	8.7	126.1	135.5	BF1-92	93.1%
1,447	N39380,E40770	1,132.0	138.0	9.2	126.4	135.5	BF1-92	93.3%
1,448	N39380,E40730	1,136.0	137.7	6.7	129.1	135.5	BF1-92	95.3%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf	OPTIMUM MOISTURE PERCENT
UM5-92	7/21/92	ASTM D1557-A	ML Silt with sand, Brown	117.6	11.4
BF1-92	7/17/92	ASTM D1557-A	SC Clayey sand with gravel	135.5	7.2

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/25/92 SUMPS 3-4

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,449	N39380,E40690	1,114.5	127.8	5.0	121.7	122.5	RS10-92	99.3%
1,450	N39390,E40720	1,114.0	126.6	4.8	120.8	122.5	RS10-92	98.6%
1,451	N39390,E40720	1,115.0	125.9	6.0	118.9	122.5	RS10-92	97.1%
1,452	N39380,E40690	1,115.5	126.6	5.6	119.6	122.5	RS10-92	97.6%
1,453	N39390,E40720	1,116.0	134.8	8.2	124.6	135.5	BF1-92	92.0%
1,454	N39380,E40690	1,116.5	137.2	8.8	126.2	135.5	BF1-92	93.1%
1,455	N39390,E40720	1,117.0	133.6	8.1	123.6	135.5	BF1-92	91.2%
1,456	N39380,E40690	1,118.5	135.0	9.0	123.9	135.5	BF1-92	91.4%
1,457	N39390,E40720	1,117.0	133.2	8.3	123.0	135.5	BF1-92	90.8%
1,458	N39380,E40690	1,120.5	135.0	7.7	125.3	135.5	BF1-92	92.5%
1,459	N39390,E40720	1,120.0	139.5	8.5	128.5	135.5	BF1-92	94.8%
1,460	N39380,E40690	1,122.5	134.0	7.0	125.3	135.5	BF1-92	92.5%
1,461	N39390,E40720	1,121.0	137.0	9.0	125.7	135.5	BF1-92	92.8%
1,462	N39380,E40690	1,124.5	141.6	9.2	129.6	135.5	BF1-92	95.6%
1,463	N39390,E40720	1,123.0	133.5	9.3	122.6	135.5	BF1-92	90.5%
1,464	N39380,E40690	1,126.5	124.9	10.5	122.2	135.5	BF1-92	90.2%
1,465	N39390,E40720	1,125.0	135.3	10.2	122.8	135.5	BF1-92	90.6%
1,466	N39380,E40690	1,128.5	138.7	8.8	127.4	135.5	BF1-92	94.0%
1,467	N39390,E40720	1,127.0	134.9	8.6	124.3	135.5	BF1-92	91.7%
1,468	N39380,E40690	1,130.5	133.2	8.8	122.5	135.5	BF1-92	90.4%
1,469	N39390,E40720	1,129.0	134.0	9.0	123.0	135.5	BF1-92	90.8%
1,470	N39380,E40690	1,132.5	136.0	10.2	123.4	135.5	BF1-92	91.1%
1,471	N39390,E40720	1,130.0	133.0	6.4	125.0	135.5	BF1-92	92.3%
1,472	N39380,E40690	1,133.5	134.4	6.6	126.1	135.5	BF1-92	93.1%
1,473	N39390,E40720	1,132.0	132.8	7.2	123.9	135.5	BF1-92	91.4%
1,474	N39380,E40690	1,134.5	131.8	6.8	123.4	135.5	BF1-92	91.1%
1,475	N39390,E40720	1,134.0	133.7	8.3	123.5	135.5	BF1-92	91.1%
1,476	N39380,E40690	1,136.5	129.4	6.2	121.9	135.5	BF1-92	90.0%
1,477	N39390,E40720	1,136.0	134.7	7.7	125.1	135.5	BF1-92	92.3%
1,478	N39380,E40690	1,138.5	132.8	9.0	121.9	135.5	BF1-92	90.0%
1,479	N39390,E40720	1,138.0	137.0	9.1	125.6	135.5	BF1-92	92.7%
1,480	N39380,E40690	1,139.5	133.8	8.4	123.5	135.5	BF1-92	91.1%
1,481	N39390,E40720	1,140.0	134.7	7.4	125.4	135.5	BF1-92	92.5%
1,482	N39380,E40690	1,140.5	137.4	8.2	127.0	135.5	BF1-92	93.7%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS10-92	7/24/92	ASTM D1557-C	SP Poorly graded sand with gravel	122.5	12.7
BF1-92	7/17/92	ASTM D1557-A	SC Clayey sand with gravel	135.5	7.2

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/10/92 TYPE II PHASE II BERM

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,483	N39700,E41145	1,142.9	137.9	10.4	124.9	124.7	P-29	100.2%
1,484	N39800,E41145	1,142.6	136.0	8.6	125.3	124.7	P-29	100.5%
1,485	N39900,E41140	1,142.8	131.9	10.5	119.4	124.7	P-29	95.7%
1,486	N40000,E41140	1,143.3	137.4	6.0	129.7	124.7	P-29	104.0%
1,487	N40100,E41140	1,142.7	124.4	9.3	113.8	124.7	P-29	91.3%
1,488	N40200,E41135	1,143.0	130.0	11.6	116.5	124.7	P-29	93.4%
1,489	N40300,E41135	1,142.7	126.5	9.3	115.7	124.7	P-29	92.8%
1,490	N39700,E41145	1,143.9	131.6	7.1	122.9	124.7	P-29	98.6%
1,491	N39800,E41145	1,143.6	136.2	10.6	123.2	124.7	P-29	98.8%
1,492	N39900,E41140	1,143.8	131.7	10.4	119.3	124.7	P-29	95.7%
1,493	N40000,E41140	1,144.3	130.2	10.3	118.0	124.7	P-29	94.6%
1,494	N40100,E41140	1,143.7	125.2	6.9	117.1	124.7	P-29	93.9%
1,495	N40200,E41135	1,144.0	128.8	8.4	118.8	124.7	P-29	95.3%
1,496	N40300,E41135	1,143.7	131.2	6.2	123.5	124.7	P-29	99.0%
1,497	N39700,E41145	1,144.9	133.2	11.9	119.1	124.7	P-29	95.5%
1,498	N39800,E41145	1,144.6	130.9	8.4	120.8	124.7	P-29	96.9%
1,499	N39900,E41140	1,144.8	128.0	10.5	115.8	124.7	P-29	92.9%
1,500	N40000,E41140	1,145.3	128.3	11.5	115.1	124.7	P-29	92.3%
1,501	N40100,E41140	1,144.7	132.5	7.9	123.7	124.7	P-29	99.2%
1,502	N40200,E41135	1,145.0	121.6	4.3	116.6	124.7	P-29	93.5%
1,503	N39800,E41145	1,145.6	131.8	11.4	118.2	124.7	P-29	94.8%
1,504	N39900,E41140	1,145.8	139.6	5.3	132.6	124.7	P-29	106.3%
1,505	N40000,E41140	1,146.3	128.9	7.2	120.2	124.7	P-29	96.4%
1,506	N40100,E41140	1,145.7	131.9	7.5	122.7	124.7	P-29	98.4%
1,507	N40200,E41135	1,146.0	139.0	5.8	131.4	124.7	P-29	105.4%
1,508	N40300,E41135	1,144.7	132.2	12.9	117.2	124.7	P-29	94.0%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-29	8/30/91	ASTM D1557-A	SM Silty sand	124.7	8.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/11/92 TYPE II PHASE II BERM

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,509	N39800,E41145	1,146.6	127.6	8.2	117.1	124.7	P-29	93.9%
1,510	N39900,E41140	1,146.8	128.1	10.0	116.5	124.7	P-29	93.4%
1,511	N40000,E41140	1,147.3	126.1	9.0	115.7	124.7	P-29	92.8%
1,512	N40100,E41140	1,146.7	132.2	6.3	124.3	124.7	P-29	99.7%
1,513	N40200,E41135	1,147.0	130.5	8.3	120.5	124.7	P-29	96.6%
1,514	N40300,E41135	1,145.7	122.3	8.4	112.8	124.7	P-29	90.5%
1,515	N39800,E41145	1,147.6	126.5	5.7	119.6	124.7	P-29	95.9%
1,516	N39900,E41140	1,147.8	127.4	7.8	118.1	124.7	P-29	94.7%
1,517	N40000,E41140	1,148.3	126.6	4.6	121.0	124.7	P-29	97.0%
1,518	N40100,E41140	1,147.7	133.5	5.8	126.2	124.7	P-29	101.2%
1,519	N40200,E41135	1,148.0	126.5	8.9	116.1	124.7	P-29	93.1%
1,520	N40300,E41135	1,146.7	122.3	6.3	115.1	124.7	P-29	92.3%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-29	8/30/91	ASTM D1557-A	SM Silty sand	124.7	8.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/12/92 TYPE II PHASE II BERM

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,521	N39800,E41145	1,148.6	126.4	6.4	118.8	124.7	P-29	95.3%
1,522	N39900,E41140	1,148.8	135.2	6.9	126.4	124.7	P-29	101.4%
1,523	N40000,E41140	1,149.3	128.7	10.3	116.7	124.7	P-29	93.6%
1,524	N40100,E41140	1,148.7	126.9	6.2	119.5	124.7	P-29	95.8%
1,525	N40200,E41135	1,149.0	124.0	8.5	114.5	124.7	P-29	91.8%
1,526	N40300,E41135	1,147.7	125.6	5.9	118.7	124.7	P-29	95.2%
1,527	N40100,E41140	1,149.7	128.6	11.0	115.8	124.7	P-29	92.9%
1,528	N40200,E41135	1,150.0	128.8	10.0	117.1	124.7	P-29	93.9%
1,529	N39605,E40820	1,141.3	125.3	7.9	116.1	124.7	P-29	93.1%
1,530	N39605,E40920	1,142.0	124.2	5.9	117.3	124.7	P-29	94.1%
1,531	N39605,E41020	1,141.4	123.9	8.3	114.5	124.7	P-29	91.8%
1,532	N39605,E41120	1,140.3	123.4	8.4	113.8	124.7	P-29	91.3%
1,533	N39605,E40820	1,142.3	120.0	4.1	115.2	124.7	P-29	92.4%
1,534	N39605,E40920	1,143.0	118.2	6.2	111.2	124.7	P-29	89.2%
1,535	N39605,E41020	1,142.4	126.3	6.4	118.7	124.7	P-29	95.2%
1,536	N39605,E41120	1,141.3	120.6	6.8	112.8	124.7	P-29	90.5%
1,537	N39700,E41145	1,145.9	126.7	8.9	116.4	124.7	P-29	93.3%
1,538	N39700,E41145	1,146.9	128.9	10.2	116.9	124.7	P-29	93.7%
1,539	N39605,E40820	1,143.3	133.9	7.6	124.5	124.7	P-29	99.8%
1,540	N39605,E40920	1,144.0	129.3	7.2	120.7	124.7	P-29	96.8%
1,541	N39605,E41020	1,143.4	128.9	8.9	118.4	124.7	P-29	94.9%
1,542	N39605,E41120	1,142.3	132.8	9.0	121.8	124.7	P-29	97.7%
1,543	N39605,E40820	1,144.3	125.3	6.1	118.1	124.7	P-29	94.7%
1,544	N39605,E40920	1,145.0	119.6	7.5	111.2	124.7	P-29	89.2%
1,545	N39605,E41020	1,144.4	128.6	6.3	121.0	124.7	P-29	97.0%
1,546	N39605,E41120	1,143.3	124.1	4.2	119.1	124.7	P-29	95.5%
1,547	N39605,E40820	1,145.3	129.2	3.8	124.4	124.7	P-29	99.8%
1,548	N39605,E40920	1,146.0	121.2	4.9	115.5	124.7	P-29	92.6%
1,549	N39605,E41020	1,145.4	132.5	8.7	121.8	124.7	P-29	97.7%
1,550	N39605,E41120	1,144.3	124.7	5.7	118.0	124.7	P-29	94.6%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-29	8/30/91	ASTM D1557-A	SM Silty sand	124.7	8.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/13/92 TYPE II PHASE II BERM

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,551	N39605,E40820	1,146.3	122.5	7.1	114.4	124.7	P-29	91.7%
1,552	N39605,E40920	1,147.0	124.2	6.3	116.8	124.7	P-29	93.7%
1,553	N39605,E41020	1,146.4	121.8	6.0	115.0	124.7	P-29	92.2%
1,554	N39605,E41120	1,145.3	125.8	7.4	117.1	124.7	P-29	93.9%
1,555	N39605,E41120	1,146.3	130.6	8.1	121.1	124.7	P-29	97.1%
1,556	N39700,E41145	1,147.9	130.5	7.7	121.1	124.7	P-29	97.1%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-29	8/30/91	ASTM D1557-A	SM Silty sand	124.7	8.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/15/92 TYPE I BERM

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,557	N42500,E39660	1,127.9	127.5	7.8	118.2	132.1	SA10-92	89.5%
1,558	N42500,E39660	1,128.9	140.8	6.4	132.3	132.1	SA10-92	100.2%
1,559	N42500,E39660	1,129.9	149.7	5.8	141.5	132.1	SA10-92	107.1%
1,560	N42400,E39620	1,124.6	147.1	5.1	141.8	132.1	SA10-92	107.3%
1,561	N42500,E39660	1,130.9	148.0	4.8	141.1	132.1	SA10-92	106.8%
1,562	N42400,E39620	1,125.6	146.3	4.6	139.9	132.1	SA10-92	105.9%
1,563	N42500,E39660	1,131.9	139.4	6.3	131.1	132.1	SA10-92	99.2%
1,564	N42500,E39660	1,132.9	146.2	6.1	137.8	132.1	SA10-92	104.3%
1,565	N42400,E39620	1,126.6	141.0	4.2	135.3	132.1	SA10-92	102.4%
1,566	N42310,E39540	1,124.3	141.1	5.2	134.2	132.1	SA10-92	101.6%
1,567	N42310,E39540	1,125.3	134.7	12.0	120.3	132.1	SA10-92	91.1%
1,568	N42240,E39460	1,123.0	140.1	5.0	133.5	132.1	SA10-92	101.1%
1,569	N42240,E39460	1,124.0	142.6	4.6	136.4	132.1	SA10-92	103.3%
1,570	N42310,E39540	1,126.3	139.5	2.8	135.7	132.1	SA10-92	102.7%
1,571	N42400,E39620	1,127.6	139.8	6.2	131.7	132.1	SA10-92	99.7%
1,572	N42310,E39540	1,127.3	138.5	3.5	133.8	132.1	SA10-92	101.3%
1,573	N42240,E39460	1,125.0	142.7	5.4	135.4	132.1	SA10-92	102.5%
1,574	N42240,E39460	1,126.0	137.5	6.9	128.7	132.1	SA10-92	97.4%
1,575	N42310,E39540	1,128.3	137.1	8.5	126.4	132.1	SA10-92	95.7%
1,576	N42400,E39620	1,128.6	134.8	7.0	125.9	132.1	SA10-92	95.3%
1,577	N42240,E39460	1,127.0	129.0	7.8	119.6	132.1	SA10-92	90.5%
1,578	N42310,E39540	1,129.3	142.6	7.3	132.9	132.1	SA10-92	100.6%
1,579	N42400,E39620	1,129.6	136.3	7.0	127.4	132.1	SA10-92	96.4%
1,580	N42240,E39460	1,128.0	119.2	12.4	106.1	113.1	SA16-92	93.8%
1,581	N42310,E39540	1,130.3	120.7	10.7	109.0	113.1	SA16-92	96.4%
1,582	N42400,E39620	1,130.6	126.2	10.2	114.5	113.1	SA16-92	101.2%
1,583	N42400,E39620	1,131.6	132.9	12.8	118.6	132.1	SA10-92	89.8%
1,584	N42310,E39540	1,131.3	133.7	10.6	120.9	132.1	SA10-92	91.5%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0
SA16-92	5/21/92	ASTM D1557-C	SP Poorly graded sand	113.1	12.9

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/16/92 TYPE I BERM

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,585	N42240,E39460	1,129.0	139.7	7.8	129.6	132.1	SA10-92	98.1%
1,586	N42240,E39460	1,130.0	142.8	5.8	135.7	132.1	SA10-92	102.7%
1,587	N42400,E39620	1,132.6	140.5	3.6	135.6	132.1	SA10-92	102.6%
1,588	N42310,E39540	1,132.3	126.8	5.1	120.7	132.1	SA10-92	91.4%
1,589	N42240,E39460	1,131.0	151.9	4.4	145.6	132.1	SA10-92	110.2%
1,590	N42240,E39460	1,132.0	143.1	3.4	138.4	132.1	SA10-92	104.8%
1,591	N42310,E39540	1,133.3	140.7	4.7	134.4	132.1	SA10-92	101.7%
1,592	N42400,E39620	1,133.6	136.2	5.2	129.4	132.1	SA10-92	98.0%
1,593	N42500,E39660	1,133.9	137.4	4.7	131.2	132.1	SA10-92	99.3%
1,594	N42240,E39460	1,133.0	136.6	6.3	128.5	132.1	SA10-92	97.3%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand	132.1	9

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/16/92 TYPE I BERM SUB-BASE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,595	N41700,E40780	1,141.8	139.8	3.1	135.6	142.1	BC2-92	95.4%
1,596	N41800,E40780	1,142.1	138.9	2.4	135.6	142.1	BC2-92	95.4%
1,597	N41900,E40780	1,141.8	141.6	4.1	135.9	142.1	BC2-92	95.6%
1,598	N42000,E40780	1,141.5	145.9	3.7	140.7	142.1	BC2-92	99.0%
1,599	N42100,E40780	1,141.2	138.7	3.3	134.2	142.1	BC2-92	94.4%
1,600	N42200,E40780	1,140.9	143.4	3.0	139.2	142.1	BC2-92	98.0%
1,601	N42300,E40780	1,140.6	143.4	4.4	137.4	142.1	BC2-92	96.7%
1,602	N42400,E40780	1,140.3	142.9	2.9	138.9	142.1	BC2-92	97.7%
1,603	N42500,E40780	1,140.0	144.7	4.5	138.5	142.1	BC2-92	97.5%
1,604	N42600,E40780	1,139.7	136.4	2.6	132.9	142.1	BC2-92	93.5%
1,605	N42700,E40750	1,139.4	137.1	3.7	132.2	142.1	BC2-92	93.0%
1,606	N42750,E40700	1,139.1	151.4	5.3	143.8	142.1	BC2-92	101.2%
1,607	N42750,E40600	1,138.8	145.5	4.3	139.6	142.1	BC2-92	98.2%
1,608	N42750,E40500	1,138.5	145.7	3.4	140.9	142.1	BC2-92	99.2%
1,609	N42750,E40400	1,138.2	153.7	4.2	147.5	142.1	BC2-92	103.8%
1,610	N42750,E40300	1,137.9	136.7	3.5	132.0	142.1	BC2-92	92.9%
1,611	N42750,E40200	1,137.6	136.2	3.2	131.9	142.1	BC2-92	92.8%
1,612	N42750,E40100	1,137.3	144.9	3.9	139.4	142.1	BC2-92	98.1%
1,613	N42750,E40000	1,137.0	136.4	4.9	130.1	142.1	BC2-92	91.6%
1,614	N42750,E39900	1,136.7	149.1	3.5	143.9	142.1	BC2-92	101.3%
1,615	N42750,E39800	1,136.4	147.1	2.9	143.0	142.1	BC2-92	100.6%
1,616	N42700,E39700	1,136.1	142.2	3.5	137.4	142.1	BC2-92	96.7%
1,617	N42600,E39670	1,135.8	136.0	5.4	129.0	142.1	BC2-92	90.8%
1,618	N42500,E39660	1,135.5	146.2	3.8	140.8	142.1	BC2-92	99.1%
1,619	N42400,E39620	1,135.2	139.7	3.9	134.4	142.1	BC2-92	94.6%
1,620	N42310,E39540	1,134.9	134.2	4.2	128.8	142.1	BC2-92	90.6%
1,621	N42240,E39460	1,134.6	136.5	4.3	130.9	142.1	BC2-92	92.1%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/22/92 TYPE I BERM SUB-BASE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,622	N42140,E39400	1,134.3	139.2	5.0	132.6	142.1	BC2-92	93.3%
1,623	N42040,E39370	1,133.9	140.5	6.7	131.7	142.1	BC2-92	92.7%
1,624	N41920,E39350	1,133.5	139.3	3.0	135.2	142.1	BC2-92	95.1%
1,625	N41820,E39330	1,133.1	138.2	3.0	134.1	142.1	BC2-92	94.4%
1,626	N41720,E39310	1,132.7	139.6	3.3	135.1	142.1	BC2-92	95.1%
1,627	N41620,E39290	1,132.3	138.7	5.4	131.6	142.1	BC2-92	92.6%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/22/92 EXPLOSIVE MAGAZINE AREA SUB-BASE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,628	N41500,E39150	1,132.8	137.1	4.4	131.4	142.1	BC2-92	92.5%
1,629	N41450,E39100	1,132.8	138.5	5.2	131.7	142.1	BC2-92	92.7%
1,630	N41400,E39050	1,132.8	137.5	3.1	133.4	142.1	BC2-92	93.9%
1,631	N41350,E39000	1,132.8	144.2	4.4	138.2	142.1	BC2-92	97.3%
1,632	N41300,E39050	1,131.8	142.8	3.5	137.9	142.1	BC2-92	97.0%
1,633	N41350,E39100	1,131.8	145.4	4.1	139.7	142.1	BC2-92	98.3%
1,634	N41400,E39150	1,131.8	131.9	3.7	127.2	142.1	BC2-92	89.5%
1,635	N41450,E39200	1,131.8	139.6	3.7	134.6	142.1	BC2-92	94.7%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/25/92 TYPE I HAUL ROAD SUB-BASE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,636	N41700,E40370	1,139.2	136.1	4.7	129.9	142.1	BC2-92	91.4%
1,637	N41660,E40280	1,138.6	134.6	5.3	127.8	142.1	BC2-92	89.9%
1,638	N41620,E40180	1,137.8	138.9	5.4	131.9	142.1	BC2-92	92.8%
1,639	N41560,E40100	1,136.3	136.5	5.7	129.1	142.1	BC2-92	90.9%
1,640	N41500,E40020	1,134.8	139.5	6.5	131.0	142.1	BC2-92	92.2%
1,641	N41440,E39950	1,133.3	139.0	7.0	130.0	142.1	BC2-92	91.5%
1,642	N41370,E39870	1,131.8	144.1	4.2	137.8	142.1	BC2-92	97.0%
1,643	N41300,E39790	1,130.3	140.9	4.7	134.6	142.1	BC2-92	94.7%
1,644	N41700,E40370	1,139.9	137.1	5.1	130.5	142.1	BC2-92	91.8%
1,645	N41660,E40280	1,139.3	141.0	6.3	132.6	142.1	BC2-92	93.3%
1,646	N41620,E40180	1,138.5	143.7	6.6	134.8	142.1	BC2-92	94.9%
1,647	N41560,E40100	1,137.0	136.8	5.8	129.3	142.1	BC2-92	91.0%
1,648	N41500,E40020	1,135.5	138.8	7.1	129.5	142.1	BC2-92	91.1%
1,649	N41440,E39950	1,134.0	147.0	6.1	138.6	142.1	BC2-92	97.5%
1,650	N41370,E39870	1,132.5	147.5	5.3	140.0	142.1	BC2-92	98.5%
1,651	N41300,E39790	1,131.0	143.4	5.7	135.7	142.1	BC2-92	95.5%
1,652	N41700,E40370	1,140.6	141.9	9.3	129.9	142.1	BC2-92	91.4%
1,653	N41660,E40280	1,140.0	149.0	5.5	141.3	142.1	BC2-92	99.4%
1,654	N41620,E40180	1,139.2	149.7	5.3	142.2	142.1	BC2-92	100.1%
1,655	N41560,E40100	1,137.7	141.6	5.6	134.2	142.1	BC2-92	94.4%
1,656	N41500,E40020	1,136.2	146.5	5.5	138.8	142.1	BC2-92	97.7%
1,657	N41440,E39950	1,134.7	150.3	6.2	141.5	142.1	BC2-92	99.6%
1,658	N41370,E39870	1,133.2	139.6	6.1	131.6	142.1	BC2-92	92.6%
1,659	N41300,E39790	1,131.7	137.7	5.8	130.1	142.1	BC2-92	91.6%
1,660	N41240,E39710	1,128.8	140.7	3.9	135.4	142.1	BC2-92	95.3%
1,661	N41240,E39710	1,129.5	144.3	5.0	137.5	142.1	BC2-92	96.8%
1,662	N41240,E39710	1,130.2	139.0	4.8	132.6	142.1	BC2-92	93.3%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

6/27/92 HAUL ROAD SUB-BASE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,663	N39160,E39990	1,146.5	141.6	4.0	136.1	142.1	BC2-92	95.8%
1,664	N39170,E39890	1,146.5	139.9	2.6	136.3	142.1	BC2-92	95.9%
1,665	N39180,E39790	1,146.5	142.5	3.0	138.4	142.1	BC2-92	97.4%
1,666	N39240,E39710	1,146.5	143.2	5.5	135.7	142.1	BC2-92	95.5%
1,667	N39320,E39650	1,146.5	135.5	3.7	130.7	142.1	BC2-92	92.0%
1,668	N39420,E39630	1,147.1	132.6	3.7	127.9	142.1	BC2-92	90.0%
1,669	N39520,E39630	1,148.0	141.3	2.7	137.5	142.1	BC2-92	96.8%
1,670	N39620,E39630	1,148.8	143.3	3.9	137.9	142.1	BC2-92	97.0%
1,671	N39700,E39680	1,149.9	142.0	4.8	135.4	142.1	BC2-92	95.3%
1,672	N39780,E39750	1,151.5	134.9	4.0	129.7	142.1	BC2-92	91.3%
1,673	N39850,E39810	1,153.2	140.0	3.5	135.3	142.1	BC2-92	95.2%
1,674	N39850,E39810	1,153.5	132.2	3.8	127.4	142.1	BC2-92	89.7%
1,675	N39780,E39750	1,151.8	134.7	3.5	130.2	142.1	BC2-92	91.6%
1,676	N39700,E39680	1,150.2	138.6	3.8	133.5	142.1	BC2-92	93.9%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/18/92 TYPE I BERM SUB-BASE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,677	N42240,E39460	1,133.8	145.1	7.8	134.6	142.1	BC2-92	94.7%
1,678	N42310,E39540	1,134.1	144.4	7.6	132.2	142.1	BC2-92	93.0%
1,679	N42400,E39620	1,134.4	147.2	7.1	137.4	142.1	BC2-92	96.7%
1,680	N42500,E39660	1,134.7	142.6	5.9	134.7	142.1	BC2-92	94.8%

roject Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/17/92 EXPLOSIVE MAGAZINE AREA BASE COURSE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,682	N41500,E39150	1,133.5	140.2	4.3	134.4	142.1	BC2-92	94.6%
1,683	N41450,E39100	1,133.5	141.2	5.0	134.4	140.3	BC1-92	95.8%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7
BC1-92	7/13/92	ASTM D1557-C	SP Poorly graded sand with gravel	140.3	8.2

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/22/92 EXPLOSIVE MAGAZINE AREA BASE COURSE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,684	N41400,E39050	1,133.5	141.4	3.9	136.1	140.3	BC1-92	97.0%
1,685	N41350,E39000	1,133.5	137.4	3.5	132.7	140.3	BC1-92	94.6%
1,686	N41300,E39050	1,132.5	140.7	3.5	136.0	140.3	BC1-92	96.9%
1,687	N41350,E39100	1,132.5	136.9	3.0	132.9	140.3	BC1-92	94.7%
1,688	N41400,E39150	1,132.5	141.1	3.2	136.7	140.3	BC1-92	97.4%
1,689	N41450,E39200	1,132.5	139.5	4.6	133.5	140.3	BC1-92	95.2%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC1-92	7/13/92	ASTM D1557-C	SP Poorly graded sand with gravel	140.3	8.2

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/22/92 TYPE I BERM BASE COURSE

TEST #	LOCATION	ELEVATION	DENSITY pcf	MOISTURE PERCENT	DENSITY pcf	DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,690	N41800,E40780	1,142.8	144.2	5.2	137.0	140.3	BC1-92	97.6%
1,691	N41900,E40780	1,142.5	149.1	5.8	140.9	140.3	BC1-92	100.4%
1,692	N42000,E40780	1,142.2	146.4	5.2	139.2	140.3	BC1-92	99.2%
1,693	N42100,E40780	1,141.9	148.1	6.2	139.4	140.3	BC1-92	99.4%
1,694	N42200,E40780	1,141.6	147.7	5.3	140.2	140.3	BC1-92	99.9%
1,695	N42300,E40780	1,141.3	148.5	6.3	139.7	140.3	BC1-92	99.6%
1,696	N42400,E40780	1,141.0	149.9	6.9	140.2	140.3	BC1-92	99.9%
1,697	N42500,E40780	1,140.7	144.0	4.8	137.4	140.3	BC1-92	97.9%
1,698	N42600,E40780	1,140.4	147.0	5.2	139.8	140.3	BC1-92	99.6%
1,699	N42700,E40750	1,140.1	143.8	5.3	136.5	140.3	BC1-92	97.3%
1,700	N42750,E40700	1,139.8	145.5	5.3	136.5	140.3	BC1-92	97.3%
1,701	N42750,E40600	1,139.5	147.7	4.8	140.9	140.3	BC1-92	100.4%
1,702	N42750,E40500	1,139.2	141.9	5.0	135.2	140.3	BC1-92	96.4%
1,703	N42750,E40400	1,138.9	145.0	5.3	137.7	140.3	BC1-92	98.1%
1,704	N42750,E40300	1,138.6	144.0	5.6	136.3	140.3	BC1-92	97.1%
1,705	N42750,E40200	1,138.3	143.9	5.2	136.8	140.3	BC1-92	97.5%
1,706	N42750,E40100	1,138.0	147.1	5.8	139.0	140.3	BC1-92	99.1%
1,707	N42750,E40000	1,137.7	142.6	5.2	142.6	140.3	BC1-92	101.6%
1,708	N42750,E39900	1,137.4	149.4	5.4	141.8	140.3	BC1-92	101.1%
1,709	N42750,E39800	1,137.1	146.7	5.2	139.5	140.3	BC1-92	99.4%
1,710	N42700,E39700	1,136.8	148.7	5.7	140.7	140.3	BC1-92	100.3%
1,711	N42600,E39670	1,136.5	145.4	6.2	137.0	140.3	BC1-92	97.6%
1,712	N42500,E39660	1,136.2	151.6	4.4	145.1	140.3	BC1-92	103.4%
1,713	N42400,E39620	1,135.9	148.9	6.2	140.2	140.3	BC1-92	99.9%
1,714	N42310,E39540	1,135.6	152.8	6.5	143.5	140.3	BC1-92	102.3%
1,715	N42240,E39460	1,135.3	146.8	6.6	137.7	140.3	BC1-92	98.1%
1,716	N42140,E39400	1,135.0	153.0	6.0	144.3	140.3	BC1-92	102.9%
1,717	N42040,E39370	1,134.6	154.3	5.1	146.9	140.3	BC1-92	104.7%
1,718	N41920,E39350	1,134.2	155.3	5.1	147.8	140.3	BC1-92	105.3%
1,719	N41820,E39330	1,133.8	147.0	4.4	140.7	140.3	BC1-92	100.3%
1,720	N41720,E39310	1,133.4	154.8	5.6	146.6	140.3	BC1-92	104.5%
1,721	N41620,E39290	1,133.0	147.6	5.5	139.8	140.3	BC1-92	99.6%

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/13/92 SETTLING POND ROAD BASE COURSE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,722	N41080,E39550	1,132.0	142.0	3.6	137.1	143.0	P-16	95.9%
1,723	N41200,E39550	1,132.0	143.1	4.0	137.6	143.0	P-16	96.2%
1,724	N41270,E39470	1,132.0	140.4	3.7	135.4	142.1	BC2-92	95.3%
1,725	N41340,E39400	1,132.0	144.7	4.7	138.3	142.1	BC2-92	97.3%
1,726	N41420,E39330	1,132.0	145.2	5.0	138.3	142.1	BC2-92	97.3%
1,727	N41380,E39250	1,132.0	142.5	4.4	136.5	142.1	BC2-92	96.1%
1,728	N41310,E39180	1,132.0	147.9	6.3	139.1	142.1	BC2-92	97.9%
1,729	N41240,E39250	1,132.0	146.2	5.3	138.8	142.1	BC2-92	97.7%
1,730	N41160,E39320	1,132.0	142.5	5.6	134.9	142.1	BC2-92	94.9%
1,731	N41090,E29400	1,132.0	145.0	5.0	138.1	142.1	BC2-92	97.2%
1,732	N41010,E39480	1,132.0	143.1	4.8	136.6	143.0	P-16	95.5%
1,733	N40940,E39400	1,132.0	142.4	4.7	136.1	143.0	P-16	95.2%
1,734	N40950,E39300	1,132.0	146.0	6.0	137.8	142.1	BC2-92	97.0%
1,735	N41020,E39220	1,132.0	142.9	5.7	135.2	142.1	BC2-92	95.1%
1,736	N41090,E39150	1,132.0	142.4	3.8	137.2	142.1	BC2-92	96.6%
1,737	N41160,E39080	1,132.0	141.1	3.9	135.9	142.1	BC2-92	95.6%
1,738	N41240,E39110	1,132.0	143.9	3.8	138.6	142.1	BC2-92	97.5%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-16	8/20/91	ASTM D1557-D	GW Well-graded gravel	143.0	7.4
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/17/92 UNDERGROUND PIPING - 2" PW 300

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,739	N39200,E40448	1,138.5	135.0	7.1	126.0	136.5	P-30	92.3%
1,740	N39155,E40550	1,141.5	133.3	7.2	124.3	136.5	P-30	91.1%
1,741	N39155,E40750	1,138.5	137.9	9.1	126.4	136.5	P-30	92.6%
1,742	N39150,E40950	1,135.5	138.4	9.7	126.2	136.5	P-30	92.5%
1,743	N39130,E41150	1,136.5	138.4	8.1	128.2	136.5	P-30	93.9%
1,744	N39150,E41235	1,140.0	141.5	8.6	130.6	136.5	P-30	95.7%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/18/92 UNDERGROUND PIPING - 2" PW 300

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,745	N39200,E40448	1,140.0	137.4	4.7	131.2	142.1	BC2-92	92.3%
1,746	N39155,E40550	1,143.0	145.5	5.8	137.4	142.1	BC2-92	96.7%
1,747	N39155,E40750	1,140.0	145.3	7.0	135.8	142.1	BC2-92	95.6%
1,748	N39150,E40950	1,137.0	134.9	4.6	129.0	142.1	BC2-92	90.8%
1,749	N39130,E41150	1,138.0	138.4	6.6	129.3	142.1	BC2-92	91.0%
1,750	N39150,E41235	1,141.5	139.6	5.6	132.2	142.1	BC2-92	93.0%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/2/92 UNDERGROUND PIPING - 6" FW 2108

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,751	N39425,E40450	1,136.0	135.3	8.2	125.1	136.5	P-30	91.6%
1,752	N39425,E40450	1,137.0	141.5	8.6	130.4	136.5	P-30	95.5%
1,753	N39425,E40450	1,138.0	132.3	8.2	122.9	136.5	P-30	90.0%
1,754	N39325,E40450	1,136.0	139.3	11.0	128.3	136.5	P-30	94.0%
1,755	N39325,E40450	1,137.0	143.7	9.1	131.7	136.5	P-30	96.5%
1,756	N39325,E40450	1,138.0	136.4	8.3	125.9	136.5	P-30	92.2%
1,757	N39280,E40450	1,136.0	136.9	8.3	126.4	136.5	P-30	92.6%
1,758	N39280,E40450	1,137.0	137.8	7.4	128.4	136.5	P-30	94.1%
1,759	N39280,E40450	1,138.0	135.0	8.5	124.4	136.5	P-30	91.1%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

7/2/92 UNDERGROUND PIPING - 6" FW 2104

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,760	N39355,E40420	1,138.0	137.7	8.1	127.4	136.5	P-30	93.3%
1,761	N39355,E40420	1,139.0	135.3	7.6	125.8	136.5	P-30	92.2%
1,762	N39355,E40420	1,140.0	133.2	8.2	123.1	136.5	P-30	90.2%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/3/92 UNDERGROUND PIPING - 2" PW 300, 3" PW 300

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,763	N39294,E40345	1,141.0	125.4	7.8	115.0	127.6	P-11	90.1%
1,764	N39294,E40345	1,143.0	131.3	11.0	118.3	127.6	P-11	92.7%
1,765	N39294,E40345	1,141.0	131.7	10.9	118.8	127.6	P-11	93.1%
1,766	N39294,E40345	1,143.0	130.5	9.3	119.4	127.6	P-11	93.6%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-11	8/12/91	ASTM D1557-A	SM Silty sand	127.6	11.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/3/92 UNDERGROUND PIPING - 8" CW 400, 4" CW 403, 1-1/2" DSA 1004

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,767	N39435,E40218	1,138.0	113.3	7.0	107.8	116.1	SA7-92	92.9%
1,768	N39435,E40218	1,139.0	116.7	6.3	109.8	116.1	SA7-92	94.6%
1,769	N39435,E40218	1,140.0	116.3	8.4	107.3	116.1	SA7-92	92.4%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/14/92 UNDERGROUND PIPING - 4" CW 402, 8" TW 1708, 6" FW 2108

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,770	N39425,E40140	1,137	119.8	10.1	108.7	116.1	SA7-92	93.6%
1,771	N39425,E40140	1,140	115.6	10.0	105.1	116.1	SA7-92	90.5%
1,772	N39425,E40140	1,143	115.4	6.2	108.6	116.1	SA7-92	93.5%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/14/92 UNDERGROUND PIPING - 4" TW 1716, 2" CDS 1500

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,773	N39400,E40145	1,137.5	115.5	9.1	105.8	116.1	SA7-92	91.1%
1,774	N39400,E40145	1,140.5	113.5	9.1	104.5	116.1	SA7-92	90.0%
1,775	N39400,E40145	1,143.5	115.9	8.0	107.3	116.1	SA7-92	92.4%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/14/92 UNDERGROUND PIPING - 6" FW 2100, 8"TW 1709

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,776	N39370,E40105	1,137.5	109.3	4.4	104.7	116.1	SA7-92	90.2%
1,777	N39370,E40105	1,140.5	117.6	7.5	109.3	116.1	SA7-92	94.1%
1,778	N39370,E40105	1,143.5	119.4	7.2	111.4	116.1	SA7-92	96.0%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/14/92 UNDERGROUND PIPING - 12" CW 409, 6" FW 2100

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,779	N39325,E40080	1,137.5	124.8	8.6	114.9	116.1	SA7-92	99.0%
1,780	N39325,E40080	1,140.5	120.1	5.9	113.4	116.1	SA7-92	97.7%
1,781	N39325,E40080	1,143.5	124.7	8.4	115.0	116.1	SA7-92	99.1%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/14/92 UNDERGROUND PIPING - 6" FW 2100, 4" CW 402

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,782	N39400,E40105	1,137.0	126.5	13.1	111.8	116.1	SA7-92	96.3%
1,783	N39400,E40105	1,139.0	116.7	8.9	106.7	116.1	SA7-92	91.9%
1,784	N39400,E40105	1,141.0	115.9	6.6	108.7	116.1	SA7-92	93.6%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/14/92 UNDERGROUND PIPING - 4" LE 2000

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,785	N39316,E40440	1,141.3	123.5	9.8	112.5	116.1	SA7-92	96.9%
1,786	N39316,E40440	1,142.3	124.2	5.7	117.5	116.1	SA7-92	101.2%
1,787	N39316,E40680	1,138.6	138.4	8.1	128.1	132.1	SA10-92	97.0%
1,788	N39316,E40680	1,139.6	137.6	7.6	127.8	132.1	SA10-92	96.7%
1,789	N39316,E40600	1,139.5	128.0	9.3	117.1	123.2	P-26	95.0%
1,790	N39316,E40600	1,140.5	131.1	10.6	118.6	123.2	P-26	96.3%
1,791	N39316,E40520	1,140.4	125.5	9.8	114.3	123.2	P-26	92.8%
1,792	N39316,E40520	1,141.4	130.7	8.7	120.1	123.2	P-26	97.5%
1,793	N39316,E40440	1,143.3	145.4	8.5	134.1	123.2	P-26	108.8%
1,794	N39316,E40520	1,142.4	140.1	8.4	129.2	123.2	P-26	104.9%
1,795	N39316,E40600	1,141.5	138.1	9.2	127.1	123.2	P-26	103.2%
1,796	N39316,E40680	1,140.6	128.8	7.8	119.5	123.2	P-26	97.0%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0
P-26	8/26/91	ASTM D1557-C	SM Silty sand	123.2	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/1/92 S.S. SEWER & MANHOLES 1-4

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,797	N39298,E40240	1,139.9	119.5	12.3	106.5	116.1	SA7-92	91.7%
1,798	N39298,E40240	1,142.9	123.8	11.3	111.3	116.1	SA7-92	95.9%
1,799	N39456,E40361	1,138.6	129.1	13.1	114.2	116.1	SA7-92	98.4%
1,800	N39456,E40361	1,141.6	125.3	12.9	111.0	116.1	SA7-92	95.6%
1,801	N39340,E40456	1,140.2	133.8	10.1	120.8	136.5	P-30	*88.5%
Retest	N39340,E40456	1,143.2	138.4	8.1	128.1	136.5	P-30	93.8%
1,803	N39232,E40457	1,141.0	135.7	7.6	126.1	136.5	P-30	92.4%
1,804	N39232,E40457	1,144.0	137.6	7.6	127.9	136.5	P-30	93.7%
1,805	N39415,E40330	1,139.3	135.4	8.2	125.1	136.5	P-30	91.6%
1,806	N39415,E40330	1,140.8	133.9	8.1	123.9	136.5	P-30	90.8%
1,807	N39340,E40265	1,139.7	118.9	9.3	108.8	116.1	SA7-92	93.7%
1,808	N39340,E40265	1,141.2	118.5	10.8	107.0	116.1	SA7-92	92.2%
1,809	N39415,E40390	1,139.6	115.5	8.3	106.7	116.1	SA7-92	91.9%
1,810	N39415,E40390	1,141.1	133.5	6.9	124.9	116.1	SA7-92	107.6%
1,811	N39380,E40425	1,140.2	126.2	11.3	113.4	116.1	SA7-92	97.7%
1,812	N39380,E40425	1,141.7	130.0	9.7	118.5	116.1	SA7-92	102.1%
1,813	N39290,E40455	1,141.1	133.2	8.2	123.1	136.5	P-30	90.2%
1,814	N39290,E40455	1,142.6	137.8	7.4	128.4	136.5	P-30	94.1%

*Does not meet project specification. Test areas not meeting project specifications were reworked, recompacted, and retested until minimum project specifications were achieved.
Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/7/92 32" PIPE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,815	N39478,E39665	1,129.5	144.0	7.8	133.5	135.5	BF1-92	98.5%
1,816	N39478,E39665	1,131.0	140.8	6.8	131.8	135.5	BF1-92	97.3%
1,817	N39478,E39665	1,132.5	137.6	8.3	127.1	135.8	BF2-92	93.6%
1,818	N39478,E39665	1,134.0	135.6	8.0	125.6	135.8	BF2-92	92.5%
1,819	N39478,E39665	1,137.0	135.2	8.8	124.3	135.8	BF2-92	91.5%
1,820	N39478,E39665	1,140.0	134.0	10.3	121.5	135.8	BF2-92	89.5%
1,821	N39478,E39765	1,130.0	149.4	8.3	138.0	135.5	BF1-92	101.8%
1,822	N39478,E39765	1,131.5	149.1	7.8	138.3	135.5	BF1-92	102.1%
1,823	N39478,E39765	1,133.0	135.3	8.6	124.5	135.8	BF2-92	91.7%
1,824	N39478,E39765	1,134.5	135.7	10.1	123.3	135.8	BF2-92	90.8%
1,825	N39478,E39765	1,136.0	134.4	8.2	124.2	135.8	BF2-92	91.5%
1,826	N39478,E39765	1,137.5	134.1	8.5	123.6	135.8	BF2-92	91.0%
1,827	N39478,E39765	1,139.0	136.4	10.1	123.9	135.8	BF2-92	91.2%
1,828	N39478,E39765	1,140.5	140.2	8.7	129.0	135.8	BF2-92	95.0%
1,829	N39478,E39865	1,130.5	140.7	9.7	128.3	135.8	BF2-92	94.5%
1,830	N39478,E39865	1,132.0	135.9	10.5	123.0	135.8	BF2-92	90.6%
1,831	N39478,E39865	1,133.5	135.9	10.7	122.7	135.8	BF2-92	90.4%
1,832	N39478,E39865	1,135.0	136.5	8.9	125.3	135.8	BF2-92	92.3%
1,833	N39478,E39865	1,136.5	135.5	8.0	125.4	135.8	BF2-92	92.3%
1,834	N39478,E39865	1,138.0	136.0	10.6	123.0	135.8	BF2-92	90.6%
1,835	N39478,E39865	1,139.5	135.6	9.2	124.2	135.8	BF2-92	91.5%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BF1-92	7/17/92	ASTM D1557-A	SC Clayey sand with gravel	135.5	7.2
BF2-92	8/11/92	ASTM D1557-C	SC-SM Silty, Clayey sand with gravel	135.8	7.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/12/92 32" PIPE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,836	N39430,E39710	1,132.6	143.5	7.4	133.7	135.8	BF2-92	98.5%
1,837	N39365,E39780	1,134.8	137.0	8.1	126.7	135.8	BF2-92	93.3%
1,838	N39430,E39710	1,134.1	132.9	10.0	120.8	135.8	BF2-92	89.0%
1,839	N39365,E39780	1,136.3	138.8	7.9	128.6	135.8	BF2-92	94.7%
1,840	N39430,E39710	1,135.6	135.2	9.4	123.6	135.8	BF2-92	91.0%
1,841	N39365,E39780	1,137.8	136.9	9.2	125.3	135.8	BF2-92	92.3%
1,842	N39430,E39710	1,137.1	135.2	9.7	123.2	135.8	BF2-92	90.7%
1,843	N39365,E39780	1,139.3	135.1	7.7	125.4	135.8	BF2-92	92.3%
1,844	N39430,E39710	1,138.6	137.2	8.6	126.3	135.8	BF2-92	93.0%
1,845	N39365,E39780	1,140.8	134.0	8.8	123.2	135.8	BF2-92	90.7%
1,846	N39430,E39710	1,140.1	134.2	9.6	122.4	135.8	BF2-92	90.1%
1,847	N39430,E39710	1,141.6	136.4	8.3	126.2	135.8	BF2-92	92.9%
1,848	N39430,E39710	1,143.1	134.6	7.5	125.2	135.8	BF2-92	92.2%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf	OPTIMUM MOISTURE PERCENT
BF2-92	8/11/92	ASTM D1557-C	SC-SM Silty, Clayey sand with gravel	135.8	7.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/14/92 32" PIPE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,849	N39478,E39965	1,131.0	137.7	10.2	124.9	135.8	BF2-92	92.0%
1,850	N39478,E39965	1,132.5	138.8	9.2	127.1	135.8	BF2-92	93.6%
1,851	N39478,E39965	1,134.0	135.9	10.0	123.6	135.8	BF2-92	91.0%
1,852	N39478,E39965	1,135.5	135.5	9.3	123.9	135.8	BF2-92	91.2%
1,853	N39478,E39965	1,137.0	134.3	8.8	123.4	135.8	BF2-92	90.9%
1,854	N39478,E39965	1,138.5	133.8	8.9	122.8	135.8	BF2-92	90.4%
1,855	N39478,E39965	1,140.0	142.5	8.4	131.5	135.8	BF2-92	96.8%
1,856	N39478,E40065	1,131.5	126.9	18.3	107.2	116.1	SA7-92	92.3%
1,857	N39478,E40065	1,133.0	127.0	17.3	108.3	116.1	SA7-92	93.3%
1,858	N39478,E40065	1,136.0	136.5	19.6	105.8	116.1	SA7-92	91.1%
1,859	N39478,E40065	1,139.0	122.2	10.3	110.7	116.1	SA7-92	95.3%
1,860	N39478,E40065	1,140.5	119.4	9.2	109.4	116.1	SA7-92	94.2%
1,861	N39478,E40165	1,132.0	115.5	9.3	105.7	116.1	SA7-92	91.0%
1,862	N39478,E40165	1,133.5	115.9	9.5	105.8	116.1	SA7-92	91.1%
1,863	N39478,E40165	1,135.0	115.9	9.5	105.6	116.1	SA7-92	91.0%
1,864	N39478,E40165	1,136.5	115.8	9.2	106.1	116.1	SA7-92	91.4%
1,865	N39478,E40165	1,138.0	120.0	9.9	108.7	116.1	SA7-92	93.6%
1,866	N39478,E40165	1,139.5	122.1	7.4	113.7	116.1	SA7-92	97.9%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf	OPTIMUM MOISTURE PERCENT
BF2-92	8/11/92	ASTM D1557-C	SC-SM Silty, Clayey sand with gravel	135.8	7.5
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/18/92 32" PIPE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,867	N39478,E40265	1,132.5	126.7	11.9	113.2	116.1	SA7-92	97.5%
1,868	N39478,E40265	1,134.0	121.4	7.2	113.2	116.1	SA7-92	97.5%
1,869	N39478,E40265	1,135.5	120.2	6.8	112.6	116.1	SA7-92	97.0%
1,870	N39478,E40265	1,137.0	126.0	10.9	113.6	116.1	SA7-92	97.8%
1,871	N39478,E40265	1,138.5	116.5	11.8	104.8	116.1	SA7-92	90.3%
1,872	N39478,E40265	1,140.0	126.5	9.9	107.9	116.1	SA7-92	92.9%
1,873	N39478,E40365	1,133.0	124.4	11.5	111.6	116.1	SA7-92	96.1%
1,874	N39478,E40365	1,134.5	126.3	7.9	107.0	116.1	SA7-92	92.2%
1,875	N39478,E40365	1,136.0	122.3	9.3	111.9	116.1	SA7-92	96.4%
1,876	N39478,E40365	1,137.5	113.3	8.1	104.8	116.1	SA7-92	90.3%
1,877	N39478,E40365	1,139.0	114.4	7.2	106.7	116.1	SA7-92	91.9%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/19/92 32" PIPE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,878	N39478,E40465	1,133.5	135.6	11.1	122	132.1	SA10-92	92.4%
1,879	N39478,E40465	1,135	129.9	9.3	118.9	132.1	SA10-92	90.0%
1,880	N39478,E40465	1,136.5	138.9	7.3	129.4	132.1	SA10-92	98.0%
1,881	N39478,E40465	1,138	137	7.7	127.2	132.1	SA10-92	96.3%
1,882	N39478,E40565	1,134	132.7	12.3	118.9	132.1	SA10-92	90.0%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA10-92	5/28/92	ASTM D1557-D	SP Poorly graded sand with gravel	132.1	9.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☐ Troxler # 21075 ☒ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/20/92 32" PIPE

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,883	N39478,E40565	1,137.0	123.8	5.1	117.8	123.2	P-26	95.6%
1,884	N39478,E40565	1,140.0	125.6	7.4	116.9	123.2	P-26	94.9%
1,885	N39478,E40665	1,134.5	129.1	11.0	116.3	123.2	P-26	94.4%
1,886	N39478,E40665	1,136.0	135.0	11.5	121.2	123.2	P-26	98.4%
1,887	N39478,E40665	1,137.5	134.9	11.6	120.9	123.2	P-26	98.1%
1,888	N39478,E40665	1,139.0	131.3	9.2	120.2	123.2	P-26	97.6%
1,889	N39478,E40665	1,140.5	130.8	9.9	119.0	123.2	P-26	96.6%
1,890	N39440,E40695	1,135.0	134.5	6.0	126.8	123.2	P-26	102.9%
1,891	N39440,E40695	1,136.5	133.3	10.1	121.2	123.2	P-26	98.4%
1,892	N39440,E40695	1,138.0	140.5	10.0	127.7	123.2	P-26	103.7%
1,893	N39440,E40695	1,139.5	139.5	10.9	125.9	123.2	P-26	102.2%
1,894	N39440,E40695	1,141.0	139.5	10.1	126.6	123.2	P-26	102.8%
1,895	N39400,E40700	1,135.2	134.8	13.4	118.8	123.2	P-26	96.4%
1,896	N39400,E40700	1,136.7	135.3	11.7	121.1	123.2	P-26	98.3%
1,897	N39400,E40700	1,138.2	136.0	10.3	123.2	123.2	P-26	100.0%
1,898	N39400,E40700	1,139.7	136.3	11.4	122.3	123.2	P-26	99.3%
1,899	N39400,E40700	1,141.2	140.6	10.2	127.5	123.2	P-26	103.5%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
P-26	8/26/91	ASTM D1557-C	SM Silty sand	123.2	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/25/92 FILL FOR VISITOR PARKING & TURN LANES

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,900	N41870,E41250	1,147.1	146.1	5.3	138.8	144.9	RS12-92	95.8%
1,901	N41870,E41200	1,147.1	144.7	8.1	133.8	144.9	RS12-92	92.3%
1,902	N41770,E41225	1,149.1	148.9	5.2	141.6	144.9	RS12-92	97.7%
1,903	N41675,E41250	1,152.2	149.2	5.7	141.9	144.9	RS12-92	97.9%
1,904	N41675,E41210	1,152.2	147.8	6.5	138.9	144.9	RS12-92	95.9%
1,905	N41770,E41306	1,148.8	148.2	4.5	141.5	144.9	RS12-92	97.7%
1,906	N41870,E41250	1,148.1	146.1	5.3	138.8	144.9	RS12-92	95.8%
1,907	N41870,E41200	1,148.1	147.5	5.6	139.7	144.9	RS12-92	96.4%
1,908	N41770,E41225	1,150.1	147.8	6.5	138.9	144.9	RS12-92	95.9%
1,909	N41770,E41306	1,149.8	149.5	5.3	142.0	144.9	RS12-92	98.0%
1,910	N41925,E41362	1,151.4	147.9	6.2	139.3	144.9	RS12-92	96.1%
'1911	N42025,E41360	1,151.6	147.3	6.5	138.4	144.9	RS12-92	95.5%
1,912	N41875,E41415	1,151.1	149.5	5.3	142.0	144.9	RS12-92	98.0%
1,913	N41725,E41419	1,150.1	146.1	6.0	137.8	141.4	BM2-92	97.5%
1,914	N41575,E41422	1,149.1	149.9	5.1	142.5	141.4	BM2-92	100.8%
1,915	N41575,E41368	1,149.1	147.3	5.6	135.7	141.4	BM2-92	96.0%
1,916	N41675,E41366	1,149.7	144.4	6.2	136.0	141.4	BM2-92	96.2%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
RS12-92	8/14/92	ASTM D1557-D	GP Poorly graded gravel with sand	144.9	6.4
BM2-92	8/26/92	ASTM D1557-D	SP-SM Poorly graded sand with silt & gravel	141.4	7.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238

Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/28/92 FILL FOR VISITOR PARKING & TURN LANES

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,917	N41925,E41362	1,150.4	148.7	6.3	139.8	141.4	BM2-92	98.9%
1,918	N42025,E41360	1,150.6	148.7	6.4	139.7	141.4	BM2-92	98.8%
1,919	N41875,E41415	1,150.1	141.6	5.4	134.4	141.4	BM2-92	95.0%
1,920	N41725,E41419	1,149.1	139.2	7.0	130.1	136.5	P-30	95.3%
1,921	N41575,E41422	1,148.1	140.2	6.8	131.4	136.5	P-30	96.3%
1,922	N41575,E41368	1,148.1	140.6	6.8	131.6	136.5	P-30	96.4%
1,923	N41675,E41366	1,148.7	140.8	5.0	134.2	136.5	P-30	98.3%
1,924	N41925,E41362	1,149.4	143.6	5.0	136.8	136.5	P-30	100.2%
1,925	N42025,E41360	1,149.6	136.5	5.0	129.8	136.5	P-30	95.1%
1,926	N41875,E41415	1,149.1	138.1	5.5	130.9	136.5	P-30	95.9%
1,927	N41725,E41419	1,148.1	142.6	5.7	134.9	136.5	P-30	98.8%
1,928	N41575,E41422	1,147.1	143.6	5.8	135.8	136.5	P-30	99.5%
1,929	N41575,E41368	1,147.1	142.5	6.0	134.5	136.5	P-30	98.5%
1,930	N41675,E41366	1,147.7	142.1	5.0	135.3	136.5	P-30	99.1%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BM2-92	8/26/92	ASTM D1557-D	SP-SM Poorly graded sand with silt & gravel	141.4	7.0
P-30	9/4/91	ASTM D1557-C	SP-SM Poorly graded sand with silt & gravel	136.5	8.4

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

8/29/92 BASE COURSE FOR VISITOR PARKING & TURN LANES

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,931	N41870,E41250	1,148.6	144.2	3.8	138.9	142.1	BC2-92	97.7%
1,932	N41870,E41200	1,148.6	142.3	3.7	137.3	142.1	BC2-92	96.6%
1,933	N41770,E41225	1,150.6	146.6	4.0	141.0	142.1	BC2-92	99.2%
1,934	N41675,E41250	1,152.7	144.7	5.3	137.4	142.1	BC2-92	96.7%
1,935	N41675,E41210	1,152.7	143.1	5.0	136.3	142.1	BC2-92	95.9%
1,936	N41770,E41306	1,150.3	145.2	3.7	140.0	142.1	BC2-92	98.5%
1,937	N41925,E41362	1,151.9	143.3	4.6	137.0	142.1	BC2-92	96.4%
1,938	N42025,E41360	1,152.1	141.6	3.6	136.7	142.1	BC2-92	96.2%
1,939	N41875,E41415	1,151.6	140.6	3.4	136.0	142.1	BC2-92	95.7%
1,940	N41725,E41419	1,150.6	148.2	4.7	141.5	142.1	BC2-92	99.6%
1,941	N41575,E41422	1,149.6	147.2	5.3	140.2	142.1	BC2-92	98.7%
1,942	N41575,E41368	1,149.6	146.9	5.6	139.1	142.1	BC2-92	97.9%
1,943	N41675,E41366	1,150.2	147.2	6.4	138.3	142.1	BC2-92	97.3%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/1/92 FILL FOR TURN LANES BY ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,944	N39315,E41412	1,143.5	136.7	6.1	128.9	141.4	BM2-92	91.2%
1,945	N39215,E41413	1,145.6	135.1	6.3	127.1	141.4	BM2-92	89.9%
1,946	N39065,E41416	1,145.7	140.4	6.9	131.4	141.4	BM2-92	92.9%
1,947	N38966,E41420	1,145.8	139.8	6.0	131.9	141.4	BM2-92	93.3%
1,948	N39866,E41420	1,146.8	138.9	6.1	130.9	141.4	BM2-92	92.6%
1,949	N39065,E41416	1,146.7	141.4	7.1	132.0	141.4	BM2-92	93.4%
1,950	N39215,E41413	1,146.6	139.0	6.3	130.8	141.4	BM2-92	92.5%
1,951	N39315,E41412	1,146.3	140.0	5.8	132.4	141.4	BM2-92	93.6%
1,952	N39315,E41464	1,144.3	141.4	6.2	133.2	141.4	BM2-92	94.2%
1,953	N39215,E41466	1,144.6	136.5	5.9	128.9	141.4	BM2-92	91.2%
1,954	N39315,E41464	1,145.3	144.3	5.4	136.8	141.4	BM2-92	96.7%
1,955	N39215,E41466	1,145.6	138.4	6.8	129.6	141.4	BM2-92	91.7%
1,956	N39015,E41470	1,144.8	145.4	4.3	139.4	141.4	BM2-92	98.6%
1,957	N38915,E41470	1,144.9	136.5	5.8	129.1	141.4	BM2-92	91.3%
1,958	N39315,E41464	1,146.3	141.3	7.3	131.6	141.4	BM2-92	93.1%
1,959	N39215,E41466	1,146.6	130.6	6.6	130.9	141.4	BM2-92	92.6%
1,960	N39015,E41470	1,145.8	142.5	5.4	133.1	141.4	BM2-92	94.1%
1,961	N38915,E41470	1,145.9	140.7	6.3	132.7	141.4	BM2-92	93.8%
1,962	N39015,E41470	1,146.8	144.3	5.6	136.6	141.4	BM2-92	96.6%
1,963	N38915,E41470	1,146.9	142.5	5.4	135.2	141.4	BM2-92	95.6%

Project Specification: Minimum of 90% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BM2-92	8/26/92	ASTM D1557-D	SP-SM Poorly graded sand with silt & gravel	141.4	7.0

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/2/92 BASE COURSE FOR TURN LANES BY ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,964	N39315,E41412	1,146.8	147.0	5.8	139.0	142.1	BC2-92	97.8%
1,965	N39215,E41413	1,147.1	144.9	5.1	137.9	142.1	BC2-92	97.0%
1,966	N39065,E41416	1,147.2	145.4	4.4	139.3	142.1	BC2-92	98.0%
1,967	N38966,E41420	1,147.3	146.0	6.0	137.8	142.1	BC2-92	97.0%
1,968	N39315,E41464	1,146.8	142.9	5.7	135.2	142.1	BC2-92	95.1%
1,969	N39215,E41466	1,147.1	142.4	3.8	137.2	142.1	BC2-92	96.6%
1,970	N39015,E41470	1,147.3	141.1	3.9	135.9	142.1	BC2-92	95.6%
1,971	N38915,E41470	1,147.4	143.9	3.8	138.6	142.1	BC2-92	97.5%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
BC2-92	7/17/92	ASTM D1557-C	GP-GM Poorly graded gravel & sand with silt	142.1	7.7

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/15/92 WWTP CLARIFIER PAD UNDER SLAB

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,972	N39425,E40180	1,139.5	119.7	6.7	112.2	116.1	SA7-92	96.6%
1,973	N39395,E40180	1,139.5	122.6	6.6	115.0	116.1	SA7-92	99.1%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/15/92 FIRE WATER TANK

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,974	N39465,E40110	1,145.8	120.2	6.1	115.2	116.1	SA7-92	99.2%
1,975	N39445,E40110	1,145.8	122.4	7.4	113.9	116.1	SA7-92	98.1%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

9/24/92 WWTP SUMP BACKFILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,976	N39345,E40167	1,137.0	127.8	9.7	116.5	116.1	SA7-92	100.3%
1,977	N39352,E40162	1,138.0	125.0	7.9	115.8	116.1	SA7-92	99.7%
1,978	N39345,E40156	1,137.0	128.6	8.7	118.2	116.1	SA7-92	101.8%
1,979	N39339,E40162	1,138.0	126.9	8.9	116.5	116.1	SA7-92	100.3%
1,980	N39345,E40167	1,139.0	121.2	7.4	112.8	116.1	SA7-92	97.2%
1,981	N39352,E40162	1,141.0	123.7	8.0	114.5	116.1	SA7-92	98.6%
1,982	N39345,E40156	1,140.0	118.0	9.6	110.6	116.1	SA7-92	95.3%
1,983	N39339,E40162	1,142.0	129.6	7.4	120.6	116.1	SA7-92	103.9%
1,984	N39345,E40167	1,144.0	118.3	6.7	110.9	116.1	SA7-92	95.5%
1,985	N39352,E40162	1,145.0	125.7	8.1	116.3	116.1	SA7-92	100.2%
1,986	N39345,E40156	1,143.0	131.8	7.8	122.2	116.1	SA7-92	105.3%
1,987	N39339,E40162	1,146.0	119.2	7.2	111.1	116.1	SA7-92	95.7%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5

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Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☐ Humboldt # 338 ☒ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

10/5/92 SLAB BACKFILL

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	DRY DENSITY pcf	MAXIMUM DENSITY pcf	PROCTOR SAMPLE #	PERCENT COMPACTION
1,988	N39310,E40210	1,146.7	121.4	7.2	113.2	116.1	SA7-92	97.5%
1,989	N39310,E40160	1,146.7	122.2	10.3	110.7	116.1	SA7-92	95.3%
1,990	N39340,E40150	1,146.7	122.3	9.3	111.9	116.1	SA7-92	96.4%
1,991	N39370,E40200	1,146.7	126.5	13.1	111.8	116.1	SA7-92	96.3%
1,992	N39360,E40170	1,146.7	144.9	4.3	138.9	144.2	RS17-92	96.3%
1,993	N39350,E40130	1,146.7	145.7	3.3	141.4	144.2	RS17-92	98.1%
1,994	N39320,E40140	1,146.7	145.8	4.5	139.6	144.2	RS17-92	96.8%

Project Specification: Minimum of 95% relative compaction.

PROCTOR SAMPLE #	DATE TESTED	TEST METHOD	SOIL CLASSIFICATION	MAXIMUM DRY DENSITY pcf.	OPTIMUM MOISTURE PERCENT
SA7-92	5/21/92	ASTM D1557-D	SP Poorly graded sand with gravel	116.1	13.5
RS17-92	9/28/92	ASTM D1557-D	GP Poorly graded gravel with sand	144.2	6.5

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" __________

% Gravel __________

Project # CS91120 Date: 8/1/91

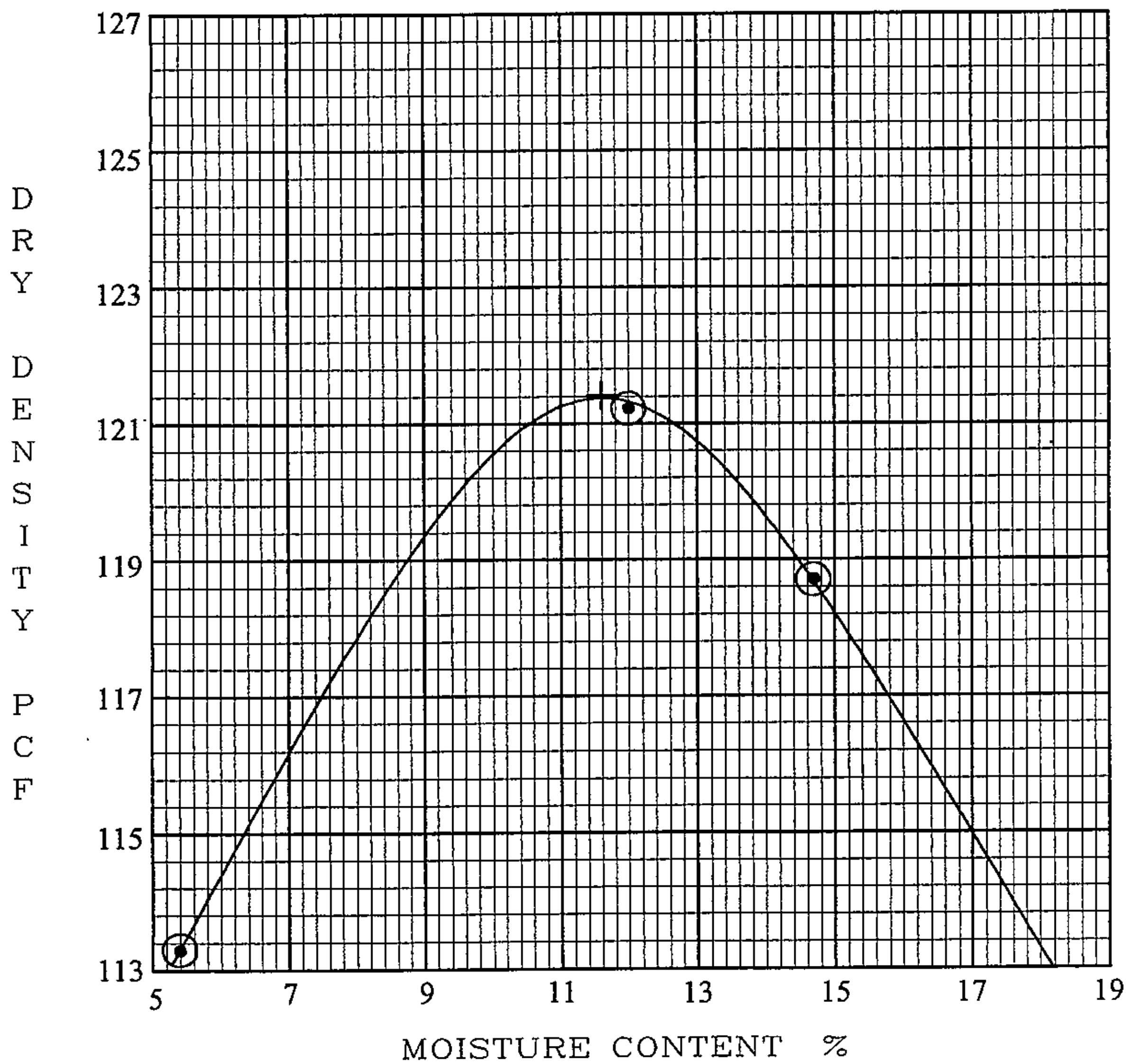
Sample # P-1, Sand #2 Location N39830, E40115

SOIL CLASSIFICATION SP-SM Poorly graded sand with silt

Maximum Dry Density 121.4 pcf Optimum Moisture Content 11.6 %

Test Method: ASTM D-1557 Method: A, C or D

Zero Airvoids Curve N/A Specific Gravity



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100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 8/12/91

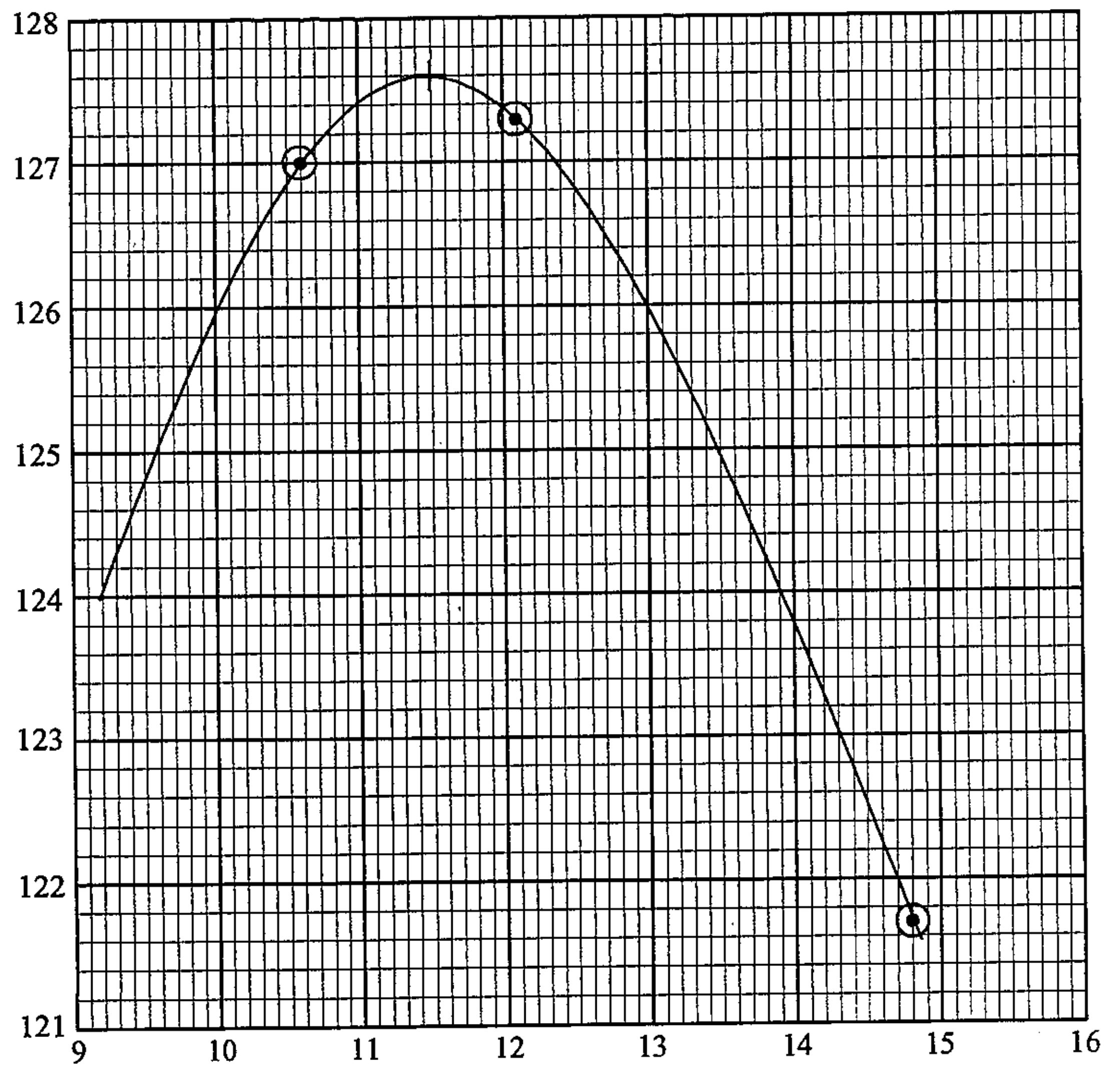
Sample # P-11; Test Sample G-1 Location N40100, E40400

SOIL CLASSIFICATION SM Silty Sand

Maximum Dry Density 127.6 pcf Optimum Moisture Content 11.5 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve N/A Specific Gravity



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TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 8/14/91

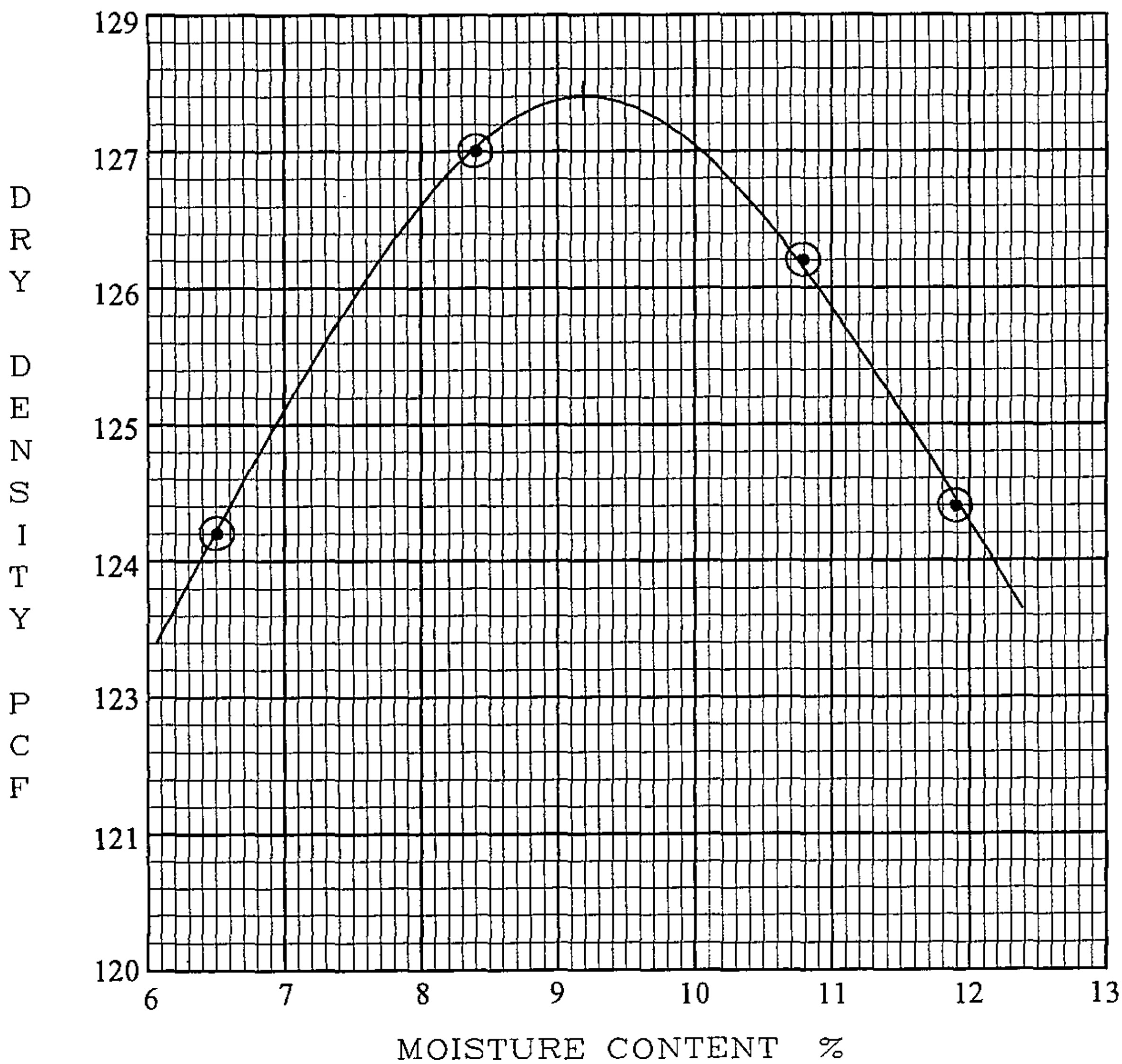
Sample # P-12, #C1-Ag-1 Location N42400, E40750

SOIL CLASSIFICATION SM Silty Sand

Maximum Dry Density 127.4 pcf Optimum Moisture Content 9.2 %

Test Method: ASTM D-1557 Method: A, C. or D

Zero Airvoids Curve N/A Specific Gravity



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TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ________

% Gravel ________

Project # CS91120 Date: 8/20/91

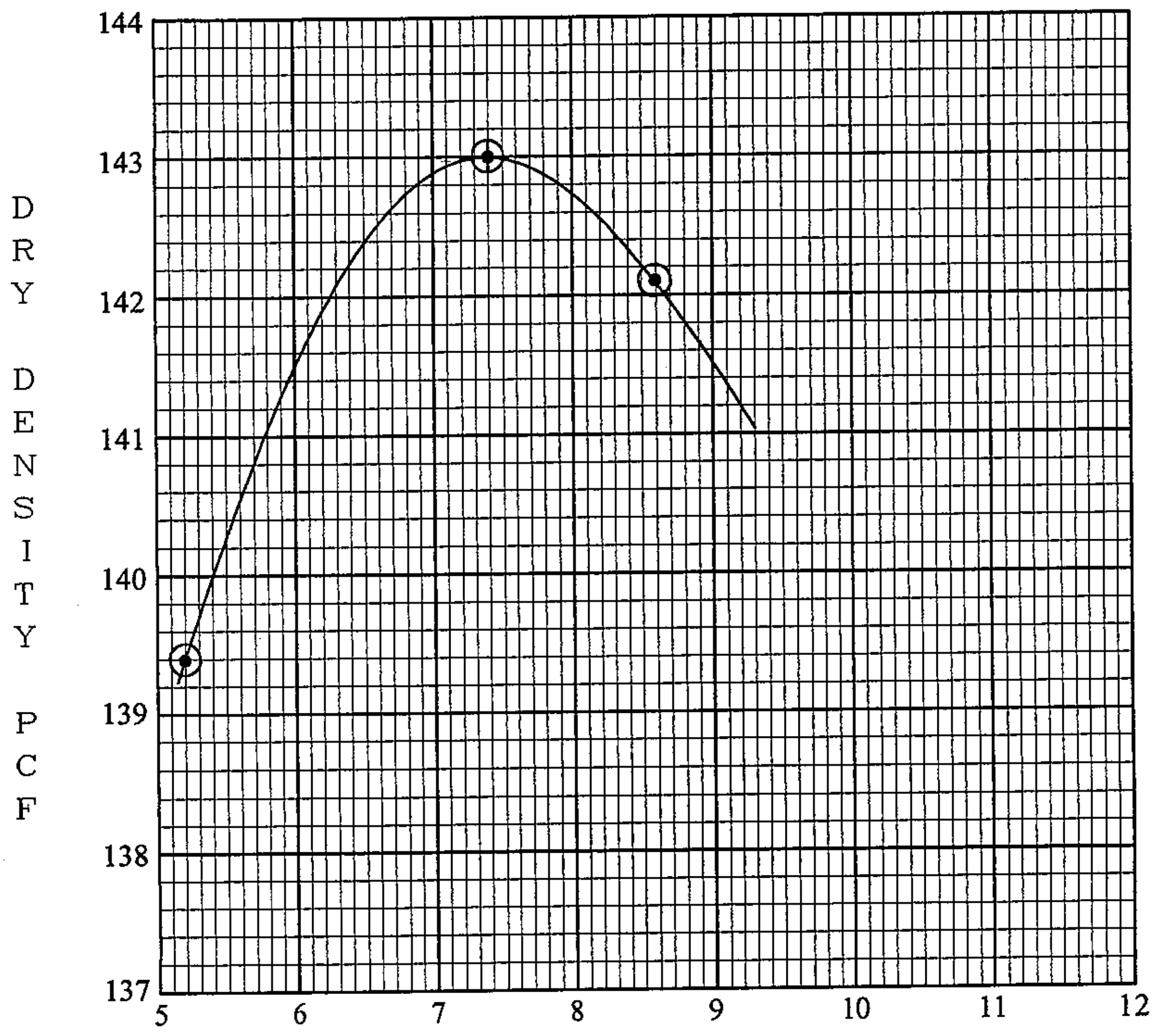
Sample # P-16, Old Borrow Pit Location N40450, E39200

SOIL CLASSIFICATION GW Well-Graded Gravel

Maximum Dry Density 143.0 pcf Optimum Moisture Content 7.4 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve N/A Specific Gravity



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% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 8/26/91

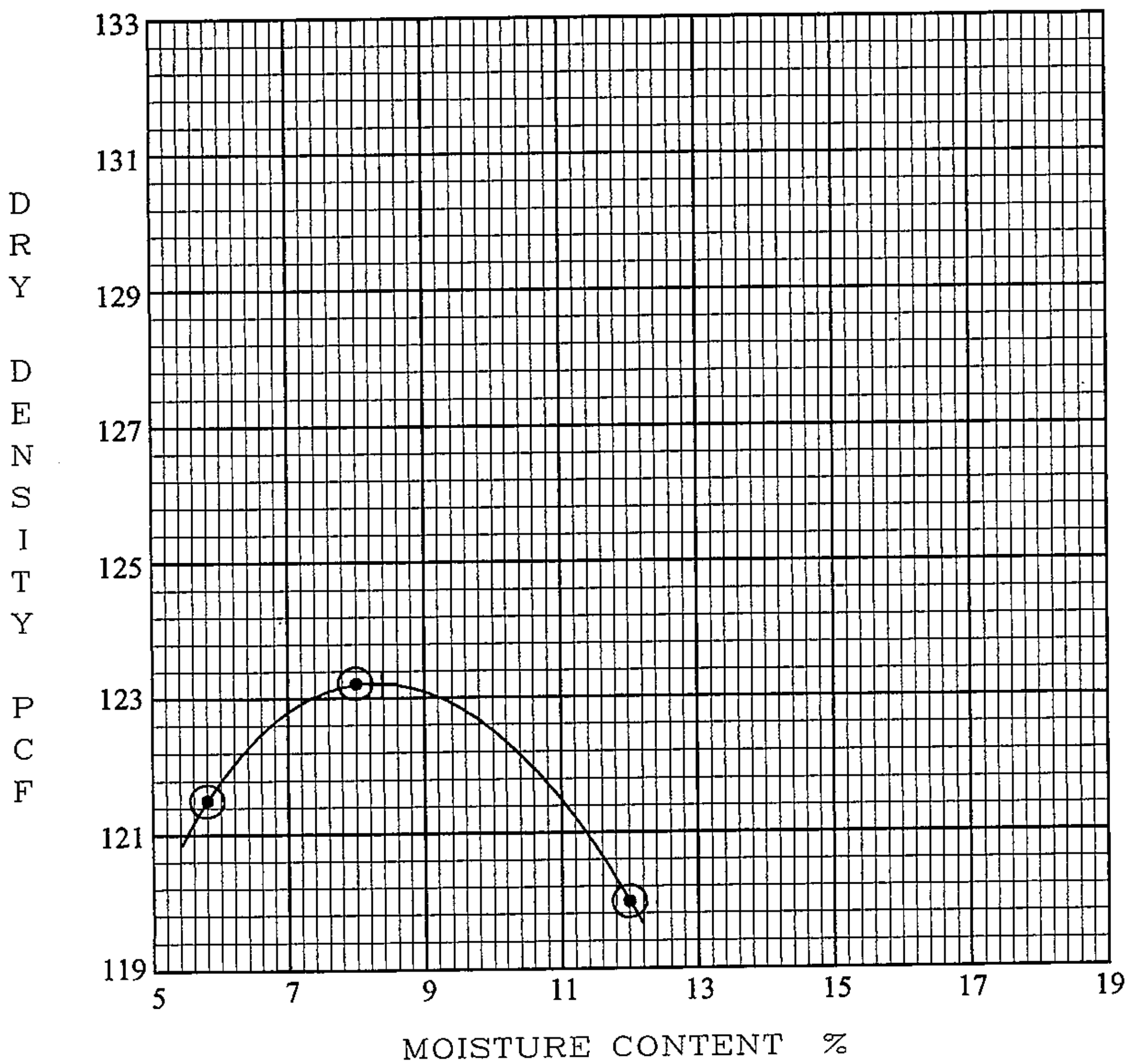
Sample # P-26, EBS10-1 Type II Stockpile Location N39915, E40145 Depth 8'

SOIL CLASSIFICATION SM Silty sand

Maximum Dry Density 123.2 pcf Optimum Moisture Content 8.4 %

Test Method: ASTM D-1557 Method: A. C or D

Zero Airvoids Curve N/A Specific Gravity



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PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ____

% Gravel ____

Project # CS91120 Date: 8/14/91

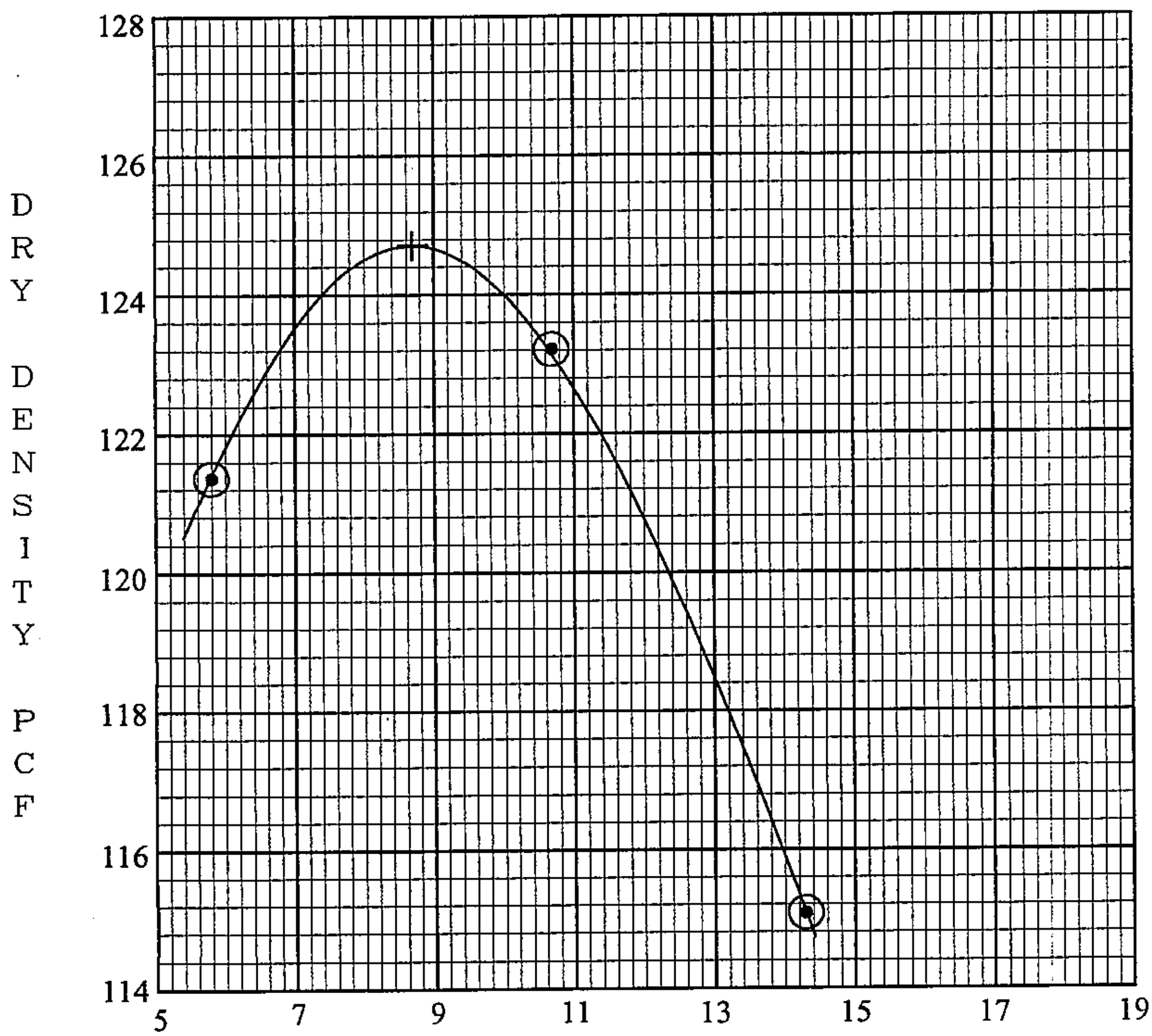
Sample # P-29, Type II Stockpile Location N39525, E40220 Depth 15'

SOIL CLASSIFICATION SM Silty Sand

Maximum Dry Density 124.7 pcf Optimum Moisture Content 8.7 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve N/A Specific Gravity



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% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 9/4/91

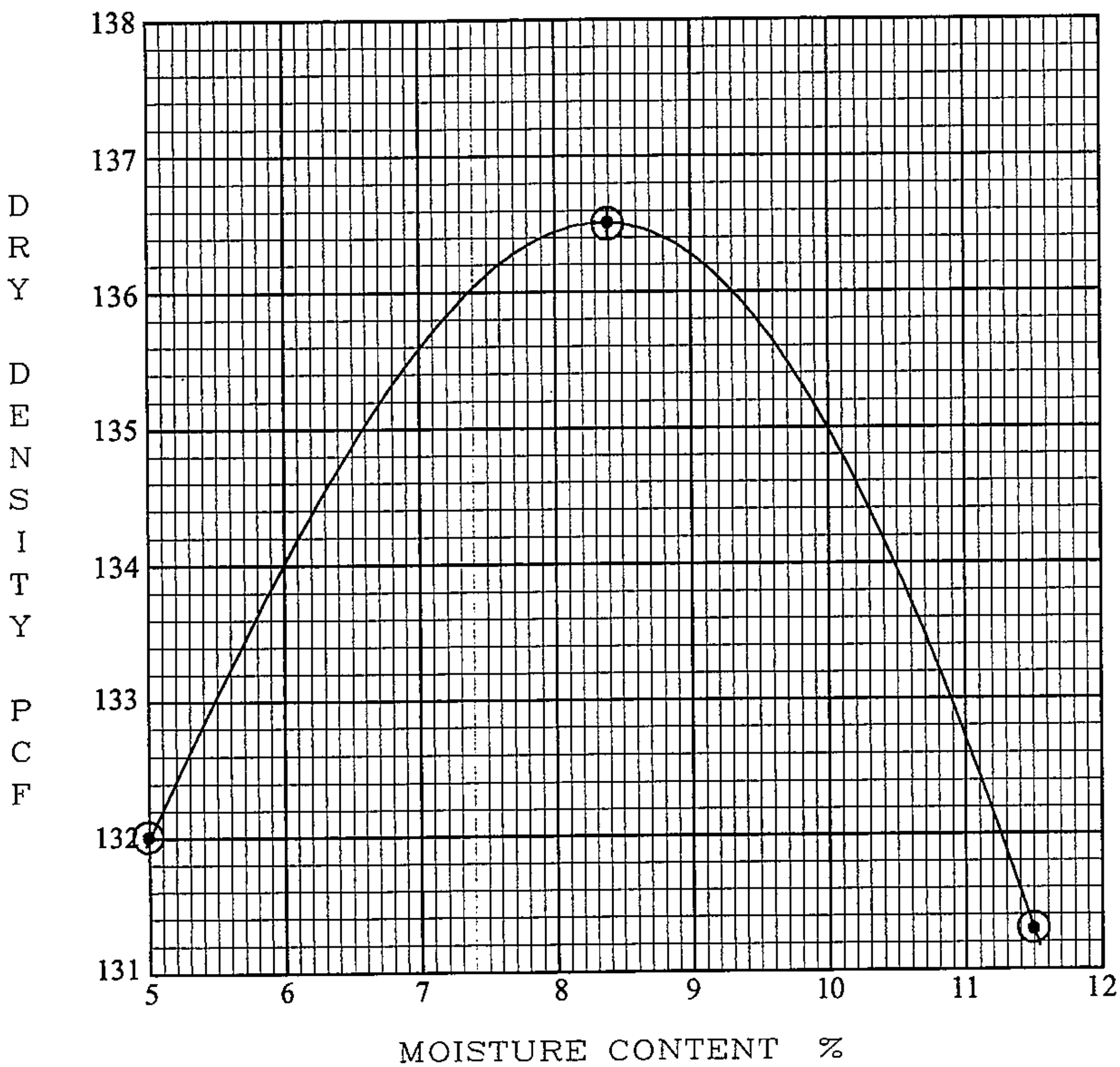
Sample # P-30, Material for explosive area Location N41600, E40000

SOIL CLASSIFICATION SP-SM Well-graded Sand with Silt and Gravel

Maximum Dry Density 136.5 pcf Optimum Moisture Content 8.4 %

Test Method: ASTM D-1557 Method: A. C or D

Zero Airvoids Curve N/A Specific Gravity



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PROJECT FLAMBEAU MINING COMPANY

% R 3/4" 12.0

% Gravel 26.0

Project # CS91120 Date: 5/21/92

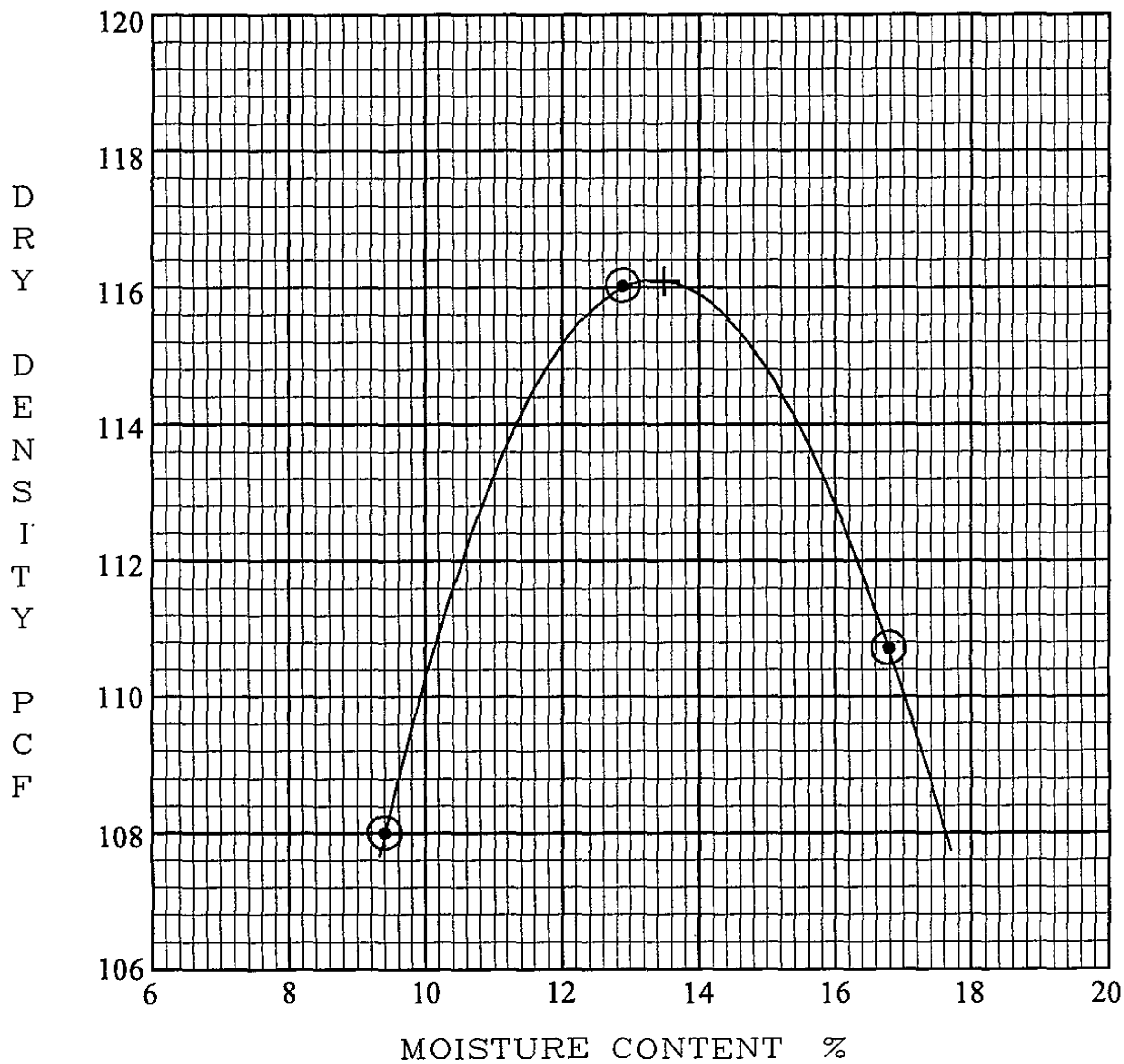
Sample # SA7-92, Sand Location N41595, E39660 Depth 8'

SOIL CLASSIFICATION SP Poorly graded sand with gravel

Maximum Dry Density 116.1 pcf Optimum Moisture Content 13.5 %

Test Method: ASTM D-1557 Method: A. C. or D

Zero Airvoids Curve N/A Specific Gravity



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PROJECT FLAMBEAU MINING COMPANY

% R 3/4" 5.0

% Gravel 9.0

Project # CS91120 Date: 5/21/92

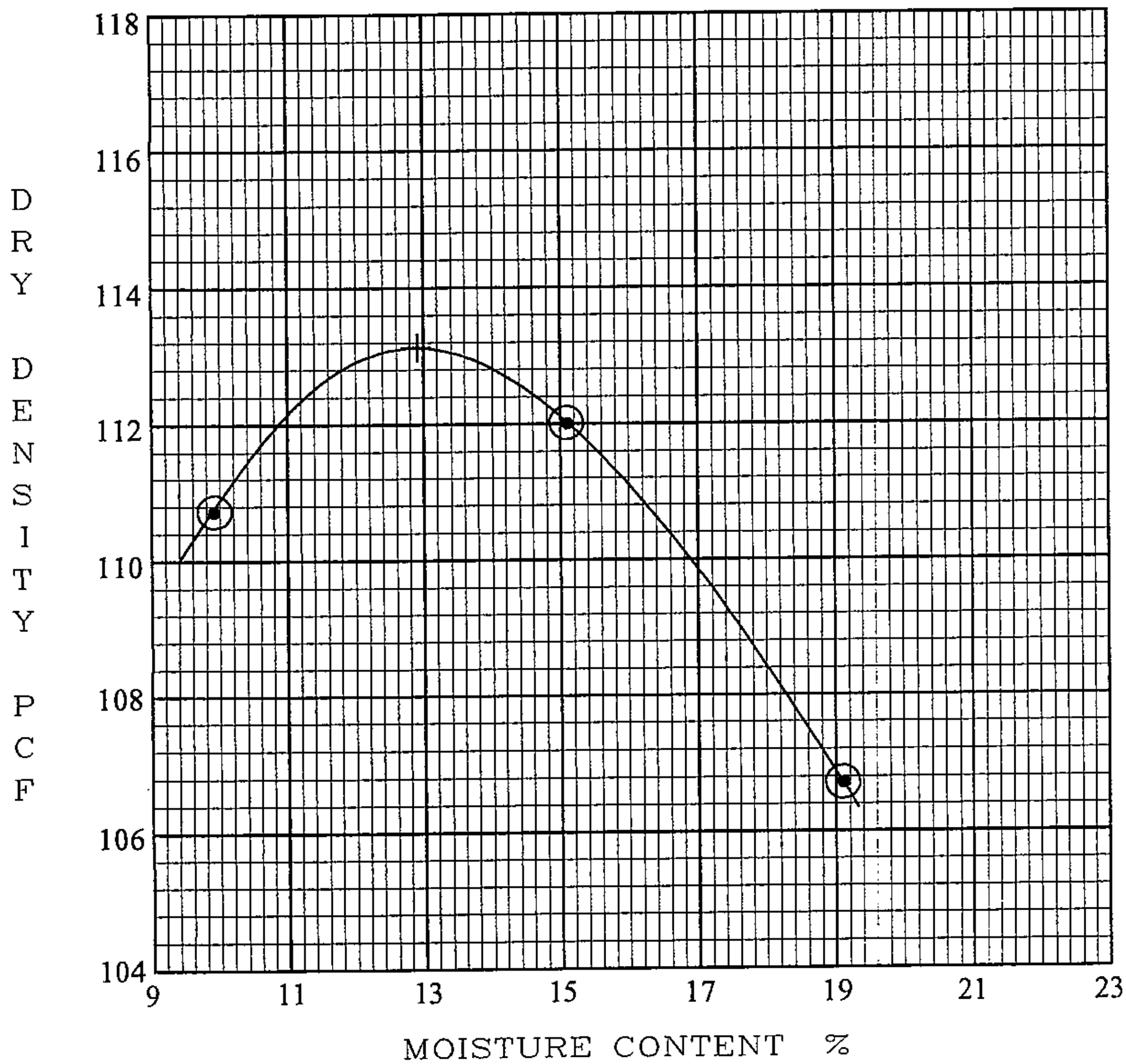
Sample # SA16-92, Sand Location N41700, E39550 Depth 8'

SOIL CLASSIFICATION SP Poorly graded sand

Maximum Dry Density 113.1 pcf Optimum Moisture Content 12.9 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve N/A Specific Gravity



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PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ____

% Gravel ____

Project # CS91120 Date: 5/28/92

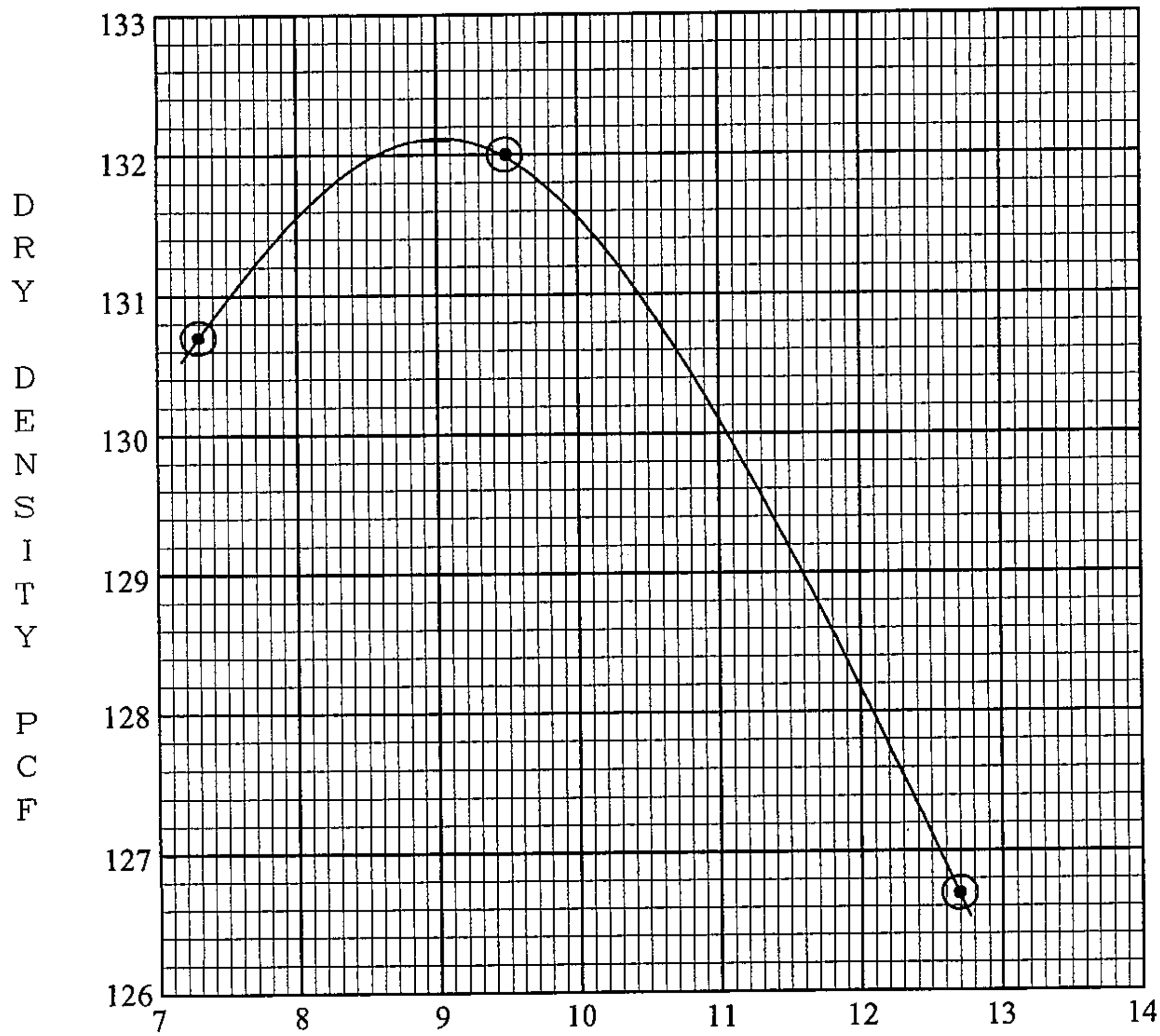
Sample # SA10-92, Sand Location N41300, E39630 Depth 18'

SOIL CLASSIFICATION SP Poorly graded sand with gravel

Maximum Dry Density 132.1 pcf Optimum Moisture Content 9.0 %

Test Method: ASTM D-1557 Method: A. C. or D

Zero Airvoids Curve N/A Specific Gravity



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PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ____

% Gravel ____

Project # CS91120 Date: 6/19/92

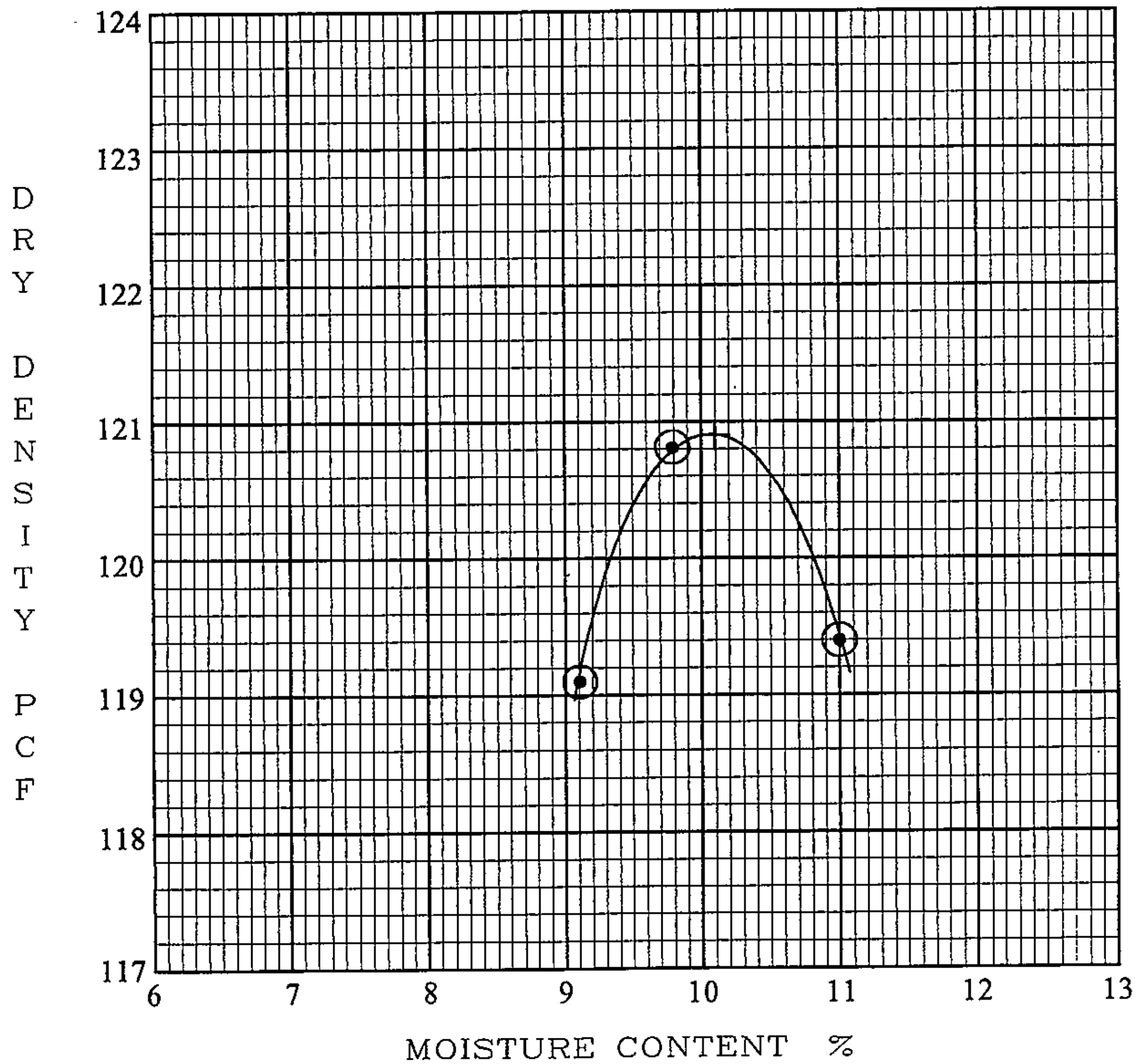
Sample # P-50, Sand Location N39700, E40000 Depth 5'

SOIL CLASSIFICATION SM Silty Sand

Maximum Dry Density 120.9 pcf Optimum Moisture Content 10.1 %

Test Method: ASTM D-1557 Method: A C, or D

Zero Airvoids Curve N/A Specific Gravity



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% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 5/27/92

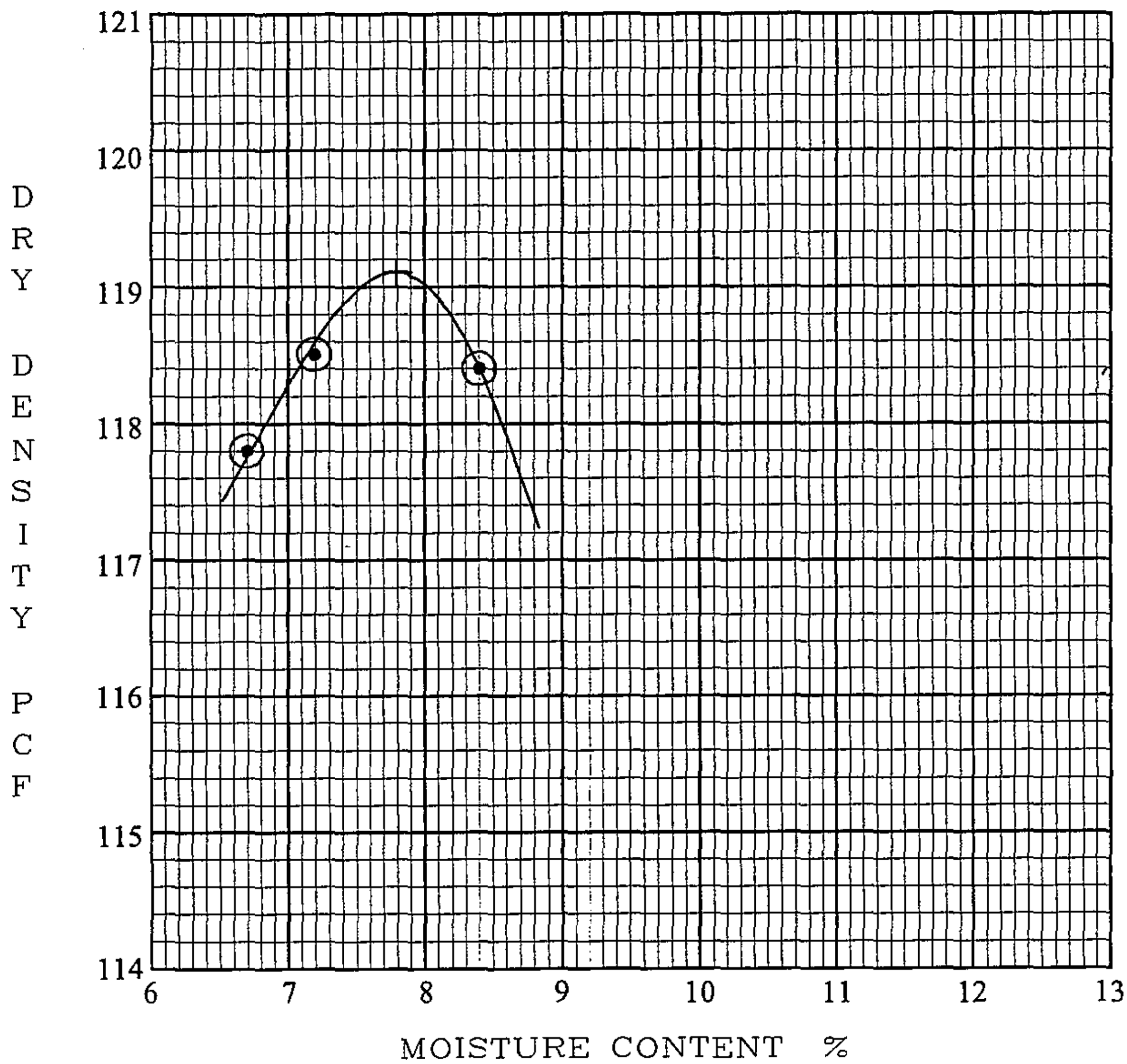
Sample # P-42, Underliner Material Location N39830, E40115

SOIL CLASSIFICATION SM Silty Sand

Maximum Dry Density 119.1 pcf Optimum Moisture Content 7.8 %

Test Method: ASTM D-1557 Method: A C. or D

Zero Airvoids Curve N/A Specific Gravity



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TELEPHONE 715-234-7008

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% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 7/7/92

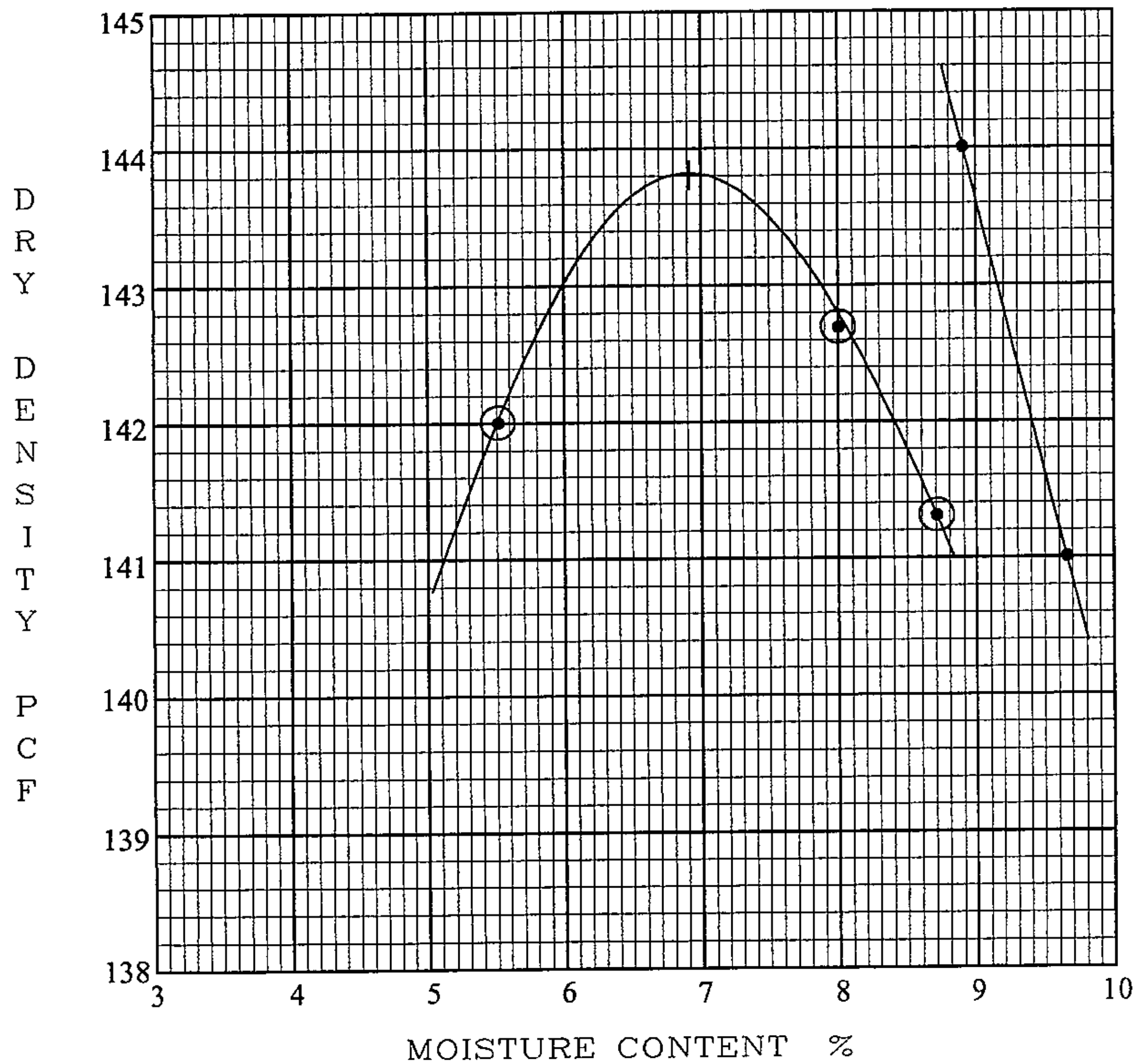
Sample # BM1-92, Borrow Material Location N41700, E39700

SOIL CLASSIFICATION SP Poorly graded gravely sand

Maximum Dry Density 143.8 pcf Optimum Moisture Content 6.9 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve 2.75 Specific Gravity



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TELEPHONE 715-234-7000

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 7/13/92

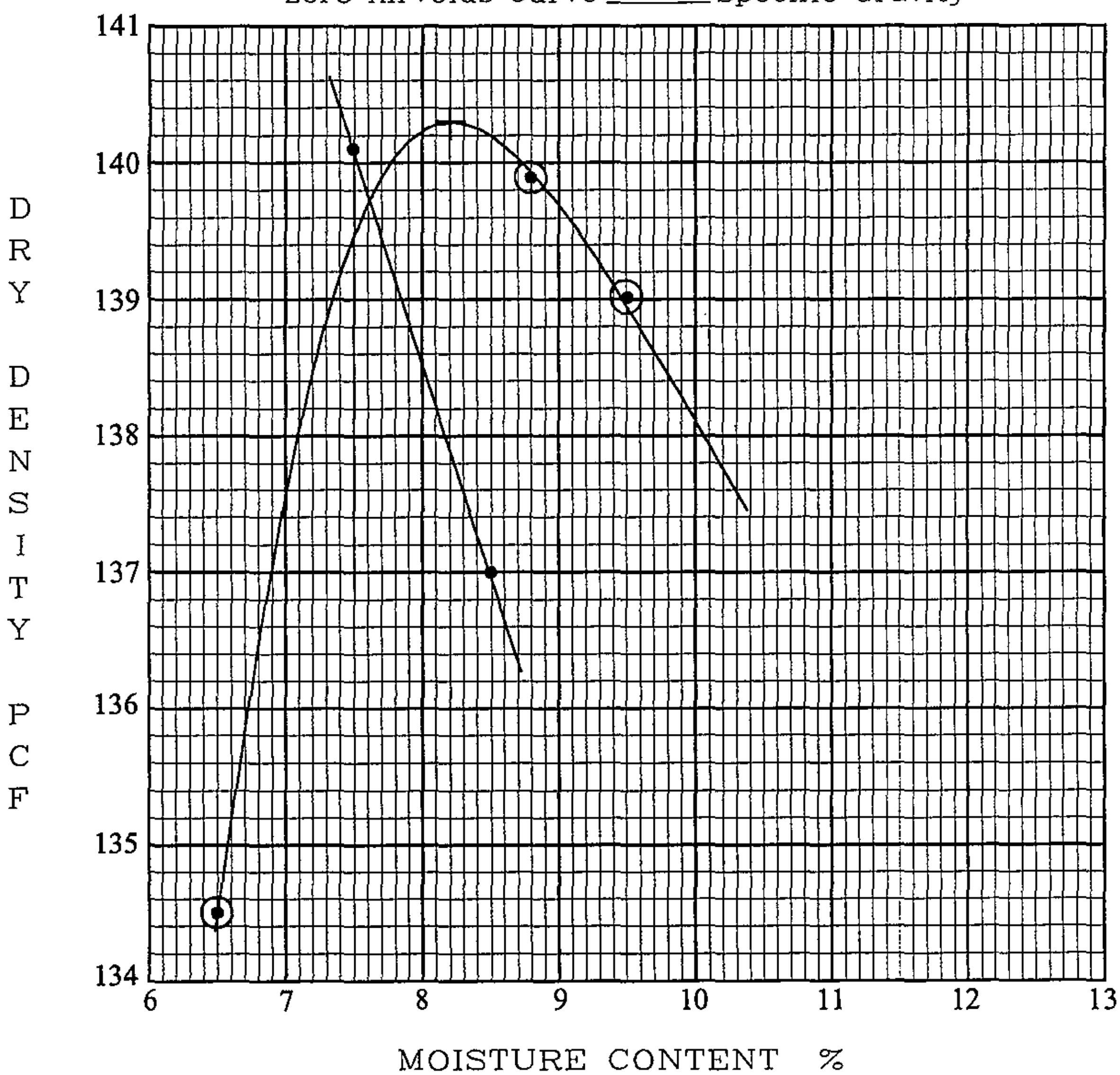
Sample # BC1-92 Base Course Location N42000, E40750

SOIL CLASSIFICATION SP Poorly graded sand with gravel

Maximum Dry Density 140.3 pcf Optimum Moisture Content 8.2 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve 2.70 Specific Gravity



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TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4"

% Gravel

Project # CS91120 Date: 7/16/92

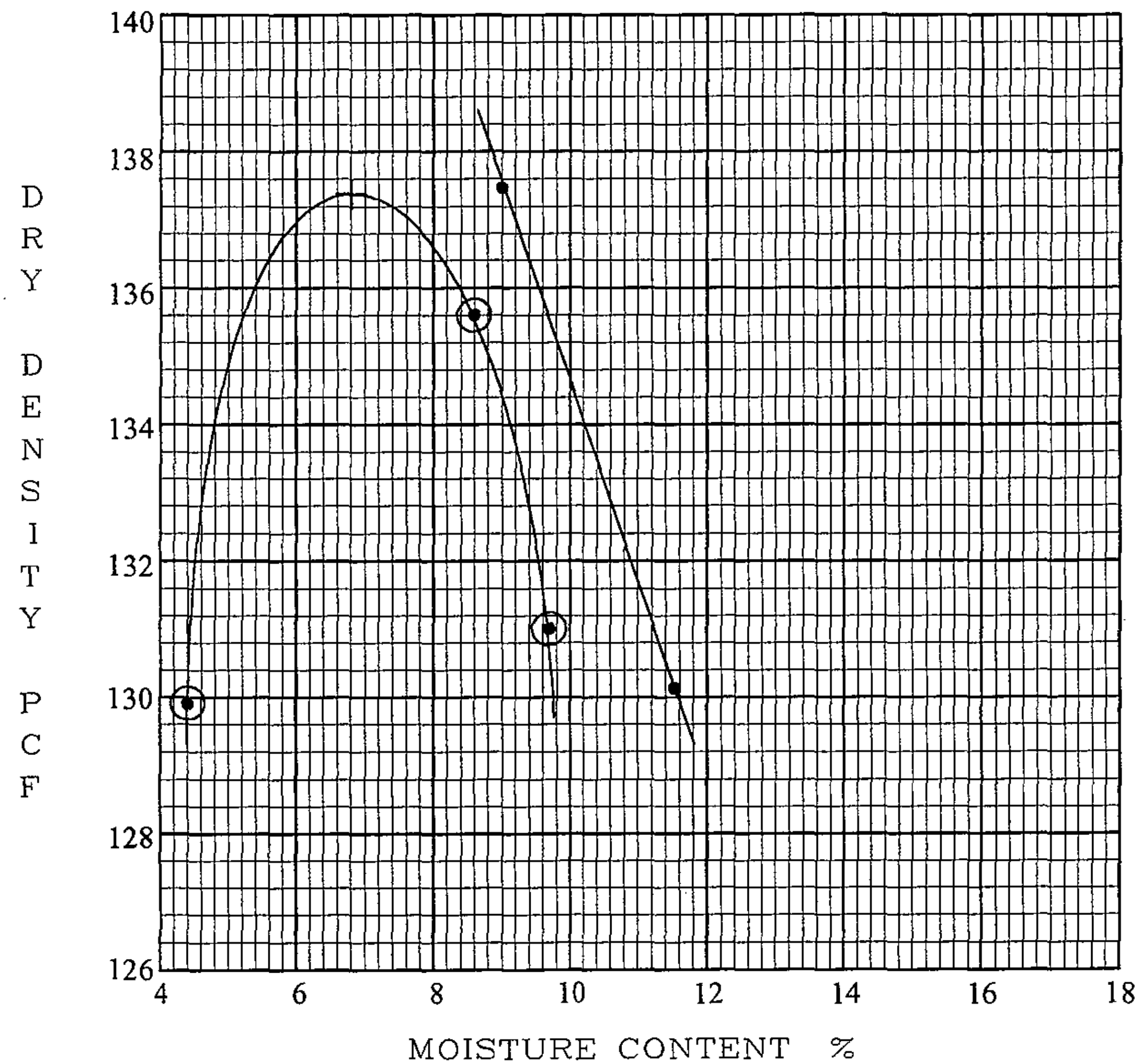
Sample # RS2-92, Red Pan Clay Location Station 49+50

SOIL CLASSIFICATION SM Silty sand

Maximum Dry Density 137.4 pcf Optimum Moisture Content 6.8 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve 2.75 Specific Gravity



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TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 7/17/92

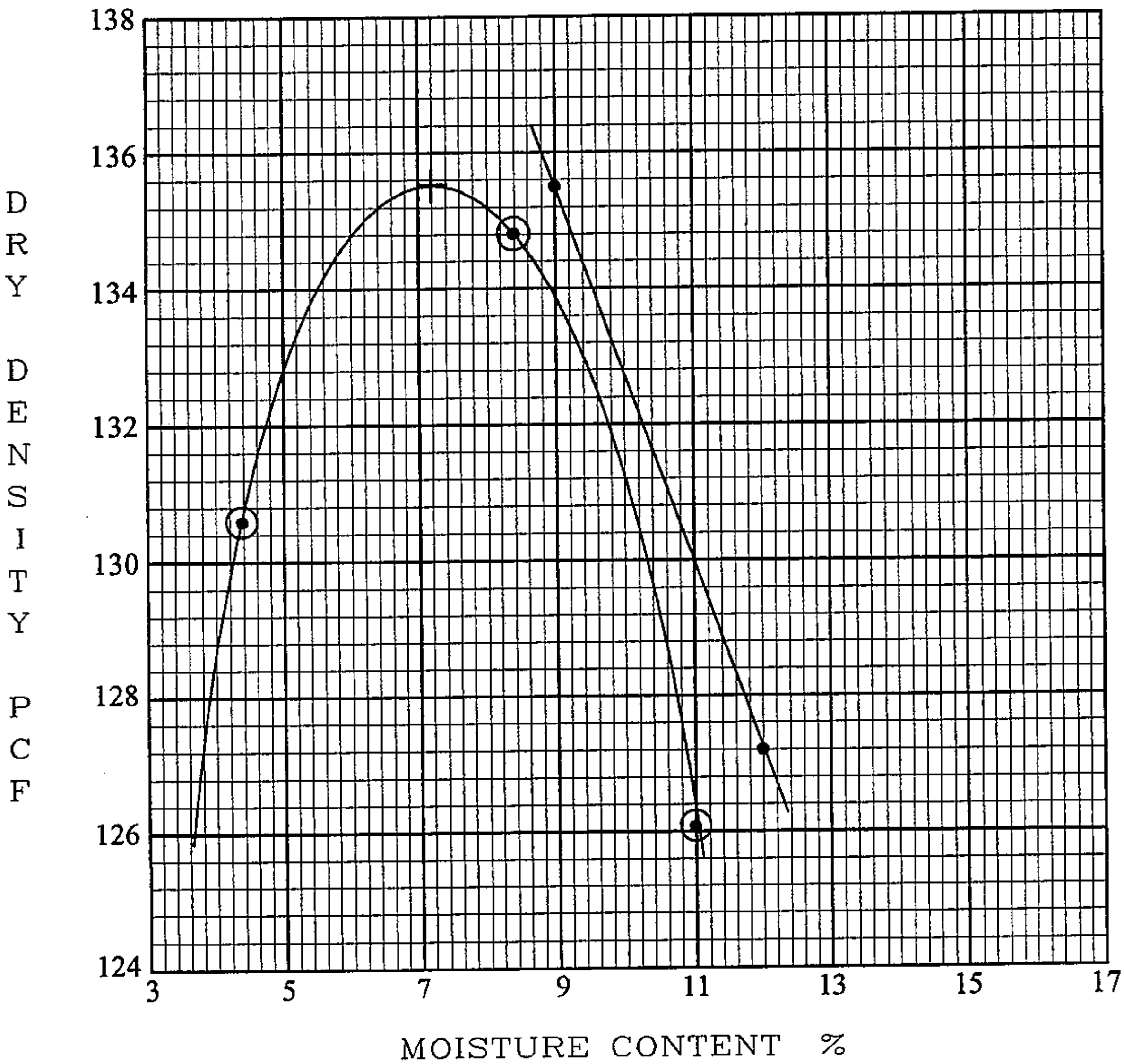
Sample # BF1-92 Backfill Location ______

SOIL CLASSIFICATION SC Clayey sand with gravel

Maximum Dry Density 135.5 pcf Optimum Moisture Content 7.2 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve 2.70 Specific Gravity



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TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 7/18/92

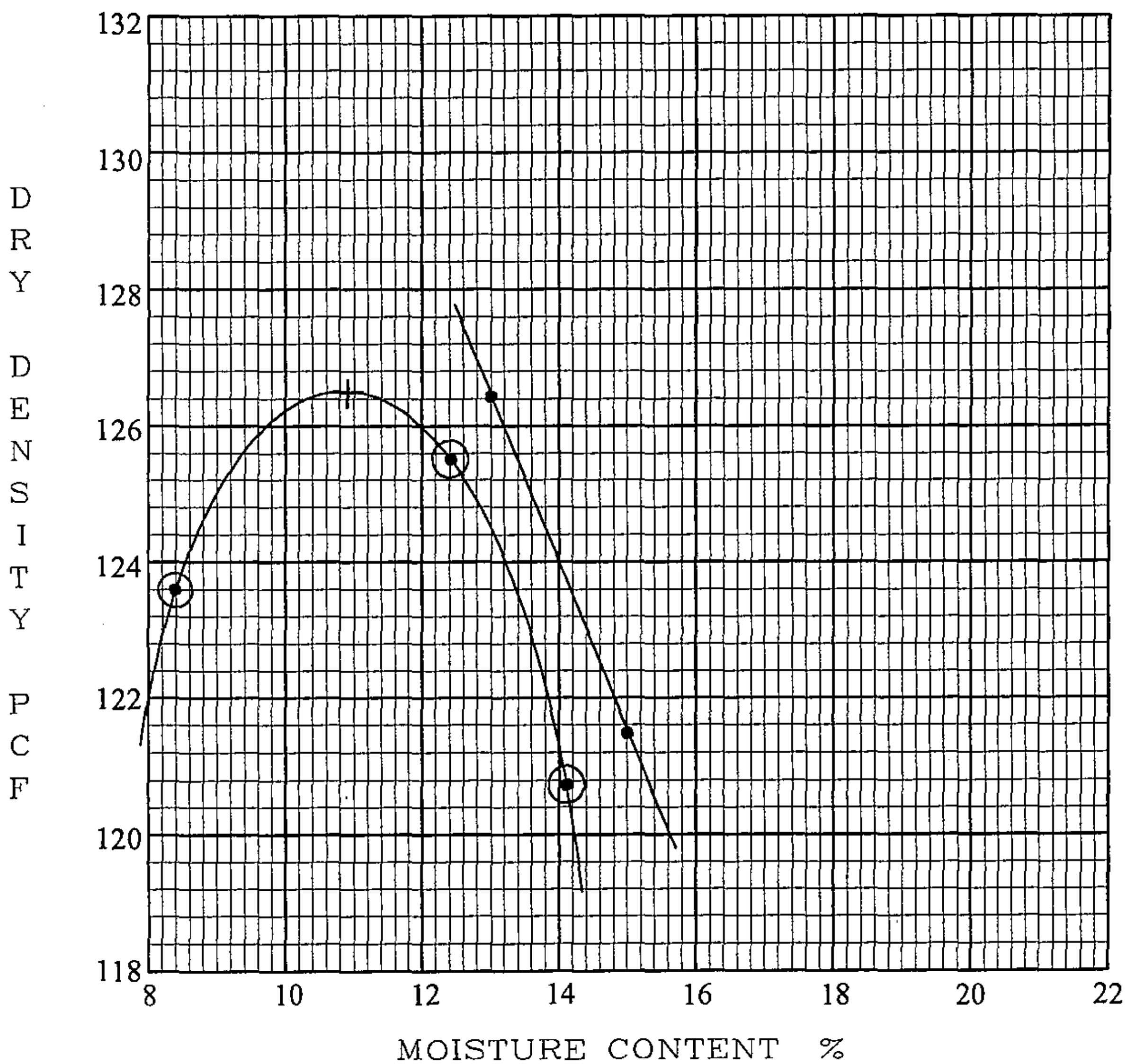
Sample # RS6-92, Rail Spur Fill #1 Location N42400, E40200

SOIL CLASSIFICATION SP Poorly graded sand with gravel

Maximum Dry Density 126.5 pcf Optimum Moisture Content 10.9 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve 2.75 Specific Gravity



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100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 7/20/92

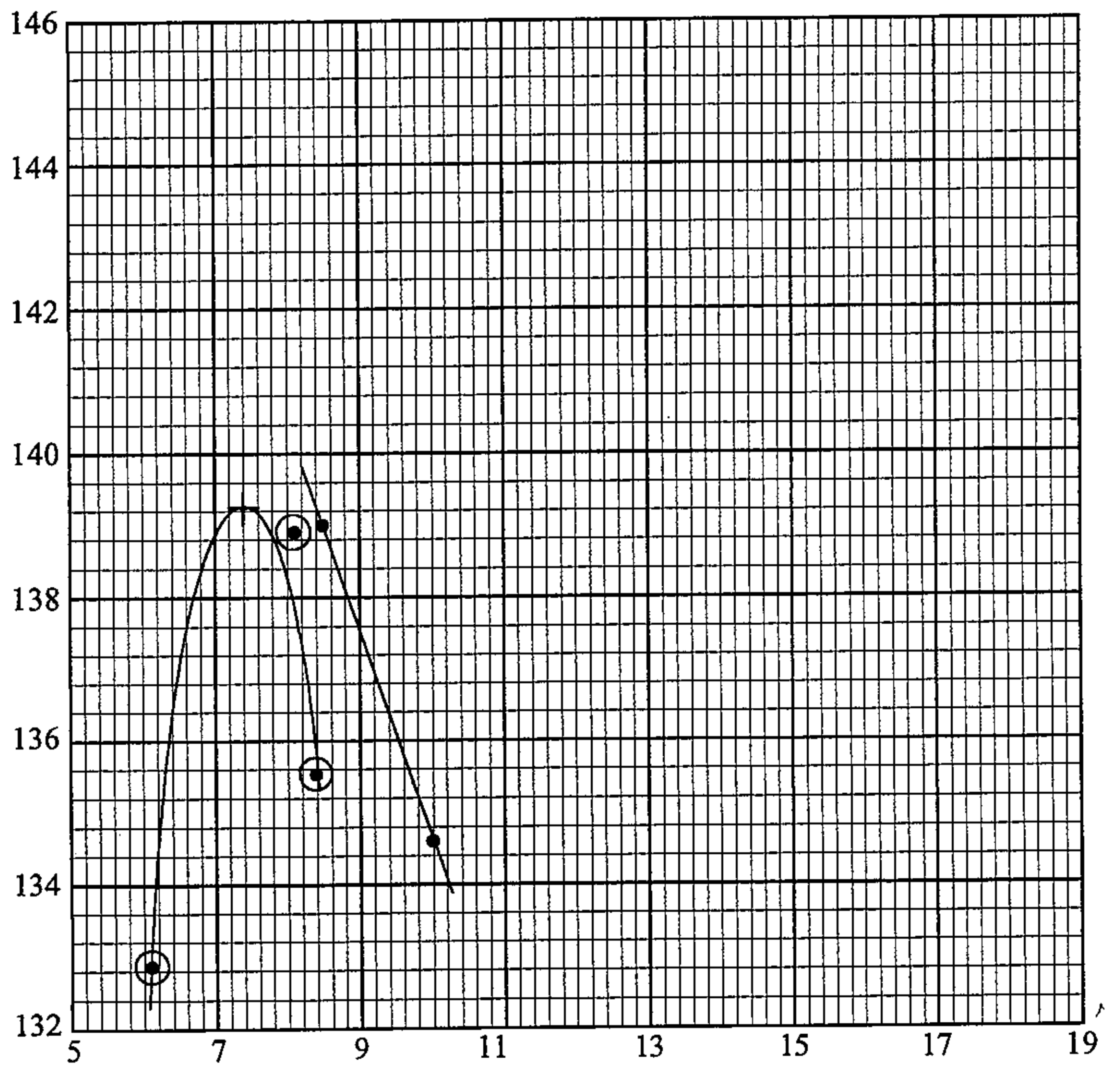
Sample # RS7-92 Rail Spur Fill Location ______

SOIL CLASSIFICATION SP Poorly graded sand with gravel

Maximum Dry Density 139.3 pcf Optimum Moisture Content 7.4 %

Test Method: ASTM D-1557 Method: A. C. or D

Zero Airvoids Curve 2.75 Specific Gravity



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TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 8/26/92

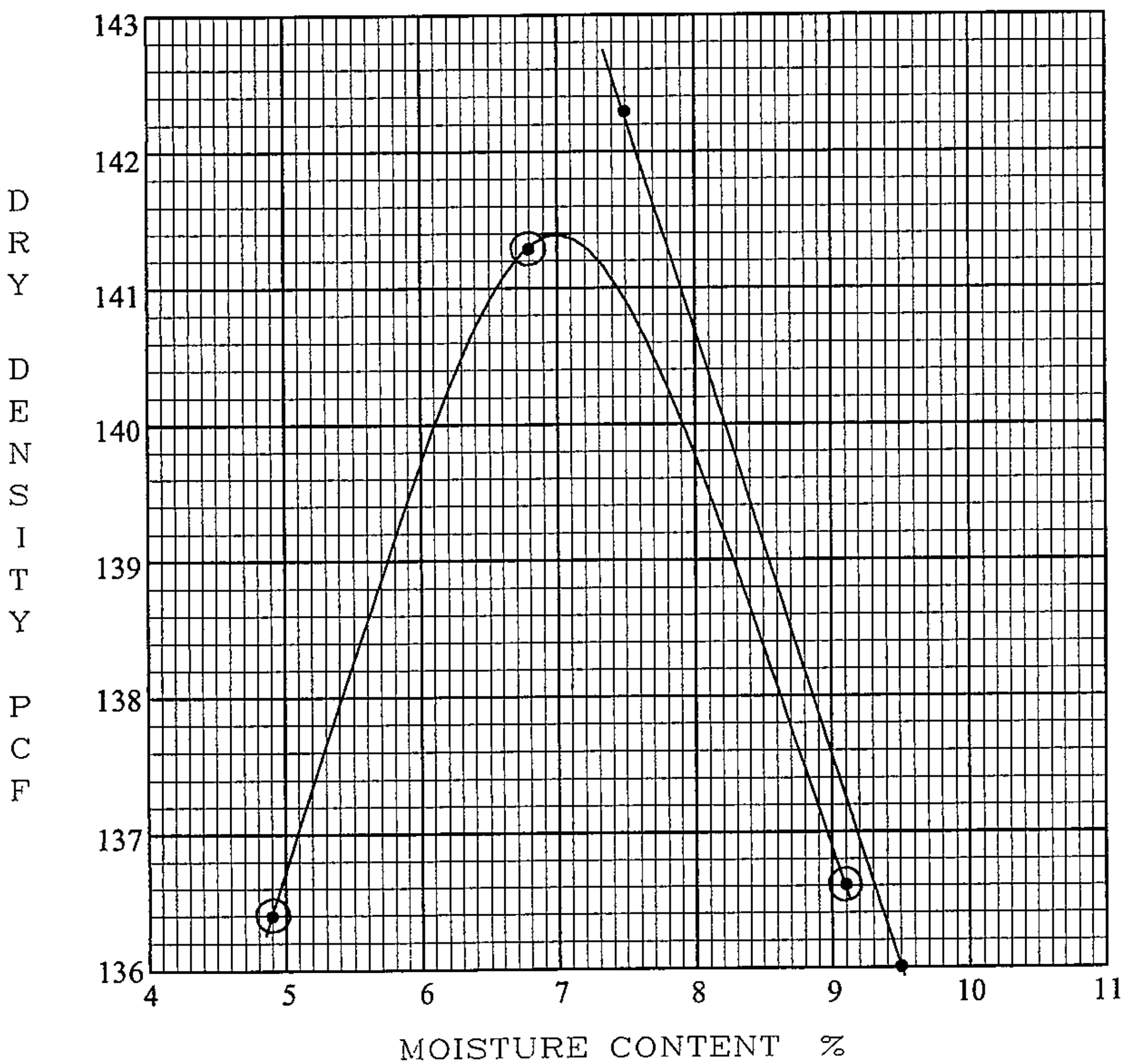
Sample # BM2-92, Borrow Material #2 Location N41750, E39700

SOIL CLASSIFICATION SP-SM Poorly graded sand with silt & gravel

Maximum Dry Density 141.4 pcf Optimum Moisture Content 7.0 %

Test Method: ASTM D-1557 Method: A. C. or D

Zero Airvoids Curve 2.75 Specific Gravity



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TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4"

% Gravel

Project # CS91120 Date: 8/14/92

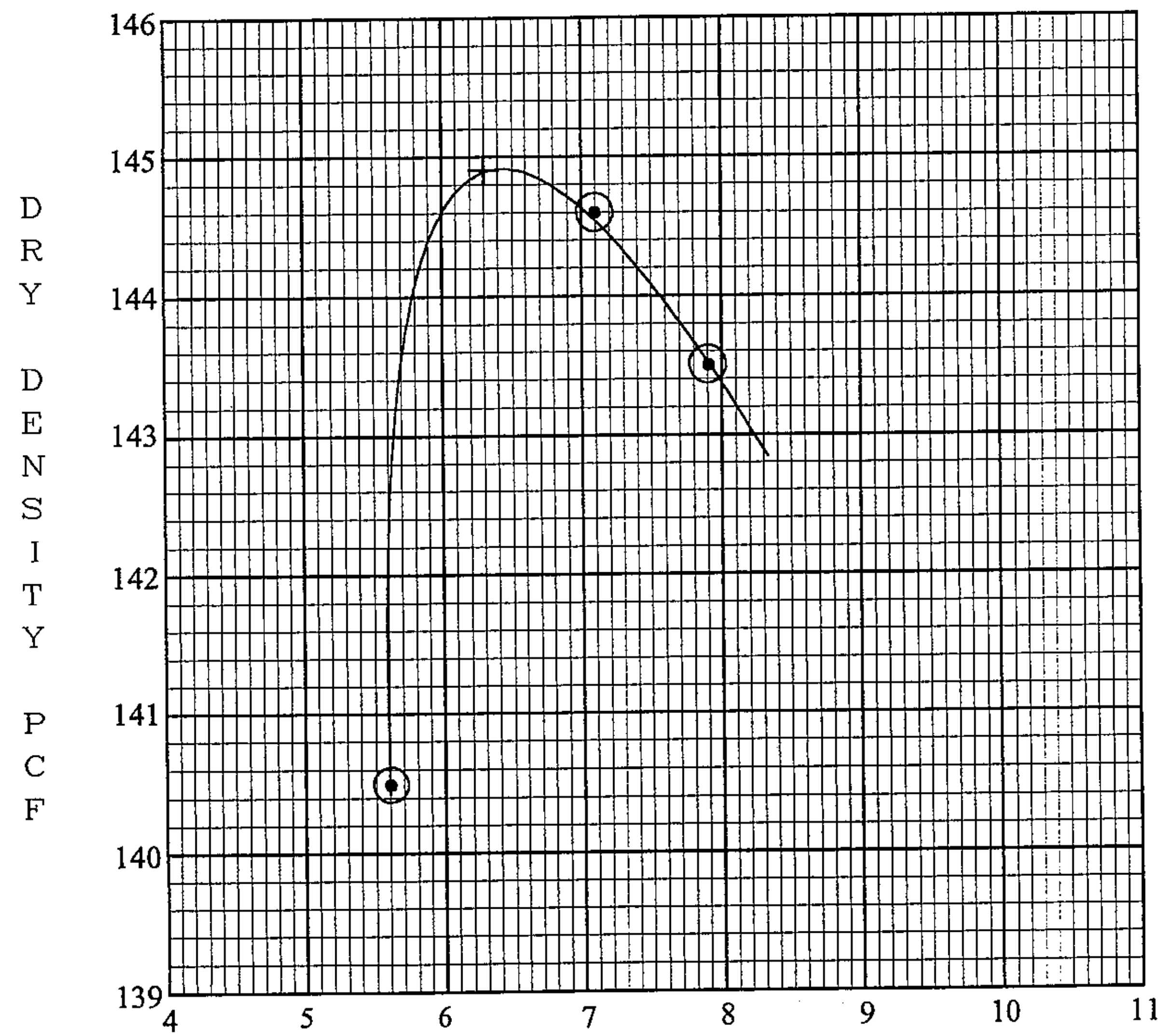
Sample # RS12-92, Sub Ballast #1 Location Stockpile

SOIL CLASSIFICATION GP Poorly graded gravel with sand

Maximum Dry Density 144.9 pcf Optimum Moisture Content 6.4 %

Test Method: ASTM D-1557 Method: A. C. or D

Zero Airvoids Curve N/A Specific Gravity



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% R 3/4"

% Gravel

Project # CS91120 Date: 8/27/92

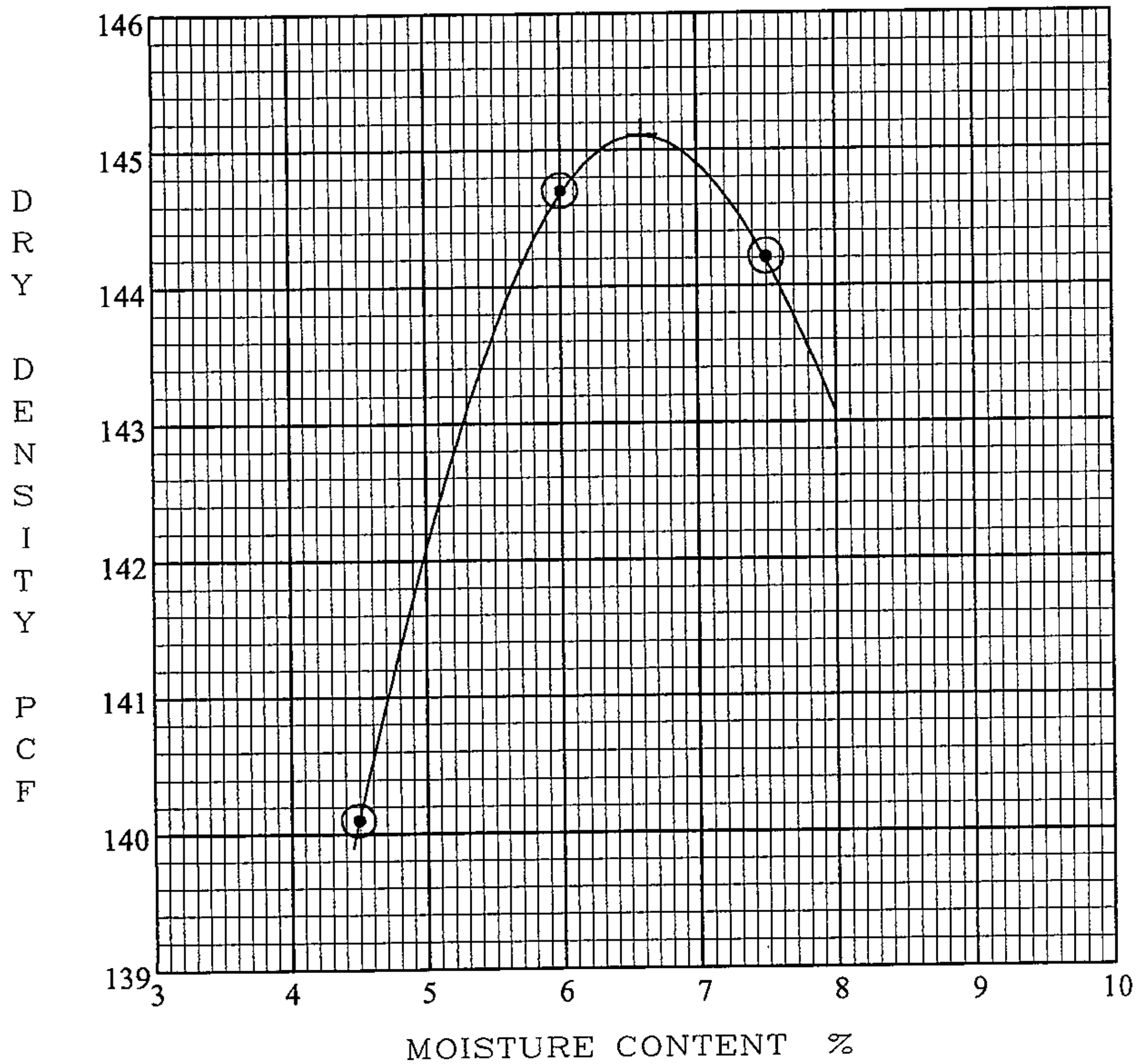
Sample # RS15-92, Sub Ballast #2 Location Station 48+00 to Station 18+00

SOIL CLASSIFICATION GP Poorly graded gravel with sand

Maximum Dry Density 145.1 pcf Optimum Moisture Content 6.6 %

Test Method: ASTM D-1557 Method: A. C. or D

Zero Airvoids Curve N/A Specific Gravity



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% R 3/4" 31.2

% Gravel 57.6

Project # CS91120 Date: 11/25/92

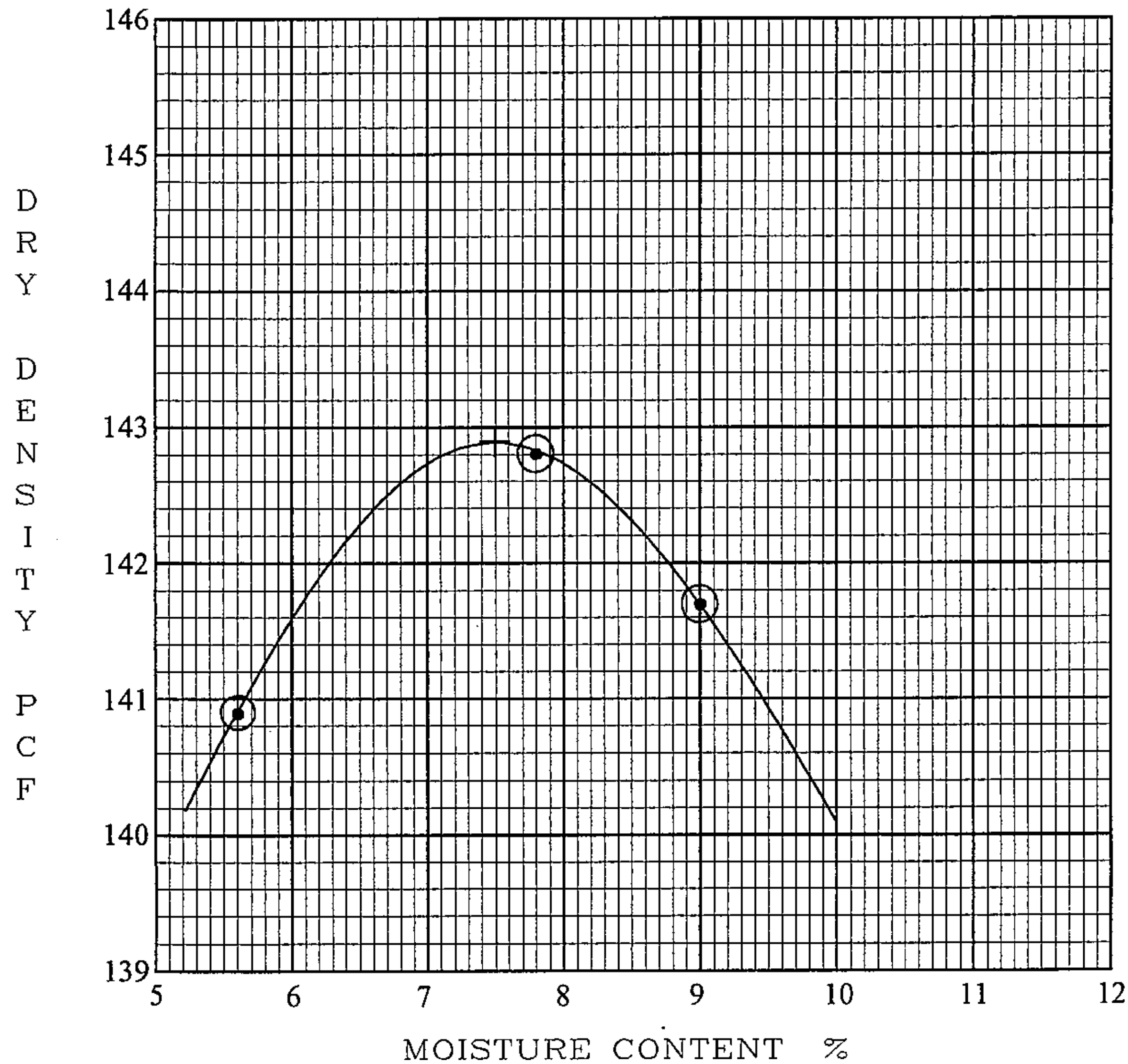
Sample # SW4-92, & Dead Man Walls #4 Backfill Material for Diaphragm Location

SOIL CLASSIFICATION GP Poorly graded gravel with sand

Maximum Dry Density 142.9 pcf Optimum Moisture Content 7.5 %

Test Method: ASTM D-1557 Method: A. C. or D

Zero Airvoids Curve N/A Specific Gravity



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PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 7/21/92

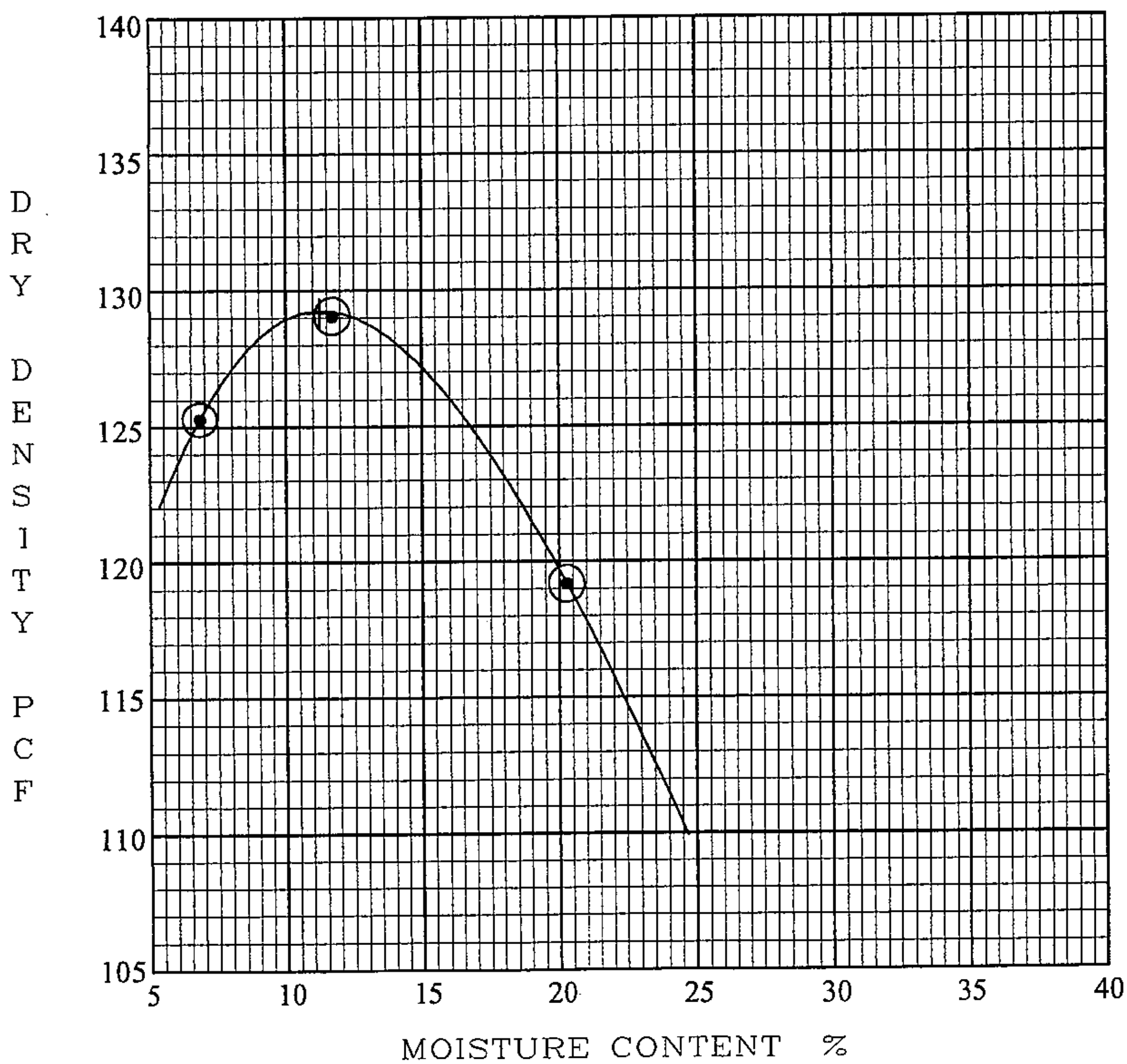
Sample # RS8-92, Rail Spur Fill #3 Location ______

SOIL CLASSIFICATION SP Poorly graded sand with gravel

Maximum Dry Density 129.2 pcf Optimum Moisture Content 11.3 %

Test Method: ASTM D-1557 Method: A. C. or D

Zero Airvoids Curve N/A Specific Gravity



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% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 7/22/92

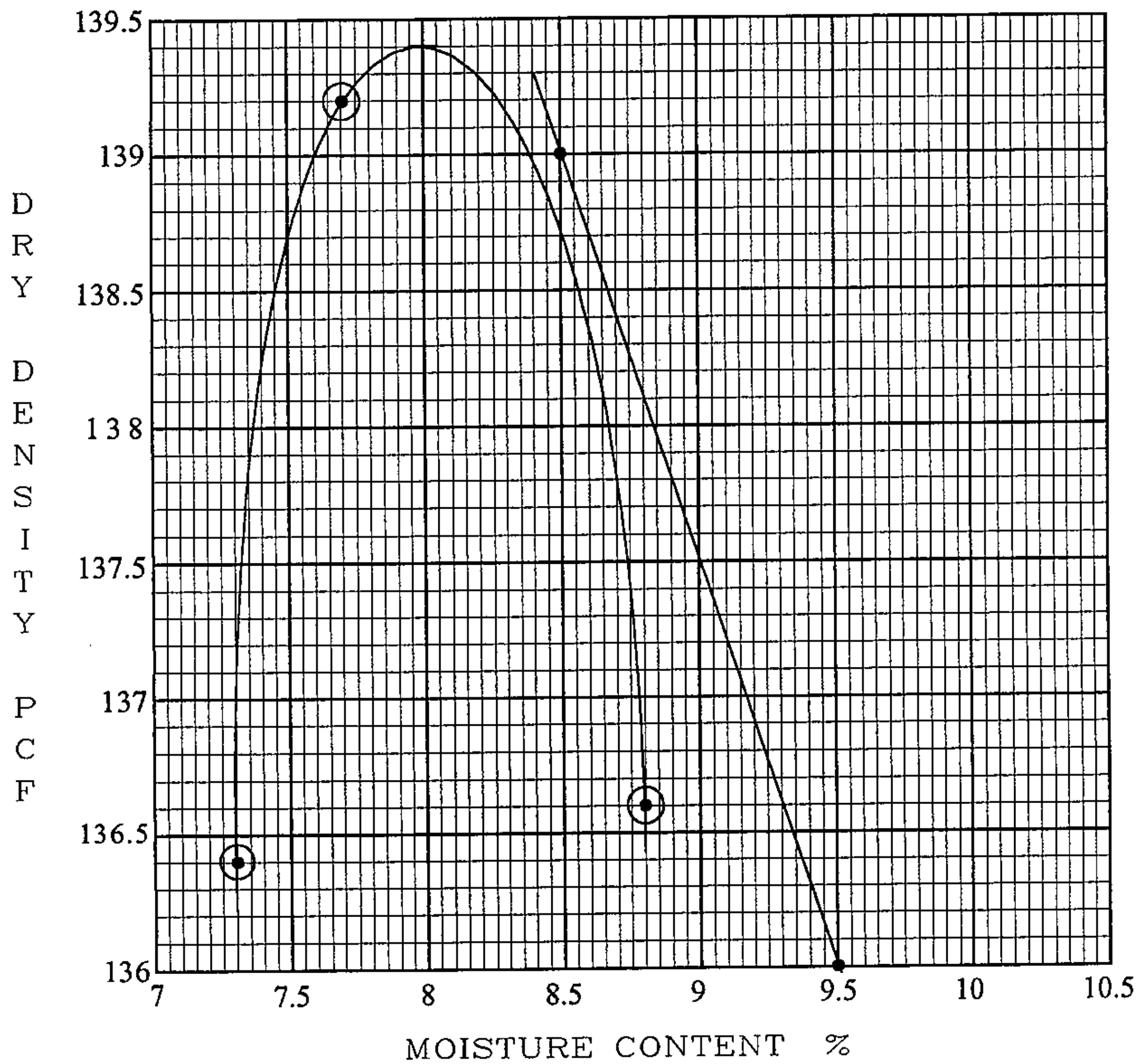
Sample # RS9-92, Rail Spur Fill #4 Location N42300, E40200

SOIL CLASSIFICATION SP Poorly graded sand with gravel

Maximum Dry Density 139.4 pcf Optimum Moisture Content 8.0 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve 2.75 Specific Gravity



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PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 7/24/92

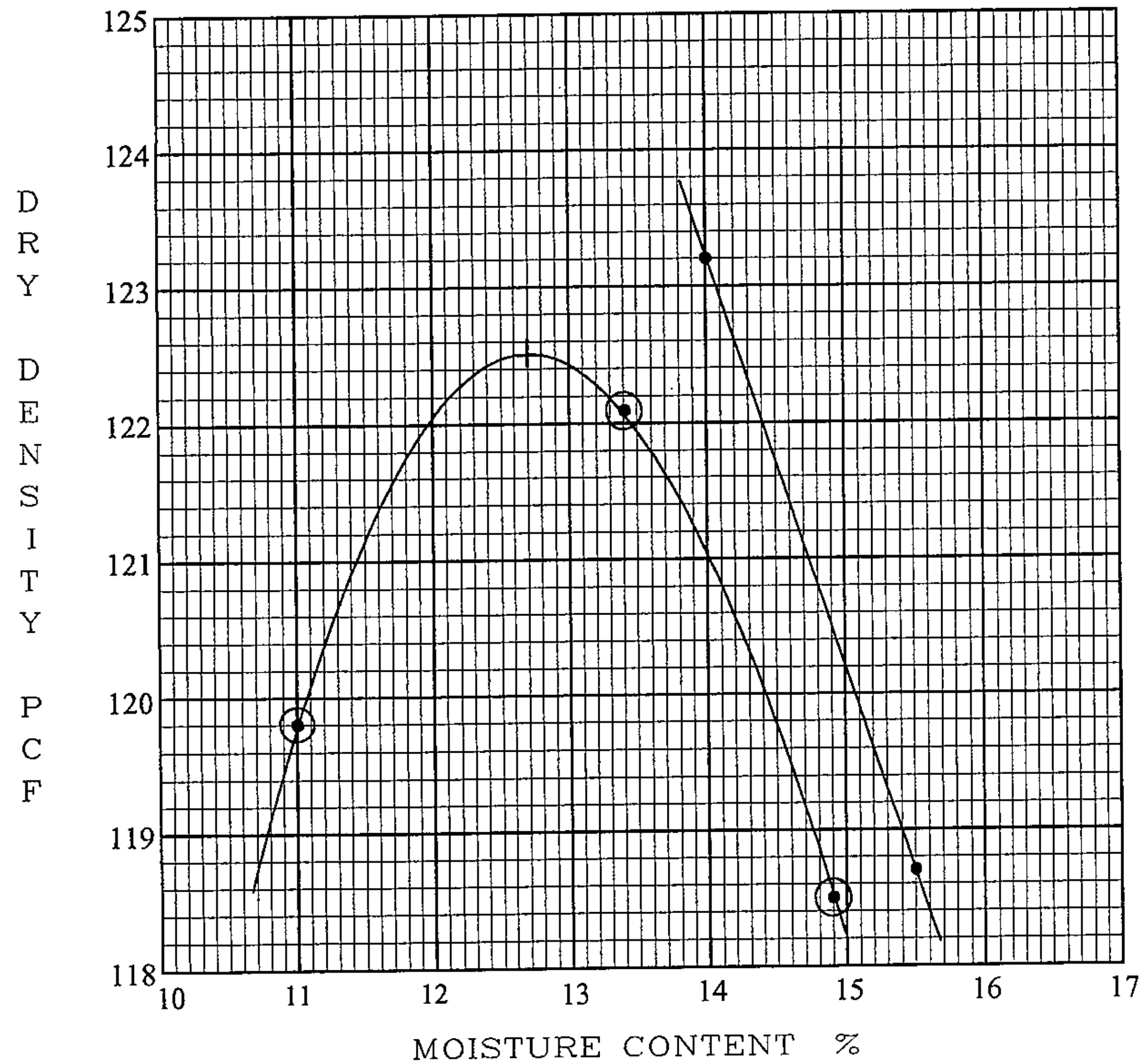
Sample # RS10-92, Rail Spur Fill #5 Location N41700, E40000

SOIL CLASSIFICATION SP Poorly graded sand with gravel

Maximum Dry Density 122.5 pcf Optimum Moisture Content 12.7 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve 2.70 Specific Gravity



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TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ______

% Gravel ______

Project # CS91120 Date: 9/28/92

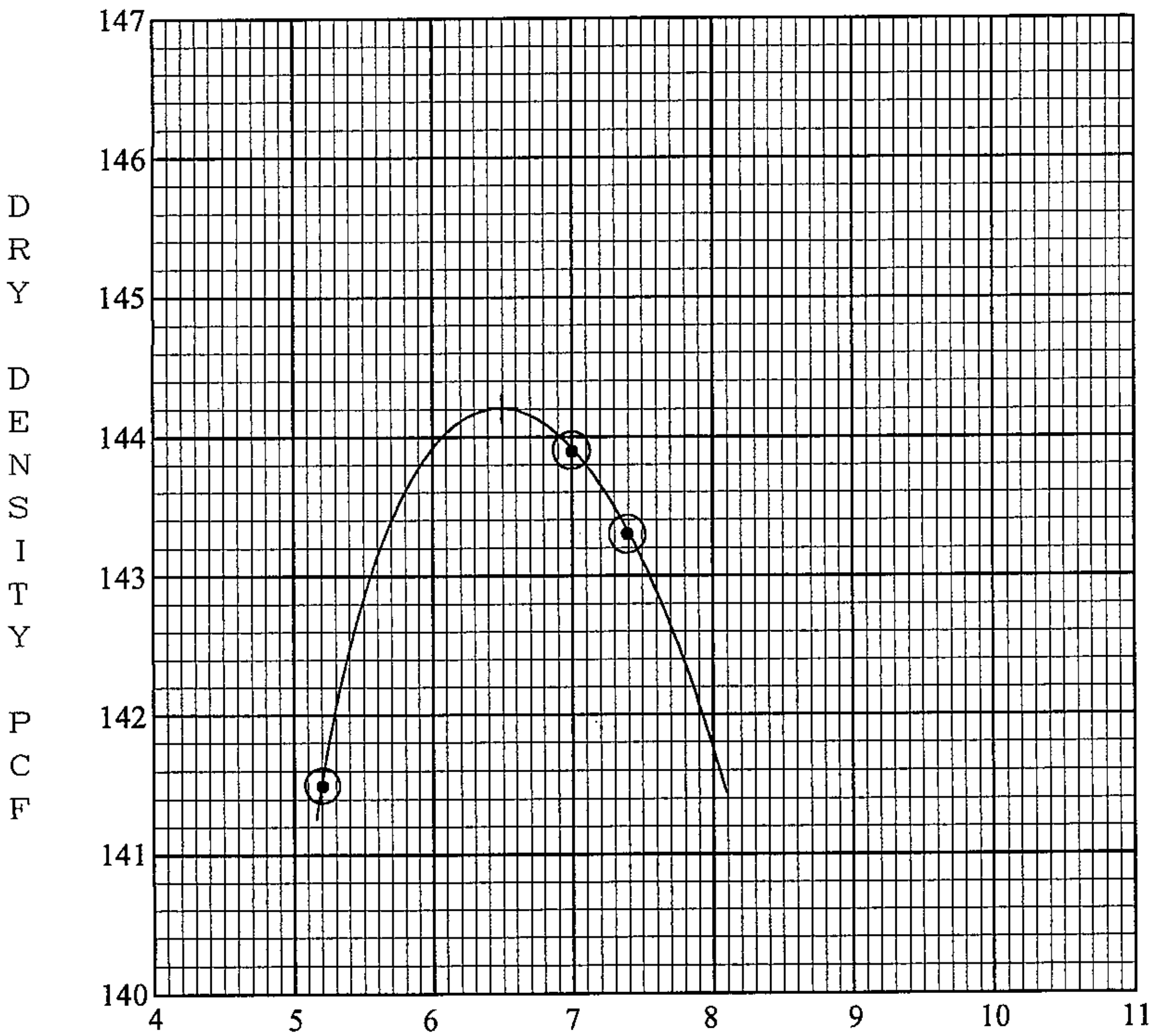
Sample # RS17-92, Sub Ballast #4 Location Station 16+0 to Station 7+0

SOIL CLASSIFICATION GP Poorly graded gravel with sand

Maximum Dry Density 144.2 pcf Optimum Moisture Content 6.5 %

Test Method: ASTM D-1557 Method: A, C, or D

Zero Airvoids Curve N/A Specific Gravity



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TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ____

% Gravel ____

Project # CS91120 Date: 7/21/92

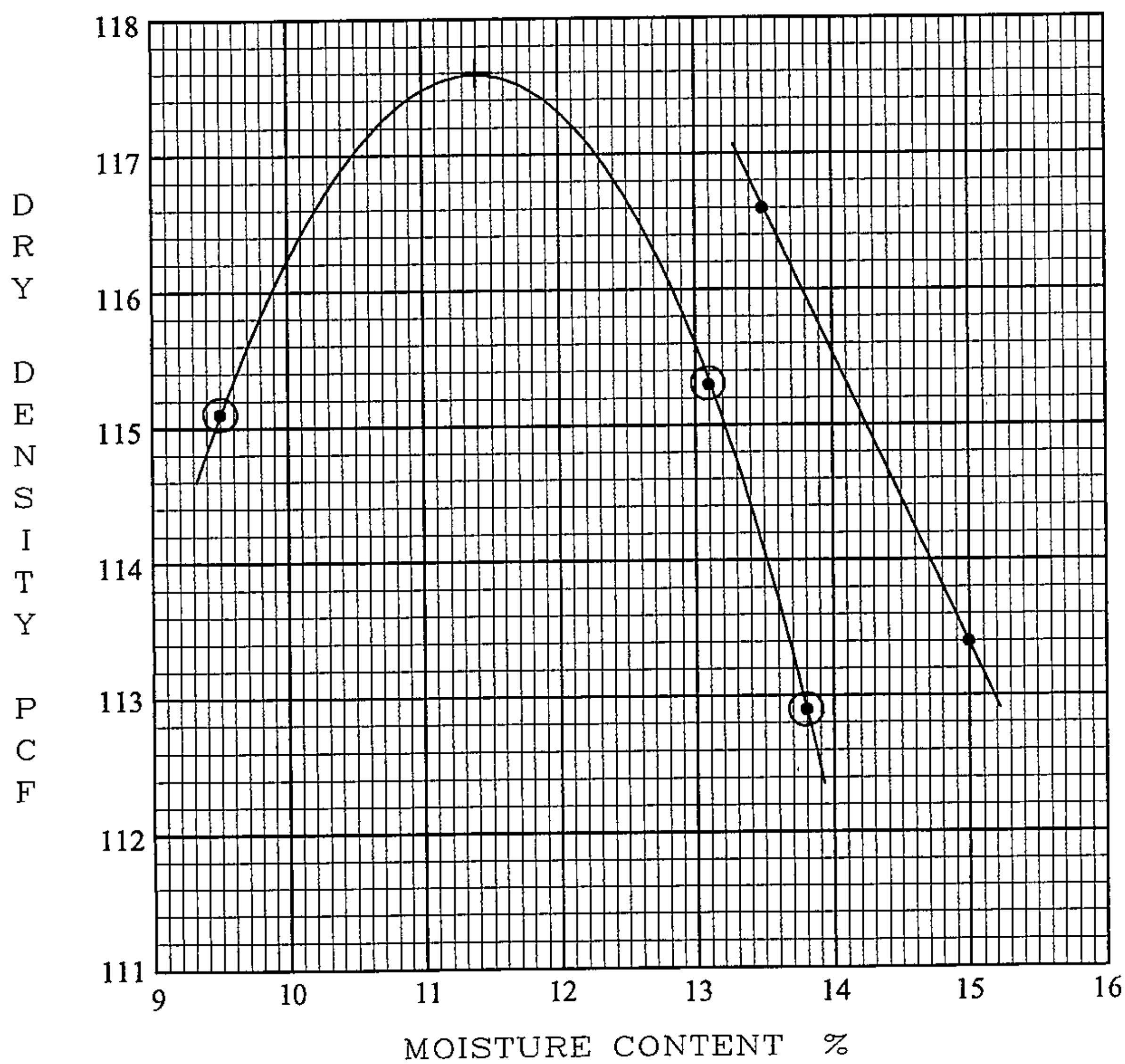
Sample # UM5-92 Underliner Material Location N40500, E40300

SOIL CLASSIFICATION ML Silt with sand, Brown

Maximum Dry Density 117.6 pcf Optimum Moisture Content 11.4 %

Test Method: ASTM D-1557 Method: A C, or D

Zero Airvoids Curve 2.50 Specific Gravity



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TELEPHONE 715-234-7008

PROJECT FLAMBEAU MINING COMPANY

% R 3/4" ____________

% Gravel ____________

Project # CS91120 Date: 8/11/92

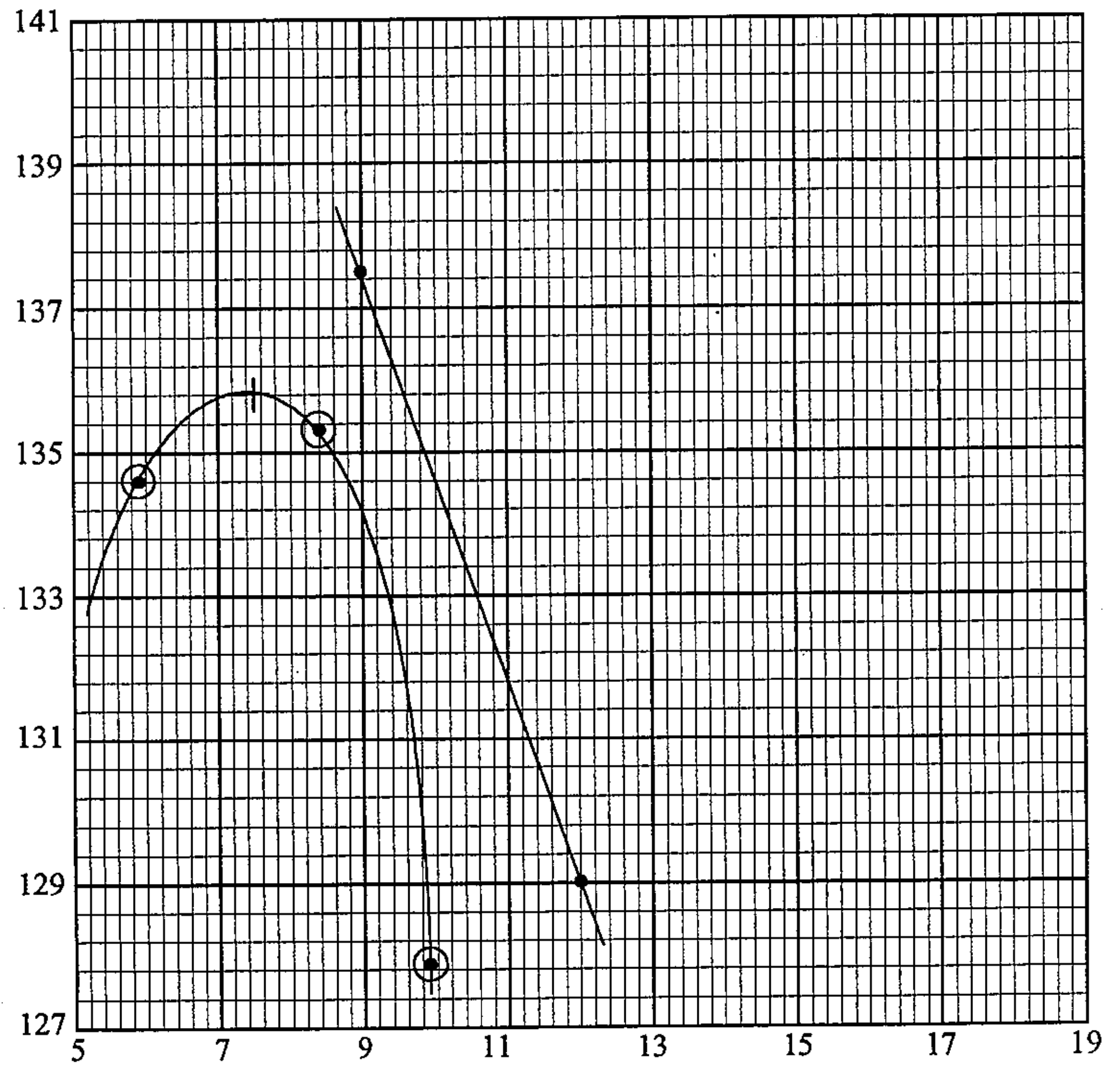
Sample # BF2-92 Backfill Location N39500, E39700

SOIL CLASSIFICATION SC-SM Silty, Clayey sand with gravel

Maximum Dry Density 135.8 pcf Optimum Moisture Content 7.5 %

Test Method: ASTM D-1557 Method: A. C or D

Zero Airvoids Curve 2.75 Specific Gravity



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PROJECT FLAMBEAU MINING COMPANY

% R 3/4"

% Gravel

Project # CS91120 Date: 7/9/92

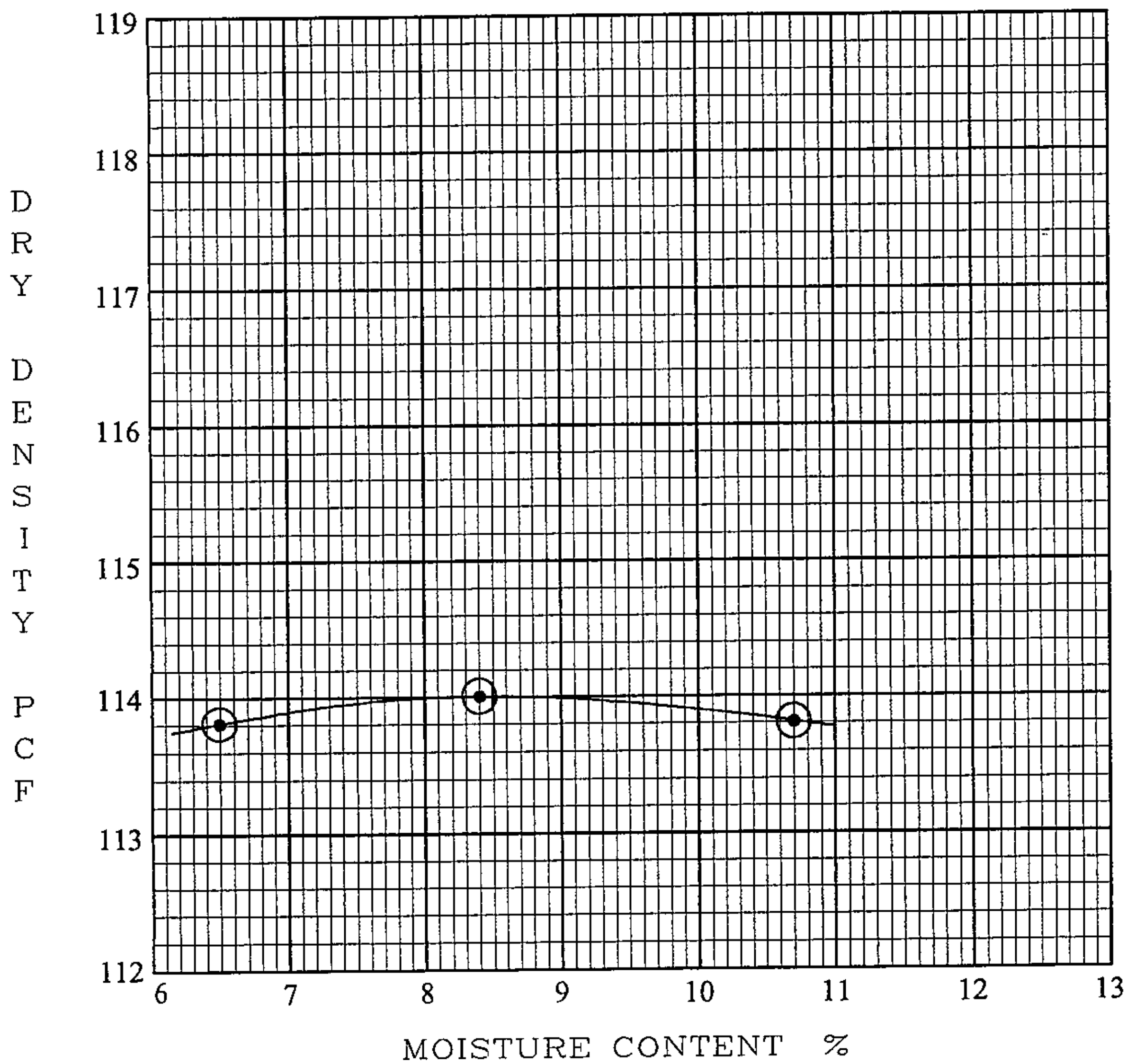
Sample # UM4-92 Underliner Material Location N40500, E40500

SOIL CLASSIFICATION ML Silt with sand, Brown

Maximum Dry Density 114.0 pcf Optimum Moisture Content 8.5 %

Test Method: ASTM D-1557 Method: A C, or D

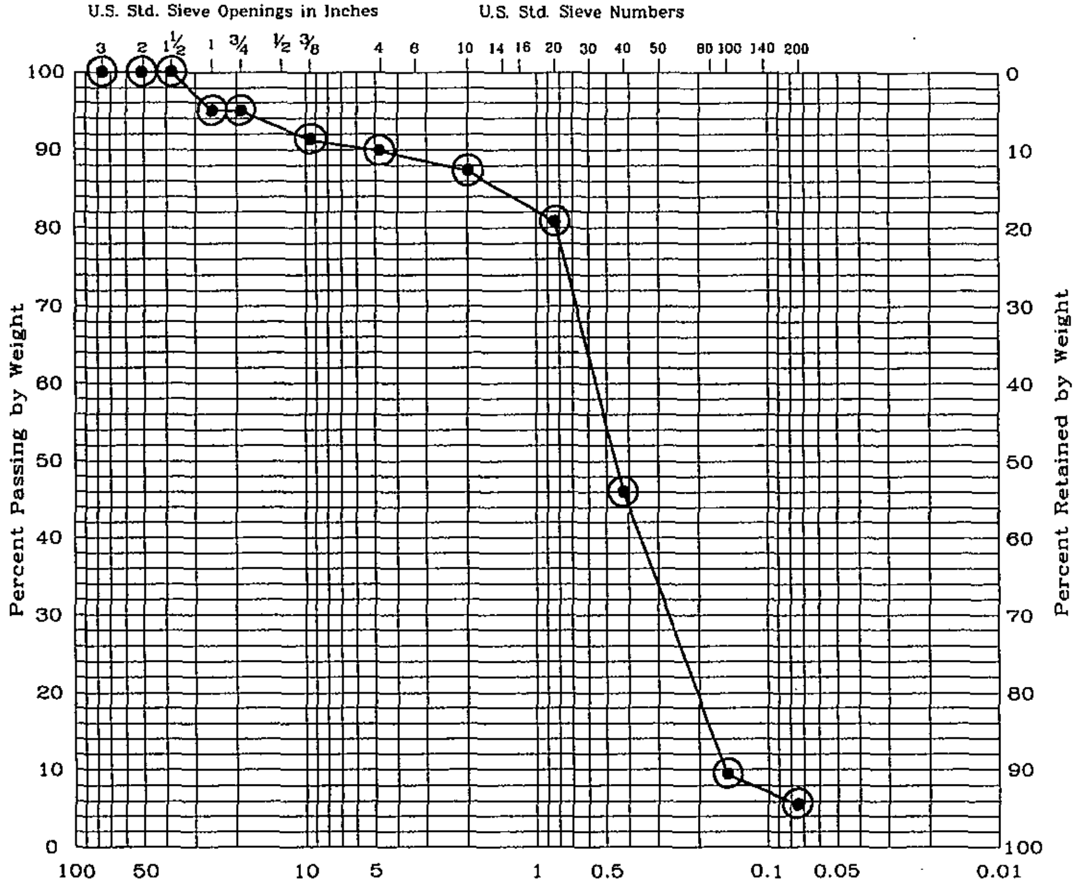
Zero Airvoids Curve N/A Specific Gravity



COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

SAMPLE # P-1
DATE 8/1/91
PROJECT FLAMBEAU MINE
PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
5 %	5 %	3 %	41 %	40.4 %	5.6 %

Sieve	% Passing	Spec.
3"	100	
2"	100	
1-1/2"	100	
1"	95	
3/4"	95	
3/8"	92	
#4	90	
#10	87	
#20	81	
#40	46	
#100	9	
#200	5.6	

Classification SP-SM Poorly graded sand with silt

Remarks

D_{10} = .16
D_{15} = .22
D_{30} = .39
D_{60} = .58
D_{85} = 1.7

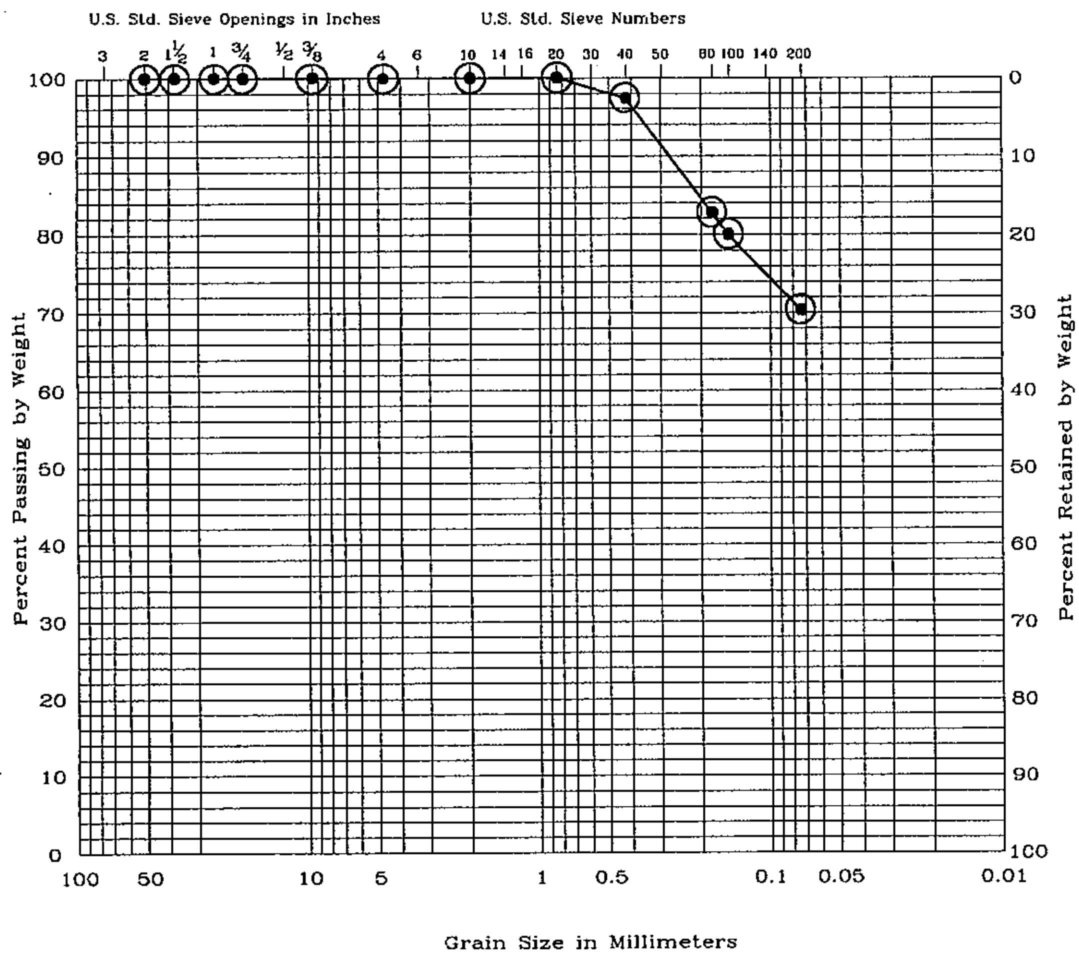
$$C_u = \frac{D_{60}}{D_{10}} = \frac{(.58)}{(.16)} = 3.6$$

$$C_c = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.39)^2}{(.16)(.58)} = 1.6$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

B141

B142



SAMPLE # P-11

DATE 8/12/91

PROJECT FLAMBEAU MINE

PROJECT # CS 91120

Sieve	% Passing	Spec.
2"	100	
1-1/2"	100	
1"	100	
3/4"	100	
3/8"	100	
#4	100	
#10	100	
#20	100	
#40	97	
#80	83	
#100	80	
#200	70.5	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
0 %	0 %	0 %	3 %	26.5 %	70.5 %

Classification SM Silty sand

Remarks

D_{10} =

D_{15} =

D_{30} =

D_{60} =

D_{85} =

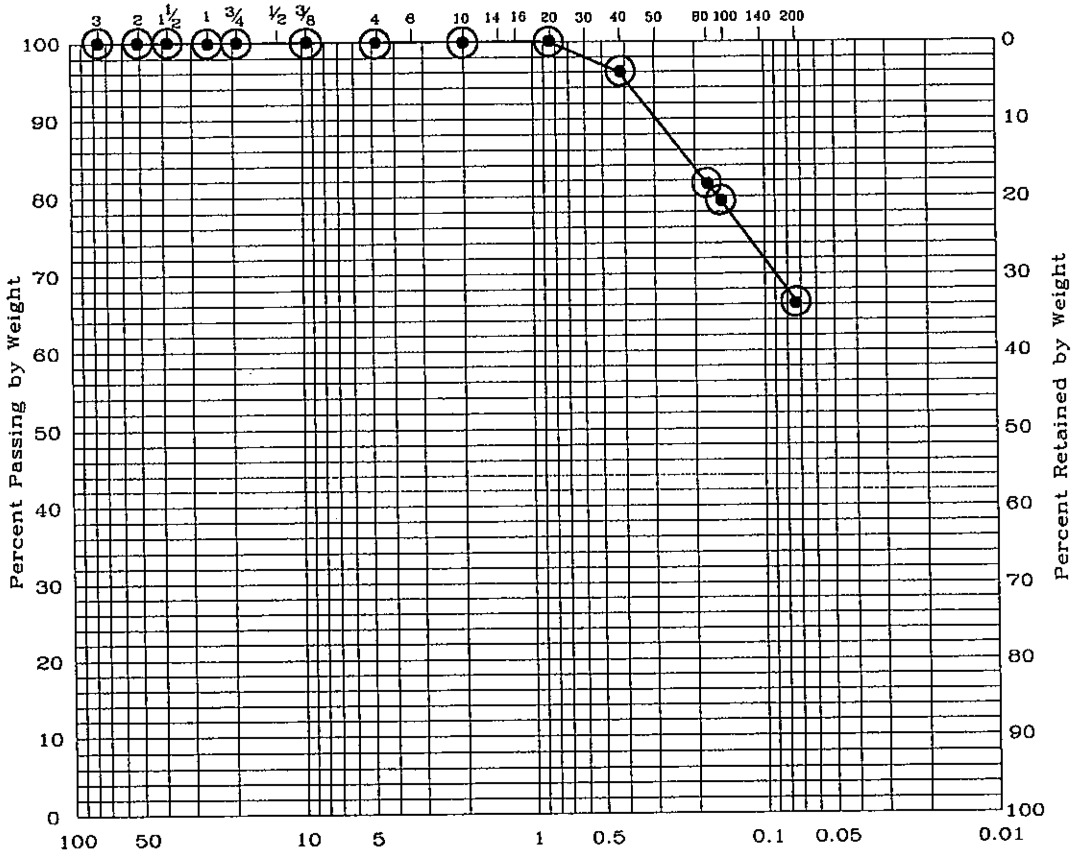
$C_U = \frac{D_{60}}{D_{10}} = \frac{(\quad)}{(\quad)} =$

$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(\quad)^2}{(\quad)(\quad)} =$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

SAMPLE # P-12
DATE 8/14/91
PROJECT FLAMBEAU MINE
PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



B143

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
5 %	5 %	3 %	41 %	40.4 %	5.6 %

Sieve	% Passing	Spec.
2"	100	
1-1/2"	100	
1"	100	
3/4"	100	
3/8"	100	
#4	100	
#10	100	
#20	100	
#40	96	
#80	82	
#100	79	
#200	66.3	

Classification SM Silty sand

Remarks

D_{10} = (est) .009
D_{15} = (est) .012
D_{30} = (est) .018
D_{60} = (est) .06
D_{85} = .23

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(.06)}{(.009)} = 6.7$$

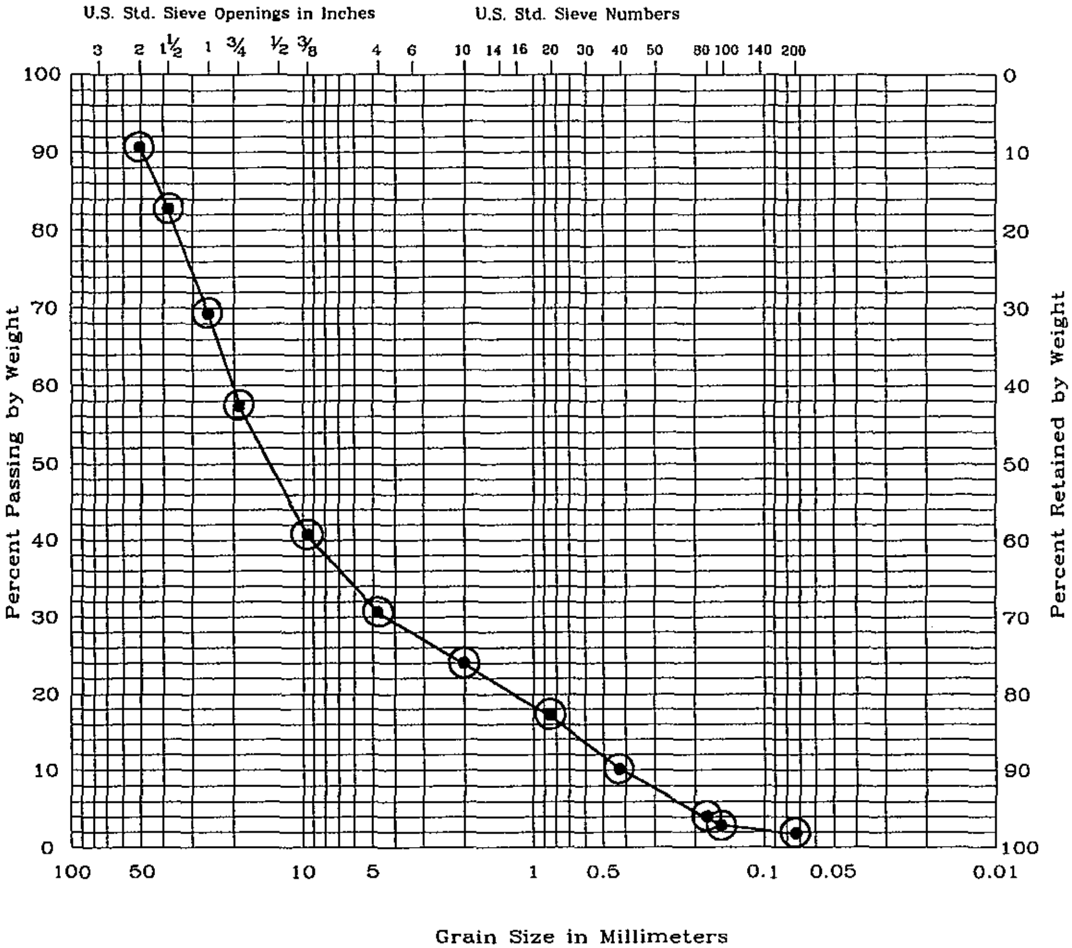
$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.018)^2}{(.06)(.009)} = .6$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

B144

MECHANICAL ANALYSIS GRAPH

SAMPLE # P-16
DATE 8/20/91
PROJECT FLAMBEAU MINE
PROJECT # CS 91120



Sieve	% Passing	Spec.
2"	91	
1-1/2"	83	
1"	69	
3/4"	57	
3/8"	41	
#4	31	
#10	24	
#20	17	
#40	10	
#80	4	
#100	3	
#200	2.2	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
43 %	26 %	7 %	14 %	7.8 %	2.2 %

Classification
GW Well-graded gravel

Remarks

D_{10} = .45
D_{15} = .70
D_{30} = 4.2
D_{60} = 22
D_{85} = 43

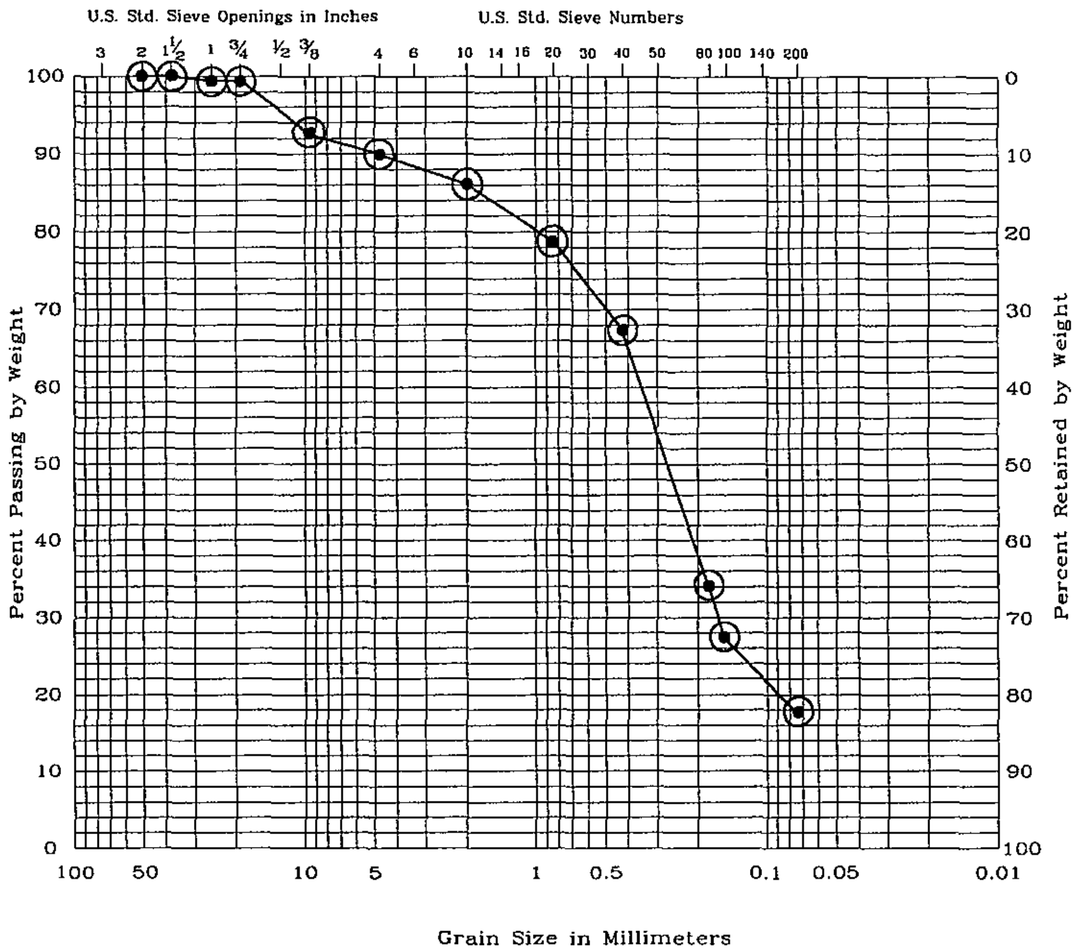
$$C_U = \frac{D_{60}}{D_{10}} = \frac{(22)}{(.45)} = 48.9$$

$$C_c = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(4.2)^2}{(.45)(22)} = 1.8$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

SAMPLE # P-26
DATE 8/26/91
PROJECT FLAMBEAU MINE
PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



B145

Sieve	% Passing	Spec.
2"	100	
1-1/2"	100	
1"	99	
3/4"	99	
3/8"	93	
#4	90	
#10	86	
#20	78	
#40	67	
#80	34	
#100	27	
#200	17.3	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
1 %	9 %	4 %	19 %	49.7 %	17.3 %

Classification
SM Silty sand

Remarks

D_{10} = (est) .029
D_{15} = (est) .055
D_{30} = .18
D_{60} = .39
D_{85} = 2.0

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(.39)}{(.029)} = 13.5$$

$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.18)^2}{(.029)(.39)} = 2.9$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

B146

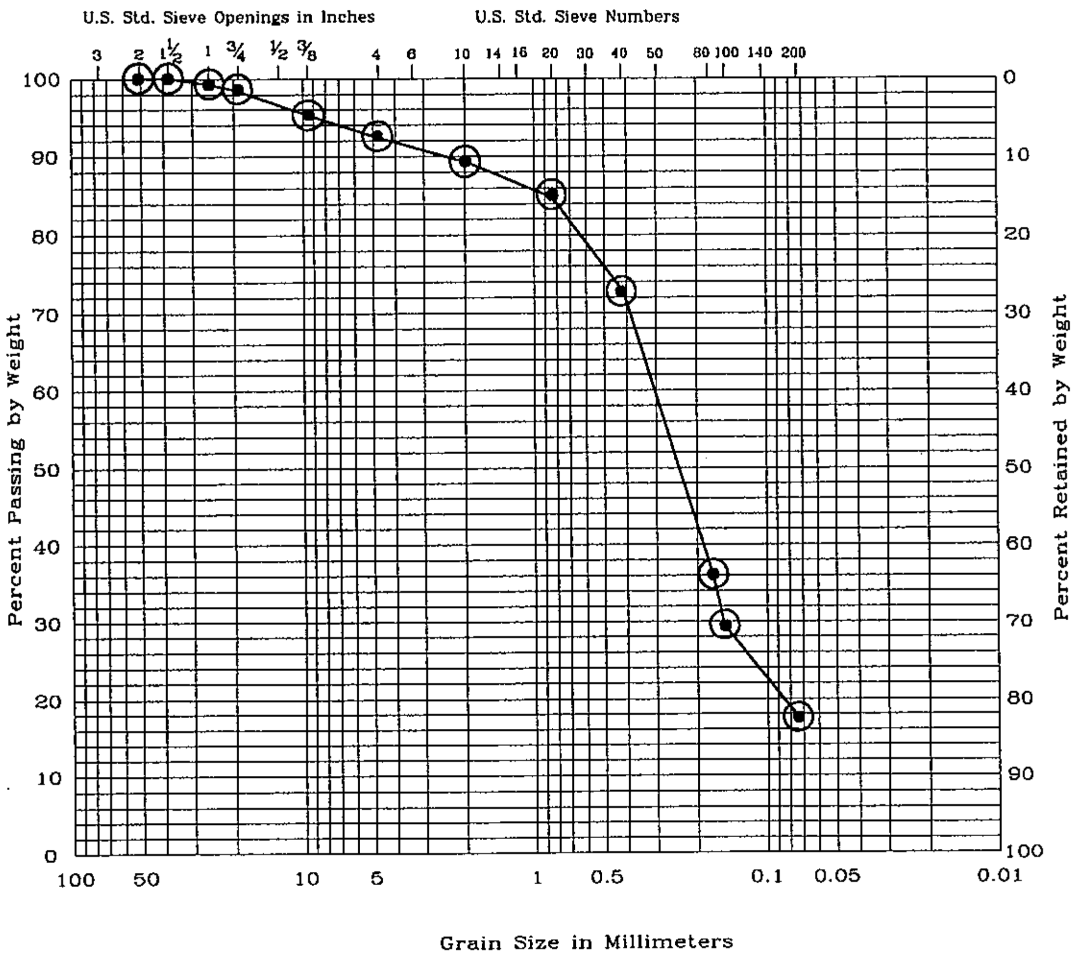
SAMPLE # P-29

DATE 8/30/91

PROJECT FLAMBEAU MINE

PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Sieve	% Passing	Spec.
2"	100	
1-1/2"	100	
1"	99	
3/4"	98	
3/8"	96	
#4	93	
#10	89	
#20	85	
#40	73	
#80	36	
#100	29	
#200	17.2	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
2 %	6 %	4 %	16 %	55.8 %	17.2 %

Classification SM Silty sand

Remarks

D_{10} = (est).046
D_{15} = (est).055
D_{30} = .098
D_{60} = .32
D_{85} = 1.00

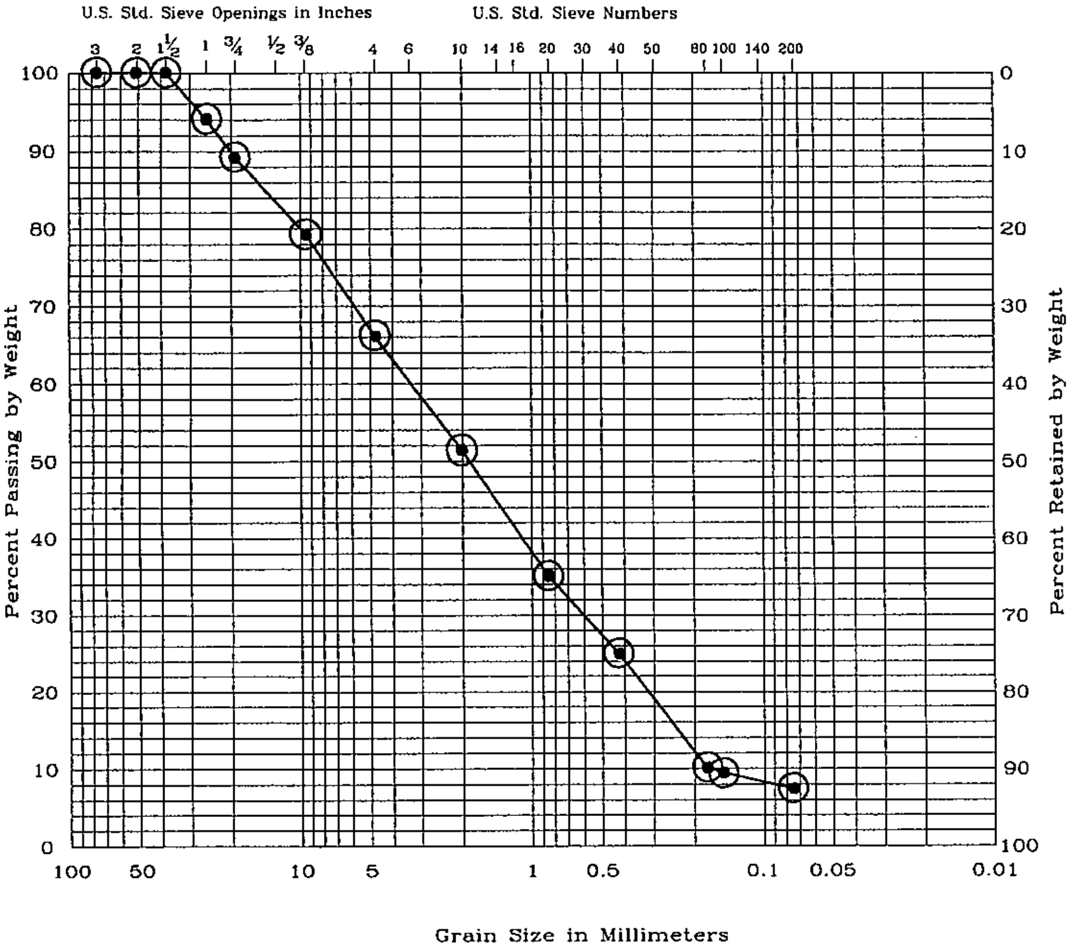
$$C_U = \frac{D_{60}}{D_{10}} = \frac{(.055)}{(.046)} = 1.2$$

$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.098)^2}{(.046)(.055)} = 3.8$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

SAMPLE # P-30
DATE 9/4/91
PROJECT FLAMBEAU MINE
PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



B147

Sieve	% Passing	Spec.
3"	100	
2"	100	
1-1/2"	100	
1"	94	
3/4"	89	
3/8"	79	
#4	66	
#10	52	
#20	35	
#40	25	
#80	10	
#100	9	
#200	7.0	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
42 %	19 %	8 %	27 %	3.4 %	.6 %

Classification SP-SM Poorly graded sand with silt & gravel

Remarks

D_{10} = .2
D_{15} = .28
D_{30} = .59
D_{60} = 3.4
D_{85} = 16

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(3.4)}{(.2)} = 17.0$$

$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.59)^2}{(.2)(3.4)} = .5$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

B148

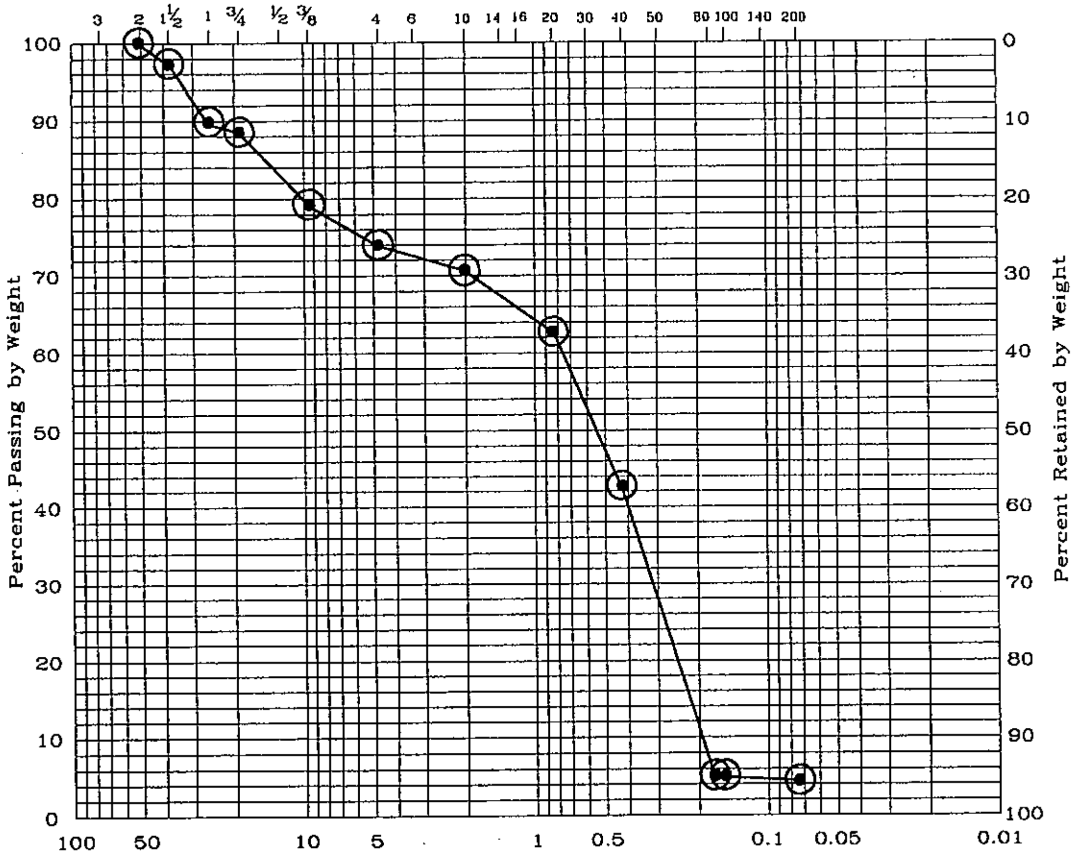
SAMPLE # SA7-92

DATE 5/21/92

PROJECT FLAMBEAU MINE

PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Grain Size in Millimeters

Sieve	% Passing	Spec.
2"	100	
1-1/2"	97	
1"	90	
3/4"	88	
3/8"	79	
#4	74	
#10	71	
#20	63	
#40	43	
#80	5	
#100	5	
#200	4.6	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
12 %	9 %	3 %	28 %	38.4 %	4.6 %

Classification SP Poorly graded sand with gravel

Remarks

D_{10} = .19
D_{15} = .23
D_{30} = .32
D_{60} = .76
D_{85} = 16

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(.76)}{(.19)} = 4.0$$

$$C_c = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.32)^2}{(.19)(.76)} = .71$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

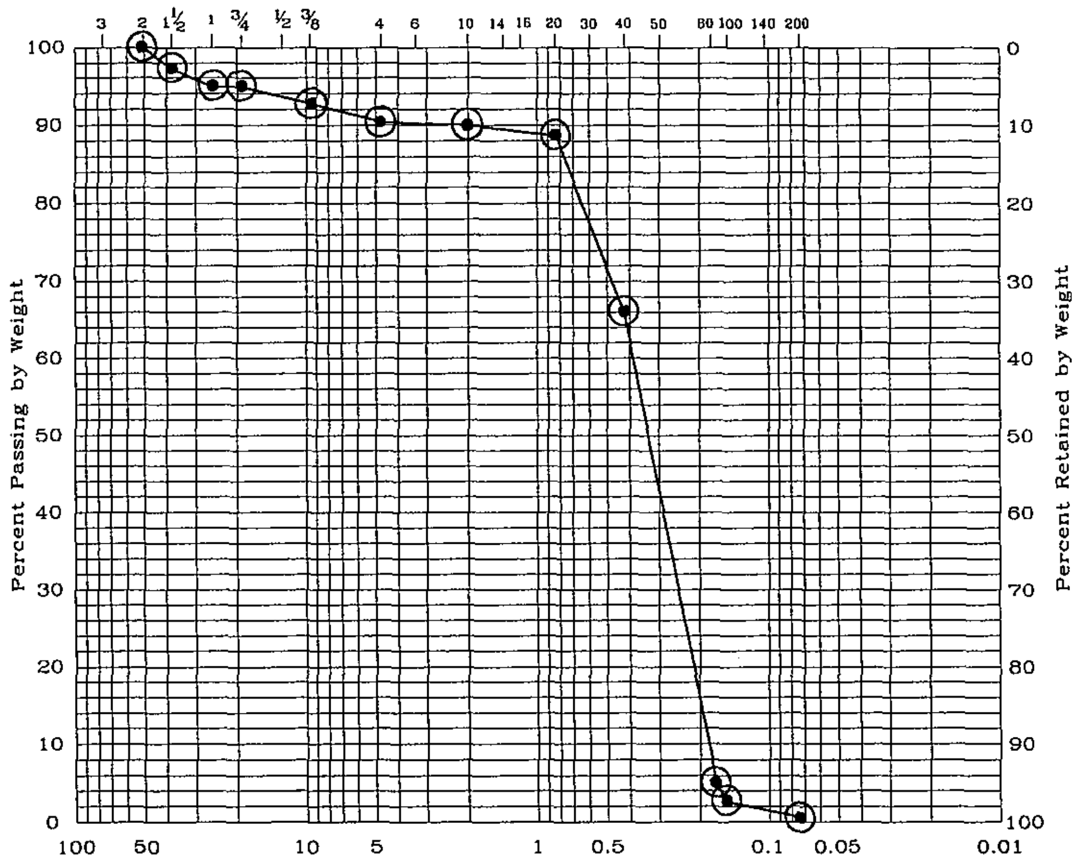
SAMPLE # SA16-92

DATE 5/21/92

PROJECT FLAMBEAU MINE

PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Grain Size in Millimeters

Sieve	% Passing	Spec.
2"	100	
1-1/2"	97	
1"	95	
3/4"	95	
3/8"	93	
#4	91	
#10	90	
#20	88	
#40	66	
#80	5	
#100	3	
#200	0.7	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
5 %	4 %	1 %	24 %	65.3 %	0.7 %

Classification SP Poorly graded sand

Remarks

D_{10} = .18
D_{15} = .19
D_{30} = .26
D_{60} = .39
D_{85} = .75

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(.39)}{(.18)} = 2.2$$

$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.26)^2}{(.18)(.39)} = 1.0$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

B149

B150

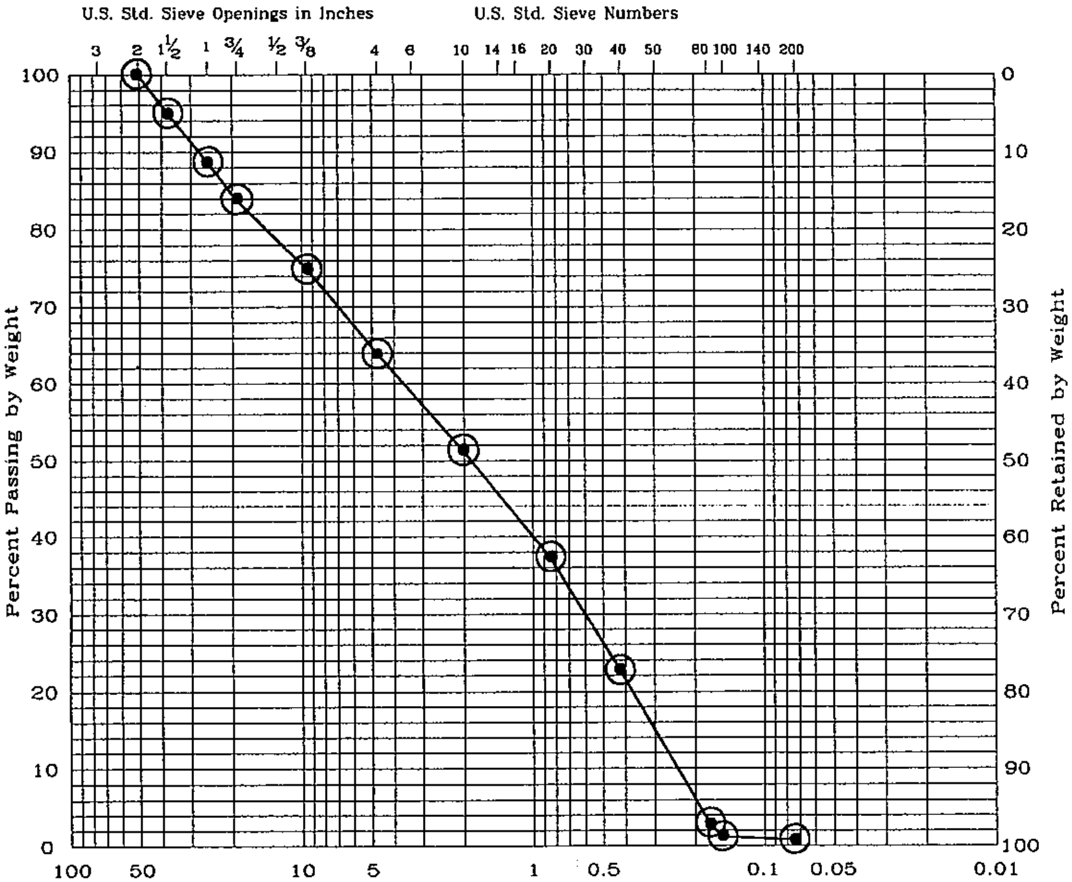
SAMPLE # SA10-92

DATE 5/28/92

PROJECT FLAMBEAU MINE

PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Grain Size in Millimeters

Sieve	% Passing	Spec.
2"	100	
1-1/2"	95	
1"	88	
3/4"	84	
3/8"	75	
#4	64	
#10	52	
#20	37	
#40	23	
#80	3	
#100	2	
#200	1.3	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
16 %	20 %	12 %	29 %	21.7 %	1.3 %

Classification SP Poorly graded sand with gravel

Remarks

D_{10} = .24

D_{15} = .30

D_{30} = .60

D_{60} = 3.7

D_{85} = 21

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(3.7)}{(.24)} = 15.4$$

$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.60)^2}{(.24)(3.7)} = .41$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

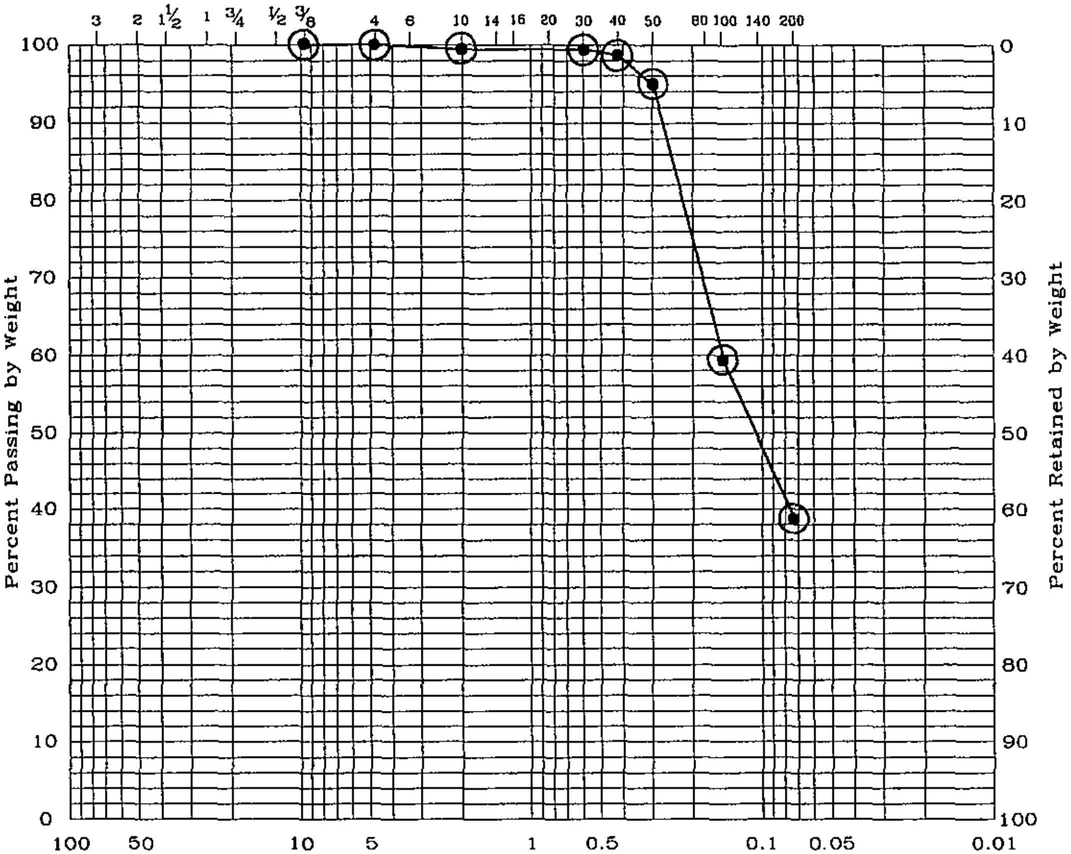
SAMPLE # P-42

DATE 6/17/92

PROJECT FLAMBEAU MINE

PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Grain Size in Millimeters

B151

Sieve	% Passing	Spec.
3/8"	100	
#4	100	
#10	99	
#30	99	
#40	98	
#50	95	
#100	59	
#200	38	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
0 %	0 %	1 %	1 %	60 %	38 %

Classification SM Silty sand

Remarks

D_{10} = N/A
D_{15} = N/A
D_{30} = N/A
D_{60} = .16
D_{85} = .25

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(\quad)}{(\quad)} = \underline{\qquad}$$

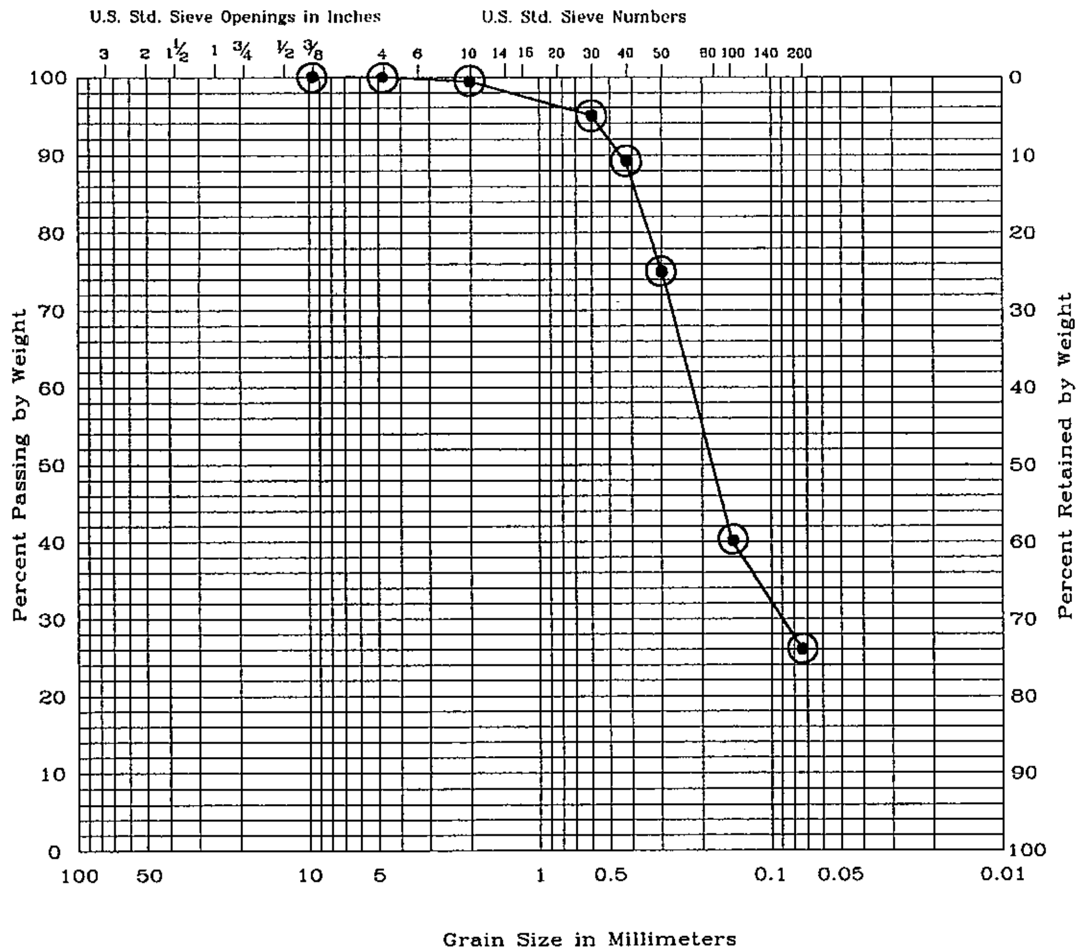
$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(\quad)^2}{(\quad)(\quad)} = \underline{\qquad}$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

B152

SAMPLE #	P-50
DATE	6/19/92
PROJECT	FLAMBEAU MINE
PROJECT #	CS 91120

MECHANICAL ANALYSIS GRAPH



GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
0 %	0 %	1 %	10 %	49 %	26 %

Sieve	% Passing	Spec.
3/8"	100	
#4	100	
#10	99	
#30	95	
#40	89	
#50	75	
#100	40	
#200	26	

Classification SM Silty sand

Remarks

D_{10} = N/A
D_{15} = N/A
D_{30} = .075
D_{60} = .23
D_{85} = .38

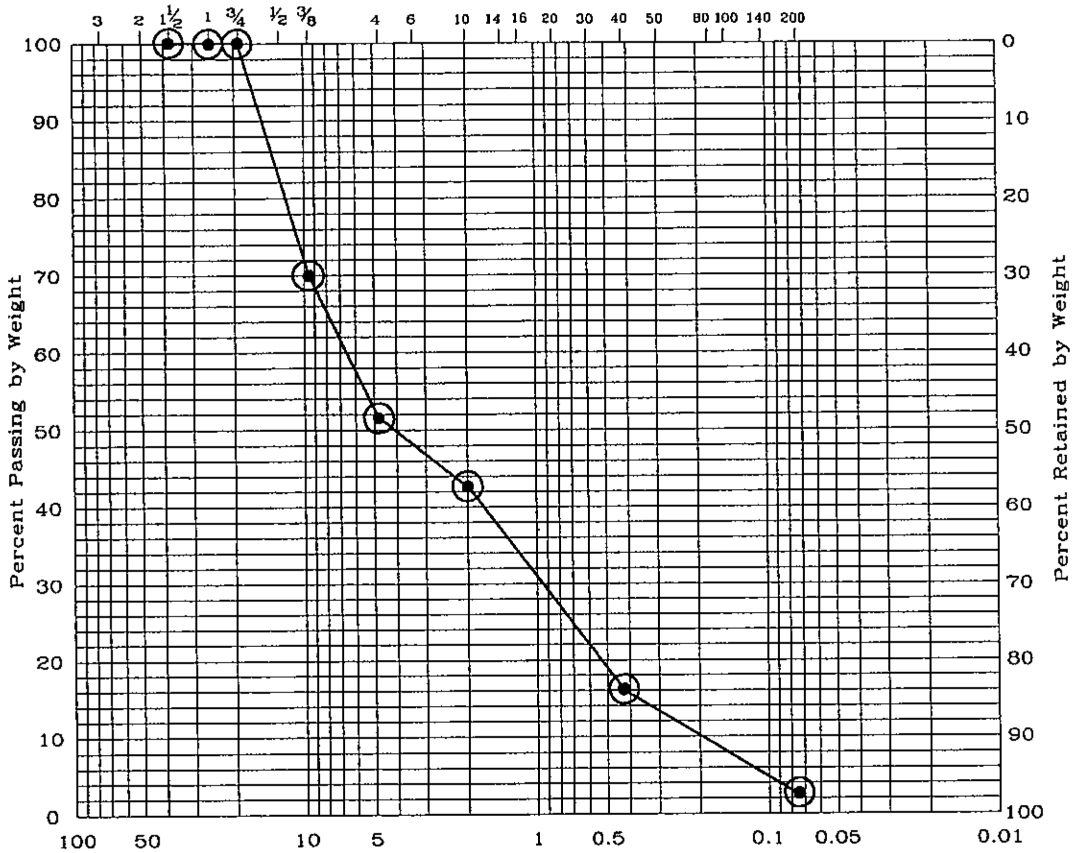
$$C_U = \frac{D_{60}}{D_{10}} = \frac{(\quad)}{(\quad)} = $$

$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(\quad)^2}{(\quad)(\quad)} = $$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

SAMPLE # BM1-92
DATE 7/7/92
PROJECT FLAMBEAU MINE
PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Grain Size in Millimeters

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
0 %	48 %	9 %	27 %	13.1 %	2.9 %

Sieve	% Passing	Spec.
2"	100	
1-1/2"	100	
1"	100	
3/4"	100	
3/8"	70	
#4	52	
#10	43	
#40	16	
#200	2.9	

Classification SP Poorly graded gravely sand

Remarks

D_{10} = .20
D_{15} = .37
D_{30} = .94
D_{60} = 6.6
D_{85} = 14

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(6.6)}{(.20)} = 33.0$$

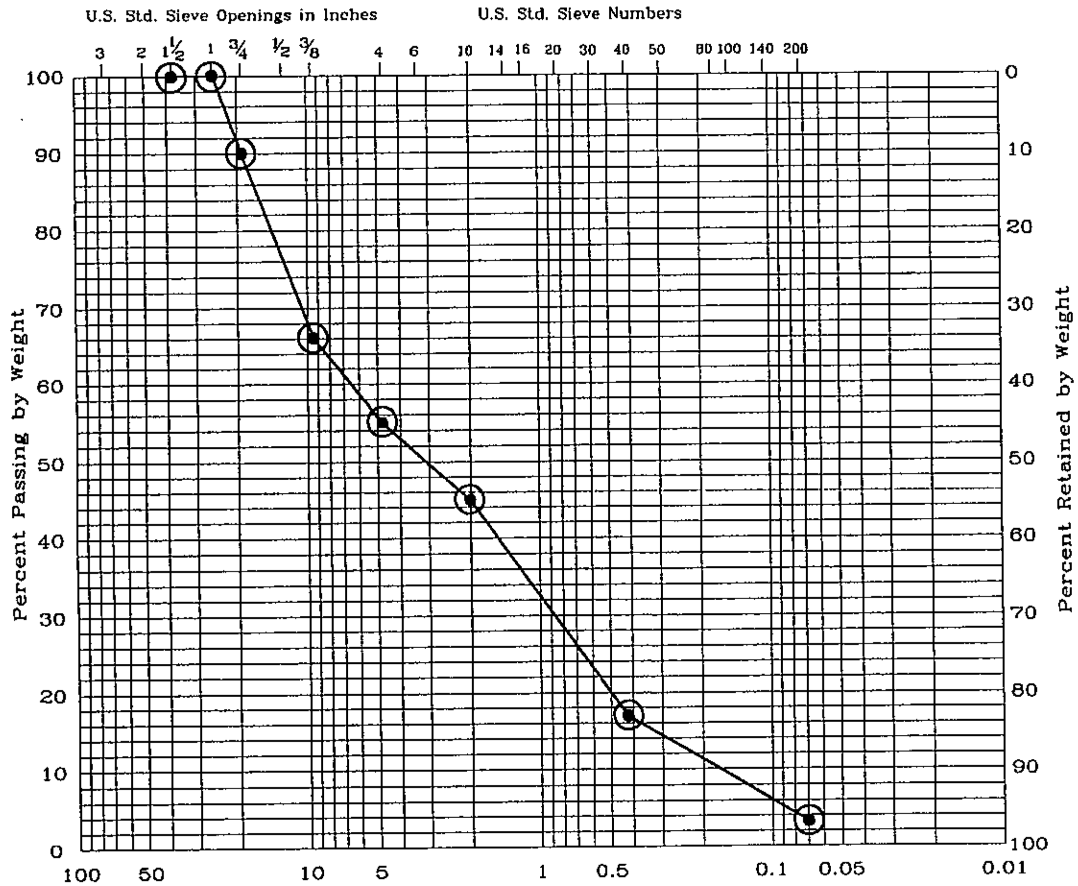
$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.94)^2}{(.20)(6.6)} = .7$$

B153

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

SAMPLE # BC1-92
DATE 7/13/92
PROJECT FLAMBEAU MINE
PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Sieve	% Passing	Spec.
1-1/2"	100	-------
1"	100	100
3/4"	90	-------
3/8"	66	50-85
#4	55	35-65
#10	45	25-50
#40	17	10-30
#200	3.6	3-10

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
10 %	35 %	10 %	28 %	13.4 %	3.6 %

Classification Base Course,
SP Poorly graded sand with gravel

Remarks Sample meets project specifications.

D_{10} = .18
D_{15} = .35
D_{30} = .9
D_{60} = 6.5
D_{85} = 17

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(6.5)}{(.18)} = 36.1$$

$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.9)^2}{(.18)(6.5)} = .7$$

B154

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

B155

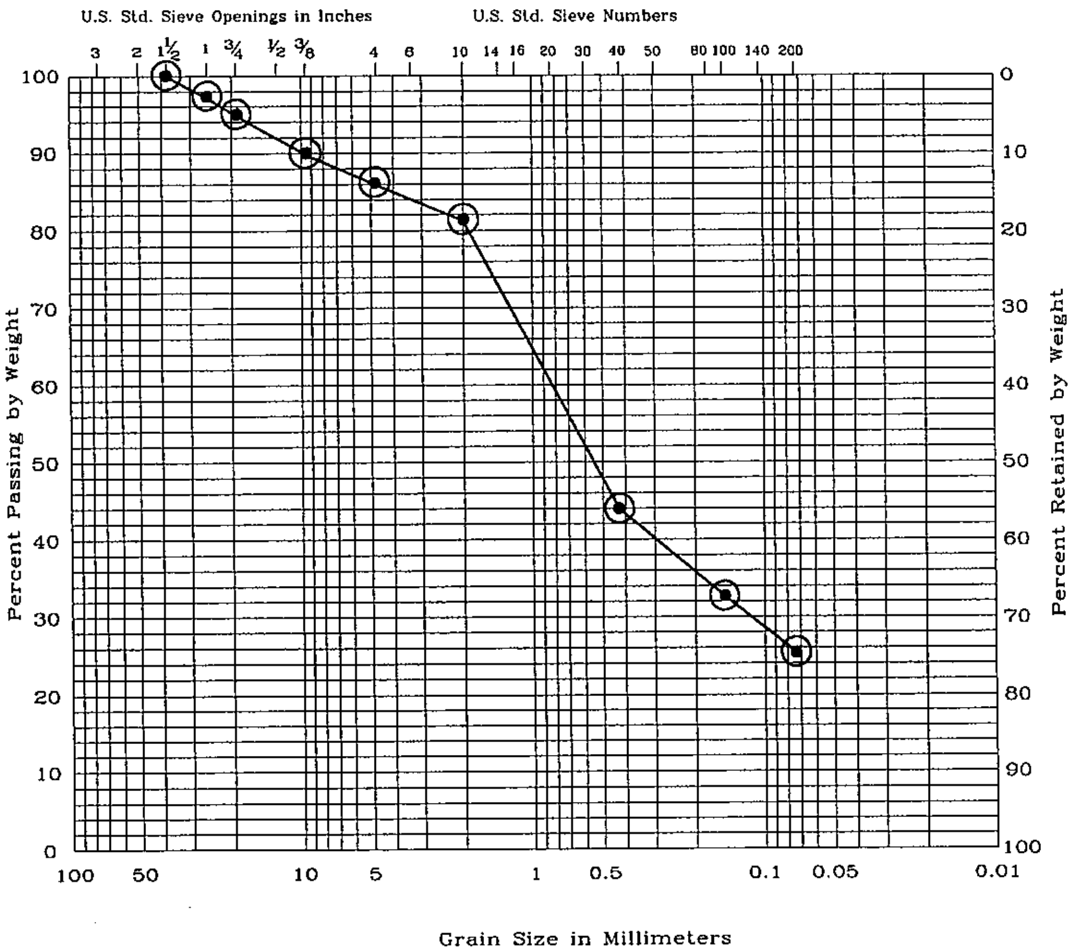
SAMPLE # RS2-92

DATE 7/16/92

PROJECT FLAMBEAU MINE

PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Sieve	% Passing	Spec.
2"	100	
1-1/2"	100	
1"	97	
3/4"	95	
3/8"	90	
#4	86	
#10	82	
#40	44	
#100	33	
#200	25.7	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
5 %	9 %	4 %	38 %	18.3 %	25.7 %

Classification SM Silty sand

Remarks

D_{10} = N/A

D_{15} = N/A

D_{30} = .13

D_{60} = .84

D_{85} = 4

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(\quad)}{(\quad)} = \_\_\_\_$$

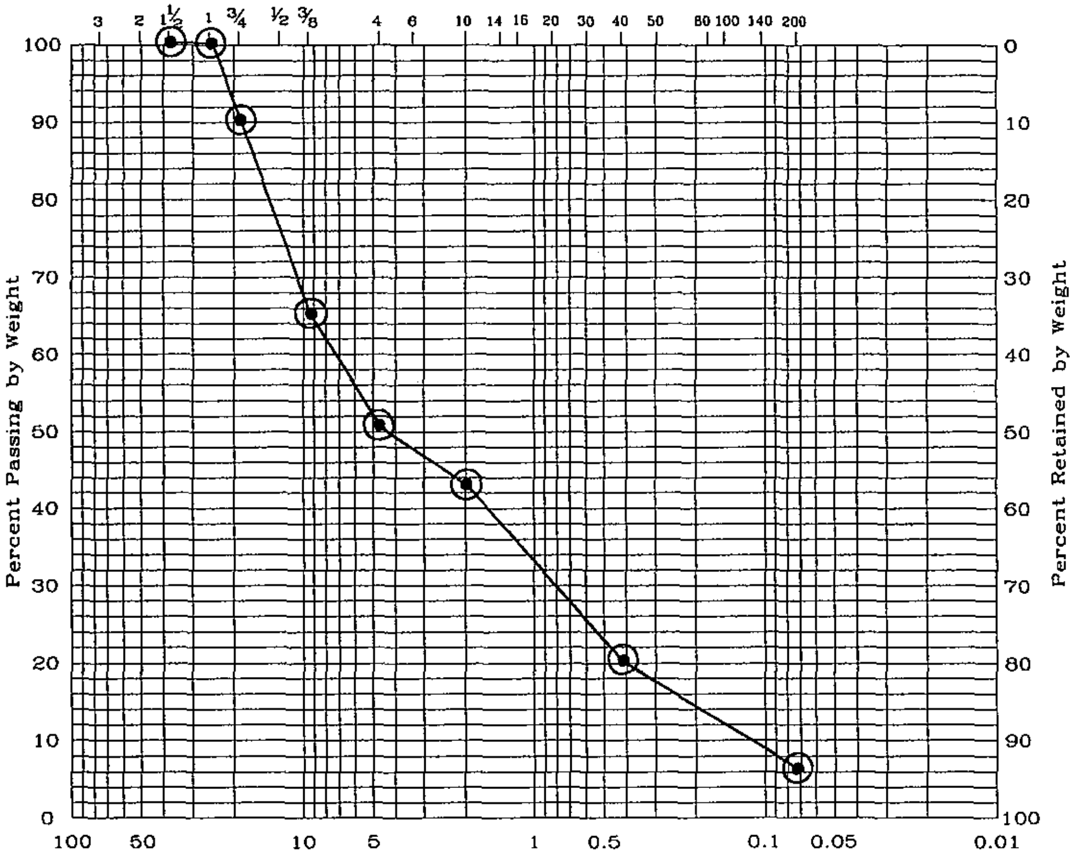
$$C_c = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(\quad)^2}{(\quad)(\quad)} = \_\_\_\_$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

B156

SAMPLE # BC2-92
DATE 7/17/92
PROJECT FLAMBEAU MINE
PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Sieve	% Passing	Spec.
2"	100	---
1-1/2"	100	---
1"	100	100
3/4"	90	---
3/8"	65	50-85
#4	51	35-65
#10	43	25-50
#40	20	10-30
#100	---	---
#200	6.0	3-10

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
10 %	39 %	8 %	23 %	14.0 %	6.0 %

Classification GP-GM Poorly graded gravel & sand with silt

Remarks Meets with all project specifications.

D_{10} = .13
D_{15} = .24
D_{30} = .84
D_{60} = 7.5
D_{85} = 17

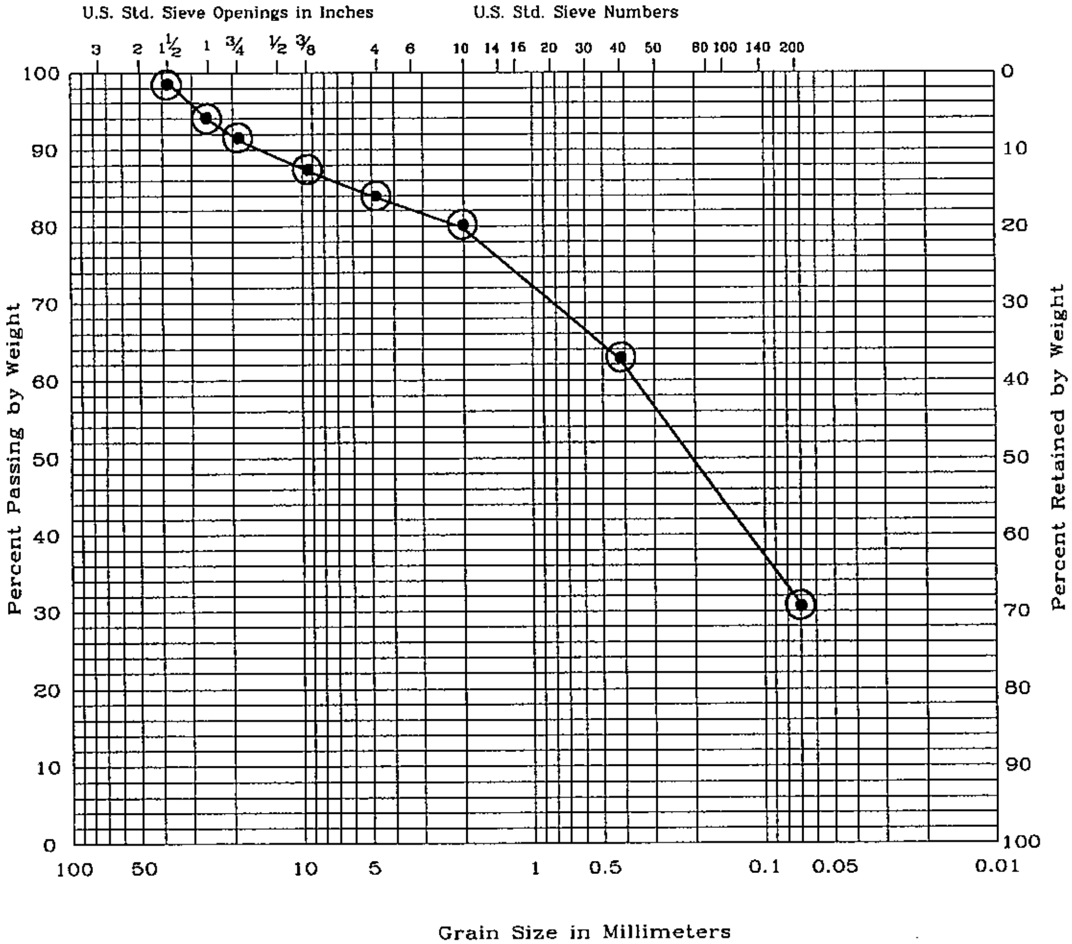
$$C_u = \frac{D_{60}}{D_{10}} = \frac{(7.5)}{(.13)} = 57.7$$

$$C_c = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.84)^2}{(.13)(7.5)} = .7$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

SAMPLE # BF1-92
DATE 7/17/92
PROJECT FLAMBEAU MINE
PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Sieve	% Passing	Spec.
1-1/2"	98	-------
1"	94	-------
3/4"	92	-------
3/8"	87	-------
#4	84	-------
#10	80	-------
#40	63	-------
#200	31.5	-------

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
8 %	8 %	4 %	17 %	31.5 %	31.5 %

Classification Backfill,
SC Clayey sand with gravel

Remarks

D_{10} = N/A .021 (est.)
D_{15} = N/A
D_{30} = .07
D_{60} = .35
D_{85} = 6

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(.35)}{(.021)} = 16.7$$

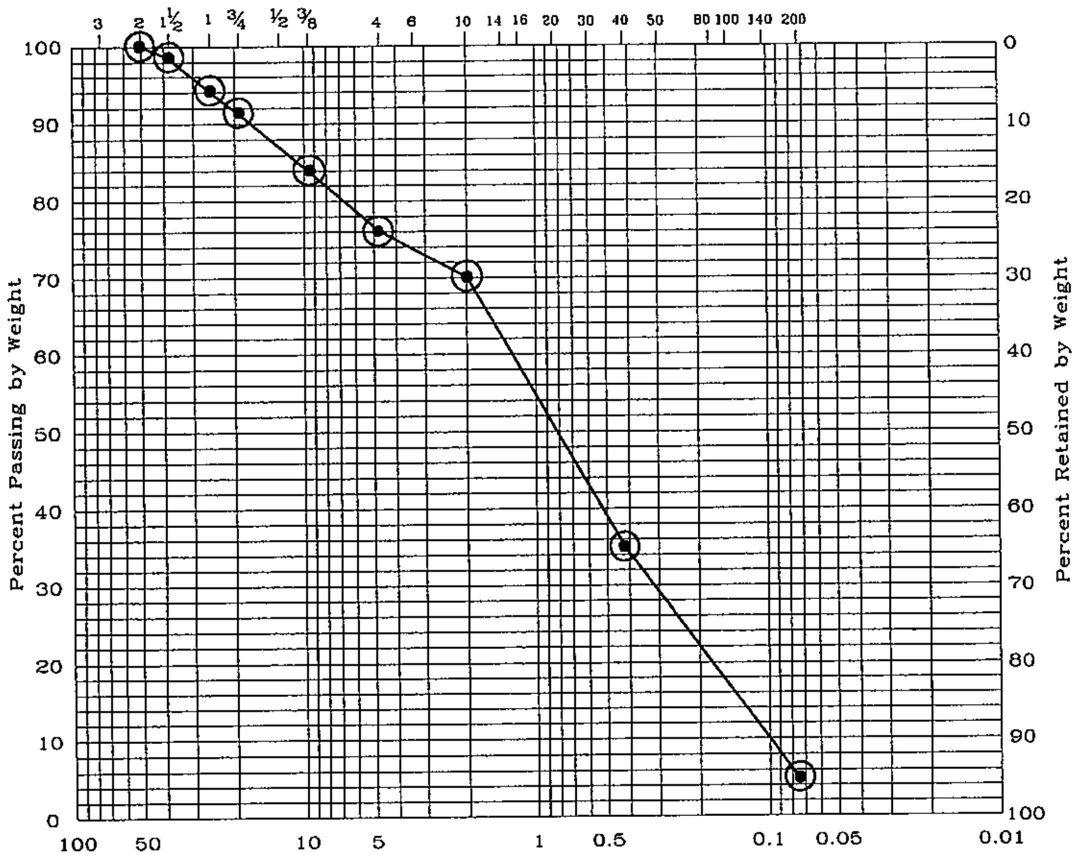
$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.07)^2}{(.021)(.35)} = .7$$

B157

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

MECHANICAL ANALYSIS GRAPH

SAMPLE # RS6-92
DATE 7/18/92
PROJECT FLAMBEAU MINE
PROJECT # CS 91120



Sieve	% Passing	Spec.
2"	100	
1-1/2"	98	
1"	94	
3/4"	92	
3/8"	84	
#4	76	
#10	70	
#40	35	
#100	---	
#200	4.8	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
8 %	16 %	6 %	35 %	30.2 %	4.8 %

Classification SP Poorly graded sand with gravel

Remarks

D_{10} = .10
D_{15} = .14
D_{30} = .32
D_{60} = 1.4
D_{85} = 12

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(\ 1.4\ )}{(\ .10\ )} = 14.0$$

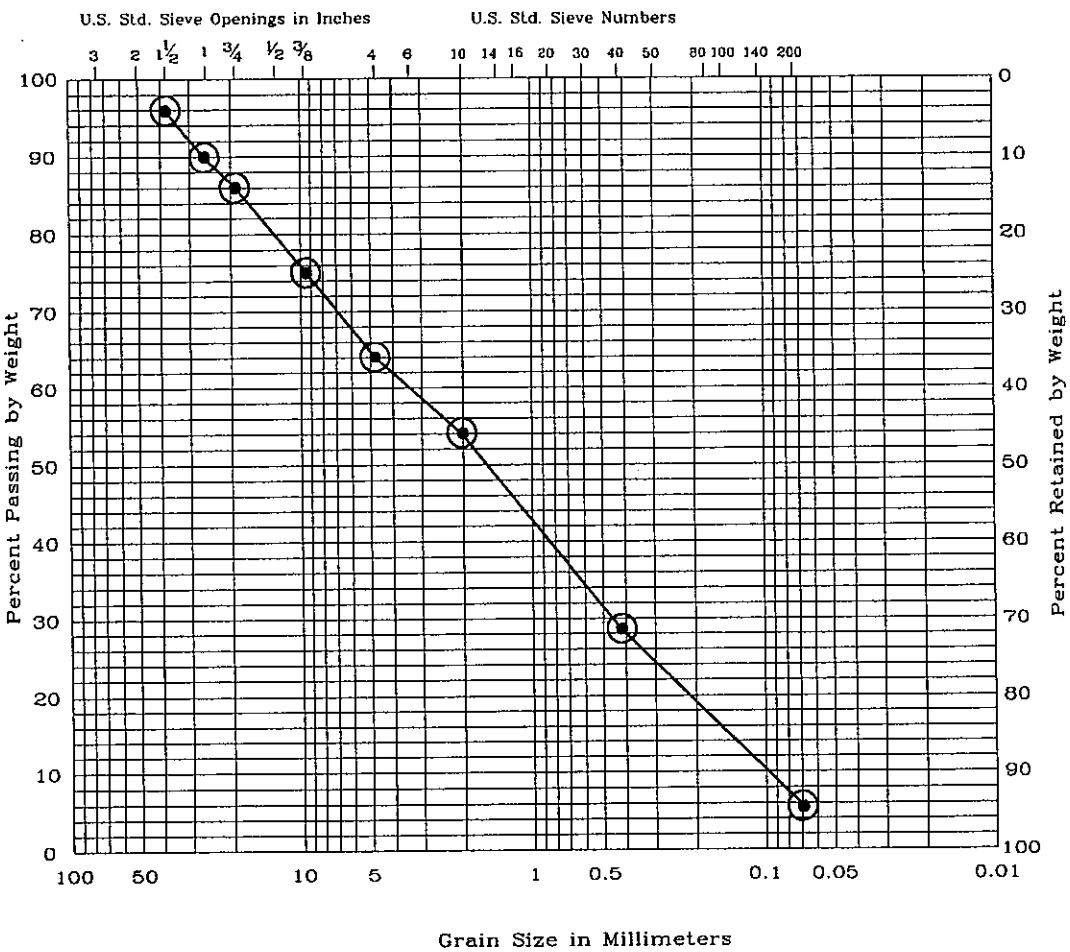
$$C_c = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(\ .32\ )^2}{(\ .10\ )(\ 1.4\ )} = .7$$

B158

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

B159

MECHANICAL ANALYSIS GRAPH



SAMPLE # RS7-92
DATE 7/20/92
PROJECT FLAMBEAU MINE
PROJECT # CS 91120

Sieve	% Passing	Spec.
1-1/2"	96	-------
1"	90	-------
3/4"	86	-------
3/8"	75	-------
#4	64	-------
#10	54	-------
#40	28	-------
#200	5.3	-------

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
14 %	22 %	10 %	26 %	22.7 %	5.3 %

Classification Backfill, SP Poorly graded sand with gravel

Remarks

D_{10} = .10
D_{15} = .16
D_{30} = .46
D_{60} = 3.4
D_{85} = 18

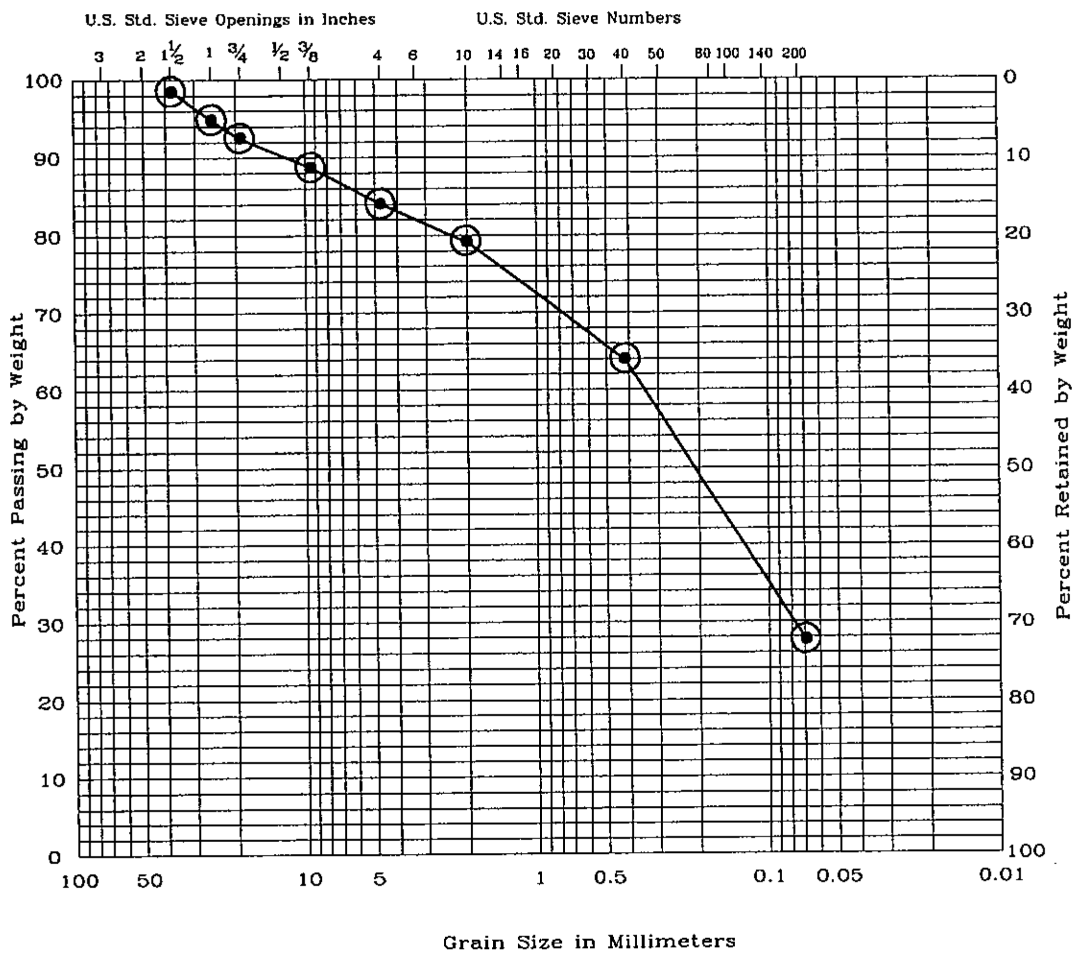
$C_U = \frac{D_{60}}{D_{10}} = \frac{(3.4)}{(.10)} = 34.0$

$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.46)^2}{(.10)(3.4)} = .6$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

SAMPLE # BF2-92
DATE 8/11/92
PROJECT FLAMBEAU MINE
PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Sieve	% Passing	Spec.
1-1/2"	98	-------
1"	95	-------
3/4"	93	-------
3/8"	88	-------
#4	84	-------
#10	79	-------
#40	64	-------
#200	27.1	-------

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
7 %	9 %	5 %	15 %	36.9 %	27.1 %

Classification Backfill, SC-SM Silty, Clayey sand with gravel

Remarks

D_{10} = ~~N/A~~ .019 (est.)
D_{15} = N/A
D_{30} = .079
D_{60} = .35
D_{85} = 5.5

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(.35)}{(.019)} = 18.4$$

$$C_c = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.079)^2}{(.019)(.35)} = .1$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

B160

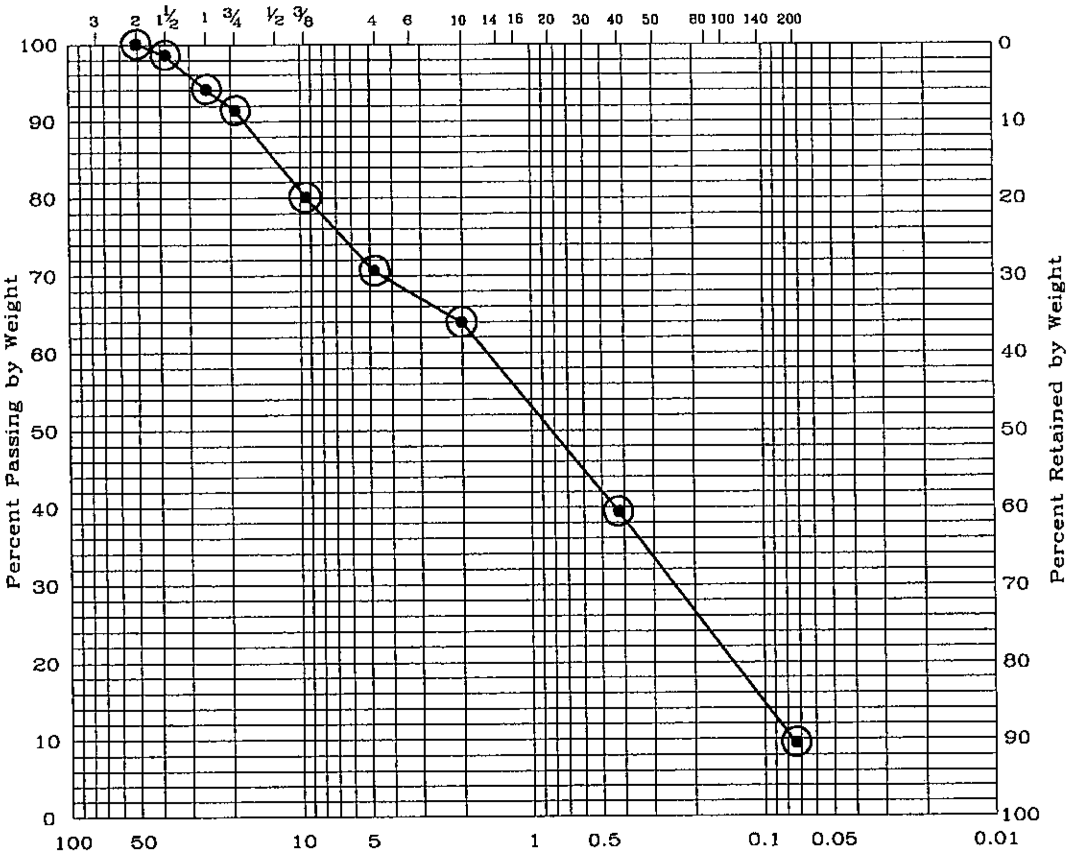
SAMPLE # BM2-92

DATE 8/26/92

PROJECT FLAMBEAU MINE

PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



B161

Sieve	% Passing	Spec.
2"	100	
1-1/2"	98	
1"	94	
3/4"	92	
3/8"	80	
#4	71	
#10	64	
#40	39	
#100	---	
#200	9.2	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
8 %	21 %	7 %	25 %	29.8 %	9.2 %

Classification SP-SM Poorly graded sand with silt & gravel

Remarks

D_{10} = .077
D_{15} = .11
D_{30} = .25
D_{60} = 1.6
D_{85} = 14

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(1.6)}{(.077)} = 20.8$$

$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.25)^2}{(.077)(1.6)} = .5$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

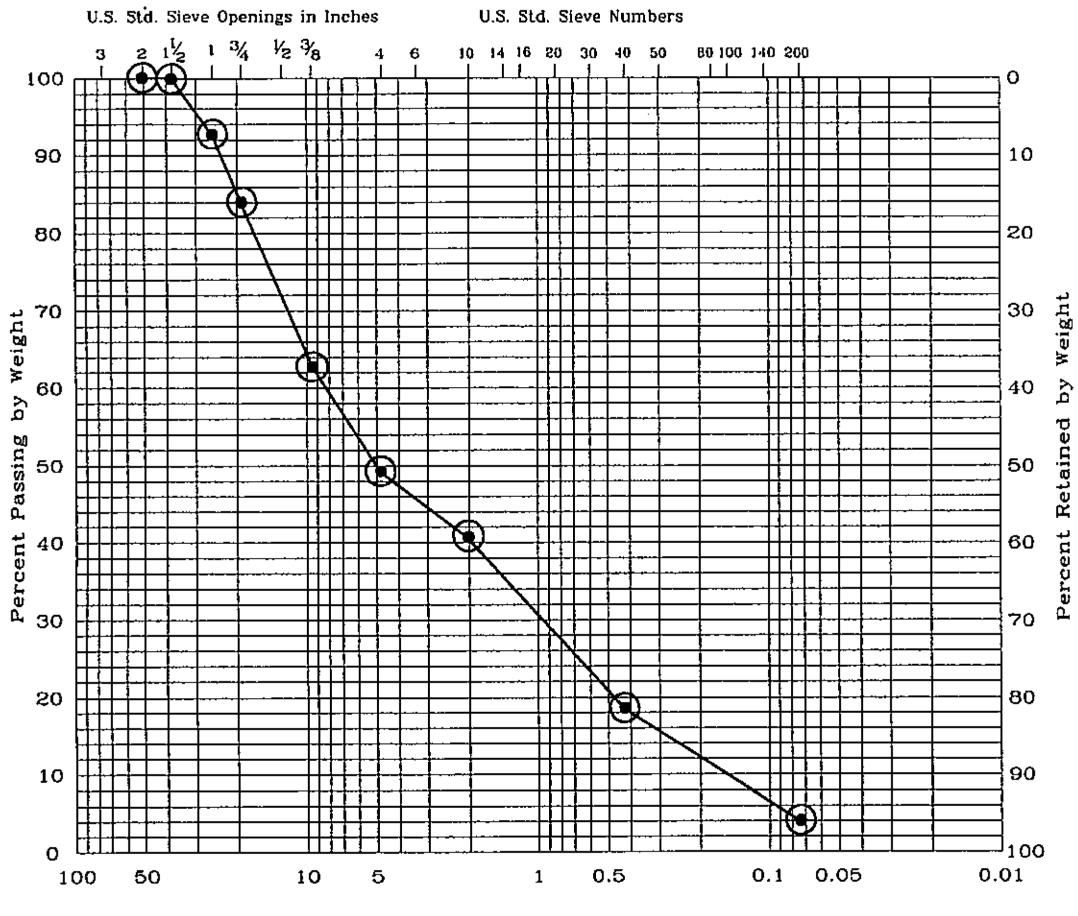
SAMPLE # RS12-92

DATE 8/14/92

PROJECT FLAMBEAU MINE

PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



B162

Sieve	% Passing	Spec.
2"	100	
1-1/2"	100	100
1"	93	75-80
3/4"	84	---
3/8"	63	40-75
#4	49	30-60
#10	41	20-45
#40	18	10-30
#100	---	---
#200	3.9	3-10

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
16%	35 %	8 %	23 %	14.1 %	3.9 %

Classification GP Poorly graded gravel with sand

Remarks Meets with all project specifications.

D_{10} = .16
D_{15} = .28
D_{30} = .97
D_{60} = 8.3
D_{85} = 20

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(8.3)}{(.16)} = 51.7$$

$$C_c = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(.97)^2}{(.16)(8.3)} = .7$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

B163

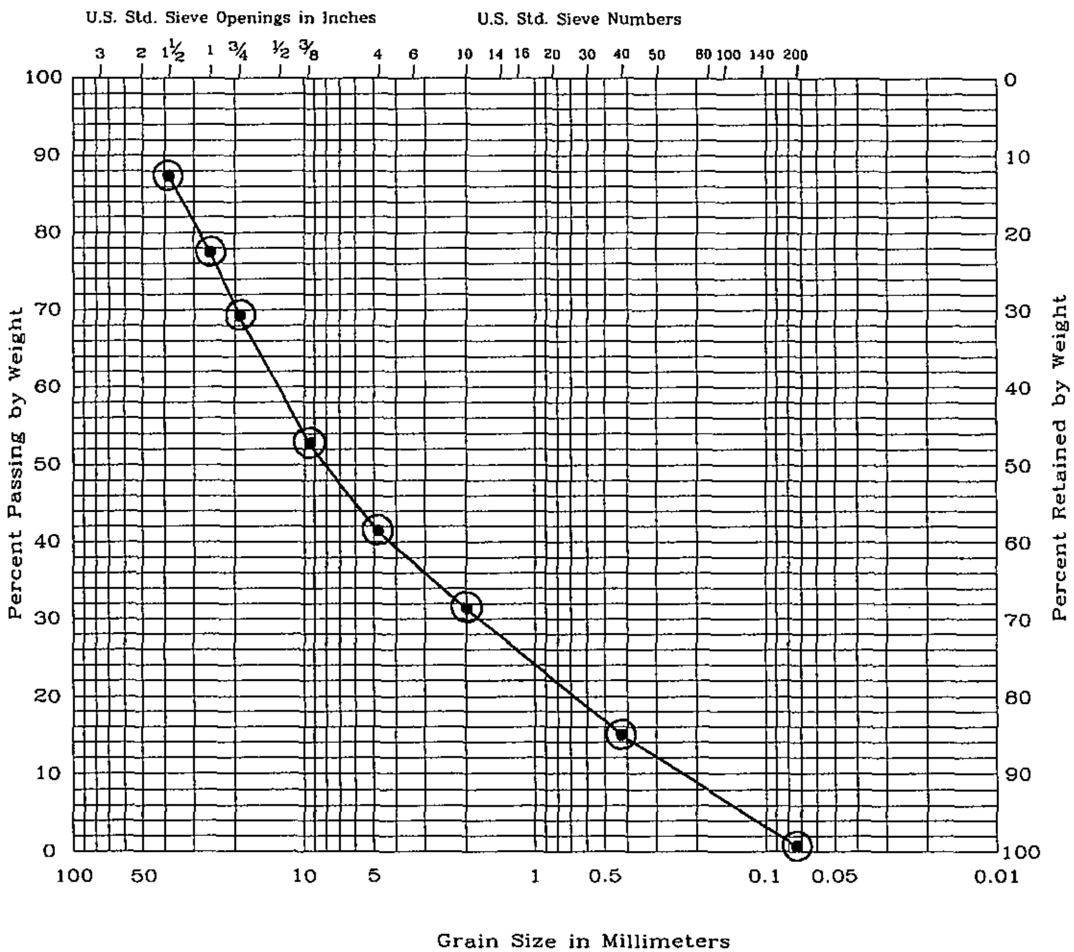
SAMPLE # SW4-92

DATE 11/25/92

PROJECT FLAMBEAU MINE

PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



Sieve	% Passing	Spec.
2"	---	
1-1/2"	87	
1"	77	
3/4"	69	
3/8"	53	
#4	42	
#10	32	
#40	15	
#100	---	
#200	1.2	

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
31%	27 %	10%	17 %	13.8 %	1.2 %

D_{10} = .24
D_{15} = .44
D_{30} = 1.7
D_{60} = 14
D_{85} = 35

$$C_U = \frac{D_{60}}{D_{10}} = \frac{(14)}{(.24)} = 58.3$$

$$C_C = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(1.7)^2}{(.24)(14)} = .9$$

Classification GP Poorly graded gravel with sand

Remarks

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

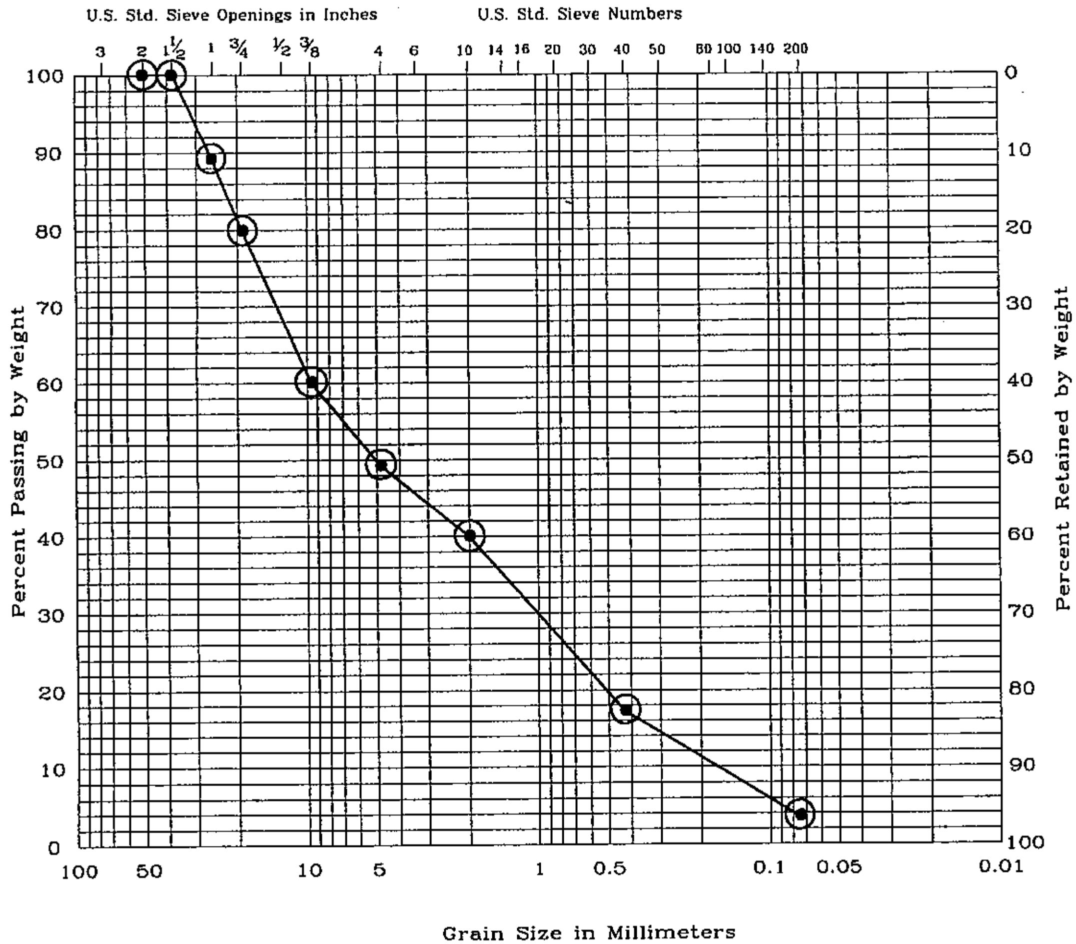
SAMPLE # RS15-92

DATE 8/27/92

PROJECT FLAMBEAU MINE

PROJECT # CS 91120

MECHANICAL ANALYSIS GRAPH



B164

Sieve	% Passing	Spec.
2"	100	
1-1/2"	100	100
1"	89	75-80
3/4"	80	---
3/8"	60	40-75
#4	49	30-60
#10	40	20-45
#40	17	10-30
#100	---	---
#200	3.4	3-10

GRAVEL		SAND			SILT or CLAY
Coarse	Fine	Course	Medium	Fine	
20%	31 %	9 %	23 %	13.6 %	4.4 %

Classification GP Poorly graded gravel with sand

Remarks Meets with all project specifications.

D_{10} = .17
D_{15} = .34
D_{30} = 1.0
D_{60} = 9.6
D_{85} = 23

$$C_u = \frac{D_{60}}{D_{10}} = \frac{(9.6)}{(.17)} = 56.5$$

$$C_c = \frac{(D_{30})^2}{(D_{10})(D_{60})} = \frac{(1.0)^2}{(.17)(9.6)} = .6$$

COOPER ENGINEERING COMPANY
100 WEST ORCHARD BEACH LANE RICE LAKE, WISCONSIN
TELEPHONE 715-234-7008

GRAIN SIZE ANALYSIS SUMMARY
FLAMBEAU MINE, LADYSMITH WISCONSIN

LOCATION:RAILROAD SPUR
CLASSIFICATION: A.R.E.A. SIZE 4 OR 4A BALLAST

	PERCENT PASSING									SPECIFICATION	
DATE TESTED	7/16/92	8/26/92	8/26/92	10/22/92	10/28/92	10/28/92	10/22/92	11/9/92	11/11/92		
SAMPLE #	RS6-92	RS13-92	RS14-92	RS19-92	RS20-92	RS22-92	RS18-92	RS23-92	RS24-92	SIZE 4A	SIZE 4
TEST #	1	2	3	4	4A	5	6	7	8		
SIEVE SIZE											
2"	100	100	100	100	100	100	100	100	100	90-100	100
1-1/2"	98	87	89	93	93	93	85	84	77	60-90	90-100
1"	52	28	22	48	51	42	39	41	16	10-35	20-55
3/4"	10	5	8	18	23	22	15	23	3	0-10	0-15
3/8"	0.4	1	4	1	2	1	1	12	0.4	0-3	0-5
#4	0.3	0.5	3.2	0.8	1	0.7	0.6	10	0.4		
% FRACTURE	100	99.7	97.8	100		100	100	97.8	93.8		
SAMPLE LOCATION	PIT	STA 60+0	STA 60+0	HWY27 S.P.	HWY27 S.P.	STA 5+0	MEADOWBROOK	STA 0+0	STA 3+0		

REMARKS
The material supplied at times varied slightly outside specification limits
but was detemined by the Engineer that the intent of the specification was fullfilled.

CLASSIFICATION: SUB BALLAST

DATE TESTED	9/8/92	
SAMPLE #	RS16-92	
TEST #	3	
SIEVE SIZE		SPECIFICATION
1-1/2"	100	100
1"	82	76-100
3/4"	74	---
3/8"	64	40-75
#4	44	30-60
#10	33	20-45
#40	12	10-30
#200	3.2	3-10

CLASSIFICATION: FRENCHDRAIN

DATE TESTED	10/28/92	
SAMPLE #	RS21-92	
TEST #	1	
SIEVE SIZE		SPECIFICATION
2"	100	100
1-1/2"	96	-
1"	42	-
3/4"	4	-
3/8"	0.4	0-5
#4	0.4	-

Cooper Engineering Company, Inc.

twin city testing corporation

4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: September 2, 1992
September 22, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	5-A	5-B	5-C	5-D
Date Cast:	8-25-92	8-25-92	8-25-92	8-25-92
Age to be Tested,days:	7	7	28	28
Slump:	2 1/2"	2 1/2"	2 1/2"	2 1/2"
Air Content:	Not Indicated			

Location of Placement: Footings lab

Specified Strength @ 28 days: 3000 psi

Mix Proportions:
Cement: 335 lbs Fly Ash 110 lbs
Fine Aggregate: 1660 lbs
Coarse Aggregate: 1760 lbs
Admixtures: W.R. 3 oz/100 lbs Catexol

Concrete Furnished by: Olynicks- Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	822670-1	822670-2	822670-3	822670-4
Date Received:	8-27-92	8-27-92	8-27-92	8-27-92
Method of Curing:				
Days on Job & Enroute:	2	2	2	2
Days Lab.Cured-ASTMC192:	5	5	26	26
Age at Test, days:	7	7	28	28
Load at Failure, pounds:	83,000	84,000	108,000	112,500
Strength, psi:	2940	2970	3820	3980

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By Joel Dunnells

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: September 22, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	5-E
Date Cast:	8-25-92
Age to be Tested,days:	28
Slump:	2 1/2"
Air Content:	Not Indicated
Location of Placement:	Footings lab
Specified Strength @ 28 days:	3000 psi
Mix Proportions:	
Cement:	335 lbs Fly Ash 110 lbs
Fine Aggregate:	1660 lbs
Coarse Aggregate:	1760 lbs
Admixtures:	W.R. 3 oz/100 lbs Catexol
Concrete Furnished by:	Olynicks- Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	822670-5
Date Received:	8-27-92
Method of Curing:	
Days on Job & Enroute:	2
Days Lab.Cured-ASTMC192:	26
Age at Test, days:	28
Load at Failure, pounds:	105,000
Strength, psi:	3720

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By Jul Dunelly

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: September 9, 1992
September 24, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463
FIELD DATA:

Job Identification:	6-A	6-B	6-C	6-D
Date Cast:	8-27-92	8-27-92	8-27-92	8-27-92
Age to be Tested,days:	7	7	28	28
Slump:	3 1/2"	3 1/2"	3 1/2"	3 1/2"
Air Content:	6.4%	6.4%	6.4%	6.4%

Location of Placement: Frost Wall, lab and adm.

Specified Strength @ 28 days: 3000 psi

Mix Proportions:
Cement: 335 lbs; Fly Ash 110 lbs
Fine Aggregate: 1540 lbs
Coarse Aggregate: 1760 lbs
Admixtures: Air 2.7 oz Catexol
Admixtures: W.R. 3 oz/100 lbs Catexol

Concrete Furnished by: Olynicks- Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	822689-1	822689-2	822689-3	822689-4
Date Received:	8-31-92	8-31-92	8-31-92	8-31-92
Method of Curing:				
Days on Job & Enroute:	4	4	4	4
Days Lab.Cured-ASTMC192:	3	3	24	24
Age at Test, days:	7	7	28	28
Load at Failure, pounds:	74,000	80,000	106,000	105,000
Strength, psi:	2620	2830	3750	3720

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By Joel Dunella

twin city testing corporation

4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: September 9, 1992
September 24, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	6-E
Date Cast:	8-27-92
Age to be Tested,days:	28
Slump:	3 1/2"
Air Content:	6.4%
Location of Placement:	Frost Wall, lab and adm.
Specified Strength @ 28 days:	3000 psi
Mix Proportions:	
Cement:	335 lbs; Fly Ash 110 lbs
Fine Aggregate:	1540 lbs
Coarse Aggregate:	1760 lbs
Admixtures:	Air 2.7 oz Catexol
Admixtures:	W.R. 3 oz/100 lbs Catexol
Concrete Furnished by:	Olynicks- Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	822689-5
Date Received:	8-31-92
Method of Curing:	
Days on Job & Enroute:	4
Days Lab.Cured-ASTMC192:	25
Age at Test, days:	28
Load at Failure, pounds:	105,000
Strength, psi:	3720

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By Joel Gunnells

B169

twin city testing corporation

4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: September 21, 1992
October 9, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	7-A	7-B	7-C	7-D
Date Cast:	9-10-92	9-10-92	9-10-92	9-10-92
Age to be Tested,days:	7	7	28	28
Slump:	4"	4"	4"	4"
Air Content:	Not Indicated			

Location of Placement: Floor 5 1/2, Lab & Administrator

Specified Strength @ 28 days: 3000 psi

Mix Proportions:
Cement: 423 lbs
Fine Aggregate: 1660 lbs
Coarse Aggregate: 1760 lbs
Admixtures: W.R. 3 oz/100 lbs Catexol
Admixtures:
Concrete Furnished by: Olynicks- Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823322-1	823322-2	823322-3	823322-4
Date Received:	9-16-92	9-16-92	9-16-92	9-16-92
Method of Curing:				
Days on Job & Enroute:	6	6	6	6
Days Lab.Cured-ASTMC192:	1	1	22	22
Age at Test, days:	7	7	28	28
Load at Failure, pounds:	52,000	50,000	89,000	75,000
Strength, psi:	1840	1770	3150	2650

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By [signature]

B170

twin city testing corporation

4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: October 9, 1992

REPORTED TO: Cooper Engineering
Mr. Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	7-E
Date Cast:	9-10-92
Age to be Tested,days:	28
Slump:	4"
Air Content:	Not Indicated
Location of Placement:	Floor 5 1/2, Lab & Administrator
Specified Strength @ 28 days:	3000 psi
Mix Proportions:	
Cement:	423 lbs
Fine Aggregate:	1660 lbs
Coarse Aggregate:	1760 lbs
Admixtures:	W.R. 3 oz/100 lbs Catexol
Admixtures:	
Concrete Furnished by:	Olynicks- Ladysmith

COMPRESSIVE STRENGTH: **Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.**

Laboratory Number:	823322-1
Date Received:	9-16-92
Method of Curing:	
Days on Job & Enroute:	6
Days Lab.Cured-ASTMC192:	22
Age at Test, days:	28
Load at Failure, pounds:	85,500
Strength, psi:	3030

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By Joel Dunnells

twin city testing corporation

4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: September 21, 1992
October 12, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	8-A	8-B	8-C	8-D
Date Cast:	9-11-92	9-11-92	9-11-92	9-11-92
Age to be Tested,days:	7	7	28	28
Slump:	3"	3"	3"	3"
Air Content:	6.8%	6.8%	6.8%	6.8%

Location of Placement: Footings, W. W. T. P.

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs/ Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol
Admixtures: Air 3.2 oz/cy Catexol
Concrete Furnished by: Olynicks- Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823324-1	823324-2	823324-3	823324-4
Date Received:	9-16-92	9-16-92	9-16-92	9-16-92
Method of Curing:				
Days on Job & Enroute:	5	5	5	5
Days Lab.Cured-ASTMC192:	2	2	23	23
Age at Test, days:	7	7	28	28
Load at Failure, pounds:	105,000	103,500	139,000	143,500
Strength, psi:	3720	3660	4920	5080

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By [signature]

B172

twin city testing corporation

4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: October 12, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	8-E
Date Cast:	9-11-92
Age to be Tested,days:	28
Slump:	3"
Air Content:	6.8%
Location of Placement:	Footings, W. W. T. P.
Specified Strength @ 28 days:	4000 psi
Mix Proportions:	
Cement:	410 lbs/ Fly Ash 110 lbs
Fine Aggregate:	1490 lbs
Coarse Aggregate:	1810 lbs
Admixtures:	W.R. 16 oz/cy Catexol
Admixtures:	Air 3.2 oz/cy Catexol
Concrete Furnished by:	Olynicks- Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823324-1
Date Received:	9-16-92
Method of Curing:	
Days on Job & Enroute:	5
Days Lab.Cured-ASTMC192:	23
Age at Test, days:	28
Load at Failure, pounds:	141,500
Strength, psi:	5010

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By *[signature]*

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4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: September 25, 1992
October 14, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	9A	9B	9C
Date Cast:	9-14-92	9-14-92	9-14-92
Age to be Tested,days:	7	28	28
Slump:	3 1/2"	3 1/2"	3 1/2"
Air Content:	Not Indicated		

Location of Placement: Floor N 1/2 lab and adm

Specified Strength @ 28 days: 3000 psi

Mix Proportions:
Cement: 423 lbs
Fine Aggregate: 1660 lbs
Coarse Aggregate: 1760 lbs
Admixtures: W.R. 3 oz/100# Catexol
Admixtures:
Concrete Furnished by: Olynicks- Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823323-1	823323-2	823323-3
Date Received:	9-16-92	9-16-92	9-16-92
Method of Curing:			
Days on Job & Enroute:	2	2	2
Days Lab.Cured-ASTMC192:	5	26	26
Age at Test, days:	7	28	28
Load at Failure, pounds:	88,000	122,500	125,000
Strength, psi:	3110	4330	4420

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By Joel Dunelle

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: September 28, 1992
October 16, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	10A	10B	10C
Date Cast:	9-18-92	9-18-92	9-18-92
Age to be Tested,days:	7	28	28
Slump:	4"	4"	4"
Air Content:	7.0%	7.0%	7.0%

Location of Placement: Clarifier pad, WWTP

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs; Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol; Air 3.2 oz/cy Catexol

Concrete Furnished by: Olynicks- Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823342-1	823342-2	823342-3
Date Received:	9-23-92	9-23-92	9-23-92
Method of Curing:			
Days on Job & Enroute:	5	5	5
Days Lab.Cured-ASTMC192:	2	23	23
Age at Test, days:	7	28	28
Load at Failure, pounds:	116,000	135,500	133,000
Strength, psi:	4100	4790	4710

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By Jul Trunella

B175

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: September 28, 1992
October 16, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	11A	11B	11C
Date Cast:	9-18-92	9-18-92	9-18-92
Age to be Tested,days:	7	28	28
Slump:	3 3/4"	3 3/4"	3 3/4"
Air Content:	6.8%	6.8%	6.8%

Location of Placement: South and east walls, WWTP

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs; Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol; Air 3.2 oz/cy Catexol

Concrete Furnished by: Olynicks- Ladysmith

COMPRESSIVE STRENGTH: **Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.**

Laboratory Number:	823344-1	823344-2	823344-3
Date Received:	9-23-92	9-23-92	9-23-92
Method of Curing:			
Days on Job & Enroute:	5	5	5
Days Lab.Cured-ASTMC192:	2	23	23
Age at Test, days:	7	28	28
Load at Failure, pounds:	110,000	137,500	146,000
Strength, psi:	3890	4870	4950

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By Jul Durell

B176

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: October 1, 1992
October 22, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	12A	12B	12C
Date Cast:	9-23-92	9-23-92	9-23-92
Age to be Tested,days:	7	28	28
Slump:	4"	4"	4"
Air Content:	6.6%	6.6%	6.6%

Location of Placement: Sump walls WWTP

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs; Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol; Air 3.2 oz/cy Catexol

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	822623-1	822623-2	822623-3
Date Received:	9-28-92	9-28-92	9-28-92
Method of Curing:			
Days on Job & Enroute:	5	5	5
Days Lab.Cured-ASTMC192:	2	23	23
Age at Test, days:	7	28	28
Load at Failure, pounds:	91,000	128,000	131,000
Strength, psi:	3220	4530	4640

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By [signature]

twin city testing corporation

4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: October 7, 1992
October 23, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	13A	13B	13C
Date Cast:	9-25-92	9-25-92	9-25-92
Age to be Tested,days:	7	28	28
Slump:	4"	4"	4"
Air Content:	6.7%	6.7%	6.7%

Location of Placement: R.R. Walls WWTP

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs; Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol; Air 3.2 oz/cy Catexol

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	822624-1	822624-2	822624-3
Date Received:	9-28-92	9-28-92	9-28-92
Method of Curing:			
Days on Job & Enroute:	3	3	3
Days Lab.Cured-ASTMC192:	4	25	25
Age at Test, days:	7	28	28
Load at Failure, pounds:	103,000	143,500	135,500
Strength, psi:	3640	5080	4790

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By Joel Durrell

B178

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4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

DATE: October 9, 1992
October 30, 1992

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	14A	14B	14C
Date Cast:	10-1-92	10-1-92	10-1-92
Age to be Tested,days:	7	28	28
Slump:	4"	4"	4"
Air Content:	6.7%	6.7%	6.7%

Location of Placement: Sand filter cell, WWTP

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs; Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol; Air 3.2 oz/cy Catexol

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823366-1	823366-2	823366-3
Date Received:	10-6-92	10-6-92	10-6-92
Method of Curing:			
Days on Job & Enroute:	5	5	5
Days Lab.Cured-ASTMC192:	2	23	23
Age at Test, days:	7	28	28
Load at Failure, pounds:	101,500	137,000	138,000
Strength, psi:	3590	4850	4880

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

By Joel Demello

twin city testing corporation

4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: October 14, 1992
November 4, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	15A	15B	15C
Date Cast:	10-6-92	10-6-92	10-6-92
Age to be Tested,days:	7	28	28
Slump:	4"	4"	4"
Air Content:	6.2%	6.2%	6.2%

Location of Placement: Office & Restroom Slab WWTP

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs; Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol; Air 3.2 oz/cy Catexol

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823393-1	823393-2	823393-3
Date Received:	10-6-92	10-6-92	10-6-92
Method of Curing:			
Days on Job & Enroute:	3	3	3
Days Lab.Cured-ASTMC192:	4	25	25
Age at Test, days:	7	28	28
Load at Failure, pounds:	101,000	131,000	130,000
Strength, psi:	3570	4640	4600

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

TWIN CITY TESTING CORPORATION

B180

By Jul Durrell

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: October 21, 1992
November 9, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-93-075

FIELD DATA:

Job Identification:	16A	16B	16C
Date Cast:	10-9-92	10-9-92	10-9-92
Age to be Tested,days:	7	28	28
Slump:	5"	5"	5"
Air Content:	6.0%	6.0%	6.0%

Location of Placement: North 1/2 Slab WWTP

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs; Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol; Air 3.2 oz/cy Catexol

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: **Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.**

Laboratory Number:	823401-1	823401-2	823401-3
Date Received:	10-13-92	10-13-92	10-13-92
Method of Curing:			
Days on Job & Enroute:	4	4	4
Days Lab.Cured-ASTMC192:	3	24	24
Age at Test, days:	7	28	28
Load at Failure, pounds:	85,500	128,000	125,500
Strength, psi:	3030	4530	4440

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel Guanella

Joel J Guanella
Eau Claire Branch Manager

B181

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: October 21, 1992
November 9, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-93-075

FIELD DATA:

Job Identification:	17A	17B	17C
Date Cast:	10-11-92	10-11-92	10-11-92
Age to be Tested,days:	8	28	28
Slump:	5.5"	5.5"	5.5"
Air Content:	5.8%	5.8%	5.8%

Location of Placement: South 1/2 Slab WWTP

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs; Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol; Air 3.2 oz/cy Catexol

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823400-1	823400-2	823400-3
Date Received:	10-13-92	10-13-92	10-13-92
Method of Curing:			
Days on Job & Enroute:	2	2	2
Days Lab.Cured-ASTMC192:	6	26	26
Age at Test, days:	8	28	28
Load at Failure, pounds:	93,000	120,500	121,500
Strength, psi:	3290	4260	4300

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel J Guanella

Joel J Guanella
Eau Claire Branch Manager

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twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: October 21, 1992
November 9, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-92-463

FIELD DATA:

Job Identification:	18A	18B	18C
Date Cast:	10-11-92	10-11-92	10-11-92
Age to be Tested,days:	8	28	28
Slump:	5.5"	5.5"	5.5"
Air Content:	6.0%	6.0%	6.0%

Location of Placement: South 1/2 Slab WWTP

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs; Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol; Air 3.2 oz/cy Catexol

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823402-1	823402-2	823402-3
Date Received:	10-13-92	10-13-92	10-13-92
Method of Curing:			
Days on Job & Enroute:	2	2	2
Days Lab.Cured-ASTMC192:	6	26	26
Age at Test, days:	8	28	28
Load at Failure, pounds:	86,000	114,000	118,500
Strength, psi:	3040	4030	4190

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel Guanella

Joel J Guanella
Eau Claire Branch Manager

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: October 23, 1992
November 12, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-93-075

FIELD DATA:

Job Identification:	19A	19B	19C
Date Cast:	10-15-92	10-15-92	10-15-92
Age to be Tested,days:	7	28	28
Slump:	4"	4"	4"
Air Content:	6.1%	6.1%	6.1%

Location of Placement: Tank Bases WWTP

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs; Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol; Air 3.2 oz/cy Catexol

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823425-1	823425-2	823425-3
Date Received:	10-21-92	10-21-92	10-21-92
Method of Curing:			
Days on Job & Enroute:	6	6	6
Days Lab.Cured-ASTMC192:	1	22	22
Age at Test, days:	7	28	28
Load at Failure, pounds:	83,000	121,500	124,000
Strength, psi:	3010	4300	4390

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel Guanella

Joel J Guanella
Eau Claire Branch Manager

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: **COMPRESSION TESTS OF CONCRETE CYLINDERS**

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

DATE: October 28, 1992
November 18, 1992

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

PROJECT NO: 8200-93-075

FIELD DATA:

Job Identification:	20A	20B	20C
Date Cast:	10-20-92	10-20-92	10-20-92
Age to be Tested,days:	7	28	28
Slump:	4"	4"	4"
Air Content:	6.2%	6.2%	6.2%

Location of Placement: Front Stoop WWTP

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 410 lbs; Fly Ash 125 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 16 oz/cy Catexol; Air 3.2 oz/cy Catexol

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: **Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26*Sq.In.**

Laboratory Number:	823457-1	823457-2	823457-3
Date Received:	10-26-92	10-26-92	10-26-92
Method of Curing:			
Days on Job & Enroute:	6	6	6
Days Lab.Cured-ASTMC192:	1	22	22
Age at Test, days:	7	28	28
Load at Failure, pounds:	133,500	155,000	150,000
Strength, psi:	4720	5480	5310

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel J Guanella

Joel J Guanella
Eau Claire Branch Manager

B185

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: **COMPRESSION TESTS OF CONCRETE CYLINDERS**

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

DATE: November 11, 1992
November 30, 1992

PROJECT NO: 8200-93-075

FIELD DATA:

Job Identification:	21A	21B	21C
Date Cast:	10-29-92	10-29-92	10-29-92
Age to be Tested, days:	7	28	28
Slump:	3 1/2	3 1/2	3 1/2"
Air Content:	Not Indicated		

Location of Placement: Elevated Slab WWTP

Specified Strength @ 28 days: 3000 psi

Mix Proportions:
Cement: 335 lbs; Fly Ash 110 lbs
Fine Aggregate: 1540 lbs
Coarse Aggregate: 1760 lbs
Admixtures: W.R. 3 oz/100 lbs. Catexol

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823507-1	823507-2	823507-3
Date Received:	11-04-92	11-04-92	11-04-92
Method of Curing:			
Days on Job & Enroute:	6	6	6
Days Lab.Cured-ASTMC192:	1	22	22
Age at Test, days:	7	28	28
Load at Failure, pounds:	103,000	150,000	150,000
Strength, psi:	3640	5310	5310

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel J Guanella
Eau Claire Branch Manager

B186

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twin city testing corporation

4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

DATE: November 19, 1992
December 10, 1992

PROJECT NO: 8200-93-075

FIELD DATA:

Job Identification:	22A	22B	22C	22D
Date Cast:	11-12-92	11-12-92	11-12-92	11-12-92
Age to be Tested,days:	7	7	28	28
Slump:	4"	4"	4"	4"
Air Content:	7.0%	7.0%	7.0%	7.0%

Location of Placement: Trace scale pad

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 515 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 15.3 oz/cy; Air 3.2 oz /cy

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823537-1	823537-2	823537-3	823537-4
Date Received:	11-17-92	11-17-92	11-17-92	11-17-92
Method of Curing:				
Days on Job & Enroute:	5	5	5	5
Days Lab.Cured-ASTMC192:	2	2	23	23
Age at Test, days:	7	7	28	28
Load at Failure, pounds:	87,500	92,500	107,000	105,000
Strength, psi:	3100	3270	3790	3720

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel Guanella

Joel J Guanella
Eau Claire Branch Manager

B187

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: **COMPRESSION TESTS OF CONCRETE CYLINDERS**

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

DATE: December 10, 1992

PROJECT NO: 8200-93-075

FIELD DATA:

Job Identification:	22E
Date Cast:	11-12-92
Age to be Tested,days:	28
Slump:	4"
Air Content:	7.0%
Location of Placement:	Trace scale pad
Specified Strength @ 28 days:	4000 psi
Mix Proportions:	
Cement:	515 lbs
Fine Aggregate:	1490 lbs
Coarse Aggregate:	1810 lbs
Admixtures:	W.R. 15.3 oz/cy; Air 3.2 oz /cy
Concrete Furnished by:	Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823537-5
Date Received:	11-17-92
Method of Curing:	
Days on Job & Enroute:	5
Days Lab.Cured-ASTMC192:	23
Age at Test, days:	28
Load at Failure, pounds:	136,000
Strength, psi:	4810

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel J Guanella
Eau Claire Branch Manager

B188

twin city testing corporation

4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

DATE: December 2, 1992
December 21, 1992

PROJECT NO: 8200-93-075

FIELD DATA:

Job Identification:	23A	23B	23C
Date Cast:	11-20-92	11-20-92	11-20-92
Age to be Tested,days:	10	28	28
Slump:	4"	4"	4"
Air Content:	6.4%	6.4%	6.4%

Location of Placement: Scale Slab

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 515 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: W.R. 15.3 oz/cy; Air 3.2 oz /cy

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823554-1	823554-2	823554-3
Date Received:	11-30-92	11-30-92	11-30-92
Method of Curing:			
Days on Job & Enroute:	10	10	10
Days Lab.Cured-ASTMC192:	0	18	18
Age at Test, days:	10	28	28
Load at Failure, pounds:	110,000	127,500	127,500
Strength, psi:	3890	4510	4510

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel J Guanella

Joel J Guanella
Eau Claire Branch Manager

twin city testing corporation

4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

DATE: December 2, 1992
December 22, 1992

PROJECT NO: 8200-93-075

FIELD DATA:

Job Identification:	24A	24B	24C
Date Cast:	11-24-92	11-24-92	11-24-92
Age to be Tested, days:	7	28	28
Slump:	4"	4"	4"
Air Content:	Not Indicated		

Location of Placement: Scale Walls

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 515 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures:

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823556-1	823556-2	823556-3
Date Received:	11-30-92	11-30-92	11-30-92
Method of Curing:			
Days on Job & Enroute:	6	6	6
Days Lab.Cured-ASTMC192:	1	22	22
Age at Test, days:	7	28	28
Load at Failure, pounds:	79,000	130,500	134,500
Strength, psi:	2800	4620	4760

REMARKS: * Information taken from field data sheet prepared by: Mr Benny Walker.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel J Guanella

Joel J Guanella
Eau Claire Branch Manager

B190

twin city testing corporation
4376 HALLIE ROAD
CHIPPEWA FALLS, WI 54729
PHONE 715/832-0282

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

DATE: December 8, 1992
December 30, 1992

PROJECT NO: 8200-93-075

FIELD DATA:

Job Identification:	25A	25B	25C
Date Cast:	11-30-92	11-30-92	11-30-92
Age to be Tested,days:	7	28	28
Slump:	Not Indicated		
Air Content:	Not Indicated		
Location of Placement:	Scale Walls		
Specified Strength @ 28 days:	4000 psi		
Mix Proportions:			
Cement:	515 lbs		
Fine Aggregate:	1490 lbs		
Coarse Aggregate:	1810 lbs		
Admixtures:			
Concrete Furnished by:	Olynicks-Ladysmith		

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823563-1	823563-2	823563-3
Date Received:	12-1-92	12-1-92	12-1-92
Method of Curing:			
Days on Job & Enroute:	1	1	1
Days Lab.Cured-ASTMC192:	6	27	27
Age at Test, days:	7	28	28
Load at Failure, pounds:	120,000	149,000	151,500
Strength, psi:	4250	5270	5360

REMARKS: * Information taken from field data sheet prepared by: Mr Charles Williamson.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel J Guanella

Joel J Guanella
Eau Claire Branch Manager

B191

REPORT OF: COMPRESSION TESTS OF CONCRETE CYLINDERS

PROJECT: FLAMBEAU MINE
LADYSMITH, WISCONSIN

REPORTED TO: Cooper Engineering
Mr Ben Walker
100 West Orchard Beach Lane
Rice Lake, WI 54868

DATE: December 10, 1992
January 4, 1993

PROJECT NO: 8200-93-075

FIELD DATA:

Job Identification:	26A	26B	26C
Date Cast:	12-3-92	12-3-92	12-3-92
Age to be Tested, days:	7	28	28
Slump:	4"	4"	4"
Air Content:	6.0%	6.0%	6.0%

Location of Placement: Approach slab

Specified Strength @ 28 days: 4000 psi

Mix Proportions:
Cement: 515 lbs
Fine Aggregate: 1490 lbs
Coarse Aggregate: 1810 lbs
Admixtures: Air 3.2 oz/cy; WR 15.3 oz/cy

Concrete Furnished by: Olynicks-Ladysmith

COMPRESSIVE STRENGTH: Test Method - ASTM C39, 6"X12" Cylinder, Area 28.26 Sq.In.

Laboratory Number:	823568-1	823568-2	823568-3
Date Received:	12-10-92	12-10-92	12-10-92
Method of Curing:			
Days on Job & Enroute:	7	7	7
Days Lab.Cured-ASTMC192:	0	21	21
Age at Test, days:	7	28	28
Load at Failure, pounds:	57,500	127,000	133,000
Strength, psi:	2030	4490	4710

REMARKS: * Information taken from field data sheet prepared by: Mr Charles Williamson.
Cylinders appear to have been frozen.

HUNTINGDON - TWIN CITY TESTING CORPORATION

Joel J Guanella

Joel J Guanella
Eau Claire Branch Manager

B192

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Braun Intertec Engineering, Inc.
245 East Roselawn Avenue
St. Paul, Minnesota 55117-1943
612-487-3245 Fax: 487-1812

Engineers and Scientists Serving the Built and Natural Environments

COLORADO VACUUM EXTRACTION TEST
(ASTM D 2172)

Date: January 26, 1993

Project: BBBX-92-005A

Reported To:
Mr. Daniel Willenbring
Cooper Engineering
100 West Orchard Beach Lane
Rice Lake, WI 54868

Permeability Evaluation
Flambeau Mine
Ladysmith, WI

FIELD DATA

Sample #:	1	Bituminous Supplier:	Not Given
Date Sampled:	10-14-92	Date Received:	10-21-92
Date Tested:	10-21-92	Sampled By:	Client
WI/DOT Type:	401.2.8	Course:	Wear
Sampled Location:	Flambeau Mine 1st Lift		

LABORATORY RESULTS

Extracted Asphalt Content (%): 5.4
Specified Asphalt Content (%):

X Project Specifications
_ MN/DOT 2331 Specifications*
__ Working Range

Aggregate Gradation	% Passing	Specifications
1"	100	100
3/4"	100	90-100
5/8"	95	—
1/2"	84*	90-97
3/8"	63*	60-85
#4	49	45-75
#8	42	25-50
#16	35	—
#30	23	15-35
#50	16	10-25
#100	8	—
#200	5.8	2-8

REMARKS: The above sample does not meet WI/DOT 401.2.8, gradation #3, specification at 1/2" and 3/8" seives.

*These gradation specifications are presented for information purposes only. They are not applicable to recycled mixtures and tighter limitations may be imposed by the trial mix working range. The use of a single extraction test as the sole determinant of pay factors is not recommended. If payment is based upon test results, an average of at least three tests is recommended. Review ASTM D2172 regarding the limitations of this test method.

Retention Factor: Determined ____ Not Determined X

cc:

BRAUN INTERTEC ENGINEERING, INC.

Daniel D. Doyle

Daniel D. Doyle
Engineering Assistant

B193

BRAUN℠
INTERTEC

Braun Intertec Engineering, Inc.
245 East Roselawn Avenue
St. Paul, Minnesota 55117-1943
612-487-3245 Fax: 487-1812

Engineers and Scientists Serving the Built and Natural Environments

COLORADO VACUUM EXTRACTION TEST
(ASTM D 2172)

Date: January 26, 1993

Project: BBBX-92-005A

Reported To:
Mr. Daniel Willenbring
Cooper Engineering
100 West Orchard Beach Lane
Rice Lake, WI 54868

Permeability Evaluation
Flambeau Mine
Ladysmith, WI

FIELD DATA

Sample #:	2	Bituminous Supplier:	Not Given
Date Sampled:	10-14-92	Date Received:	10-21-92
Date Tested:	10-21-92	Sampled By:	Client
WI/DOT Type:	406	Course:	Wear
Sampled Location:	Flambeau Mine 2nd Lift		

LABORATORY RESULTS

Extracted Asphalt Content (%): 4.4
Specified Asphalt Content (%):

X Project Specifications
_ MN/DOT 2331 Specifications*
_ Working Range

Aggregate Gradation	% Passing	Specifications
1"	100	100
3/4"	100	90-100
5/8"	99	—
1/2"	89*	90-97
3/8"	75	60-85
#4	56	45-75
#8	43	25-50
#16	32	—
#30	23	15-35
#50	16	10-25
#100	8	—
#200	5.8	2-8

REMARKS: The above sample does not meet WI/DOT 401.2.8, gradation #3, specifications at 1/2" sieve.

*These gradation specifications are presented for information purposes only. They are not applicable to recycled mixtures and tighter limitations may be imposed by the trial mix working range. The use of a single extraction test as the sole determinant of pay factors is not recommended. If payment is based upon test results, an average of at least three tests is recommended. Review ASTM D2172 regarding the limitations of this test method.

Retention Factor: Determined _____ Not Determined __X__

cc:

BRAUN INTERTEC ENGINEERING, INC.

Daniel D. Doyle

Daniel D. Doyle
Engineering Assistant

B194

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☒ Humboldt # 338 ☐ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

10/14/92 ASPHALT - RAILROAD ON HWY 27

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
564	N39550,E41430	1,146.1	147.5	5.8	4.2	150.3	98.1%
565	N39530,E41430	1,146.1	146.8	5.2	1.3	150.3	97.7%

10/14/92 ASPHALT - PARKING LOT

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
566	N41870,E41250	1,148.8	145.2	5.1	6.6	150.3	96.6%
567	N41870,E41200	1,148.8	146.2	5.3	5.8	150.3	97.3%
568	N41770,E41225	1,150.8	145.8	4.8	6.7	150.3	97.0%
569	N41675,E41250	1,152.8	145.9	4.6	6.8	150.3	97.0%
570	N41675,E41210	1,152.8	145.0	4.3	7.9	150.3	96.5%

10/14/92 ASPHALT - TURN LANES

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
571	N41770,E41306	1,150.4	143.9	5.2	7.4	150.3	95.7%
572	N41925,E41362	1,152.0	144.4	5.6	6.5	150.3	96.0%
573	N42025,E41360	1,152.2	142.9	4.6	8.8	150.3	95.1%
574	N41875,E41415	1,151.7	144.8	5.4	6.6	150.3	96.3%
575	N41725,E41419	1,150.7	146.6	4.4	6.7	150.3	97.5%
576	N41575,E41422	1,149.7	145.0	5.3	6.5	150.3	96.5%
577	N41575,E41368	1,149.7	144.6	5.6	6.5	150.3	96.2%
578	N41675,E41366	1,150.3	145.8	5.2	6.2	150.3	97.0%

Project Specification: Minimum of 95% relative compaction.

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☒ Humboldt # 338 ☐ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

10/14/92 ASPHALT - TURN LANES JANSEN

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
579	N39315,E41412	1,147.0	144.8	5.4	6.5	150.3	96.3%
580	N39215,E41413	1,147.3	143.9	5.1	7.5	150.3	95.7%
581	N39065,E41416	1,147.4	143.6	4.9	7.9	150.3	95.5%
582	N38966,E41420	1,147.5	146.7	4.9	5.9	150.3	97.6%
583	N39315,E41464	1,147.0	144.0	4.2	8.6	150.3	95.8%
584	N39215,E41466	1,147.3	143.0	5.3	7.8	150.3	95.1%
585	N39015,E41470	1,147.5	146.9	4.5	6.4	150.3	97.7%
586	N38915,E41470	1,147.6	149.3	4.9	4.2	150.3	99.3%

10/15/92 ASPHALT - ADMINISTRATION PARKING

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
587	N39290,E40555	1,146.2	145.5	5.3	6.3	150.3	96.8%
588	N39290,E40680	1,143.7	144.2	4.8	7.7	150.3	95.9%
589	N39165,E40555	1,146.0	145.0	5.0	6.9	150.3	96.5%
590	N39165,E40680	1,144.0	143.9	5.6	6.9	150.3	95.8%

10/15/92 ASPHALT - ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
591	N39145,E40490	1,146.8	145.0	5.5	6.4	150.3	96.5%
592	N39145,E40690	1,143.8	147.8	6.3	3.5	150.3	98.3%
593	N39145,E40890	1,140.9	144.1	5.1	7.4	150.3	95.9%
594	N39125,E41090	1,141.1	144.6	5.2	7.0	150.3	96.2%
595	N39115,E41290	1,144.8	144.4	4.9	7.5	150.3	96.0%

Project Specification: Minimum of 95% relative compaction.

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☒ Humboldt # 338 ☐ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

10/15/92 ASPHALT - RAILROAD ON HWY 27

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
596	N39550,E41430	1,146.3	147.3	4.9	5.7	150.3	98.0%
597	N39530,E41430	1,146.3	145.4	5.8	5.6	150.3	96.7%

10/15/92 ASPHALT - PARKING LOT

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
598	N41870,E41250	1,149.0	149.9	5.2	3.6	150.3	99.7%
599	N41870,E41200	1,149.0	144.6	5.6	6.5	150.3	96.2%
600	N41770,E41225	1,151.0	151.5	4.4	3.7	150.3	100.8%
601	N41675,E41250	1,153.0	144.1	6.1	6.1	150.3	95.9%
602	N41675,E41210	1,153.0	144.4	5.2	7.1	150.3	96.0%

10/15/92 ASPHALT - TURN LANES

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
603	N41770,E41306	1,150.6	143.1	5.6	7.4	150.3	95.2%
604	N41925,E41362	1,152.2	142.9	5.6	7.5	150.3	95.1%
605	N42025,E41360	1,152.4	148.2	5.1	4.7	150.3	98.6%
606	N41875,E41415	1,151.9	142.4	5.9	7.4	150.3	95.0%
607	N41725,E41419	1,150.9	143.0	5.9	7.1	150.3	95.2%
608	N41575,E41422	1,149.9	147.7	5.3	4.9	150.3	98.2%
609	N41575,E41368	1,149.9	149.6	5.0	4.0	150.3	99.5%
610	N41675,E41366	1,150.5	147.1	5.3	5.3	150.3	97.9%

Project Specification: Minimum of 95% relative compaction.

Cooper Engineering Co., Inc.

Compaction Test Results

Test Method: ASTM D2922/AASHTO T-238
Gauge: ☒ Humboldt # 338 ☐ Troxler # 21075 ☐ Troxler # 503449

Project: Flambeau Mining Company; Ladysmith, WI
Client: Flambeau Mining Company
Project #: CS91120
Report Date: Jan. 31, 1992

10/15/92 ASPHALT - TURN LANES JANSEN

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
611	N39315,E41412	1,147.1	143.3	5.6	7.2	150.3	95.3%
612	N39215,E41413	1,147.4	145.7	4.5	7.2	150.3	96.9%
613	N39065,E41416	1,147.5	145.4	5.4	6.2	150.3	96.8%
614	N38966,E41420	1,147.6	149.1	5.0	4.4	150.3	99.2%
615	N39315,E41464	1,147.1	145.4	5.3	6.3	150.3	96.7%
616	N39215,E41466	1,147.4	144.5	5.9	6.2	150.3	96.1%
617	N39015,E41470	1,147.6	144.8	5.5	6.4	150.3	96.3%
618	N38915,E41470	1,147.7	143.9	5.7	6.7	150.3	95.8%

10/15/92 ASPHALT - ADMINISTRATION PARKING

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
619	N39290,E40555	1,146.3	143.4	5.2	7.7	150.3	95.4%
620	N39290,E40680	1,143.8	144.0	5.6	6.8	150.3	95.8%
621	N39165,E40555	1,146.1	146.6	5.2	5.7	150.3	97.6%
622	N39165,E40680	1,144.1	144.7	5.5	6.5	150.3	96.3%

10/15/92 ASPHALT - ACCESS ROAD

TEST #	LOCATION	ELEVATION	WET DENSITY pcf	MOISTURE PERCENT	PERCENT AIRVOIDS	MAXIMUM DENSITY pcf	PERCENT COMPACTION
623	N39145,E40590	1,145.5	146.6	5.0	5.9	150.3	97.5%
624	N39145,E40790	1,142.5	148.1	5.3	4.6	150.3	98.5%
625	N39135,E40990	1,139.6	143.6	6.2	6.4	150.3	95.6%
626	N39120,E41190	1,143.1	145.8	5.2	6.2	150.3	97.0%

Project Specification: Minimum of 95% relative compaction.

Flambeau Mining Company

Date: 5-18-92
Weather: Sunny
Temperature: 42 a.m. 70 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			8			8	

Equipment (List below)

B199

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

SeT up FielD Lab

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: 5-19-92

Weather: Sunny

Temperature: 53 a.m. 85 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

B200

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Set up Lab, Located Waste and Loess Material in Type I Stockpile area.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Welk[illegible]

Owner: [illegible signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: 5-20-92

Weather: Sunny

Temperature: 38 a.m. 85 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

B201

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Lab work, Determine waste & Loess material in Type II stockpile area.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Danny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: May 21-92
Weather: Sunny
Temperature: 60 a.m. 84 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			9			9	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Locating Waste & Loess material.

Doing Soil Testing on Sand from Type I Stockpile area that will be used for Fill.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Barry Walker

Owner: [signature]

B202

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: May 26-92
Weather: Sunny
Temperature: 38° a.m. 58° p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

B203

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary (such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Testing In Lab, With Jon Buntow Going over soils and placement of soils

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng.

Contractor's rep.: Denny Walker

Owner: [signature]

White - Contractor   Green - Accounts   Canary - Control   Pink - Proj. File   Gold - SLC Central File

Flambeau Mining Company

Date: May 27-92
Weather: Sunny
Temperature: 41 a.m. 67 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural					—		
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents	—						
Engineers	—		1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

B204

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Compaction Test on 24"
cmp in settlement Pond
Locating LOESS & waste WITH
Jon Gumtow. Taking more
samples For under Liner Material

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: May 28-92
Weather: Sunny
Temperature: 51 a.m. 74 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			9½			9½	

Equipment (List below)

B205

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test in Lab,
Locating and overseeing
soil placement

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.
Contractor's rep.: Ben Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: May 29-92
Weather: Sunny
Temperature: 51 a.m. 73 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

B206

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test in Lab.
Paper work. Locating and
overseeing soil placement
Density test in Type II
Stockpile area.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: MAY 30-92
Weather: Partly Cloudy
Temperature: 50 a.m. 78 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			5			5	

Equipment (List below)

B207

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density test in Type II area
over seeing soil Placement.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 1-92

Weather: Partly Cloudy

Temperature: 57 a.m. 79 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

B208

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary (such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on SE Corner Type II, oversight on EBS area

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 2-93
Weather: Sunny
Temperature: 58 a.m. 80 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on SE corner of Type II. oversight of soil placement.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Coopin Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

B209

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 3-92

Weather: Sunny

Temperature: 59 a.m. 84 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10 1/2			10 1/2	

Equipment (List below)

B210

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary (such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on SE corner Type II, over seeing Soil Placement.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 4-92
Weather: Sunny
Temperature: 59 a.m. 80 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			9			9	

Equipment (List below)

B211

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Location Loess & Waste in Type I for Stockpiles, Locating Topsoil & Hydric in Phase II

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 5-92

Weather: Sunny

Temperature: 47 a.m. 74 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			8h			8h	

Equipment (List below)

B212

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Locating Tgo5011 from Hydric In Phase II

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [signature]

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 8-92
Weather: Cloudy
Temperature: 47 a.m. 64 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Locating Nypnic in Phase II
Inspecting Loess coming from Facilities area.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [illegible]

Owner: [illegible]

B213

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 9-92

Weather: Partly Cloudy

Temperature: 60 a.m. 74 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

B214

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on 6" Lift of Loess in Type II

Density Test on Phase II Bern

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's Rep.: Barry Walker

Owner: Dale Cameron

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 10-92
Weather: Sunny
Temperature: 60 a.m. 84 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

B215

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on 6" Lift of Loess in Type II
Density Test on Phase II Berm

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [signature] Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 11-92
Weather: Sunny
Temperature: 60 a.m. 86 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Type II Phase A Berm

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Coggin Eng.
Contractor's rep.: Barry Walker
Owner: [signature]

B216

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 12 -92
Weather: Sunny
Temperature: 61 a.m. 85 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

B217

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Phase II Berm.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Wilken

Owner: John [illegible]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 13-92

Weather: Sunny

Temperature: 61 a.m. 90 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			8			8	

Equipment (List below)

B218

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Phase II Bldg.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 15-92

Weather: Cloudy

Temperature: 61 a.m. 74 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			10		10	20	

Equipment (List below)

Check on two men

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on NW corner of Type I Berm about 400' long.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

B219

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 16-92
Weather: Cloudy
Temperature: 61 a.m. 70 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			8½			8½	

Equipment (List below)

B220

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Type I Berm NW corner.
SubBase around Type I Berm

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Bery Welker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: 6-22-92

Weather: Cloudy

Temperature: 54 a.m. 65 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

B221

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Sub Base around Type I area & Explosive Magazine

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 23-92
Weather: Cloudy
Temperature: 54 a.m. 70 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10 ½			10 ½	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Indicating Waste from good material coming from Surge + Runoff Pond. Paper work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

B222

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 24-92
Weather: Cloudy
Temperature: 58 a.m. 75 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			11			11	

Equipment (List below)

B223

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Hydric To Topsoil StockPile, material from Runoff Pond Area, Paper Work Locating Loess in Crusher Area compaction Test on Phase II Berm

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 25-92

Weather: Partly Cloudy

Temperature: 48 a.m. 75 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			10 1/2		10 1/2	21	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Sub Base on Haul Road.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Benj Welke

Owner: [signature]

B224

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 27-92
Weather: Sunny
Temperature: 51 a.m. 80 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			8			8	

Equipment (List below)

B225

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on SubBase on Haul Road SW of Type II

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng
Contractor's rep.: Benny Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: June 29-92
Weather: Sunny
Temperature: 51 a.m. 74 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		10½	21½	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspection of EBS area on access Road and Density Tests on fill

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Benny Walker

Owner: [signature]

B226

Flambeau Mining Company

Date: June 30 -90

Weather: Sunny

Temperature: 52 a.m. 75 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		10½	21½	

Equipment (List below)

B227

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Fill on Access Road in EBS Area.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [illegible signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 1-92
Weather: Sunny
Temperature: 66 a.m. 76 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Survey			1		2	3	
Tot. Indir. labor							
TOTAL			2		3	5	
Subcontracts							
Total Subcon.							
Total Manhours			17½		25	42½	

Equipment (List below)

B228

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Survey Crew checking Blue Tops in Type II & control Points. Pick up Base coarse samples & Paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor   Green - Accounts   Canary - Control   Pink - Proj. File   Gold - SLC Central File

Flambeau Mining Company

Date: 7-6-92

Weather: Sunny

Temperature: 53 a.m. 82 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			12½		35½	48	

Equipment (List below)

B229

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Testing In Lab on overliners Material, Density tests on EBS Area on access Road.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: 7-7-92
Weather: Cloudy
Temperature: 67 a.m. 80 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			11		31	42	

Equipment (List below)

B230

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests in Lab, Density Test on Access Road, 4th Crop, First 6" Lift of Loess

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.
Contractor's rep.: [signature]
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 8-92

Weather: Cloudy

Temperature: 67 a.m. 80 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
[illegible]			1		1	2	
Tot. Indir. labor							
TOTAL			2		4	6	
Subcontracts							
Total Subcon.							
Total Manhours			20½		40½	61	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests in Lab. Density Tests on Backfill for 48" cmp. Density Test on Loess for Type II.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: [illegible]

Owner: [illegible]

B231

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 9-92

Weather: Sunny

Temperature: 63 a.m. 80 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Survey			1		1	2	
Tot. Indir. labor							
TOTAL			2		4	6	
Subcontracts							
Total Subcon.							
Total Manhours			20		31½	51½	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests In Lab.
Density Tests In Type II
2nd Lift of Loess, And
Loess In Leachate Pipe Trench

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

B232

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 10-92
Weather: Cloudy - Rain
Temperature: 57 a.m. 75 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL							
Subcontracts							
Total Subcon.							
Total Manhours			3 1/2		8 1/2	12	

Equipment (List below)

B233

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Lab Work, paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 13-92

Weather: Sunny

Temperature: 55 a.m. 72 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			10		28	38	

Equipment (List below)

B234

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests in Lab

Density Test on Base Course on Type I Berm.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Bry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 15 - 92

Weather: Partly Cloudy

Temperature: 53 a.m. 73 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			10		15½	25½	

Equipment (List below)

B235

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests in Lab. Density Test on Loess in NE corner Type II. Inspecting Soils on Rail Spur.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 16-92
Weather: Sunny
Temperature: 58 a.m. 77 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		23	24	
Warehousemen							
Office Clerical							
Tot. Indir. labor.							
TOTAL			1		23	24	
Subcontracts							
Total Subcon.							
Total Manhours			10		29	39	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test in Lab,
Density Tests on Rail Spur

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

B236

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: 7-17-92

Weather: Partly Cloudy

Temperature: 58 a.m. 77 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		4	5	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		4	5	
Subcontracts							
Total Subcon.					40	52	
Total Manhours			12		[illegible]	[illegible]	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests in Lab
Density Tests on spur
Inspecting material coming from spur

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benj Walker

Owner: [signature]

B237

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 18-92

Weather: PartLy Cloudy

Temperature: 57 a.m. 74 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			6		6	12	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Rail Spur

Sump #3 by Surge pond,

Sub Base on 400' of Type I

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Bing Walker

Owner: [signature]

B238

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 20 -92
Weather: Partly Cloudy
Temperature: 55 a.m. 70 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		4	5	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		4	5	
Subcontracts							
Total Subcon.							
Total Manhours			11		37½	48½	

Equipment (List below)

B239

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test For Lab, Density Tests on Rail Spur

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 21-92

Weather: Sunny

Temperature: 49 a.m. 70 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		4	5	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL							
Subcontracts							
Total Subcon.							
Total Manhours			13		42	55	

Equipment (List below)

B240

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test In Lab.
Density Test on Rail Spur
On Loess in Type II & Surge
Pond.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [signature]

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 23-92
Weather: Sunny
Temperature: 58 a.m. 75 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen			[illegible]				
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			14½		31½	46	

Equipment (List below)

B241

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test Lab. Density Test on Soil Spoon, — Loess in Type-II, Loess in Leachate Ditch, Tests in Surge pond.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [signature]

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 24-92
Weather: Sunny
Temperature: 53 a.m. 80 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			13 1/2		36 1/2	50	

Equipment (List below)

B242

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test in Lab, Density Test on Spun, Loess in Type II and Sump #3 & 4

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Coggan Eng

Contractor's rep.: Barry Walton

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 25-97
Weather: Cloudy
Temperature: 63 a.m. 77 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			9 1/2		16 1/2	26	

Equipment (List below)

B243

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Rail Spur STA 46+0 -48+0 Density Tests on Backfill for Sumps #3 & 4

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Bing Watkins

Owner: Jack Cameron

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 25-92
Weather: Cloudy
Temperature: 58 a.m. 68 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		4	5	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		4	5	
Subcontracts							
Total Subcon.							
Total Manhours			13		48	61	

Equipment (List below)

B244

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test In Lab, Density Test on Rail Spur from STA 58+0 -60+0, Density Test on LOESS in Fypall, Base course on Explosive mag, and on STA 44+50 -45+50 on Spur

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [illegible]

Owner: [illegible]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company
Date: July 27-92
Weather: Sunny
Temperature: 50 a.m. 50 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			13½		34	47½	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests in Lab. Density Tests on Rail Spur, on Backfill for Sumps, on Loess in Type II

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's Rep.: Benny Walker

Owner: [signature]

B245

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 28-92

Weather: Partly cloudy

Temperature: 63 a.m. 78 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			12½		33½	46	

Equipment (List below)

B246

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test in Lab, Density Test on Rail spur STa 19-20 Density Test on Backfill for sump #3+4, Rail spur STa 42+-43

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep: [signature]

Owner: [signature]

Flambeau Mining Company

Date: July 29-92

Weather: Sunny

Temperature: 63 a.m. 75 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			12		28½	40½	

Equipment (List below)

B247

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test in Lab, Density Test on Spur STa 18-19, Leachate Ditches In Type II

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [illegible]

Owner: [illegible]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: July 30-92
Weather: Sunny
Temperature: 52 a.m. 73 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers		~~0~~	1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			11		31	42	

Equipment (List below)

B248

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on spur
STa 21-22, STa 41-42
Density Tests on LOESS in
Type II

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company
Date: July 31-92
Weather: Sunny
Temperature: 55 a.m. 80 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			13		30	43	

Equipment (List below)

B249

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests in Lab. Density Test on Rail Spur, on Loess in Type II, Gravel Bedding For Leachate Pipes.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walter

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: August 1 -92

Weather: Sun

Temperature: 58 a.m. 84 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			5		15	20	

Equipment (List below)

B250

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests In Loess Typically on Rail spur. Inspecting under cutts on Spur

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Caspen Eng.

Contractor's rep.: Ben Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company
Date: August 3-92
Weather: Sunny
Temperature: 54 a.m. 72 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			11½		32½	44	

Equipment (List below)

B251

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress
Soil Tests in Lab, paper work, Density Test on spur, Inspecting cuts on spur

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Copper Eng.
Contractor's rep.: Barry Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug. 4-92
Weather: Sunny
Temperature: 53 a.m. 77 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			13		27½	40½	

Equipment (List below)

B252

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests In Lab, Density Tests on Rail spur, Inspecting cuts on spur, paper work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [signature]

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug. 5-92
Weather: Sunny
Temperature: 50 a.m. 78 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			12		30	42	

Equipment (List below)

B253

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test in Lab, Density Tests on Rail Spur, Type II
Inspecting Cuts on Rail Spur

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng
Contractor's rep.: Barry Walton
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

L

Flambeau Mining Company

Date: Aug. 6-92
Weather: Cloudy
Temperature: 55 a.m. 80 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			12		21½	33½	

Equipment (List below)

B254

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test in Lab. Density Tests on Rail Spur, Losses in Type II

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Copper Eng.

Contractor's rep.: Benny Wolfhm

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug-7-92
Weather: Cloudy
Temperature: 62 a.m. 75 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			12½		24	36½	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspection Rail spur cuts, Crusher EBS, Density Tests on Rail spur, EBS crusher area, backfill for 32" pipe

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng

Contractor's rep.: [signature]

Owner: [signature]

B255

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug 8-92
Weather: Sunny
Temperature: 61 a.m. 86 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers					2	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL					2	2	
Subcontracts							
Total						4	
Total Subcon.							
Total Manhours					14½	14½	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests, Inspecting Gravel for Leachate Pipe

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng

Contractor's rep.: Ben Walker

Owner: [signature]

B256

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: 8-10-92
Weather: Sunny
Temperature: 68 a.m. 75 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			10		4	14	

Equipment (List below)

B257

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Paper WORK

10

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug. 11-92

Weather: Sunny

Temperature: 58 a.m. 74 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			13½		34½	48	

Equipment (List below)

B258

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests in Lab, Inspecting cuts on Spur, underground piping, Density Tests on Spur, underground pipe 32"

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Bry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug. 12-92
Weather: Cloudy
Temperature: 68 a.m. 67 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			12½		24	36½	

Equipment (List below)

B259

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting cut on spur
Density Tests on spur, EBS
in Crusher site, Back fill
for 32" underground pipe.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng
Contractor's rep.: Bruy Walden
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug. 13-92

Weather: Sunny

Temperature: 42 a.m. 71 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			12		21	33	

Equipment (List below)

B260

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests in Lab, Density Tests on Spur, EBS in crusher area, Backfill underground pipe. Inspecting cuts on Spur.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [signature]

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug. 14-92

Weather: Sunny

Temperature: 42 a.m. 71 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			12		29½	41½	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on culverts for Rail Spur, on access Road, Back Fill for underground Pipes Soils Tests in Lab.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [signature]

Owner: [signature]

B261

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug 15-92

Weather: Sunny

Temperature: 52 a.m. 73 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers					2	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL					2	2	
Subcontracts							
Total Subcon.							
Total Manhours					20½	20½	

Equipment (List below)

B262

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on access Road Rail Spur culverts, Facilities area.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Coopr Eng.

~~Contractor's rep.:~~ Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug-17-92
Weather: Cloudy
Temperature: 48 a.m. 71 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			12		30	42	

Equipment (List below)

B263

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Backfill for Underground Pipe, base for Buildings, soil Tests in Lab. Inspecting Material from Type I, Waste, Loess, Fill being separated Density Tests on access Road

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug. 18-92

Weather: Sunny

Temperature: 53 a.m. 77 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			13½		20	33½	

Equipment (List below)

B264

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on underground Piping, access Road, Inspecting over Liner material. Fill for Building site. Soils Tests

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Copper Eng.

Contractor's rep.: [signature]

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug 19-92
Weather: Sunny
Temperature: 56 a.m. 78 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Tr[illegible]con.							
Total Manhours			13½		21½	35	

Equipment (List below)

B265

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on underground piping, Building Site, Rail Spur,

Inspecting overline Material, Hydric soils, Cut on Rail Spur STa. 12+0 - 13+0
Soil Test In Lab

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng
Contractor's rep.: Benny Walther
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug 20-92
Weather: Sunny
Temperature: 52 a.m. 61 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Tot. Subcon.							
Total Manhours			13½		17½	31	

Equipment (List below)

B266

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests in Lab
Density Tests on Rail Spur
underground pipe, pea gravel
for Leachate Pipe.
Inspecting cut on Rail
Spur

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [signature]

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug 21-92
Weather: Sunny
Temperature: 57 a.m. 83 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1	3		4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1	3		4	
Subcontracts							
Total Subcon.							
Total Manhours			12½	31		43½	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Pea Gravel
for Leachate Pipes. Backfill
for under ground pipe
Sub Bolst on span. paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogen Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

B267

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug. 22-92
Weather: Sunny
Temperature: 64 a.m. 83 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1	2		3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1	2		3	
Subcontracts							
Total Subcon.							
Total Manhours			7	9 1/2		16 1/2	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Rail Spur subBalst, Sump #1&2, Sub Grade Rail spur, access Road, Paper Work. Inspecting SubBalst material

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

B268

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: August 24
Weather: Sunny
Temperature: 71 a.m. 82 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			13		18½	31½	

Equipment (List below)

B269

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Rail Spur Sub Balst, Spur Fill
Inspection cut on Rail spur
Sta 14+0 - 14+50
Density Test Back Fill underground Pipe, under Footings for Lab Building, Visitors Parking

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng
Contractor's rep.: Barry Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: August 25-92
Weather: Cloudy - RAIN
Temperature: 58 a.m. 66 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers		0	1	2		3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1	2		3	
Subcontracts							
Total Subcon.							
Total Manhours			12		18½	30½	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Rail Spur, underground pipe, Visitors Parking.
Inspecting cut on Spur STA 14+50 R+O
Concrete Tests on Lab Footings

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [illegible signature]

Owner: [illegible signature]

B270

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug 26-92
Weather: Partly Cloudy
Temperature: 51 a.m. 64 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers		1		3		4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL		1		3		4	
Subcontracts							
Total Subcon.							
Total Manhours		13		36		47	

Equipment (List below)

B271

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests in Lab. Density Tests on Parking area, Loess In Typett, underground Pipe. Backfill for Sump #1&2, Turn out Lanes

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor   Green - Accounts   Canary - Control   Pink - Proj. File   Gold - SLC Central File

Flambeau Mining Company

Date: Aug 27 -97

Weather: Partly Cloudy

Temperature: 48 a.m. 69 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			12		33	45	

Equipment (List below)

B272

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Tests In Lab. Density Tests on Parking Lot, Turn Lanes Loess In Type II

Concrete Test on Frost Walls For Lab. ADm.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep: [signature] Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug. 29-92
Weather: Cloudy
Temperature: 54 a.m. 72 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			12		12	24	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Parking
LoT & Lanes, Rail spur
Inspecting cut on Rail Spur.
Density Test on LOESS For
Crusher SITE.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Casper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug. 28-92
Weather: Sunny
Temperature: 47 a.m. 71 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			12		20½	32½	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soils Tests in Lab.
Density Tests on Backfill
for Sumps, Turn Lanes &
Pass Lane, underground
pipe

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Coppen Eng.

Contractor's rep.: [signature]

Owner: [signature]

B273

White - Contractor   Green - Accounts   Canary - Control   Pink - Proj. File   Gold - SLC Central File

Flambeau Mining Company

Date: Aug 30-92
Weather: Cloudy
Temperature: 48 a.m. 062 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			6			6	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Hydric Soil, Cut on Crusher area; Paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Amy Walden

Owner: [signature]

B274

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Aug. 31 -92
Weather: Partly Cloudy
Temperature: 48 a.m. 64 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			13		28	41	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting cut on Rail Spur
Placing of Sub Ballast
Density Tests on Spur
on man Hole for 36" pipe

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Copper Eng.

Contractor's rep.: Barry Walfman

Owner: [signature]

B275

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 1-92
Weather: Sunny
Temperature: 42 a.m. 71 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers		1			3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL		1			3	4	
Subcontracts							
Total Subcon.							
Total Manhours		13			34	47	

Equipment (List below)

B276

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Rail Spur, 36" underground Pipe, 6" Sanitary Sewer Lines & Man Holes, Sub Ballast.
Inspecting Ties & Rail
Density Test on Turn Lanes

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng
Contractor's rep.: Barry Walker
Owner:

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 2-92
Weather: Rain
Temperature: 65 a.m. 71 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		3	14	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Spur,
underground piping
Paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Bing Walker

Owner: [signature]

B277

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 3-92
Weather: Sunny
Temperature: 56 a.m. 74 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			12		17	29	

Equipment (List below)

B278

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Rail spur Sub Ballast, under ground pipes, Back fill for Lab & Adm. Building Density Tests on 16" Pipe Between Fyrett & Hasatt

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep. Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company
Date: Sept. 4-92
Weather: RAIN
Temperature: 48 a.m. 66 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers		1		2		3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL		1		2		3	
Subcontracts							
Total Subcon.							
Total Manhours		9		5		14	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Rail Spur, 36" pipe repair work.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Coggin Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

B279

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company
Date: Sept 8-92
Weather: Sunny
Temperature: 48 a.m. 62 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers		1			3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL		1			3	4	
Subcontracts							
Total Subcon.							
Total Manhours		12½			25	37½	

Equipment (List below)

B280

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Rail Spur Sub Ballast, Sub Base on Access Road, underground pipe. Back fill Lab & Adm Building

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 9-92

Weather: Cloudy

Temperature: 51 a.m. 60 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		3	4	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		3	4	
Subcontracts							
Total Subcon.							
Total Manhours			13		22	35	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soil Test in Lab. Density Test on access Road, 36" pipe, underground piping Lab Parking Lot.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Barry Walker

Owner: [signature]

B281

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 10-92

Weather: Cloudy

Temperature: 46 a.m. 58 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			12		18½	30½	

Equipment (List below)

B282

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on access Road, Loess in crusher Site, underground piping, Adm. Parking Lot

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: 9/11/92
Weather: Sunny
Temperature: 36 a.m. 66 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			12		11	23	

Equipment (List below)

B283

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on access Road, Cmps for Rail spur, under ground pipe.

Concrete Tests for WWTP Footings

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor   Green - Accounts   Canary - Control   Pink - Proj. File   Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 12, 1992
Weather:
Temperature: ________ a.m. ________ p.m.
Contract: Cooper Eng.

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			10		10	20	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on
Base Course for Parking
Lot & Access Rd,
Loess for Crusher

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

B284

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept 14-92

Weather: P. Cloudy

Temperature: 61 a.m. 74 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			12 1/2		11 1/2	24	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Base course on access Road & Parking LoT, on Slurry Wall area.

Concrete Tests on North 1/2 of Lab. Rm. Floor.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

B285

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 15-92

Weather: Partly Cloudy

Temperature: 61 a.m. 78 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			12		11	23	

Equipment (List below)

B286

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Slurry Wall pad, underground piping

Estimating Concrete Pour

Paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cayuga Eng

Contractor's rep.: Barry Walker

Owner:

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 16

Weather: Cloudy

Temperature: 61 a.m. 77 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			10		5	15	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Concrete cly to Lab
Entering compaction Test
on computer, Gridding N & E
compaction Tests

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [signature]

Owner: [signature]

B287

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company
Date: Sept. 17-92
Weather: Partly Cloudy
Temperature: 58 a.m. 73 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			10½		4	15½	

Equipment (List below)

B288

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test for under
Clarifier PAD.
Paper Work
Water Samples for
Slurry Wall

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept 18-92
Weather: Cloudy
Temperature: 53 a.m. 62 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10½			10½	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Concrete Tests For Clarifier Pad, on WWTP Walls. Paper Work.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng
Contractor's rep.: Bing Walker
Owner: [signature]

B289

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 21-92

Weather: Cloudy

Temperature: 58 a.m. 70 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			12		8	20	

Equipment (List below)

B290

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on LOFCS
for Surge Pond, Density
Tests on Rail Spur STA 7+0-11+0
Paper work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Coop. Eng

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 22-92
Weather: Sunny
Temperature: 48 a.m. 60 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			13			13	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Rail spur,
LOESS In crusher site,
Locating Sub Base Material,
Paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng
Contractor's rep.: Barry Walker
Owner: [signature]

B291

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 23-92

Weather: Sunny

Temperature: 53 a.m. 64 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			11			11	

Equipment (List below)

B292

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Subgrade on Rail Spur 7+0 - 11+0, on Sub Ballast at Meadow Brook Intersection,

Concrete Tests on Sump Walls for WWTP.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [signature] Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 22-92
Weather: Sunny
Temperature: 48 a.m. 72 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			11		20	31	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on LOESS In Runoff Pond, Density Test on SubBase in Facilities area.

Inspecting Slurry Wall

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Bruce Walker

Owner: [signature]

B293

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company
Date: Sept. 25-92
Weather: Sunny
Temperature: 46° a.m. 73 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		8	19	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on SubBase For Facilities Area, Inspection For Slurry Wall.

Concrete Test For WWTP

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng
Contractor's rep.: [signature]
Owner: [signature]

B294

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 26-92
Weather: Sunny
Temperature: 38 a.m. 49 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			8			8	

Equipment (List below)

B295

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Sub
Base for Facilities area.
Paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cypm Eng

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 28-92
Weather: Sunny
Temperature: 38 a.m. 51 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			11½		20	31½	

Equipment (List below)

B296

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Sub Base
for Facilities area, Backfill
for Lysimeter M.H.

Inspecting Slurry Wall.

Soil Tests

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng
Contractor's rep.: Barry Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Sept. 29-92
Weather: Sunny
Temperature: 30 a.m. 70 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			11		19	30	

Equipment (List below)

B297

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Base course on Facilities area, Density Tests on Back Fill for Lysimeter Pipe.
Soil Tests.

Inspecting Slurry Wall.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: 9-30-92
Weather: Sunny
Temperature: 35 a.m. 70 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers		1			1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL		1			1	2	
Subcontracts							
Total Subcon.							
Total Manhours		11			11	22	

Equipment (List below)

B298

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Built Span, SubBase on Facility area

Inspect Slurry Wall

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's Rep.: [signature]

Owner: [signature]

White - Contractor   Green - Accounts   Canary - Control   Pink - Proj. File   Gold - SLC Central File

Flambeau Mining Company

Date: Oct 1-92
Weather: Sun
Temperature: 45 a.m. 74 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		6½	17½	

Equipment (List below)

B299

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Concrete Test For WWTP
Inspecting Slurry Wall

Density Test on Lysimeter Pond, Fill In Facilities area
Soil Tests

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: [signature]
Contractor's Rep.: [signature]
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 2-92
Weather: Sunny
Temperature: 47° a.m. 74 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			11		17	28	

Equipment (List below)

B300

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on SubBase in Facilities area, on Base course in Facilities area, on SubBallast on Rail Spur STA 6+0 - 16+0

Inspecting Slurry Wall

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Coyne Eng

Contractor's rep: B. Wilh[illegible]

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 3 -92
Weather: Sun
Temperature: 49 a.m. 74 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			5			5	

Equipment (List below)

B301

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Concrete Test for WWTP

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Benz Walker
Contractor's rep.: Cayuna Eng
Owner: [signature]

White - Contractor   Green - Accounts   Canary - Control   Pink - Proj. File   Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 5. 92
Weather: Cloudy
Temperature: 51 a.m. 64 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			13		19	32	

Equipment (List below)

B302

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Sub Ballast
on Rail Spur
Density Test on Leachate
Pipe Gravel, Lysimeter Pond
Pea Gravel
Inspecting Slurry Wall.
Soil Test In Lab

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng.

Contractor's rep.: [signature]

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 6-92
Weather: Cloudy - Lt Rain
Temperature: 51 a.m. 58 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			12		15½	27½	

Equipment (List below)

B303

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Gravel For LeacHate Pipe Bedding, Fill for Rail Spur.
Concrete Tests on WWTP & Diafram Wall.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Caspr Eng.

Contractor's rep: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 7-92

Weather: Cloudy Rain

Temperature: 45 a.m. 55 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			9		18½	27½	

Equipment (List below)

B304

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Test on Rail Crossing

Inspecting Diversion Wall

Soil Tests, Paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Barry Walker

Owners: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 8-92
Weather: Cloudy Rain
Temperature: 44V a.m. 51 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			6½		11	17½	

Equipment (List below)

B305

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diafram Wall
Concrete Test Core panels
paper work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cayon Eng.

Contractor's rep: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct-9-97
Weather: Cloudy Rain
Temperature: 44 a.m. 53 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			8		23	31	

Equipment (List below)

B306

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Concrete Tests on WWTP
Engineering Diafarm Wall
[illegible] [illegible] work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng
Contractor's rep.: [illegible]
Owner: [illegible]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct 10-92
Weather: Cloudy
Temperature: 43 a.m. 55 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			8			8	

Equipment (List below)

B307

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspect Diafram Wall
Test concrete for panel #14

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cayne Eng

Contractor's rep.:

Owner:

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company
Date: Oct. 11-92
Weather: Sunny
Temperature: 44° a.m. 60 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			6			6	

Equipment (List below)

B308

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress
Test concrete for slab
for WWTP

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: [signature]
Contractor's rep.: [signature]
Owner: [signature]

White - Contractor   Green - Accounts   Canary - Control   Pink - Proj. File   Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 12-92
Weather: Sunny
Temperature: 46 a.m. 52 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11½		11½	23	

Equipment (List below)

B309

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphragm Wall, Rail Spur, Paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Caspian Eng.

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 13-92

Weather: Sunny

Temperature: 26 a.m. 51 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			11½		17	28½	

Equipment (List below)

B310

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphram Wall

concrete Tests for panel #6

Density Tests on Leachate Pipe

Gravel

Soil Tests

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cayuga Eng

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 14-92
Weather: Cloudy
Temperature: 38 a.m. 49 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			12½		12½	25	

Equipment (List below)

B311

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Density Tests on Asphalte, Concrete Test on Diaphram Wall.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Casper Engr.
Contractor's rep.: Barry Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct 15-92

Weather: Clouds

Temperature: 37 a.m. 52 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11½		11½	23	

Equipment (List below)

B312

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting ~~[illegible]~~ Diversion Wall, concrete Test for WWTP, Density Tests on Asphalt, on Leachate pea Gravel,

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Barry Walker

Owner: [illegible signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: 04/16-92
Weather: S[illegible]
Temperature: 32° a.m. 41 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			10		11	21	

Equipment (List below)

B313

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphragm Wall
Concrete Test for Diaphragm
Wall. Inspecting overburden
& crushed Rock.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Fry
Contractor's rep.: Barry Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 14-92

Weather: Cloudy

Temperature: 18 a.m. 37 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		10	21	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphram Wall, overliner mat, Crusher Rock, Paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cayuna Eng

Contractor's rep.: Barry Walker

Owner: [signature]

B314

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 20-92

Weather: cloudy

Temperature: 33 a.m. 42 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			12		10	22	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Concrete Tests for Panel #15 on Diaphragm Wall, concrete Tests for WWTP. Inspecting cut for panel #11 Soil Tests

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng

Contractor's rep.: B. Walker

Owner: [signature]

B315

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 21-92

Weather: Sunny

Temperature: 38 a.m. 55 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		11	22	

Equipment (List below)

B316

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphragm Wall
Inspecting material for
crusher site, Haul Road
Thru Type II: Separating
Loess from Waste & [illegible]
[illegible] Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: [signature]

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 22-92

Weather: Sunny

Temperature: 40 a.m. 72 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		11	22	

Equipment (List below)

B317

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphram wall, Concrete Test for Panel #11 Inspecting Fill for Haul Road & Crusher site, Paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 23-92

Weather: Sunny

Temperature: 44 a.m. 63 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		2	3	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		2	3	
Subcontracts							
Total Subcon.							
Total Manhours			11		19	30	

Equipment (List below)

B318

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Soils Test, Inspecting Diaphram Wall, concrete Test Panel #5 Inspecting Haul Road, paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company
Date: Oct. 24-92
Weather: Sunny
Temperature: 47° a.m. 70 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers					1	1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL					1	1	
Subcontracts							
Total Subcon.							
Total Manhours					8	8	

Equipment (List below)

B319

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphram Wall.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cayon Eng

Contractor's rep.: B. Welle

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct 26-92
Weather: Sunny
Temperature: 42 a.m. 58 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		11	22	

Equipment (List below)

B320

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphragm Wall.
concrete Tests for panel #9
Inspecting fill for 60' Haul
Road, pipe work Inspecting
concrete pour for WWTP

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng
Contractor's rep: [signature] Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 27-92

Weather: Sunny

Temperature: 23 a.m. 52 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		11	22	

Equipment (List below)

B321

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphram Wall
concrete Test for Panel #4
Inspecting 60' Haul Road
Power Work.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Eng

Contractor's rep.: B. Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct. 28-92

Weather: Cloudy

Temperature: 30 a.m. 39 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		11	22	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphram Wall concrete Tests for panel #17
Inspecting 60' Haul Road, French Drain for Rail Spur, concrete Pour for WWTP.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogun Eng

Contractor's rep.: Barry Walton

Owner: [signature]

B322

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: ~~Sunny~~ Oct. 29-92

Weather: Sunny

Temperature: 38 a.m. 44 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		11	22	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphram Wall
concrete Test for Panel #10,
for Elevated Slab W.W.T.P.
Test Holes in phase II
Paper Work

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep.: [signature]

Owner: [signature]

B323

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Oct 30-92
Weather: Sunny
Temperature: 22 a.m. 48 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1		1	2	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1		1	2	
Subcontracts							
Total Subcon.							
Total Manhours			11		11	22	

Equipment (List below)

B324

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphram Wall and Concrete TEST on pad #3. Test pit in Mine Site for LOESS

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Benny Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Nov. 2-92
Weather: Cloudy Rain
Temperature: 32 a.m. 38 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			11			11	

Equipment (List below)

B325

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Concrete Tests on Diaphragm Wall Panel # 18 & 19, 1 & 2

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cayuga Eng
Contractor's rep: Barry Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Nov. 3 -92
Weather: cloudy
Temperature: 31 a.m. 39 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			5½			5½	

Equipment (List below)

B326

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphragm Wall

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cogan Fry

Contractor's rep.: Barry Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Nov. 4 -92

Weather: Cloudy

Temperature: 28 a.m. 33 p.m.

Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			7			7	

Equipment (List below)

B327

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Excavation For
S 1/2 Deadman Walls

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cagen King

Contractor's rep.: B. Walker

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Nov. 5-92
Weather: Cloudy
Temperature: 26 a.m. 31 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			4 1/2			4 1/2	

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary (such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting 5 1/2 Excavation For Deadman Wall, Steel For Deadman Wall

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep: Barry Walker

Owner: [signature]

B328

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Nov. 6-92
Weather: Cloudy
Temperature: 18 a.m. 30 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl · Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			10			10	

Equipment (List below)

B329

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress
Inspecting Deadman
Wall - Setting Forms.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cayan Fing
Contractor's rep.: Barry Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Nov. 9-92
Weather: Cloudy
Temperature: 34 a.m. 45 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			6			6	

Equipment (List below)

B330

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Dead man Wall

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.
Contractor's rep.: [signature]
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Nov. 10 -92
Weather: Cloudy
Temperature: 32 a.m. 41 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			5			5	

Equipment (List below)

B331

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Deadman Wall

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng
Contractor's rep.: Barry Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Nov. 11-92
Weather: Sunny
Temperature: 31 a.m. 42 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			6			6	

Equipment (List below)

B332

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Diaphram Wall

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng

Contractor's rep: [signature]

Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: Nov. 12-92
Weather: Cloudy
Temperature: 28 a.m. 33 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			11			11	

Equipment (List below)

B333

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

concrete Tests for Deadman Wall & Scale Pad

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng.

Contractor's rep.: Barry Watkins

Owner: [signature]

White - Contractor   Green - Accounts   Canary - Control   Pink - Proj. File   Gold - SLC Central File

Flambeau Mining Company

Date: Nov. 16-92
Weather: Cloudy
Temperature: 27 a.m. 34 p.m.
Contract:

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete							
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers			1			1	
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL			1			1	
Subcontracts							
Total Subcon.							
Total Manhours			4			4	

Equipment (List below)

B334

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

Inspecting Deadman Wall,
Rail Spur Scale

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: Cooper Eng
Contractor's rep.: Barry Walker
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

/

Flambeau Mining Company
Date: 11-24-92
Weather: Cloudy
Temperature: 32° a.m. ________ p.m.
Contract: ____________

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL							
Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork			[illegible]				
Concrete			1				
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers							
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL							
Subcontracts							
Total Subcon.							
Total Manhours			8				

Equipment (List below)

B335

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary
(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress
TEST CONCRETE ON SCALE WALLS - GEN. DAS.

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: COOPER ENG.
Contractor's rep. CHARLES H. Wilkinson
Owner: [signature]

White - Contractor Green - Accounts Canary - Control Pink - Proj. File Gold - SLC Central File

Flambeau Mining Company

Date: NOV-23
Weather: Cloudy
Temperature: 34 a.m. ________ p.m.
Contract: ________

CONTRACTOR'S DAILY REPORT

CONSTRUCTION PERSONNEL

Classification	Staff	Gnrl Foremen	Foremen	Skill Labor	Labor	Total on Payroll	Absent
Direct Labor							
Earthwork							
Concrete			1				
Struct. Steel							
Buildings							
Architectural							
Mechanical							
Piping							
Electrical							
Instrumentation							
Other							
Total Dir. Labor							
Indirect Labor							
Management							
Superintendents							
Engineers							
Warehousemen							
Office Clerical							
Tot. Indir. labor							
TOTAL							
Subcontracts							
Total Subcon.							
Total Manhours		8					

Equipment (List below)

DAILY CONSTRUCTION DATA

Items causing delays (include drawings, materials, equipment, etc.)

Items which may cause delay in future:

Major material quantities summary

(such as excavation, concrete, struct. steel, piping, etc.):

Material	Today	Prev. Total	Total to Date

General Information - Work in progress

TEST CONCRETE FOR DEAD MAN WALL - General Inspection -

Continue General Info. on Other Side

These reports are to be submitted the day following the work.

Contractor: COOPER Eng.

Contractor's rep: CHARLES A.W. Williamson

Owner: [signature]

B336

White - Contractor   Green - Accounts   Canary - Control   Pink - Proj. File   Gold - SLC Central File

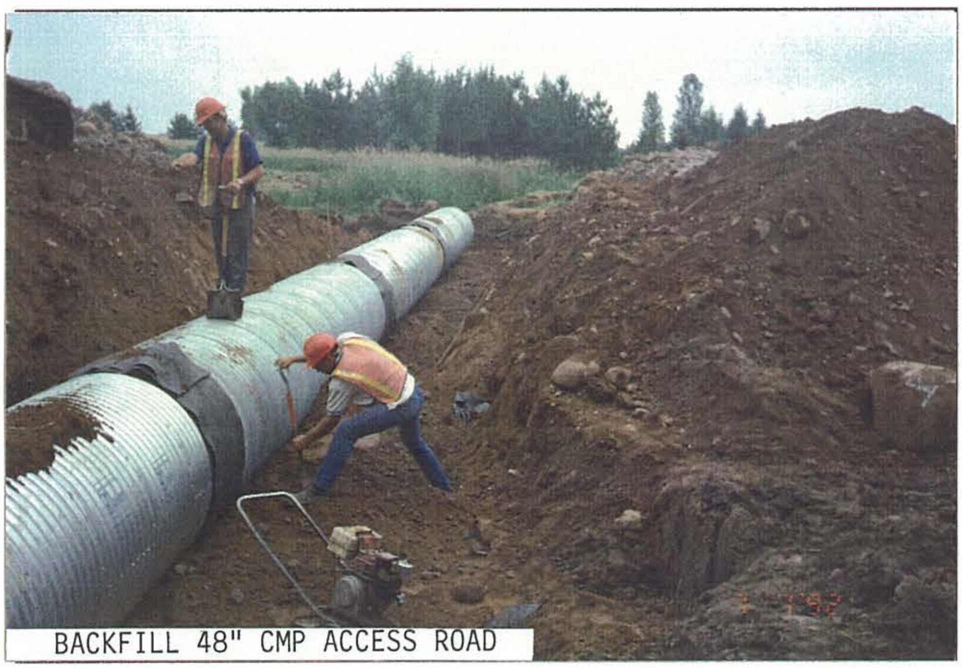
Appendix C

1992 Construction Activity Photography

SUBBASE ON HAUL ROAD

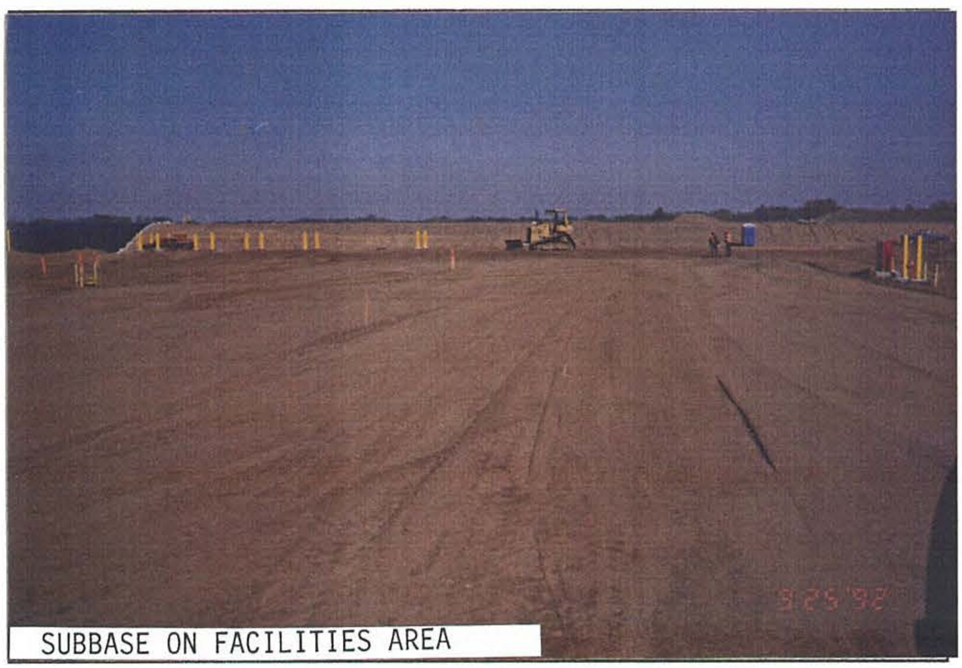
HAULING SUBBASE

PLACING 48" CMP ACCESS ROAD



BACKFILL 48" CMP ACCESS ROAD

CUTTING FACILITIES AREA


SUBBASE ON FACILITIES AREA

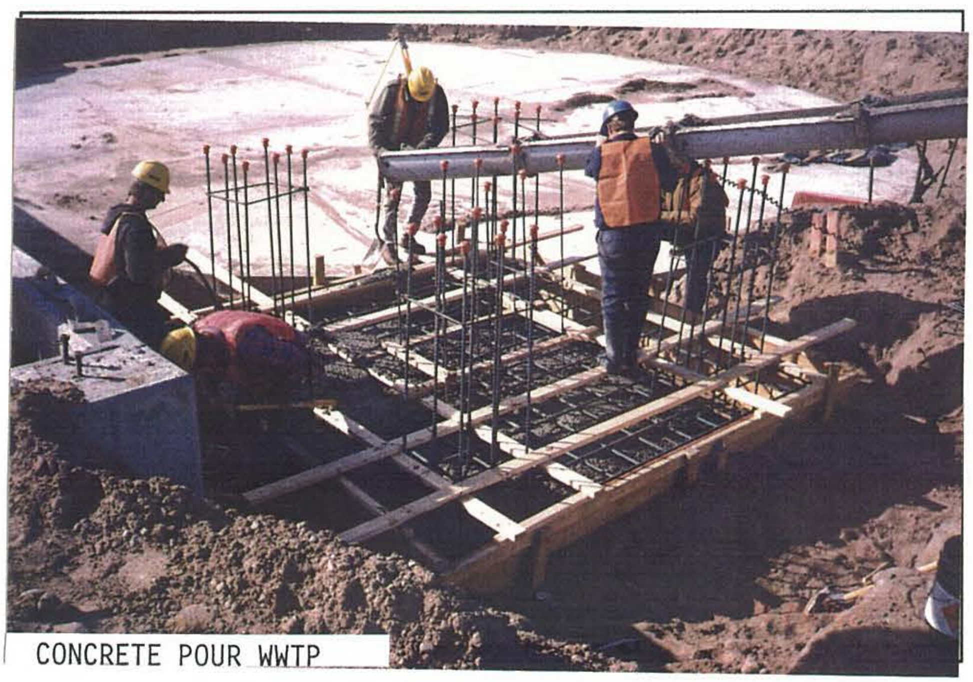
FORMING FOOTINGS FOR ADM & LAB


POUR NORTH ½ LAB ADM. FLOOR

STEEL FOR LAB & ADM.

LAB AND ADMINISTRATION BUILDING

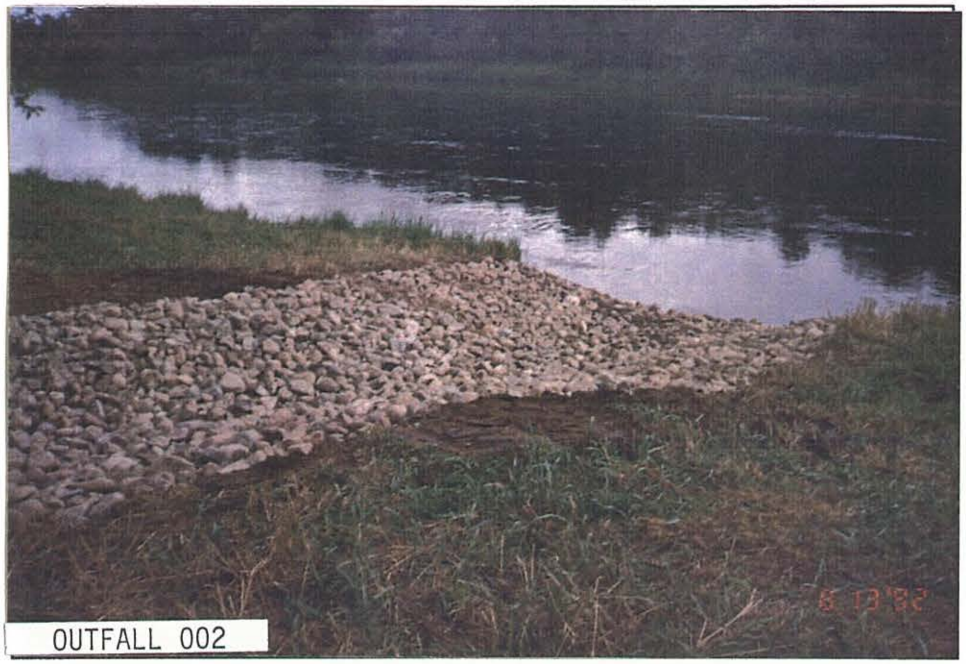
POURING CLAIRIFIER SLAB



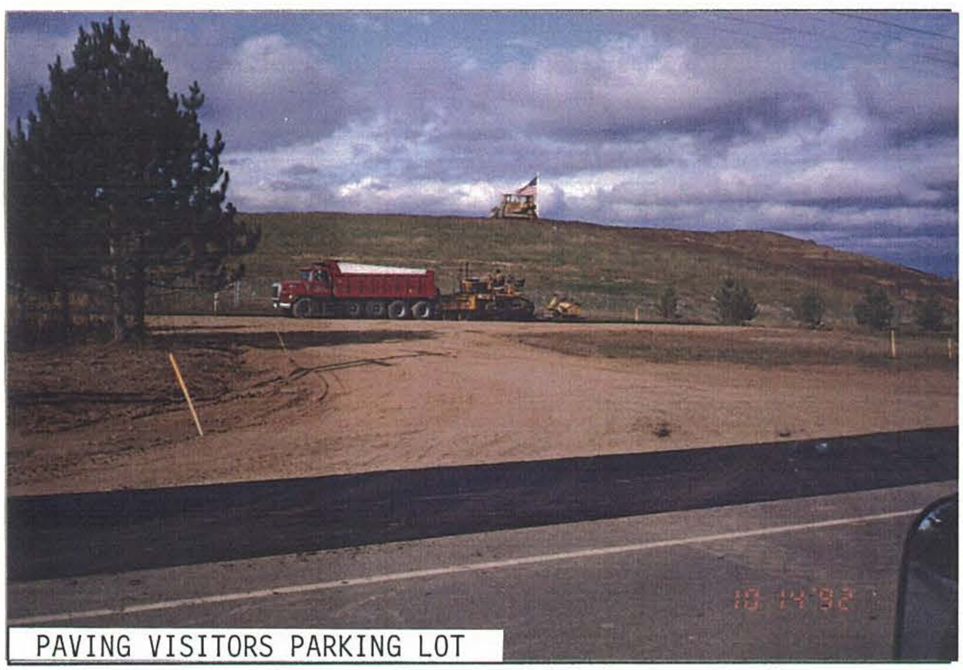
CONCRETE POUR WWTP

WASTEWATER TREATMENT PLANT

WWTP

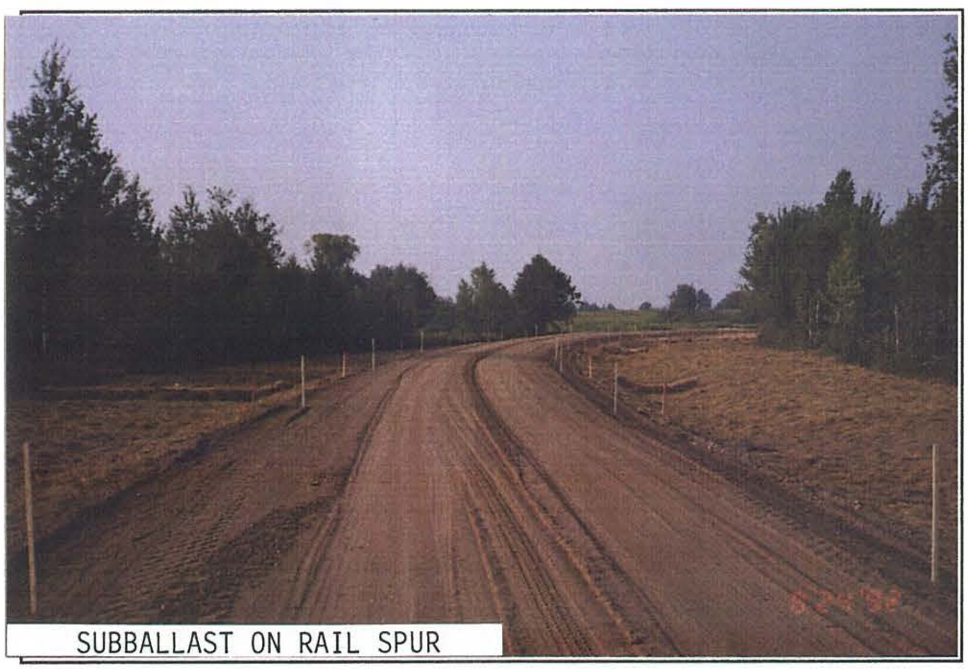


OUTFALL 002



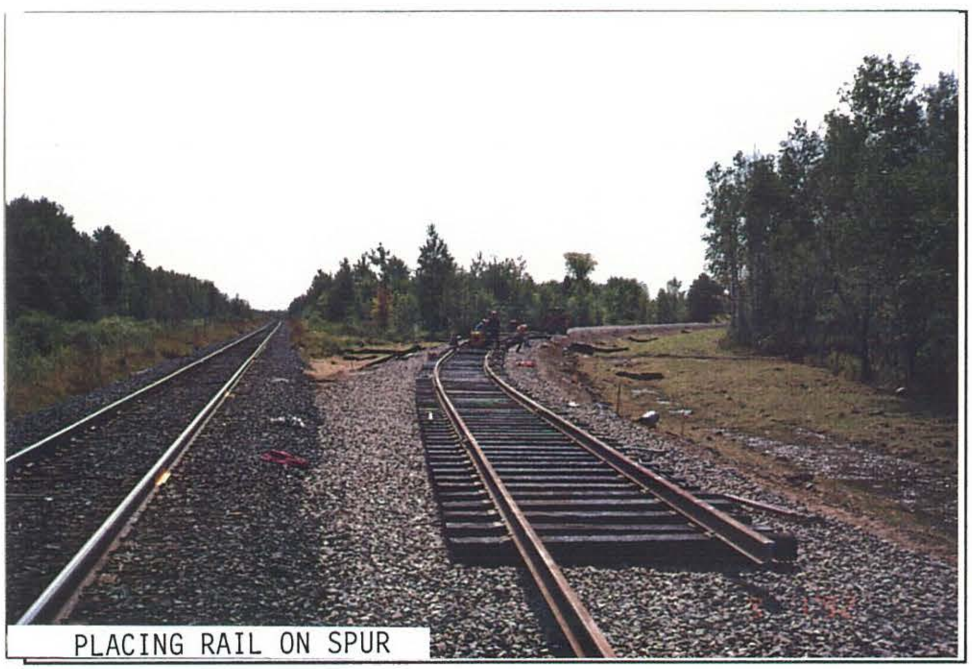
PAVING VISITORS PARKING LOT

EROSION CONTROL ALONG RAIL SPUR



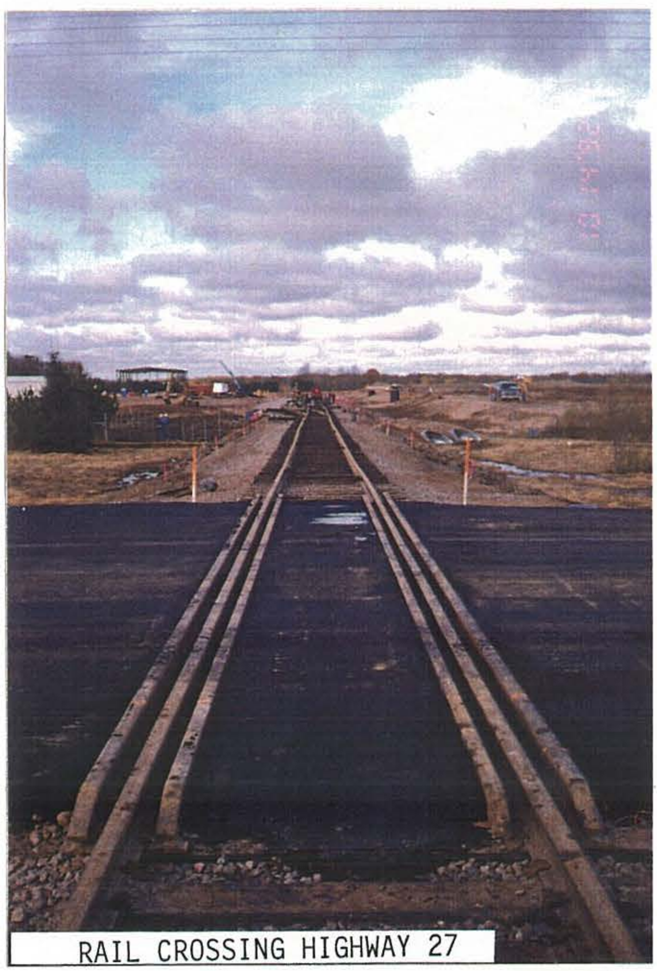
SUBBALLAST ON RAIL SPUR

END WALL & RIP RAP AT STA 62 + 0 FOR RAIL SPUR



PLACING RAIL ON SPUR

POURING SLAB FOR TRACK SCALE



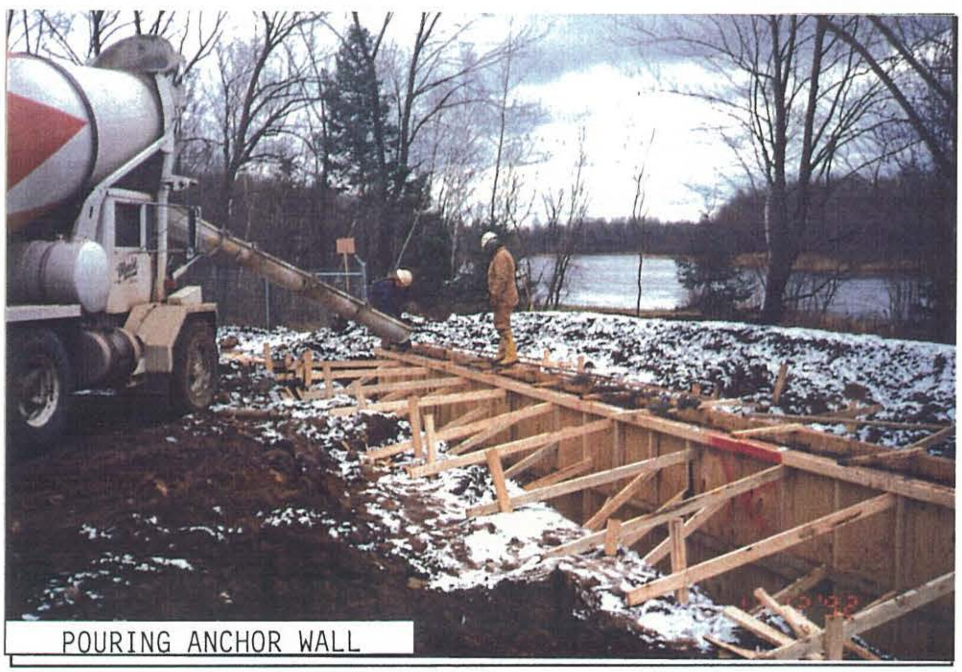
RAIL CROSSING HIGHWAY 27

[32-15]91F6

EXCAVATING SLURRY WALL

CONCRETE GUIDE WALLS FOR DIAPHRAGM WALL


STEEL FOR PANEL #5 DIAHRAGM WALL


POURING ANCHOR WALL

Appendix D

Annual Reclamation Report

Flambeau Mining Company
N4095 Highway 27
Ladysmith, Wisconsin 54848
(715) 532-7620

November 11, 1992

Kennecott

Mr. Gordon Reinke, Coordinator
Mine Reclamation Unit
Bureau of Solid and Hazardous Waste Management
101 South Webster Street, GEF II
Madison, WI 53707

Dear Mr. Reinke:

RE: Flambeau Project - Reclamation Annual Report

The Flambeau Mining Company (Flambeau) is submitting six copies of this Annual Reclamation report for the Flambeau mining project near Ladysmith, Wisconsin. The report is submitted to satisfy the requirement of Part 3, condition 26.d of the Mining Permit (Docket IH-89-14, January 14, 1991). The Annual Reclamation Report records reclamation activities, monitoring, raw data and evaluations for Flambeau Project site performed in 1992. The general format for this report was discussed and agreed to with Mr. Larry Lynch of your office on October 22, 1992.

Previous 1992 Reclamation Submittals

A list of reclamation activities which were anticipated to be performed during 1992 was submitted to the Department in a letter dated April 15, 1992 pursuant to Part 3, Condition 26.a of the Mining Permit. Pursuant to a verbal request by Larry Lynch of the Department during a May 6, 1992 site visit, an additional submittal regarding anticipated 1992 reclamation activities was forwarded to the Department, dated June 30, 1992. This subsequent submittal included temporary reclamation items as well as permanent features. A copy of both submittals is included in Attachment A.

A mid summer progress report dated October 9, 1992 (Attachment A) was submitted to the Department pursuant to Part 3, Condition 26.c of the mining permit. The format of the midsummer progress report addressed the items presented in both the previous submittals (April 15 and June 30, 1992) regarding anticipated reclamation activities at the site.

Corporate Office: 10 East South Temple • P.O. Box 11248 • Salt Lake City, Utah 84147 • (801) 322-7000

A tree transplantation notification was submitted to the Department on May 12,1992 which documented the verbal notification and transplantation descriptions that had occurred with the Department during the previous week. The Notification described the criteria used for tree selection and marking as requested by Larry Lynch during the May 6, 1992 site visit. The notification letter is included in Attachment A.

A seeding plan for the east face of the topsoil stockpile and a tree planting plan for the buffer strip along the Flambeau river was submitted to the Department dated August 27, 1992. The tree planting plan was approved by the Department in a letter dated September 29, 1992. Further and refined information was requested by the Department concerning the seeding plan. Subsequently, an updated seed mix was submitted (dated October 13, 1992). An approval of the seeding plan by WDNR is pending. These documents are included in Attachment A.

Stream "C" Relocation

Relocation of stream "C" at the southeast corner of the site has been completed and erosion control measures such as straw bales, silt fences, topsoiling and seeding have been installed.

Flood Control Dike Construction

Flood control dike construction was completed by September 21, 1992. The slurry wall was constructed through the dike in late September and October 1992. The flood control dike was regraded and topsoiled and seeded during the last week in October, 1992.

Temporary Nursery

Trees located within the pit area were selected, marked and moved to the temporary nursery pursuant to the Transplantation Notification submitted to the Department dated May 12, 1992. Trees to be planted were selected by Paul Skidmore of Foth & Van Dyke on behalf of Flambeau on May 14, 1992 in accordance to the Transplantation Plan. The trees were moved to the temporary nursery within the following week. More trees are listed in Attachment B.

Approximately 25 trees identified by WDNR representatives (Portle and Markart) were also transplanted from the mine site to the nursery.

Originally it also was planned to transplant trees from the pit area to a buffer area along STH 27 and to the buffer strip along the Flambeau River. Due to the lack of suitable onsite stock, plantings along STH 27 were accomplished using stock transplanted from offsite property owned by Flambeau. Eighty-eight trees, consisting of a mixture of Norway pine and spruce, were planted along STH 27 during June, 1992. Discussion of the Flambeau River buffer strip planting is presented below.

Plant Trees in the Buffer Strip

Nursery stock trees were planted in the Flambeau River buffer strip area according to the plan submitted to the Department dated August 19, 1992. The work was accomplished by Colonial Nursery during the month of October 1992. A detailed list of the trees planted is included in the buffer strip tree planting documentation letter prepared by Colonial Nursery contained in Attachment C.

Permanent Seeding

The topsoil area and aquascape perimeter slopes have not been reseeded with the permanent seed mix as of November 1992. Additional topsoil was placed on the stockpile in the fall 1992. It is anticipated that reseeding will take place in the fall of 1992 with prairie seed mix applied to the east face of the topsoil stockpile and DOT seed mix No. 3 applied to the remaining surfaces (pursuant to Flambeau's Oct. 13, 1992, submittal) or the entire topsoil stockpile will be covered with straw and seeded in the spring of 1993.

Slope Restoration

Restoration of the sloughed area has occurred with the exception of the berms of the one-acre aquascape test plot, which will be addressed in the spring of 1993.

Type II Stockpile - East Berm

The main portion of the east berm of the Phase II, Type II storage area was constructed in July, 1992. The outside face of berm was topsoiled and seeded in September of 1992, with DOT seed mix No. 3.

Settling Ponds

The inside slopes of the settling ponds were stabilized by placement of seeding mats in late June and July, 1992.

Slurry Cutoff Wall System

The construction of the slurry cutoff wall system commenced in September, 1992. The completion of system construction is pending at the time of this writing.

One Acre Aquascape Testplot

A stem count of the one acre test plot was performed by Country Wetlands in September 1992. The work that was conducted included a random sampling of vegetation cover within the one acre wetland test plot to determine species composition and cover percentages. The results of the 1992 analysis indicates that both the design and revegetation of the test plot has been completed very successfully. A report summarizing the findings of the stem count is included in Attachment D.

Closing Comments

The record of reclamation activities, raw data and initial evaluations of this permitted site have been submitted according to conditions of the mining permit. If there are any questions or comments regarding this report, they may be directed to Jana Murphy of Flambeau at (715) 532-7620.

Sincerely,

Jana E. Murphy

Jana E. Murphy
Supervisor of Environmental Affairs

JEM/cg
Attachments

cc: Lawerence Mercando, Flambeau Mining Company (w/att.)
Henry Handzel, DeWitt, Porter, et al (w/att.)
James B. Hutchison, Foth & Van Dyke (w/att.)
Bernice Dukerschein, Rusk County Board (w/att.)
Robert Plantz, Town of Grant (w/att.)
Al Christianson, City of Ladysmith (w/att.)
Clarence Glotfety, Rusk County Zoning (w/att.)

Attachment A

Correspondence

Foth & Van Dyke

Engineers
Architects
Planners
Scientists

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

April 15, 1992

Mr. Gordon Reinke, Coordinator
Mine Reclamation Unit
Bureau of Solid and Hazardous Waste Management
101 South Webster Street, GEF II
Madison, WI 53707

Dear Mr. Reinke:

RE: Flambeau Project - List of 1992 Reclamation Activities

On behalf of the Flambeau Mining Company (Flambeau), Foth & Van Dyke is submitting the following list of reclamation activities which are anticipated to be performed during the 1992 construction season. This list is submitted to fulfill the requirement of the Mining Permit Approval, Part 3, Condition 26(a).

Permanent reclamation activities anticipated to be constructed in 1992 are:

- Stream "C" relocation.
- Flood control dike construction.
- Relocate/plant trees to an area along the Flambeau River.

Stream "C" is located on the southeast portion of the site. The relocation of the stream is described in the mining permit application and the Surface Water Management Plan. The flood control dike is located on the west end of the pit, between the pit and the Flambeau River. Trees will be relocated from various locations across the site to an area between the pit and east shore of the Flambeau River. In addition, nursery stock will also be placed in this area to fulfill permit conditions.

Temporary reclamation activities which are anticipated to be performed during 1992 include seeding berms and the swales in retopsoiled areas and transplanting trees in the fall from the pit area to both the temporary nursery located on the north side of the project area, and to the west side of Highway 27.

If you have any questions, please contact us at your convenience.

Sincerely,

Foth & Van Dyke

James B Hutchison

James B. Hutchison, P.E.
Project Manager

Jerry W. Sevick

Jerry W. Sevick, P.E.
Group Vice President

JBH/lb

cc: Lawrence E. Mercando, Flambeau
Henry J. Handzel, DeWitt, Porter, *et al.*
Bernice Dukerschein, Rusk County
Clarence Glotfelty, Rusk County
Robert Plantz, Town of Grant
Al Christianson, City of Ladysmith
Ron Roberts, Ford, Bacon, and Davis

[32-10]91F6.51

Foth & Van Dyke

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

June 30, 1992

Mr. Gordon Reinke, Coordinator
Mine Reclamation Unit
Bureau of Solid and Hazardous Waste Management
101 South Webster Street, GGF 11
Madison, WI 53707

Dear Mr. Reinke:

RE: Flambeau Project - Reclamation Activities

On behalf of the Flambeau Mining Company (Flambeau), Foth & Van Dyke is submitting additional information regarding reclamation activities that will be performed in 1992. This information was requested by Larry Lynch of your staff during a site visit on May 6, 1992. As a point of clarification, the Department stated that in addition to the permanently reclaimed feature of the interior slopes of the one acre aquascape test plot, reclamation activities also include seeding of temporary site features such as berms and disturbed areas that will be reworked during final reclamation after the active life of the mine. Reclamation activities that will be performed in 1992 relate to seeding of permanent and temporarily reclaimed areas. A brief discussion of each of these activities follows.

Topsoil Stockpile/Aquascape Test Plot

Two areas that will be seeded or reseeded in 1992 are the topsoil stockpile area and the interior slope of the berm surrounding the one acre aquascape test plot. Per previous discussions with WDNR, it was agreed that a seed mix containing native species would be used to vegetate these two areas and that oats could be used as nursery plants. All other seeding to be completed in accordance with the plan outlined in this letter is to be completed using Wisconsin DOT seed mix No. 3 and oats as the nursery plant.

The seed mix to be used for the topsoil stockpile and interior slope of the beam surrounding the one aquascape test plot is to consist of the following:

[32-15/C3S01]91F6.51

Botanical Name	Common Name	#/Acre	% Mix
Forbs			
Anemone cylindrica	Thimble Weed	.5	.5
Asclepius tuberosa	Butterfly Milkweed	.5	.5
Solidago rigida	Stiff Goldenrod	.5	.5
Echinacea pallida	Pale Purple Coneflower	.5	.5
Eryngium yuccifolium	Rattlesnake Master	.5	.5
Monarda fitsulosa	Bergmont	.3	.3
Lespedeza capitala	Roundheaded Bush Clover	.5	.5
Rudbeckia hirta	Black-eyed Susan	.2	.2
Tradescantia ohinsis	Spiderwort	.5	.5
Grasses			
Andropogon gerardi	Big Bluestem	1.0	1.0
Elumus Canadensis	Canada Wild Rye	3.0	3.0
Panicum virgatum	Switchgrass	1.0	1.0
Sorghastrum nutans	Indiangrass	3.0	3.0
Native Seed Mixture #/acre		12.0	
Temporary Nurse Crop			
Avena Sativa	Oats	88.0	88.0
Temporary Nurse Crop Seed Mixture #/acre		88.0	

The seed mix will be deposited at a rate of approximately 100 pounds per acre by hydroseed, mechanical means or by hand. Mulch will be applied by hydroseed or by hand. Fertilizer application rates will be determined by testing the topsoil for nutrient content.

Slope Restoration

Two bermed areas that experienced side-slope surface sloughing during the spring of 1992 as well as various other small areas across the site that experienced some sloughing will be restored this year. The two primary areas are located at the northwest face of the west berm of the Type II stockpile area and the west face of the east berm of the one acre aquascape test plot.

Restoration work will be conducted by a backhoe and be through hand spading. On-site material will be used as fill if extra soil is required. Four inches of topsoil will be placed on the prepared subgrade. The topsoil will be seeded, fertilized and mulched by hand or by mechanical means.

Type II Stockpile - East Berm

The east berm (running north-south) of the Type II storage area will be constructed in 1992. Material excavated from the building area and the Phase I area of the Type II stockpile will be used to construct the berm. The outside slope of the berm will be topsoiled and seeded with Wisconsin DOT seed mix No. 3 at the rate of approximately 80 pounds per acre with an additional 40-pound per acre of oats. Fertilizer rates will be determined by testing the topsoil for nutrient content.

Settling Ponds

The side slopes of the settling ponds in the 002 outfall stream are currently being stabilized by placement of seeding mats. The DOT mix No. 3 seed mix is being applied at a rate of approximately 80 pounds per acre with an additional 40 pounds per acre of oats. The seeding mats will be anchored at the pond rims. The mats will be used to reduce surface sloughing of granular soils as well as to establish a grass cover.

Slurry Wall

During the 1992 construction season, the slurry wall will be constructed at the southwest end of the proposed mine pit between the planned pit and the Flambeau River. A slurry wall preconstruction report will be submitted for Department review at least 60 days prior to the start of construction. The report will provide detailed descriptions of construction methods as well as erosion control measures that will be used during slurry wall site work preparation and construction.

If you have any questions or comments, please contact Jim Hutchison at 414-497-2500.

Sincerely,

Foth & Van Dyke

James B Hutchison

James B. Hutchison, P.E.
Project Manager

Jerry W. Sevick/cac

Jerry W. Sevick, P.E.
Group Vice President

JBH:GWS:cac

cc: Lawrence Mercando, Flambeau Mining Company
Henry Handzel, Dewitt, Porter, et al
John Kaiser, Rusk County Board
Robert Plantz, Town of Grant
Al Christianson, City of Ladysmith
Clarence Glotfelty, Rusk County

[32-15/C3S01]91F6.51

Temporary Nursery

Trees located within the pit area were selected, marked and moved to the temporary nursery pursuant to the Transplantation Notification submitted to the Department dated May 12, 1992. Trees to be planted were selected by Paul Skidmore of Foth & Van Dyke on behalf of Flambeau on May 14, 1992 in accordance to the Transplantation Plan. The trees were moved to the temporary nursery within the following week.

Trees identified by WDNR representatives (Portle, Markhart) were also transplanted from the mine site to the nursery.

Topsoil Stockpile/Aquascape Test Plot

The topsoil stockpile area and aquascape perimeter slopes have not been reseeded with the permanent seed mix as of August, 1992. Additional topsoil remains to be placed on the stockpile, scheduled fall 1992. It is anticipated the reseeding will take place in the fall of 1992 with prairie seed mix applied to the east face of the topsoil stockpile and DOT seed mix No. 70 applied to the remaining surface.

Slope Restoration

Restoration of the sloughed area has occurred with the exception of the east berm of the one-acre aquascape test plot, which will be addressed in the spring of 1993.

Type II Stockpile - East Berm

The main portion of the east berm of the Phase 2, Type II storage area was constructed in July, 1992. The outside face of berm was topsoiled and seeded in September of 1992.

Settling Ponds

The inside slopes of the settling ponds were stabilized by placement of seeding mats in late June and July, 1992.

Slurry Cutoff Wall System

Slurry cutoff wall system construction commenced in September, 1992.

If you have any questions or comments please contact me at (715) 532-7620.

Sincerely,

Flambeau Mining Company

Jana E. Murphy

Jana E. Murphy
Supervisor of Environmental Affairs

JEM/cg

cc: Lawerence Mercando, Flambeau Mining Company
Henry Handzel, DeWitt, Porter, et al
James B. Hutchison, Foth & Van Dyke✓
Bernice Dukerschein, Rusk County Board
Robert Plantz, Town of Grant
Al Christianson, City of Ladysmith
Clarence Glotfety, Rusk County Zoning
File

Engineers
Architects
Planners
Scientists

Foth & Van Dyke

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

COPY

May 12, 1992

Mr. Gordon Reinke, Coordinator
Mine Reclamation Unit
Bureau of Solid and Hazardous Waste Management
101 South Webster Street, GEF II
Madison, WI 53707

RE: Flambeau Project - Transplantation Notification

Dear Mr. Reinke:

On behalf of the Flambeau Mining Company (Flambeau), Foth & Van Dyke is providing this letter of notification regarding tree selection and marking work for transplantation at the Flambeau Project. Tree selection and marking will be performed on Thursday, May 14, 1992. Criteria used for tree selection and marking are presented with this notification per the request of Larry Lynch of your office during an on-site meeting of May 6, 1992. The work is being done consistent with Section 5.11.3.2, Table No. 5-4 of the Mine Permit Application and condition No. 7 of the Water Regulatory Permit Approval.

Tree Selection

As many trees as is feasible will be located and identified for eventual transplanting. Tree selection for transplanting will be performed by Foth and Van Dyke personnel, in conjunction with Flambeau Mining personnel. Selected trees will be tagged for transplantation to the temporary nursery or buffer areas. Color-coded ribbon and waterproof markers will be used to identify the trees, and their origin location will be depicted on a scaled site plan. Trees selected for the nursery and Highway 27 buffer area will be contained in the "Savannah Plant List", Table No. 5-4, Mining Permit Application. Trees selected for the River buffer area will be consistent with the requirements of Condition No. 7 of the Water Regulatory Permit Approval.

Trees selected for transplantation will fall within a caliper (trunk size) range of one inch to six inches. The larger trees (two inch to six inch) will be transplanted to buffer areas, and the smaller trees (one inch to three inch) will be transplanted to the temporary nursery.

Destination Identification

The destination location for individual trees to be moved will be located and identified. Destination locations will be identified using waterproof markers on color-coded ribbon tied to surveyor's lath, and will be depicted on a scaled site plan. The site plan will include the following specific destinations:

1. Temporary nursery - The temporary nursery will be laid out per the attached plan. As many existing, and acceptable, site trees will be transplanted to the temporary nursery prior to June 1, 1992. Additional temporary nursery trees will be selected from commercially available bare-root tree stock and planted sometime during

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1992. Trees located in the temporary nursery will be maintained according to accepted horticultural practices and will comply with provisions outlined in the Mine Permit Application.

2. Highway 27 Site Buffer Area - The Highway 27 buffer area will be laid out in the field. Existing site trees will be transplanted to areas that require visual screening of mine facilities and operations. Approximately ten to thirty existing site trees may be transplanted to this area, depending on availability of suitable stock.

3. Flambeau River Buffer Strip - The Flambeau River buffer strip will be laid out in the field. As required in Condition 7 of the Water Regulatory Permit Approval, a 50-foot wide buffer strip shall begin in the area of the northern outfall area (outfall 002) and extent southerly, parallel with the Flambeau River, for a length of 450 feet. However, field conditions indicate that existing on-site trees located in the area of the proposed screening may drastically reduce the number of trees required to be planted. It is recommended that the actual number and location of visual screening trees be agreed to and located in the field by Foth and Van Dyke, Flambeau and WDNR personnel.

If you have any questions or comments, please contact Jim Hutchison at (414)-497-2500.

Sincerely,

Foth & Van Dyke

James B. Hutchison
James B. Hutchison, P.E.
Project Manager

Jerry W. Sevick
Jerry W. Sevick, P.E.
Group Vice President

JBH1:mj:naj/lb

Enclosure

cc: Lawrence E. Mercando, Flambeau (w/encl.)
Henry J. Handzel, DeWitt, Porter, *et al.* (w/encl.)
Bernice Dukerschein, Rusk County (w/encl.)
Clarence Glotfelty, Rusk County (w/encl.)
Robert Plantz, Town of Grant (w/encl.)
Al Christianson, City of Ladysmith (w/encl.)
Ron Roberts, Ford, Bacon, and Davis (w/encl.)
Ken Markart, Wisconsin DNR, Rhinelander (w/encl.)
File (w/encl.)

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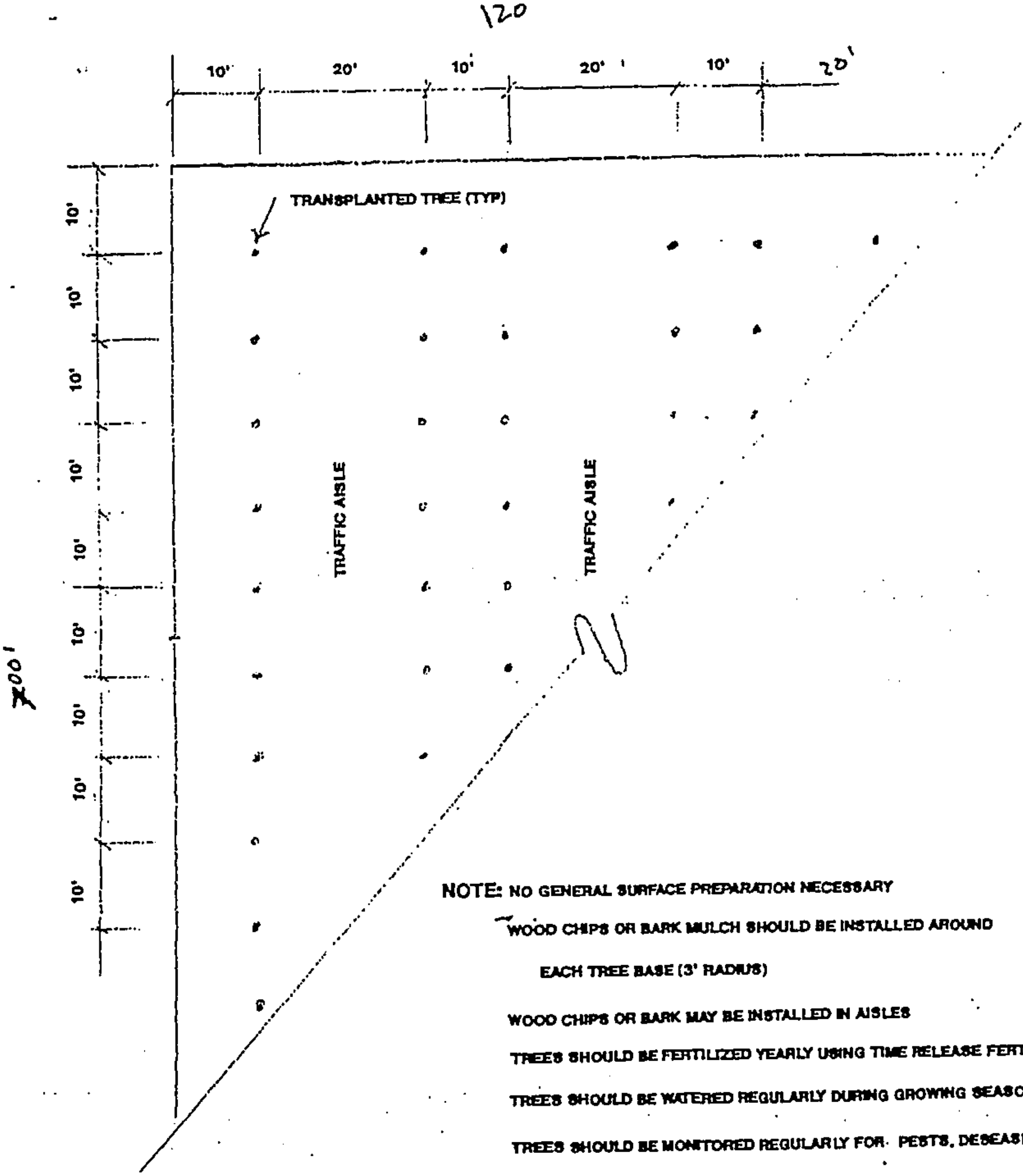

NOTE: NO GENERAL SURFACE PREPARATION NECESSARY

WOOD CHIPS OR BARK MULCH SHOULD BE INSTALLED AROUND EACH TREE BASE (3' RADIUS)

WOOD CHIPS OR BARK MAY BE INSTALLED IN AISLES

TREES SHOULD BE FERTILIZED YEARLY USING TIME RELEASE FERTILIZER PACKETS

TREES SHOULD BE WATERED REGULARLY DURING GROWING SEASON

TREES SHOULD BE MONITORED REGULARLY FOR PESTS, DESEASES, AND MECHANICAL DAMAGE

AUGUST, 1991 DRAWN BY PES

FLAMBEAU PROJECT–LADYSMITH, WI.

TEMPORARY NURSERY PLAN

Foth & Van Dyke
Suite 400 Park West
406 Science Drive
Madison, Wisconsin 53711

NO SCALE

Foth & Van Dyke

Engineers
Architects
Planners
Scientists

August 27, 1992

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

Mr. Gordon Reinke, Coordinator
Mine Reclamation Unit
Bureau of Solid And Hazardous Waste Management
101 South Webster Street, GEF 11
Madison, WI 53707

Dear Mr. Reinke:

RE: Flambeau Project - Seeding Plan for East Face of Topsoil Stockpile and Tree Planting of Buffer Strip

Seed Mix - Topsoil Stockpile, East Face

The following prairie seed mix will be used for seeding of the east face of the topsoil stockpile at the Flambeau Mine site in Ladysmith, Wisconsin.

Topsoil Stockpile East Face Seed Mix

Botanical Name	Common Name	Lbs. per Acre	Percent Mix
Forbs			
Anemone cylindrica	Thimble Weed	.3	.3
Asclepius tuberosa	Butterfly Milkweed	.4	.4
Solidago rigida	Stiff Goldenrod	.3	.3
Echinacea pallida	Pale Purple Coneflower	.3	.3
Erynigium yuccifolium	Rattlesnake Master	.3	.3
Mondarda fistulosa	Bergmont	.3	.3
Lespedeza capitata	Roundheaded Bush Clover	.3	.3
Rudbeckia hirta	Black-eyed Susan	.2	.2
Tradescantia ohiensis	Spiderwort	.3	.3
Astragalus canadensis	Canada Milk Vetch	.2	.2
Amorpha canecens	Leadplant	.4	.4
Lupinus perennis	Wild Lupine	.4	.4
Desmodium canadense	Canada tick-trefoil	.3	.3
Grasses			
Andropogon gerardi	Big Bluestem	1.0	1.0
Elumus Canadensis	Canada Wild Rye	3.0	3.0
Panicum virgatum	Switchgrass	1.0	1.0
Sorghastrum nutans	Indiangrass	3.0	3.0
Native Seed Mixture Lbs. per Acre			
Temporary Nurse Crop			
	Annual Rye	88.0	88.0
Temporary Nurse Crop Seed Lbs. per Acre		88.0	

Mr. Gordon Reinke, Coordinator
Bureau of Solid and Hazardous Waste Management
August 27, 1992
Page 2

Upon completion of the following items this fall (handicap ramp and additional topsoil added to the existing topsoil pile), the topsoil pile will be seeded on the east face with annual and perennial rye. The remainder being seeded with WDOT seed mix No. 3 as described in the 1981 edition of the Standard Highway Road and Bridge Specification, pages 518-522.

The rye mix for fall seeding shall be as follows: 75 percent Annual Rye and 25 percent Perennial Rye. The rate of application shall be Annual Rye, 75 pounds per acre and Perennial Rye, 25 pounds per acre. All fall seeding shall be mulched with straw.

In the Spring of 1992, the specified prairie seed mix shall be applied to the east face of the topsoil pile using a no-till seeder.

Seeding operations will be performed using a warm-season grass drill that is capable of metering seeds independently and able to sow fluffy seed.

Tree Planting Plan - Buffer Strip

The buffer strip of woody vegetation that is to be planted along the waterward side of the existing tree line on the west edge of the project site is shown on Figure T-1. The tree groupings are shown and numbered on an aerial photo at a scale of one inch equals 50 feet. The species makeup of the groupings are listed in the following Buffer Strip Planting Schedule:

Buffer Strip Planting Schedule

	Group					
Species	1	2	3	4	5	Total
Aspen	8	16	8	3	2	37
Birch	7	15	8	2	1	33
White Pine	6	13	7	3	2	31
White Spruce	5	11	6	2	2	26
Tamarack	5	9	5	2	1	22
Hemlock	4	7	4	1	1	17
Black Spruce	3	4	3	1	1	9
TOTAL	38	74 75	41	14	10	175

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The trees shall be planted at an approximate ten-foot spacing within the groups as shown in Drawing T-1. The actual placement of species listed in the planting schedule shall be mixed in order to create a more natural appearance. The trees shall be planted by hand and the holes backfilled using existing soil removed from the hole. Three to four inches of wood chips shall be placed around trees to help keep the initial weed growth down and preserve water. After initial placement, wood chips will not be replenished to allow for a natural appearance of the plantings.

Sincerely,

Foth & Van Dyke

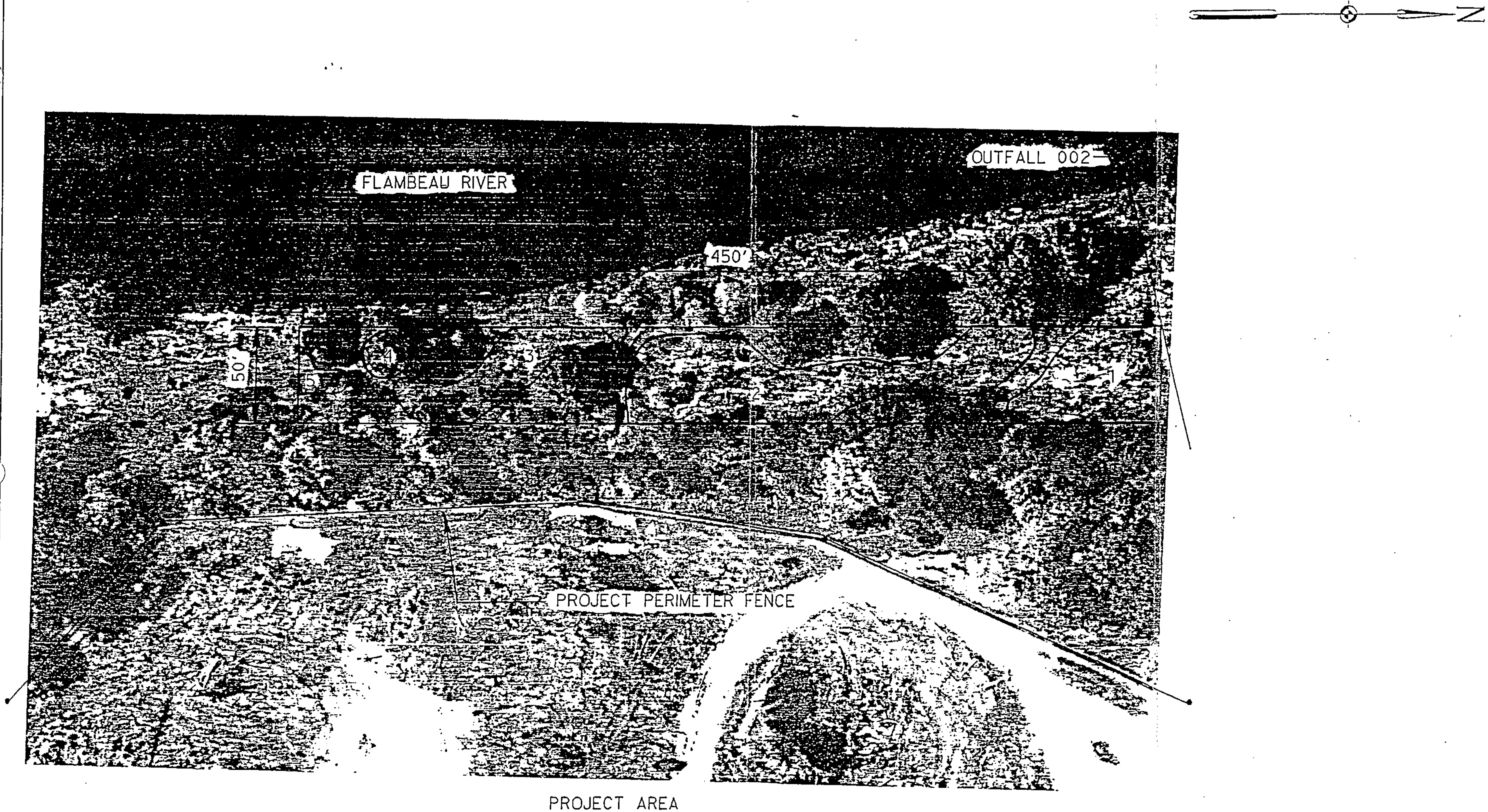
Bruce F. Woods, ASLA
Landscape Architect

James B. Hutchison, P.E.
Project Manager

BFW,JBH/lb

Enclosure

cc: Bob Sinclair, Flambeau (w/encl.)
Larry Mercando, Flambeau (w/encl.)
Ken Markart, WDNR (w/encl.)
File (w/encl.)



FLAMBEAU PROJECT			
FIGURE T-1 BUFFER STRIP TREE PLANTINGS FLAMBEAU RIVER			
Scale: 1" = 50'		Date: AUGUST, 1992	
Prepared By: Foth & Van Dyke		By: BBV	

D19

WISCONSIN
DEPT. OF NATURAL RESOURCES

Carroll D. Besadny
Secretary

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

101 South Webster Street
Box 7921
Madison, Wisconsin 53707
BUREAU OF SOLID WASTE 608-266-2111
SOLID WASTE FAX 608-267-2768
DNR TDD 608-267-6897

September 29, 1992

File Ref:2720-2

Mr. James Hutchison, P.E.
Foth and Van Dyke
2737 Ridge Road
P.O. Box 19012
Green Bay, WI 54307-8516

Dear Mr. Hutchison:

This letter is in response to your letter of August 27, 1992 in which you requested approval of the plan to install vegetative copses at the buffer strip along the Flambeau River between outfalls 001 and 002. This was required by condition number 7 in the Chapter 30 permit.

We have reviewed the plan entitled "Tree Planting Plan - Buffer Strip" and find the planting schedule and attached map satisfactory. We hereby approve the plan for the placement of the copses as indicated on Figure T-1 and the species breakdowns within the copses as proposed in the "Buffer Strip Planting Schedule".

However, at this time we are not able to approve the Seeding plan since it is still under discussion and review.

Should you have any questions, please feel free to contact me or Tom Portle of my staff.

Sincerely,

Gordon H. Reinke

Gordon H. Reinke, Coordinator
Mine Reclamation Unit
Bureau of Solid and Hazardous Waste Management

TLP:pc

cc: R. Sinclair - FMC
K. Markart - NCD

Engineers
Architects
Planners
Scientists

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October 13, 1992

Mr. Gordon Reinke, Coordinator
Mine Reclamation Unit
Bureau of Solid And Hazardous Waste Management
101 South Webster Street, GEF 11
Madison, WI 53707

Dear Mr. Reinke:

RE: Flambeau Project - Seeding Plan for East Face of Topsoil Stockpile and Temporary Area Seeding Plan

Updated Seed Mix - Topsoil Stockpile, East Face

Pursuant to discussions between Tom Portle of the Wisconsin Department of Natural Resources (WDNR) and Jim Hutchison of Foth & Van Dyke on behalf of the Flambeau Mining Company (Flambeau), a revised seeding mix has been developed for seeding the east face of the topsoil stockpile at the Flambeau Mine site in Ladysmith, Wisconsin. The updated seed mix is as follows:

Topsoil Stockpile East Face
Prairie Seed Mix

Botanical Name	Common Name	Lbs. per Acre
Forbs		
Anemone cylindrica	Thimble Weed	.3
Asclepius tuberosa	Butterfly Milkweed	.4
Solidago rigida	Stiff Goldenrod	.3
Echinacea pallida	Pale Purple Coneflower	.3
Erynigium yuccifolium	Rattlesnake Master	.3
Mondarda fistulosa	Wild Bergamot	.3
Lespedeza capitata	Roundheaded Bush Clover	.3
Rudbeckia hirta	Black-eyed Susan	.2
Tradescantia ohiensis	Spiderwort	.3
Astragalus canadensis	Canada Milk Vetch	.2
Amorpha canecens	Leadplant	.4
Lupinus perennis	Wild Lupine	.4
Desmodium canadense	Canada tick-trefoil	.3
Grasses		
Andropogon gerardi	Big Bluestem	1.0
Elumus Canadensis	Canada Wild Rye	3.0
Panicum virgatum	Switchgrass	1.0
Sorghastrum nutans	Indiangrass	3.0
Native Seed Mixture Lbs. per Acre		
Temporary Nurse Crop		
	Annual Rye	8

[A3S10]91F6.F51

Upon completion of the following items this fall (handicap ramp and additional topsoil added to the existing topsoil pile), the topsoil pile will be seeded on the east face with annual and rye. The remainder being seeded with WDOT seed mix No. 3 as described in the 1981 edition of the Standard Highway Road and Bridge Specification, pages 518-522. This seed mix is being stored on-site.

In the Fall of 1992 just prior to deep frost conditions or in the Spring of 1993, the specified prairie seed mix shall be applied to the east face of the topsoil pile by hand broadcasting seed onto site. Seeding operations will include scarifying the soil prior to seed placement, seeding and working or raking seed into the soil.

Seed Mix - Temporary Seeding

During discussions with the WDNR, the WDNR expressed the desire to incorporate native species of seeds into the seed mix used to seed temporary grass areas. In an effort to satisfy this request, the following seed mix is submitted for approval as seed mix to replace the DOT Mix No. 3 (1981 edition of the Standard Highway Road and Bridge Specifications) which is currently being used at the site when current supplies onsite are used up.

Temporary Grass Area
Seed Mix

Species	Mixture Proportions, Percent
Improved Hard Fescue	15
Improved Turf Type Tall Fescue	35
Little Bluestem	4
Prairie Dropseed	0.5
Sidcoats Grama	4.5
Canada Wild Rye	3
Perennial Ryegrass	28

This seed mix is DOT seed mix No. 70 (1989 edition). The rate of application will be about 130 pounds per acre.

Soil Improvement

General topsoil soil samples were obtained in September, 1992, for analysis in respect for soil supplement information. Four soil sample test results are attached to this letter report. The results of the soil analysis indicate the need to adjust the soil pH in most of the soils sampled. Nitrogen, phosphate and potash supplement is also indicated in some of the soils sampled. Due to the concerns of surface water runoff quality, it is proposed that aglime be added to low pH soils at a rate of about 1000 pounds per acre prior to seeding. The results of the seeding in these areas will be evaluated in the fall of 1993 to determine if addition of nitrogen, phosphates and/or potash is required.

If you have any questions or comments, please contact Jim Hutchison at (414) 496-6813.

Sincerely,

Foth & Van Dyke

Bruce F. Woods, KVB

Bruce F. Woods, ASLA
Landscape Architect

James B Hutchison

James B. Hutchison, P.E.
Project Manager

BFW:JBH:jef

cc: Bob Sinclair, Flambeau
Larry Mercando, Flambeau
Jana Murphy, Flambeau
Ken Markart, WDNR
Henry Handzel, DeWitt Porter *et al.*
Clarence Glotfelty, Risk County
File

[A3S10]91F6.F51

Attachment B

Temporary Nursery Tree Planting List

Temporary Nursery Tree List[1]
Trees Moved in the Late Spring of 1992

Tree #	Tree Diameter	Tree Type	Original Tree Location	Tree Condition
1	3"	Aspen	Pit Area S.	Leafed Out
2	3"	Aspen	Pit Area S.	Leafed Out
3	3"	Aspen	Pit Area S.	Leafed Out
4	1"	Aspen	Pit Area S.	Leafed Out
5	5"	Paperbirch	Pit Area S.	Leafed Out
6	2"	Aspen	Pit Area S.	Leafed Out
7	2"	Aspen	Pit Area S.	Leafed Out
8	3"	P.Birch Clump	Pit Area S.	Leafed Out
9	2"	Witch Hazel	Pit Area N.	Leafed Out
10	3"	Aspen	Pit Area N.	Leafed Out
11	4"	Spruce	Spur Area	Candled
12	5"	White Cedar	Spur Area	--
13	2"	Scotch Pine	Spur Area	Candled
14	2"	Spruce	Spur Area	Candled
15	2"	Red Pine	Spur Area	Candled
16	3"	Red Pine	Spur Area	Candled
17	3"	Red Pine	Spur Area	Candled
18	2"	Spruce	Spur Area	Candled
19	2"	Spruce	Spur Area	Candled
20	3"	Red Pine	Spur Area	Candled
21	3"	Paper Birch	Spur Area	Leafed
22	3"	Red Pine	Spur Area	Candled
23	3"	Red Pine	Spur Area	Candled
24	3"	Red Pine	Spur Area	Candled
25	3"	White Spruce	Spur Area	Candled
26	4"	Red Pine	Spur Area	Candled
27	3"	Red Pine	Spur Area	Candled
28	3"	Red Pine	Spur Area	Candled
29	4"	Red Pine	Spur Area	Candled
30	4"	Red Pine	Spur Area	Candled
31	6"	Hemlock	Spur Area	

[1]Trees selected by Mr. Paul Skidmore of Foth & Van Dyke and moved by Flambeau Mining Company. In addition, approximately 25 trees that were selected by WDNR representives (Portle, Mackhart) were also moved at the same time. A listing of these trees was not recorded.

[32-15/11]91F6

Attachment C

Buffer Strip Tree Planting Letter

COLONIAL NURSERY
N.4038 HWY. 27
Ladysmith, WI. 54848

Mr. R. Sinclair
FLAMBEAU MINING COMPANY
N.4095 HWY. 27
Ladysmith, WI. 54848

RE: Buffer Strip Tree Planting
In accordance with FOTH & VAN DYKE letter
Dated August 19, 1992 Draft
Sketch Figure T-1 Buffer Strip
Order No. FB0099

Dear Mr. Sinclair,

This letter is to inform you that the Buffer Strip Tree Planting has been completed, 178 trees within specification set forth have been hand planted and mulched in accordance with FOTH & VAN DYKE letters pages 2 and 3, dated August 19, 1992.

After studying the landscape of the banks of the FLAMBEAU river, we believe the mixture of trees planted within each zone will resemble the natural flow of the landscape surrounding the Buffer area. In order to resemble the natural look some trees were planted closer than others, and some were mixed or planted in groups. While speaking with Bruce F. Woods, Landscape Architect (FOTH & VAN DYKE) he stated that the WDNR thought it would be better to go with a mixture of single stem Birch and Clump Birch which we were able to do.

Also, we believe that the Buffer Planting exceeds all specifications set forth by FOTH & VAN DYKE, WDNR and the FLAMBEAU MINING COMPANY. The completion of this job was made easier by Mr. Bob Cameron and his men, who made access to the site and the availability of chips for the trees, this was greatly appreciated. Thank you.

Below is a complete detailed list of trees planted within each zone.

Zone 1 - compiles a mixture of 8 Aspen, 7 Birch, 6 White Pine, 5 White Spruce, 5 Tamarack, 4 Hemlock, 3 Black Spruce

Zone 2 - compiles a mixture of 16 Aspen, 15 Birch, 13 White Pine, 11 White Spruce, 9 Tamarack, 7 Hemlock, 4 Black Spruce

Zone 3 - compiles a mixture of 8 Aspen, 8 Birch, 7 White Pine 6 White Spruce, 5 Tamarack, 4 Hemlock, 3 Black Spruce

Cont.

Zone 3 - compiles a mixture of 8 Aspen, 8 Birch, 7 White Pine, 6 White Spruce, 5 Tamarack, 4 Hemlock, 3 Black Spruce

Zone 4 - compiles a mixture of 3 Aspen, 2 Birch, 3 White Pine, 2 White Spruce, 2 Tamarack, 1 Hemlock, 1 Black Spruce

Zone 5 - compiles a mixture of 2 Aspen, 1 Birch, 2 White Pine, 2 White Spruce, 1 Tamarack, 1 Hemlock, 1 Black Spruce

Complete total of all 178 trees.

I would like to take this time to thank you, Mr. Sinclair and the FLAMBEAU MINING COMPANY for selecting COLONIAL NURSERY for this project. If we may be of any assistance to you or the FLAMBEAU MINING COMPANY wether it be for information or landscape services, please feel free to contact us any time.
Thank you again.

Sincerely,

Clifford [signature]

COLONIAL NURSERY

Attachment D

One Acre Aquascape Analysis

Wetland Restoration Analysis

Flambeau Mining Co.
Ladysmith, Wisconsin

prepared by
Elizabeth Warne, staff biologist
Peter Wolter, staff consultant
JoAnn Gillespie, director
Country Wetlands Nursery & Consulting Ltd.
Muskego WI 53150

September, 1992

Contents

I. Review of installation procedures and materials

On 7/1/91, Mr. Paul Skidmore of Foth & Van Dyke contacted Country Wetlands to assist in the design of a 1 acre test wetland for Flambeau Mining Company's (Flambeau) Copper-Gold mine located near Ladysmith WI. An appropriate seed mix and plants indigenous to the area was designed and submitted for approval by Country Wetlands to Mr. Skidmore. The project was then approved by Foth & Van Dyke and Flambeau for installation in fall of 1991.

On 10/9/91, Peter Wolter and Keir Peckham of Country Wetlands met with Mr. Paul Skidmore at the Flambeau site. After reviewing the site conditions and project specifications with Mr. Skidmore, the 1 acre wetland test plot was seeded and planted.

Planting: Installation of the wetland plant materials was completed first by grouping the plants in small clusters, or pods. It is important to have a sufficient root mass for survival of native wetland plants when they are installed in disturbed or artificially constructed sites. Success of planting is also dependent upon maintenance of optimal water depths. Each plant species installed was planted at the appropriate water depth for that species. The native wetland plant species that were used are the following:

Scientific name	Common Name
Carex lacustris	lake sedge
Iris versicolor	blue flag iris
Nuphar sp.	yellow water lily
Nymphaea odorata	white water lily
Pontedaria cordata	pickeralweed
Sagittaria latifolia	arrowhead
Sparganium eurycarpum	burreed

Seeding: Seeding of the sedge meadow area of the wetland installation was performed by broadcasting the native seed over the shallower two-thirds of the test plot. Species contained in the native seed mix were the following:

Scientific name	Common Name
Acorus calamus	sweet flag
Asclepias incarnata	marsh milkweed
Aster novae-angliae	new england aster
Helenium autumnale	sneezeweed
Iris versicolor	blue flag iris
Scirpus atrovirens	dark green bulrush
Verbena hastata	blue vervain

The matrix was also used for erosion as well as noxious weed control. Due to the "indeterminate viability" or dormancy period which most native seed displays, a matrix or cover crop was used in the seeding area. The seed was raked in to bring the seed in contact with the soil for better germination rates. The seeded area was then mulched with hay to help prevent erosion. Two 1m x 1m plots were designated onsite to study any germination which might occur from exposure of the original seed bank of the soils used. These areas were not seeded so that observations could be made on what seeds had already existed in the wetland soil that was emplaced in the test plot.

II. Vegetation analysis methods

On September 14 and 15, 1992, Elizabeth Warne and Peter Wolter, of CWNC, met with

John Gumtow, of Foth and Van Dyke, at the Flambeau copper-gold mine near Ladysmith, WI for the purpose of examining the vegetation of the one-acre test wetland. Mr. Gumtow established 9 permanent transects along which 26 one-meter square quadrats were placed (Figure 1). The vegetation in each quadrat was examined by Ms. Warne and Mr. Wolter for numbers of stems of each species and the percent cover of each species. The plants which had been emplaced by CWNC were also checked for growth and seed production. In addition, one of the unseeded plots established by Paul Skidmore was examined determine whether there were any differences in seeded versus unseeded areas. Photographs were taken of each of the three major areas of the wetland, as well as of several individual quadrats and individual plants.

III. Discussion of condition of installed plants

Fifty arrowhead (**Sagittaria latifolia**) were originally emplaced within the emergent edge zone of the test plot. These plants are very healthy and are growing in stands, approximately at the midpoint of the test plot where the water level begins to deepen. Most of these plants are producing mature seed heads. Biologically, this is beneficial for wildlife food and for natural reproduction of this species of plant. A large toad was found among the arrowhead.

Two hundred burreed (**Sparganium eurycarpum**) were originally emplaced within the emergent edge zone and the open water emergent/aquatic zone. These plants seemed to be extremely healthy, producing up to five growing stems within one growing season. Many of these plants are also producing mature seed heads and are propagating themselves by rhizome. Biologically, this is beneficial for wildlife food and natural reproduction of this species of wetland plant. Small shrews were visually observed in among the stands of burreed.

Twenty-five blue flag iris (**Iris versicolor**) were originally emplaced within the emergent edge zone and within the emergent zone of the test plot. Approximately one-half of these were observed throughout our study. These plants are also propagating by rhizome and producing some seed heads. Biologically, this is beneficial for wildlife food and for natural reproduction of this species of plant.

Fifty lake sedge (**Carex lacustris**) were originally emplaced within the emergent edge zone. Small clumps of lake sedge were observed growing in among manna grass and cattail. No seed heads were observed.

Fifty pickerelweed (**Pontedaria cordata**) were originally emplaced within the emergent edge zone and the open water emergent/aquatic zone of the test plot. These plants are currently very healthy, and are extremely large. They are propagating themselves by rhizome and are forming stands. Seed heads were also found on many of these plants. Biologically, this is beneficial for wildlife food and natural reproduction of this species of plant.

Ten white water lilies (**Nymphaea odorata**) were originally emplaced within the open water emergent/aquatic zone within the test plot. Seventeen white water lilies were observed, demonstrating propagation by rhizome once again. Each water lily had many pads, providing cover for fish, insects, and other aquatic organisms. Tadpoles, minnows and dragonflies were noted among the plants.

Fifteen yellow water lilies (**Nuphar variegatum**) were originally emplaced within the open water emergent/aquatic zone of the test plot. Twenty yellow water lilies were observed. Flowering stalks were noted on a few of these plants. Up to 19 pads were counted per plant, providing cover for fish, insects, and other aquatic organisms. Tadpoles and minnows were noted among the plants.

IV. Stem counts and vegetation cover - data and analysis

The composition of the standing vegetation in the one-acre test wetland was determined using stem counts and percent cover values for each species occurring in one-meter sample quadrats. Twenty-six quadrats located on nine transects were examined.

Thirty-four species, overall, were found in the wetland (Table 1). Twenty species were found within the quadrats; 14 occurred in the wetland but not in the quadrats. The majority of all species were classified as native, obligate.

The dominant species were *Glyceria grandis*, *Typha sp.*, and *Eleocharis obtusa* in that order (Table 2). The genus occurring most frequently was *Typha sp.*, which was found in 21 quadrats. The lack of flowering parts prevented this plant from being identified to species. *Glyceria grandis*, found in 18 quadrats, had the highest mean number of stems and percent cover per meter^2 of all species (30.4 stems/m^2 and 19.3% cover/m^2).

Seeded species: Of the species which had been seeded into the wetland, one species, *Scirpus atrovirens*, occurred in the quadrats with a mean of 0.2 stems/m^2 and 0.1% cover/m^2. One other species, *Acorus calamus*, was found in the wetland but not in the quadrats.

Rootstock species: Five species planted as rootstock were found in the quadrats; *Nymphaea odorata, Nuphar variegata, Sparganium eurycarpum, Sagittaria latifolia and Pontederia cordata* (Table 2). Mean stem counts ranged from 0.1 to 1.1 stems/m^2 for these species; mean percent cover ranged from 2.0 to 5.8/m^2. *Carex lacustris* and *Iris versicolor* occurred in the wetland but not in quadrats.

Total cover for all species averaged 53.6%/m^2.

V. Conclusions

The species present consisted of emergent (Glyceria grandis, Typha sp.) floating-leaved (Glyceria sp.) and submersed plant types (Potamogeton foliosus and Utricularia vulgaris). The wildlife observed in the wetland included amphibians (toad and tadpoles), spiders and insects (water boatmen) and small mammals. The variety of plant types, the dominance by native wetland species and the presence of wildlife after one growing season indicates that this constructed wetland is successful in providing both wildlife habitat and the proper conditions for germination and growth of desirable wetland plants.

Of the total vegetative cover, the majority (85%) was contributed by volunteer species, 14% was contributed by species which were planted by CWNC, and less than 1 percent came from species which were seeded in by CWNC. The seed which was spread on the site by CWNC and did not germinate may either have been dormant or the conditions may not have been right at that time for germination of these species. It is also possible that the water was too deep for germination due to settling and compaction of the soil after construction. The wetland will undoubtedly undergo some variation in water level in the future and these changes, in addition to seasonal variations in light and temperature, will trigger germination of the seed emplaced by CWNC. The conditions were correct, however, for the germination of seeds and propagules in the donor soil (propagules are plant pieces which can grow into mature plants). Volunteer species are those which were either present in the donor soil (soil from another wetland which is used a seed source) or were blown or carried in naturally. Fourteen of the twenty species found in the quadrats were volunteer. In addition, the vegetation of the unseeded test plots contained the same species as the seeded areas further indicating that volunteer seeds were responsible for the majority of the vegetation.

In the next few years, the plants which were emplaced as rootstock will continue to spread vegetatively. These plants are also producing seed which will be dispersed around the wetland by wind and water, allowing new plants to become established.

Two species which were present, Typha sp. and Phalaris arundinacea, may become problem species if they become dominant, because they can outcompete desirable plants. This could result in a wetland with lower plant diversity. Neither species is dominant in the test wetland; however, their cover could increase if the water level is allowed to become too low. This may be especially true of Phalaris arundinacea. Continued monitoring of these species will provide information concerning their impact on this test wetland.

The first year evaluation of this project indicates that both the design and revegetation of the one acre test wetland has been extremely successful. This project illustrates that design and creation of wetlands if properly executed creates the foundation of a functioning ecosystem.

Table 1. Species occurring in test wetland.

Species occurring in sample quadrats:

Scientific name	Common name	FWS indicator category*
Cardamine pensylvanica	Bitter cress	Facwet+
Carex sp.	Sedge	—
Cicuta maculata	Water hemlock	Obl
Eleocharis obtusa	Spike rush	Obl
Glyceria grandis	Giant manna grass	Obl
Glyceria sp.	Manna grass	Obl
Juncus effusus	Soft rush	Obl
Lindernia dubia	False pimpernel	Obl
Nuphar variegatum♦	Yellow water lily	Obl
Nymphaea odorata♦	White water lily	Obl
Phalaris arundinacea	Reed canary grass	Facwet+
Polygonum hydropiper	Water pepper	Obl
Polygonum persicaria	Smartweed	Facwet
Pontederia cordata♦	Pickerel weed	Obl
Potamogeton foliosus	Pond weed	Obl
Sagittaria latifolia♦	Arrowhead	Obl
Scirpus atrovirens✲	Dark green bulrush	Obl
Sparganium eurycarpum♦	Burreed	Obl
Typha sp.	Cattail	Obl
Utricularia vulgaris	Bladderwort	Obl

Species occurring in test wetland outside of sample quadrats:

Acorus calamus✲	Sweet flag	Obl
Alisma plantago-aquatica	Water plantain	Obl
Bidens cernua	Nodding beggarticks	Obl
Calamagrostis canadensis	Blue-joint grass	Obl
Carex lacustris♦	Lake sedge	Obl
Echinochloa crusgalli	Barnyard grass	Facwet
Glyceria canadensis	Rattlesnake grass	Obl
Iris versicolor♦	Blue flag iris	Obl
Juncus tenuis	Path rush	Fac
Lycopus americanus	Cutleaf water horehound	Obl
Mimulus ringens	Monkeyflower	Obl
Najas flexilis	Bushy pondweed	Obl
Scirpus validus	Softstem bulrush	Obl
Solidago graminifolia	Grass-leaved goldenrod	Facwet-

* Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: national summary. U.S. Fish Wildl. Serv. Biol. Rep. 88(24).
Species emplaced by CWNC: ♦=rootstock, ✲=seeds.

Table 2. Species occurring in sample quadrats of one-acre test wetland. Species are listed in order of frequency. Values for stem counts and percent cover are expressed as means ± 90% confidence limits.

Species	Frequency (no.of quads)	Stems/m^2 (mean ± conf.lim)	Percent cover (mean ± conf.lim.)
Typha sp.	21	6.8 ± 2.5	9.7 ± 4.4
Eleocharis obtusa	20	2.4 ± 0.7	9.3 ± 4.0
Glyceria grandis	18	30.4 ± 11.4	19.3 ± 8.7
Polygonum hydropiper	10	0.6 ± 0.3	1.0 ± 0.4
Phalaris arundinacea	9	2.7 ± 3.5	5.1 ± 5.8
Lindernia dubia	7	0.8 ± 0.6	0.7 ± 0.4
Cardamine pensylvanica	5	0.9 ± 1.0	0.5 ± 0.3
Glyceria sp.	4	6.6 ± 6.9	3.2 ± 2.8
Carex sp.	2	1.2 ± 1.5	0.7 ± 1.0
Sparganium eurycarpum♦	2	1.0 ± 1.2	2.0 ± 2.6
Nymphaea odorata♦	2	0.2 ± 0.2	5.8 ± 6.9
Nuphar variegata♦	2	0.1 ± 0.1	2.0 ± 2.6
Utricularia vulgaris	2	0.1 ± 0.2	1.5 ± 2.4
Potamogeton foliosus	2	0.1 ± 0.1	2.0 ± 2.6
Scirpus atrovirens✲	1	0.2 ± 0.4	0.1 ± 0.2
Sagittaria latifolia♦	1	1.1 ± 2.2	3.4 ± 5.6
Pontederia cordata♦	1	0.6 ± 1.0	2.4 ± 4.1
Cicuta maculata	1	0.03 ± 0.1	2.4 ± 4.1
Juncus effusus	1	0.03 ± 0.1	0.1 ± 0.2
Polygonum persicaria	1	0.03 ± 0.1	0.1 ± 0.2

Species emplaced by CWNC: ♦=rootstock, ✲=seed.

Table 3. Stem count and percent cover data collected from one-acre test wetland. Data is expressed as actual stem counts and cover class value per quadrat. Cover class values were converted to class midpoint for data calculation.

ransect	1						2						3						4						5	
uadrat	1		2		3		1		2		3		1		2		3		1		2		3		1	
tem ct/Cover class*	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C
ypha sp.	13	2	26	3	5	1	15	3	16	2	3	1	2	1	7	2	16	3			5	1	4	1	1	1
icuta maculata	1	4																								
'halaris arundinacea	1	2	2	2	53	5	1	1					1	1											3	1
'ardamine pensylvanica	1	1	5	1	15	1							1	1												
lyceria grandis			8	1	11	1	22	2	51	2	69	4	35	2	17	2	77	5	31	2	92	5	46	3	110	3
Scirpus atrovirens					6	1																				
'leocharis obtusa					2	2	1	2	1	2	4	3	4	2	6	3	5	2	4	1	4	2	3	1	1	1
.indernia dubia					5	1	4	1	6	1	1	1	3	1	2	1	1	1								
'arex sp.					11	1	21	2																		
Juncus effusus									1	1																
Polygonum hydropiper									1	1	1	1			1	1	1	1					3	1	1	1
Glyceria sp.																										
Sagittaria latifolia																			29	5						
Utricularia vulgaris																									1	3
Pontederia cordata																										
Sparganium eurycarpum																										
Potamogeton foliosus																										
Nuphar variegatum																										
Nymphaea odorata																										
Polygonum persicaria																										
Total cover (%)		50		35		80		70		45		90		50		70		95		80		90		45		30

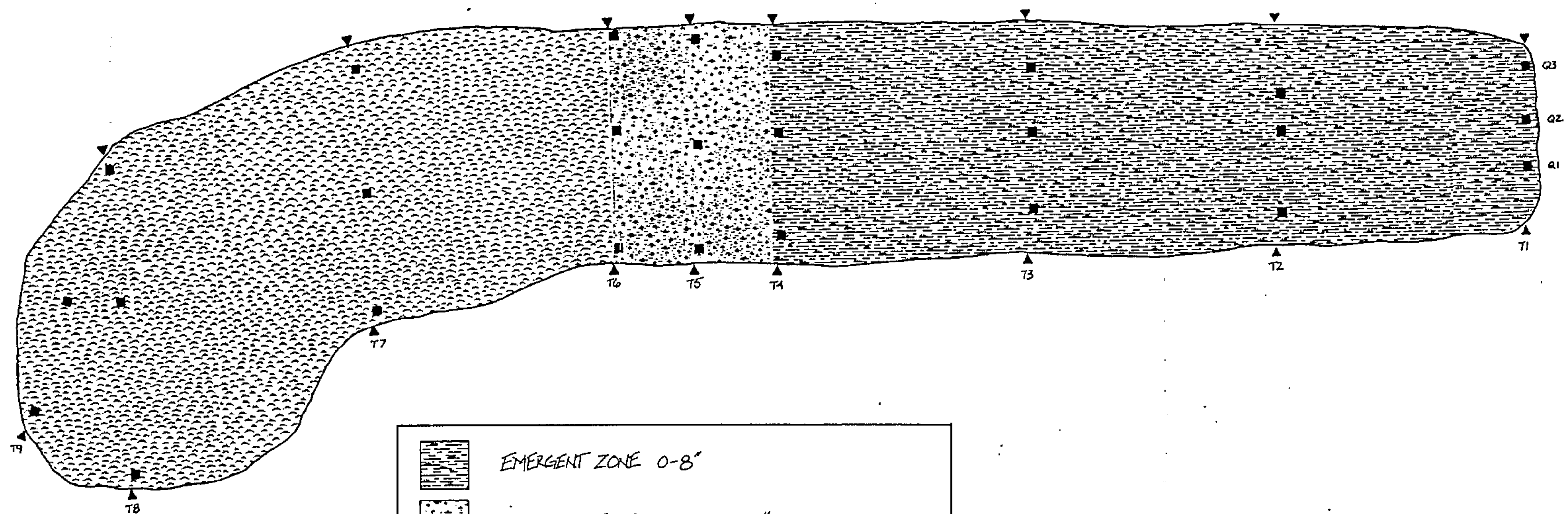
*Cover classes:

1: 1-4%
2: 5-24%
3:25-49%
4:50-74%
5:75-100%

Table 3. continued. Stem count and percent cover class values.

nsect					6						7						8						9			
adrat	2		3		1		2		3		1		2		3		1		2		3		1		2	
em ct/Cover class*	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C	S	C
pha sp.			1	1	3	1			20	3	11	2			5	1	1	1	3	1	15	2	5	1	0	0
cuta maculata																										
alaris arundinacea									4	1					5	1	1	1								
rdamine pensylvanica									1	1																
yceria grandis					80	3			19	2	47	3			6	1					2	1	68	2		
irpus atrovirens																										
eocharis obtusa	2	1			4	2					8	3	2	1	1	1	3	1	1	1	4	1	1	1		
ndernia dubia																										
rex sp.																										
ncus effusus																										
lygonum hydropiper			1	1							2	1			3	1	1	1								
yceria sp.	95	2					31	2					28	2					37	2						
agittaria latifolia																										
tricularia vulgaris																										
ontederia cordata			15	4																						
parganium eurycarpum			16	3													9	2								
otamogeton foliosus			1	2											1	3										
uphar variegatum					1	3					2	2														
ymphaea odorata																					2	4	3	5		
olygonum persicaria																							1	1		
tal cover (%)		25		55		40		15		45		75		30		55		25		30		75		95		0

*Cover classes:
1: 1-4%
2: 5-24%
3: 25-49%
4: 50-74%
5: 75-100%



EMERGENT ZONE 0-8"

EMERGENT EDGE ZONE 6-15"

OPEN WATER EMERGENT/AQUATIC ZONE 15-36"

■ 1 M × 1 M QUADRATS

▲ TRANSECT STAKES

FIGURE 1

TRANSECT - QUADRAT MAP

SCALE: 1" = 30'	APPROVED BY:	DRAWN BY BE/MW
DATE: 9-23-92		REVISED

Flambeau Mining Company

DRAWING NUMBER

D44

Appendix E

Quarterly Groundwater Quality Correspondence and Results

Foth & Van Dyke

Engineers
Architects
Planners
Scientists

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

June 8, 1992

Mr. Lawrence J. Lynch, Hydrogeologist
Mine Reclamation Unit
Bureau of Solid & Hazardous Waste Management
State of Wisconsin
Department of Natural Resources
P.O. Box 7921
Madison, WI 53707

Dear Mr. Lynch:

RE: Flambeau Project
Environmental Monitoring
Groundwater Results (January 1992 Sampling Event)

Attached please find copies of the laboratory results sheets for analyses performed on groundwater samples collected on January 8 and 9, 1992, on behalf of the Flambeau Mining Company. In addition, groundwater elevations for on-site wells and piezometers have been included.

Per your instructions, the results are being forwarded to you in this manner to satisfy WDNR reporting requirements because Turn-Around Documents (TAD's) are not presently available. Once TAD's are available, this data will be resubmitted to you in the TAD format.

If there are any questions regarding this submittal, please contact either of the undersigned.

Sincerely,

Foth & Van Dyke

Russell T. Janeshek
Associate

James B. Hutchison, P.E.
Project Manager

RTJ/JBH:tap

Attachments

cc: Gordon Reinke, WI Dept. of Natural Resources (w/attachments)
Lawrence Mercando, Flambeau Mining Company (w/attachments)
Henry Handzel, Dewitt, Porter, et al (w/attachments)
John Kaiser, Rusk County Board (w/attachments)
Robert Plantz, Town of Grant (w/attachments)
Al Christianson, City of Ladysmith (w/attachments)
Clarence Glotfelty, Rusk County (w/attachments)

[32-15\C3S01]91F6.51

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121776 Report Date: 01/21/92
Your Sample ID: MW-1000
Sample Matrix : WATER

COLLECTION INFORMATION
Date/Time/By: 01/08/92 13:05 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121776	Alkalinity		20	MG/L
	Copper	<	14	UG/L
	Iron	<	55	UG/L
	Total Hardness		67	MG/L
	Manganese		6.1	UG/L
	pH		6.5	S.U.
	Sulfate		38	MG/L
	Total Dissolved Solids		110	MG/L

Signed *[signature]* Date 01/21/92

Signed ______ E2 Date ______

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121777 Report Date: 01/21/92
Your Sample ID: MW-1000P
Sample Matrix : WATER

COLLECTION INFORMATION
Date/Time/By: 01/08/92 13:17 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121777	Alkalinity		88	MG/L
	Copper	<	14	UG/L
	Iron		1700	UG/L
	Total Hardness		110	MG/L
	Manganese		820	UG/L
	pH		6.4	S.U.
	Sulfate		11	MG/L
	Total Dissolved Solids		120	MG/L

Signed Neil K Melby Date 01/21/92

Signed ______ Date ______

ORTEK
ENVIRONMENTAL LABORATORY
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435
414-498-2222
FAX: 414-498-4067

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121778
Your Sample ID: MW-1002
Sample Matrix : WATER

Report Date: 01/21/92

COLLECTION INFORMATION
Date/Time/By: 01/08/92 15:08 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121778	Alkalinity		47	MG/L
	Copper	<	14	UG/L
	Iron	<	55	UG/L
	Total Hardness		67	MG/L
	Manganese	<	4.0	UG/L
	pH		6.5	S.U.
	Sulfate	<	10	MG/L
	Total Dissolved Solids		100	MG/L

Signed Nil K Melby Date 01/21/92

Signed ______ Date ______

E4

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121779 Report Date: 01/21/92
Your Sample ID: MW-1002G
Sample Matrix : WATER

COLLECTION INFORMATION
Date/Time/By: 01/08/92 15:12 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121779	Alkalinity		80	MG/L
	Copper	<	14	UG/L
	Iron	<	55	UG/L
	Total Hardness		110	MG/L
	Manganese	<	4.0	UG/L
	pH		6.4	S.U.
	Sulfate		11	MG/L
	Total Dissolved Solids		140	MG/L

Signed Nick Melby Date 01/21/92

Signed ______ Date ______

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121780
Your Sample ID: MW-1004
Sample Matrix : WATER

Report Date: 01/21/92

COLLECTION INFORMATION
Date/Time/By: 01/09/92 11:00 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121780	Sulfate	<	10	MG/L
	Total Dissolved Solids		65	MG/L
	Iron	<	55	UG/L
	Copper	<	14	UG/L
	Alkalinity		27	MG/L
	pH		6.6	S.U.
	Manganese	<	4.0	UG/L
	Total Hardness		37	MG/L

Signed D- [signature] Date 2-19-92

Signed ______ Date ______

E6

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121781
Your Sample ID: MW-1004S
Sample Matrix : WATER

Report Date: 01/21/92

COLLECTION INFORMATION

Date/Time/By: 01/09/92 11:05 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121781	Alkalinity		27	MG/L
	Copper	<	14	UG/L
	Iron	<	55	UG/L
	Total Hardness		62	MG/L
	Manganese	<	4.0	UG/L
	pH		6.5	S.U.
	Sulfate		11	MG/L
	Total Dissolved Solids		95	MG/L

Signed *Nik Melby* Date *01/21/92*

E7

Signed ______________ Date ______

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121782
Your Sample ID: MW-1004P
Sample Matrix : WATER

Report Date: 01/21/92

COLLECTION INFORMATION

Date/Time/By: 01/09/92 11:08 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121782	Alkalinity		160	MG/L
	Copper	<	14	UG/L
	Iron		320	UG/L
	Total Hardness		150	MG/L
	Manganese		120	UG/L
	pH		6.7	S.U.
	Sulfate	<	10	MG/L
	Total Dissolved Solids		160	MG/L

Signed *Nick Melby* Date *01/21/92*

Signed ______________________ Date __________

E8

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2490 West Mason Street · P.O. Box 12435 · Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121784
Your Sample ID: MW-1005
Sample Matrix : WATER

Report Date: 01/21/92

COLLECTION INFORMATION

Date/Time/By: 01/09/92 09:10 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121784	Alkalinity		86	MG/L
	Copper	<	14	UG/L
	Iron		18000	UG/L
	Total Hardness		1000	MG/L
	Manganese		460	UG/L
	pH		6.2	S.U.
	Sulfate		14	MG/L
	Total Dissolved Solids		530	MG/L

Signed Nick Mellberg Date 01/21/92

Signed ______________ Date ______________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street · P.O. Box 12435 · Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121785
Your Sample ID: MW-1005S
Sample Matrix : WATER

Report Date: 01/21/92

COLLECTION INFORMATION

Date/Time/By: 01/09/92 09:30 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121785	Iron		3600	UG/L
	Copper	<	14	UG/L
	Sulfate	<	10	MG/L
	Total Hardness		250	MG/L
	pH		6.7	S.U.
	Total Dissolved Solids	<	20	MG/L
	Alkalinity		170	MG/L
	Manganese		210	UG/L

Signed ____________________ Date 2-19-92

Signed ____________________ Date ________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2490 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121786 Report Date: 01/21/92
Your Sample ID: MW-1005P
Sample Matrix : WATER

COLLECTION INFORMATION
Date/Time/By: 01/09/92 09:45 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121786	Alkalinity		260	MG/L
	Copper	<	14	UG/L
	Iron		750	UG/L
	Total Hardness		240	MG/L
	Manganese		160	UG/L
	pH		6.8	S.U.
	Sulfate	<	10	MG/L
	Total Dissolved Solids		280	MG/L

Signed Neil K Melberg Date 01/21/92

Signed ______ Date ______

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121787 Report Date: 01/21/92
Your Sample ID: MW-1010P
Sample Matrix : WATER

COLLECTION INFORMATION
Date/Time/By: 01/08/92 13:38 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121787	Silver	<	0.4	UG/L
	Alkalinity		150	MG/L
	Arsenic	<	3.0	UG/L
	Barium		79	UG/L
	Cadmium		1.0	UG/L
	Chromium	<	2	UG/L
	Copper	<	14	UG/L
	Iron		150	UG/L
	Total Hardness		130	MG/L
	Mercury	<	0.2	UG/L
	Manganese		250	UG/L
	Lead	<	2.0	UG/L
	pH		7.2	S.U.
	Selenium	<	3.0	UG/L
	Sulfate		16	MG/L
	Total Dissolved Solids		200	MG/L
	Zinc	<	20	UG/L

Signed *[signature]* Date 01/21/92

Signed ______________________ Date __________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2490 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9201057
Our Lab # : 121783 Report Date: 01/21/92
Your Sample ID: FB-1
Sample Matrix : WATER

COLLECTION INFORMATION
Date/Time/By: 01/08/92 13:33 S D J
Location : LADYSMITH/91F6

Lab#	test		Result	Units
121783	Alkalinity	<	10	MG/L
	Copper	<	14	UG/L
	Iron	<	55	UG/L
	Total Hardness	<	5	MG/L
	Manganese	<	4.0	UG/L
	pH		7.7	S.U.
	Sulfate	<	10	MG/L
	Total Dissolved Solids	<	20	MG/L

Signed Nick Milbry Date 01/21/92

Signed ____________________ Date __________

ORTEK CHAIN OF CUSTODY/ANALYSIS REQUEST FORM

1 of 3

No.: 3494

Company Name: FVD

Project No./Client: 91F6

Sampling Location: LADYSMITH

Sampler: SDJ

ORTEK Batch No. 9201057

Bottle Size/Preservative: 500ml — | 1000ml HNO3

Date	Time	Sample I.D./Description	No. of Bottles (500ml —)	No. of Bottles (1000ml HNO3)					Total	*Sample Type	PH	TDS	IRON	ALKALINITY	HARDNESS	COPPER	SULFATE	MANGANESE			Remarks	Lab Use Only ID Number
1/8/92	1305	MW-1000	1	1					2	G.W.	X	X	X	X	X	X	X	X				121776
↓	1317	MW-1000P	1	1					↓	↓	X	X	X	X	X	X	X	X				121777
↓	1508	MW-1002	1	1					↓	↓	X	X	X	X	X	X	X	X				121778
↓	1512	MW-1002G	1	1					↓	↓	X	X	X	X	X	X	X	X				121779
1/9/92	1100	MW-1004	1	1					↓	↓	X	X	X	X	X	X	X	X				121780
↓	1105	MW-1004S	1	1					↓	↓	X	X	X	X	X	X	X	X				121781
↓	1108	MW-1004P	1	1					↓	↓	X	X	X	X	X	X	X	X				121782
1/8/92	1333	FB-1	1	1					↓	D.I.	X	X	X	X	X	X	X	X				121783

COMMENTS/SPECIAL INSTRUCTIONS:

E14

☐ If Pb > 5ppm do TCLP

*Sample Type		
S - Soil	SW - Surface Water	H - Hazardous Liquid
SE - Sediment	DW - Drinking Water	A - Air
SO - Solid	WW - Wastewater	O - Oil
	GW - Groundwater	X - Other ______

Date Received: 1/10/92

Date Due: 1-31-92 ☐ RUSH (approved by lab)

Quotation #:

Purchase Order #:

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☒ Yes ☐ No

Packed By: SDJ

Sealed For Shipping By: SDJ Seal # 001

Results To: FVD

Billing Address:

Attention: RUSS JANESHEK

Phone: FAX

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott Jansen	1/10/92	0840			
2.						

Received for Laboratory: Gloria Dettalter 1/10/92 08:40

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☒ Yes ☐ No

Method of Shipment: FVD

Contents Temperature on ice °C Refrig. # 121, M3

ORTEK
2496 West Mason Street
Green Bay, WI 54307-2435
(414) 498-2222

ORTEK CHAIN OF CUSTODY/ANALYSIS REQUEST FORM

No.: 3495

2 of 3

Company Name: FVD

Project No./Client: 91F6

Sampling Location: LADYSMITH

Sampler: SDJ

ORTEK Batch No. 920105?

Bottle Size/Preservative: 500ml —; 1000ml HNO3

Date	Time	Sample I.D./Description	No. of Bottles: 500ml	No. of Bottles: 1000ml HNO3					Total	*Sample Type	Ph	TDS	Iron	Manganese	Sulfate	Copper	T. Alkalinity	T. Hardness	Arsenic	Barium	Remarks	Lab Use Only ID Number
1/9/92	0910	mw-1005	1	1					2	G.W.	X	X	X	X	X	X	X	X				121784
↓	0930	mw-1005S	1	1					↓	↓	X	X	X	X	X	X	X	X				121785
↓	0945	mw-1005P	1	1					↓	↓	X	X	X	X	X	X	X	X				121786
1/8/92	1338	mw-1010P	1	1					↓	↓	X	X	X	X	X	X	X	X	X	X		121787

COMMENTS/SPECIAL INSTRUCTIONS:

E15

☐ If Pb > 5ppm do TCLP

*Sample Type
S - Soil
SE - Sediment
SO - Solid
SW - Surface Water
DW - Drinking Water
WW - Wastewater
GW - Groundwater
H- Hazardous Liquid
A - Air
O - Oil
X - Other ______

Date Received: 1/10/92
Date Due: ______ ☐RUSH (approved by lab)
Quotation #: ______
Purchase Order #: ______

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☒Yes ☐No

Packed By: SDJ

Sealed For Shipping By: SDJ Seal # 001

Results To: FVD

Billing Address: ______

Attention: Russ Janeshek

Phone: ______ FAX ______

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott Jansen	1/10/92	0840			
2.						

Received for Laboratory: Gloria Dorttster 1-10-92 0840

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☒Yes ☐No

Method of Shipment: FVD

Contents Temperature on Ice °C Refrig. # 121, 11-3

ORTEK
2496 West Mason Street
Green Bay, WI 54307-2435
(414) 498-2222

ORTEK

CHAIN OF CUSTODY/ANALYSIS REQUEST FORM

3 of 3

No.: 3496

Company Name: FVD

Project No./Client: 91FC

Sampling Location: LADYSMITH

Sampler: SOJ

ORTEK Batch No. 9201057

Bottle Size/Preservative: 1000ml HNO3

Date	Time	Sample I.D./Description	No. of Bottles (1000ml HNO3)						Total	*Sample Type	ANALYSIS REQUESTED: CADMIUM	CHROMIUM	LEAD	MERCURY	SELENIUM	SILVER	ZINC				Remarks	Lab Use Only ID Number
1/8/92	1338	MW-1010P	1						1	G.W.	X	X	X	X	X	X	X					121787

COMMENTS/SPECIAL INSTRUCTIONS:

E16

☐ If Pb > 5ppm do TCLP

*Sample Type: S - Soil; SE - Sediment; SO - Solid; SW - Surface Water; DW - Drinking Water; WW - Wastewater; GW - Groundwater; H - Hazardous Liquid; A - Air; O - Oil; X - Other

Date Received: 1/10/92
Date Due: ☐ RUSH (approved by lab)
Quotation #:
Purchase Order #:

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☒ Yes ☐ No
Packed By: SOJ
Sealed For Shipping By: SOJ Seal # 001

Results To: FVD
Attention: RUSS JANESHEK

Billing Address:
Phone: FAX

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott Jansen	1/10/92	08:40			
2.						

Received for Laboratory: Gloria Doffitor 1-10-92 08:40

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☒ Yes ☐ No
Method of Shipment: FVD
Contents Temperature ON ICE °C Refrig. # 121 M-3

ORTEK
2496 West Mason Street
Green Bay, WI 54307-2435
(414) 498-2222

FLAMBEAU MINING COMPANY
QUARTERLY GROUNDWATER ELEVATION

January 1992
Readings Taken 01/08/92

Location	Groundwater Elevation	Location	Groundwater Elevation
MW-1000	1090.31	PZ-1008G	1139.16
MW-1000P	1090.15	PZ-1009	1144.49
MW-1001	1111.67	PZ-1009G	1144.24
MW-1001G	1116.70	MW-1010P	1087.60
MW-1001P	1116.94	PZ-1011	1140.20
MW-1002	1093.90	PZ-1012	1110.36
MW-1002G	1093.93	PZ-R1	1085.59
MW-1003	1114.35	PZ-S1	1097.06
MW-1003P	1114.34	PZ-S3	1117.91
MW-1004	1111.65	Sandpoint	Frozen
MW-1004S	1111.00	ST-9-23	1120.87
MW-1004P	1108.79	ST-9-23A	1121.15
MW-1005	1140.86	ST-9-26	1113.31
MW-1005S	1140.32	PZ-1A	Frozen
MW-1005P	1140.95	PZ-1B	1097.75
PZ-1006	Dry	OW-7	1103.90
PZ-1006G	1137.21	OW-10	1091.13
PZ-1006S	1135.73	OW-39	1103.14
PZ-1007S	1117.74	OW-42	1090.65
PZ-1008	1139.45	OW-43	1055.94

Foth & Van Dyke

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

June 8, 1992

Mr. Lawrence J. Lynch
Hydrogeologist
Mine Reclamation Unit
Bureau of Solid and Hazardous Waste Management
State of Wisconsin
Department of Natural Resources
P.O. Box 7921
Madison, WI 53707

Dear Mr. Lynch:

RE: Flambeau Project
Environmental Monitoring
Groundwater Results (April 1992 Sampling Event)

Attached please find copies of the laboratory results sheets for analyses performed on groundwater samples collected on April 8 and 9, 1992, on behalf of the Flambeau Mining Company. In addition, groundwater elevations for on-site wells and piezometers and water level readings for the staff gauge locations have been included.

Per your instructions, the results are being forwarded to you in this manner to satisfy WDNR reporting requirements because Turn-Around Documents (TADS) are not presently available. Once TADs are made available by WDNR, this data will be resubmitted to you in the TAD format.

If there are any questions regarding this submittal, please contact either of the undersigned.

Sincerely,

Foth & Van Dyke

Russell T. Janeshek
Associate

James B. Hutchison, P.E.
Project Manager

RTJ,JBH1:kmc

Attachments

cc: Gordon Reinke, Wisconsin Department of Natural Resources (w/attach)
Lawrence Mercando, Flambeau Mining Company (w/attach)
Henry Handzel, DeWitt, Porter, *et al* (w/attach)
John Kaiser, Rusk County Board (w/attach)
Robert Plantz, Town of Grant (w/attach)
Al Christianson, City Administrator, City of Ladysmith (wo/attach)
Clarence Glotfelty, Rusk County Zoning Administrator (wo/attach)

[32-22]91F6.51 L-Lynch

FLAMBEAU MINING COMPANY
QUARTERLY GROUNDWATER ELEVATION
April 1992
Readings Taken 4/8/92

Location	Groundwater Elevation	Location	Groundwater Elevation
MW-1000	1092.01	PZ-1008G	1139.72
MW-1000P	1091.67	PZ-1009	1144.87
MW-1001	1116.71	PZ-1009G	1144.42
MW-1001G	1116.13	MW-1010P	1089.08
MW-1001P	1116.45	PZ-1011	1140.82
MW-1002	1093.70	PZ-1012	1112.48
MW-1002G	1093.75	PZ-R1	1087.84
MW-1003	1115.50	PZ-S1	1099.19
MW-1003P	1115.50	PZ-S3	1117.57
MW-1004	1112.19	Sandpoint	1085.82
MW-1004S	1112.05	ST-9-23	1120.14
MW-1004P	1109.72	ST-9-23A	1120.44
MW-1005	1141.23	ST-9-26	1112.95
MW-1005S	1140.71	PZ-1A	1103.39
MW-1005P	1141.48	PZ-1B	1102.73
PZ-1006	1138.27	OW-7	1121.02
PZ-1006G	1137.82	OW-10	1094.65
PZ-1006S	1136.12	OW-39	1103.21
PZ-1007S	1117.18	OW-42	1091.56
PZ-1008	1140.56	OW-43	1090.01

[32-22]91F6.51 L-Lynch

FLAMBEAU MINING COMPANY

MONTHLY STAFF GAUGE READINGS
FEBRUARY - APRIL 1992

	WT-1	WT-2	WT-3	WT-4	WT-5
February 1992 (-)	NRT	NRT	NRT	NRT	NRT
March 1992 (3-30-92)	0.61	0.96	0.46	1.25	0.53
April 1992 (4-30-92)	0.46	0.85	0.28	1.07	0.50

NRT = no readings taken (frozen conditions)

[32-22]91F6.51 L-Lynch

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

Client: FOTH & VAN DYKE
2737 S RIDGE ROAD
PO BOX 19012
GREEN BAY WI 54307-9012

Lab Sample No. 124393-124404
ORTEK Batch No. 9204102

Client Contact: RUSS JANESHEK
Client ID #: MW-1000/MW-1000P/MW-1002/MW-1002G/MW-1004/MW-1004S/MW-1004P/MW-1005/MW-1005S/MW-1005P/FB-1/MW-1010P
Client Project: 91F6

05/07/92

1.0 SCOPE OF ANALYTICAL SERVICES

1.1 Twelve (12) aqueous samples were received at ORTEK on 04/10/92.

1.2 The twelve (12) aqueous samples were analyzed in accordance with Methods 150.1, 160.2, ICAP, 375.2, 310.2, 130.2 and GFAA.

2.0 ANALYTICAL RESULTS

2.1 Based on the analytical services performed, attached is a summary of the Wet Chemistry and Metals Data and a Chain of Custody for your records.

James Chang, Ph.D
Laboratory Director

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12436 Green Bay, WI 54307-2436

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9204102
Our lab # : 124393
Your sample ID: MW-1000
Sample Matrix : WATER

Report Date: 05/01/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 10:48 SDJ/SVD
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124393	Sulfate		410	MG/L	04/27/92
	pH		2.6	S.U.	04/10/92
	Total Dissolved Solids		130	MG/L	04/11/92
	Copper		210	UG/L	04/28/92
	Iron		250	UG/L	04/28/92
	Manganese		7.1	UG/L	04/28/92
	Alkalinity	<	10	MG/L	04/14/92
	Total Hardness		67	MG/L	04/14/92

Signed Earl G Schmoll Date 5-1-92

Signed ____________ Date ____________

E22

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2490 West Mason Street · P.O. Box 12435 · Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9204102
Our lab # : 124394
Your sample ID: MW-1000P
Sample Matrix : WATER

Report Date: 05/01/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 11:00 SDJ/SVD
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124394	Sulfate		14	MG/L	04/27/92
	pH		6.7	S.U.	04/10/92
	Total Dissolved Solids		120	MG/L	04/11/92
	Copper	<	14	UG/L	04/28/92
	Iron		1300	UG/L	04/28/92
	Manganese		830	UG/L	04/28/92
	Alkalinity		84	MG/L	04/14/92
	Total Hardness		88	MG/L	04/14/92

Signed Carl G. Schmoll Date 5-1-92

Signed ______________ Date ______________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street PO Box 12435 Green Bay WI 54307-2435

- SAMPLE ANALYSIS REPORT -

TO: FOTH & VAN DYKE
2737 S RIDGE ROAD
PO BOX 19012
GREEN BAY WI 54307-9012

ATTN: RUSS JANESHEK

Batch ID: 9204102 Report Date: 05/01/92
Our Lab #: 124395
Your Sample ID: MW-1002
Sample Matrix: WATER

COLLECTION INFORMATION

Date/Time/By: 04/08/92 14:05 SDJ/SVD
Location: 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124395	Sulfate		11	MG/L	04/27/92
	pH		7.0	S.U.	04/10/92
	Total Dissolved Solids		85	MG/L	04/10/92
	Copper	<	14	UG/L	04/28/92
	Iron	<	55	UG/L	04/28/92
	Manganese	<	4.0	UG/L	04/28/92
	Alkalinity		49	MG/L	04/14/92
	Total Hardness		48	MG/L	04/14/92

Signed: Marcia A. Kuehl Date: 5/11/92

Signed: ______ Date: ______

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Revision 05/11/92 vrg

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9204102
Our lab # : 124396
Your sample ID: MW-1002G
Sample Matrix : WATER

Report Date: 05/01/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 14:25 SDJ/SVD
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124396	Sulfate		14	MG/L	04/27/92
	pH		6.9	S.U.	04/10/92
	Total Dissolved Solids		150	MG/L	04/10/92
	Copper	<	14	UG/L	04/28/92
	Iron	<	55	UG/L	04/28/92
	Manganese	<	4.0	UG/L	04/28/92
	Alkalinity		84	MG/L	04/14/92
	Total Hardness		110	MG/L	04/14/92

Signed Carl E Schmoll Date 5-1-92

Signed ______________________ Date ______________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street · P.O. Box 12435 · Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9204102
Our lab # : 124397
Your sample ID: MW-1004
Sample Matrix : WATER

Report Date: 05/01/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 09:15 SDJ/SVD
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124397	Sulfate		12	MG/L	04/27/92
	pH		7.1	S.U.	04/10/92
	Total Dissolved Solids		82	MG/L	04/11/92
	Copper	<	14	UG/L	04/28/92
	Iron	<	55	UG/L	04/28/92
	Manganese	<	4.0	UG/L	04/28/92
	Alkalinity		36	MG/L	04/14/92
	Total Hardness		77	MG/L	04/14/92

Signed Earl G. Schmoll Date 5-1-92

Signed ______________ Date ______________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9204102
Our lab # : 124398
Your sample ID: MW-1004S
Sample Matrix : WATER

Report Date: 05/01/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 09:30 SDJ/SVD
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124398	Sulfate		12	MG/L	04/27/92
	pH		7.2	S.U.	04/10/92
	Total Dissolved Solids		100	MG/L	04/11/92
	Copper	<	14	UG/L	04/28/92
	Iron	<	55	UG/L	04/28/92
	Manganese	<	4.0	UG/L	04/28/92
	Alkalinity		60	MG/L	04/14/92
	Total Hardness		72	MG/L	04/14/92

Signed Earl Schmoll Date 5-1-92

Signed Date

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9204102
Our lab # : 124399
Your sample ID: MW-1004P
Sample Matrix : WATER

Report Date: 05/01/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 09:40 SDJ/SVD
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124399	Sulfate	<	10	MG/L	04/27/92
	pH		7.0	S.U.	04/10/92
	Total Dissolved Solids		180	MG/L	04/11/92
	Copper	<	14	UG/L	04/28/92
	Iron		370	UG/L	04/28/92
	Manganese		140	UG/L	04/28/92
	Alkalinity		170	MG/L	04/14/92
	Total Hardness		160	MG/L	04/14/92

Signed Carl E Schmoll Date 5-1-92

Signed ____________________ Date ____________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9204102
Our lab # : 124400
Your sample ID: MW-1005
Sample Matrix : WATER

Report Date: 05/01/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 15:12 SDJ/SVD
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124400	Sulfate		16	MG/L	04/27/92
	pH		6.3	S.U.	04/10/92
	Total Dissolved Solids		680	MG/L	04/10/92
	Copper	<	14	UG/L	04/28/92
	Iron		17000	UG/L	04/28/92
	Manganese		380	UG/L	04/28/92
	Alkalinity		90	MG/L	04/14/92
	Total Hardness		520	MG/L	04/14/92

Signed ________________ Date 5-1-92

Signed ________________ Date ________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9204102
Our lab # : 124401
Your sample ID: MW-1005S
Sample Matrix : WATER

Report Date: 05/01/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 13:35 SDJ/SVD
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124401	Sulfate	<	10	MG/L	04/27/92
	pH		7.1	S.U.	04/10/92
	Total Dissolved Solids		210	MG/L	04/10/92
	Copper	<	14	UG/L	04/28/92
	Iron		3700	UG/L	04/28/92
	Manganese		200	UG/L	04/28/92
	Alkalinity		180	MG/L	04/14/92
	Total Hardness		290	MG/L	04/14/92

Signed Earl G Schmoll Date 5-1-92

E30

Signed ____________ Date ____________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street ... P.O. Box 12435 ... Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9204102
Our lab # : 124402
Your sample ID: MW-1005P
Sample Matrix : WATER

Report Date: 05/01/92

COLLECTION INFORMATION

Date/Time/By: 04/08/92 16:00 SDJ/SVD
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124402	Sulfate	<	10	MG/L	04/27/92
	pH		7.0	S.U.	04/10/92
	Total Dissolved Solids		350	MG/L	04/10/92
	Copper	<	14	UG/L	04/28/92
	Iron		1000	UG/L	04/28/92
	Manganese		130	UG/L	04/28/92
	Alkalinity		260	MG/L	04/14/92
	Total Hardness		240	MG/L	04/14/92

Signed Carl I Kamall Date 5-1-92

Signed ______________ Date ______________

E31

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street · P.O. Box 12435 · Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

TO: FOTH & VAN DYKE
2737 S RIDGE ROAD
PO BOX 19012
GREEN BAY WI 54307-9012

ATTN: RUSS JANESHEK

Batch ID: 9204102 Report Date: 05/05/92
Our Lab #: 124404
Your Sample ID: MW-1010P
Sample Matrix: WATER

COLLECTION INFORMATION

Date/Time/By: 04/09/92 10:45 SDJ/SVD
Location: 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124404	Sulfate		14	MG/L	04/27/92
	Mercury	<	0.2	UG/L	04/25/92
	Silver	<	0.4	UG/L	04/23/92
	Arsenic		5.5	UG/L	04/28/92
	Cadmium		2.1	UG/L	04/27/92
	Chromium	<	2	UG/L	04/27/92
	Lead	<	2.0	UG/L	04/23/92
	Selenium	<	3.0	UG/L	04/30/92
	pH		7.7	S.U.	04/10/92
	Total Dissolved Solids		340	MG/L	04/11/92
	Barium		92	UG/L	04/28/92
	Copper	<	14	UG/L	04/28/92
	Iron	<	55	UG/L	04/28/92
	Manganese		200	UG/L	04/28/92
	Zinc	<	20	UG/L	04/28/92
	Alkalinity		160	MG/L	04/14/92
	Total Hardness		140	MG/L	04/14/92

Signed: Marcia A. Kuehl Date: 5/11/92

Signed: E32 Date:

Revision 05/11/92 vrg

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9204102
Our lab # : 124403
Your sample ID: FB-1
Sample Matrix : WATER

Report Date: 05/01/92

COLLECTION INFORMATION

Date/Time/By: 04/09/92 09:35 SDJ/SVD
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
124403	Sulfate	<	10	MG/L	04/27/92
	pH		8.6	S.U.	04/10/92
	Total Dissolved Solids	<	20	MG/L	04/11/92
	Copper	<	14	UG/L	04/28/92
	Iron	<	55	UG/L	04/28/92
	Manganese	<	4.0	UG/L	04/28/92
	Alkalinity	<	10	MG/L	04/14/92
	Total Hardness	<	5	MG/L	04/14/92

Signed Earl G. Schmoll Date 5-1-92

Signed ______________ Date ______________

ORTEK CHAIN OF CUSTODY/ANALYSIS REQUEST FORM

1/3

No.: 3498

Company Name: FVO

Project No./Client 91F6

Sampling Location: Flambeau

Sampler SDJ ; SVDi

ORTEK Batch No. 9204102

Bottle Size/Preservative: 500ml; 500ml HNO3; 500ml H2SO4

Date	Time	Sample I.D./Description	No. of Bottles (500ml)	No. of Bottles (500ml HNO3)	No. of Bottles (500ml H2SO4)	Total	*Sample Type	pH (LAB)	TDS	Iron	Manganese	Sulfate	Copper	Total Alkalinity	Total Hardness	Remarks	Lab Use Only ID Number
4/9/92	1048	MW-1000	1	1	1	3	G.W.	X	X	X	X	X	X	X	X	preserved in lab NO-unpreserved	124393
↓	1100	MW-1000P	1	1	1	↓	↓	X	X	X	X	X	X	X	X		124394
4/8/92	1405	MW-10002	1	1	1			X	X	X	X	X	X	X	X		124395
↓	1425	MW-1002G	1	1	1			X	X	X	X	X	X	X	X		124396
4/9/92	0915	MW-1004	1	1	1			X	X	X	X	X	X	X	X		124397
	0930	MW-1004S	1	1	1			X	X	X	X	X	X	X	X		124398
↓	0940	MW-1004P	1	1	1			X	X	X	X	X	X	X	X		124399
4/8/92	1512	MW-1005	1	1	1			X	X	X	X	X	X	X	X		124400
↓	1535	MW-1005S	1	1	1	↓	↓	X	X	X	X	X	X	X	X		124401

COMMENTS/SPECIAL INSTRUCTIONS:

E34

☐ If Pb>5ppm do TCLP

*Sample Type: S - Soil; SE - Sediment; SO - Solid; SW - Surface Water; DW - Drinking Water; WW - Wastewater; GW - Groundwater; H - Hazardous Liquid; A - Air; O - Oil; X - Other ______

Date Received: 4/10/92

Date Due: 5/1/92 ☐RUSH (approved by lab)

Quotation #:

Purchase Order #:

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☒Yes ☐No

Packed By: SDJ

Sealed For Shipping By: SDJ Seal # 001

Results To: FVO

Billing Address:

Attention: Russ Janeshek

Phone: FAX

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott Jansen	4/10/92	0820			
2.						

Received for Laboratory: Gloria Dottiter 4/10/92 08:20

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☒Yes ☐No

Method of Shipment: FVO

Contents Temperature on Ice °C Refrig. # M-4 121

ORTEK
2496 West Mason Street
Green Bay, WI 54307-2435
(414) 498-2222

ORTEK CHAIN OF CUSTODY/ANALYSIS REQUEST FORM

2 of 3

No.: 3498

Company Name: FVD

Project No./Client: 91F6

Sampling Location: Flambeau

Sampler: SDJ ; SV01

ORTEK Batch No. 9204162

Bottle Size/Preservative: 500ml NONE, 500 H2SO4, 500ml HNO3, 1000ml HNO3

Date	Time	Sample I.D./Description	500ml NONE	500 H_2SO_4	500ml HNO_3	1000ml HNO_3			Total	*Sample Type	pH (LAB)	TDS	IRON	MANGANESE	SULFATE	COPPER	TOTAL ALKALINITY	TOTAL HARDNESS	ARSENIC	BARIUM	Remarks	Lab Use Only ID Number
4/8/92	1600	MW-1005P	1	1	1				3	G.W.	X	X	X	X	X	X	X	X				124402
4/9/92	0935	FB-1	1	1	1				↓	D.I.	X	X	X	X	X	X	X	X				124403
↓	1045	MW-1010P		1	1	1			↓	G.W.	X	X	X	X	X	X	X	X	X	X		124404

COMMENTS/SPECIAL INSTRUCTIONS:

E35

☐ If Pb > 5ppm do TCLP

*Sample Type: S - Soil; SE - Sediment; SO - Solid; SW - Surface Water; DW - Drinking Water; WW - Wastewater; GW - Groundwater; H - Hazardous Liquid; A - Air; O - Oil; X - Other

Date Received: 4/10/92

Date Due: 5/1/92 ☐RUSH (approved by lab)

Quotation #:

Purchase Order #:

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☒Yes ☐No

Packed By: SDJ

Sealed For Shipping By: SDJ Seal # 001

Results To: FVD

Billing Address:

Attention: RUSS JANESHEK

Phone: FAX

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott Jansen	4/10/92	0820			
2.						

Received for Laboratory: Gloria Doftiter 4/10/92 0820

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☒Yes ☐No

Method of Shipment: FVD

Contents Temperature On Ice °C Refrig. # M-4 / 21

ORTEK
2496 West Mason Street
Green Bay, WI 54307-2435
(414) 498-2222

ORTEK

CHAIN OF CUSTODY/ANALYSIS REQUEST FORM

3 of 3

No.: 3499

Company Name: FVD

Project No./Client: 91F6

Sampling Location: Flambeau

Sampler: SOJ & SVD,

ORTEK Batch No. 9204102

Bottle Size/Preservative: 1000 ml HNO3

Date	Time	Sample I.D./Description	No. of Bottles (1000 ml HNO3)						Total	*Sample Type	Cadmium	Total Chromium	Lead	Mercury	Selenium	Silver	Zinc				Remarks	Lab Use Only ID Number
4/9/92	1045	MW-1010P	1						1	G.W.	X	X	X	X	X	X	X					124404

COMMENTS/SPECIAL INSTRUCTIONS:

E36

☐ If Pb > 5ppm do TCLP

*Sample Type
S - Soil
SE - Sediment
SO - Solid
SW - Surface Water
DW - Drinking Water
WW - Wastewater
GW - Groundwater
H - Hazardous Liquid
A - Air
O - Oil
X - Other ______

Date Received: 4/10/92
Date Due: 5/1/92 ☐RUSH (approved by lab)
Quotation #:
Purchase Order #:

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☒Yes ☐No

Packed By: SOJ

Sealed For Shipping By: SOJ Seal # 001

Results To: FVD

Billing Address:

Attention: Russ Janeshek

Phone: FAX

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott Jansen	4/10/92	0820			
2.						

Received for Laboratory: Gloria Doftuter 4/10/92 08:20

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☒Yes ☐No

Method of Shipment: FVD

Contents Temperature on ice °C Refrig. # M-4

ORTEK
2496 West Mason Street
Green Bay, WI 54307-2435
(414) 498-2222

Foth & Van Dyke

Engineers
Architects
Planners
Scientists

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

September 11, 1992

Mr. Lawrence J. Lynch
Hydrogeologist
Mine Reclamation Unit
Bureau of Solid and Hazardous Waste Management
State of Wisconsin
Department of Natural Resources
P. O. Box 7921
Madison, WI 53707

Dear Mr. Lynch:

RE: Flambeau Mining Company
Environmental Monitoring
Groundwater Quality Results (July 1992)

Attached are copies of the laboratory results sheets for analyses performed on groundwater samples collected on July 15 and 16, 1992 on behalf of Flambeau Mining Company. In addition, groundwater elevations for on-site wells and piezometers and water level readings from the staff gauge locations have been included.

The groundwater elevation data have been included (in order to provide a timely submittal) recognizing that several potential discrepancies with regard to monitoring well elevations are currently being discussed with Teresa Harding of the Park Falls Area Headquarters office.

The results are being forwarded to you in this manner to satisfy WDNR reporting requirements because TurnAround Documents (TADs) are not currently available.

If there are any questions regarding this submittal, please contact either of the undersigned.

Sincerely,

Foth & Van Dyke

Russell T. Janeshek
Associate

Jim Hutchison, P.E.
Project Manager

RTJ,JH/lb

Enclosure

cc: Gerald W. Sevick, P.E., Foth & Van Dyke (w/o encl.)
Gordon Reinke, Wisconsin DNR (w/encl.)
Lawrence Mercando, Flambeau Mining Company (w/encl.)
Henry Handzel, DeWitt, Porter, *et al.* (w/encl.)
John Kaiser, Rusk County (w/encl.)
Robert Plantz, Town of Grant (w/encl.)
Al Christianson, City of Ladysmith (w/o encl.)
Clarence Glotfelty, Rusk County (w/o encl.)
Theresa Harding, Wisconsin DNR (Park Falls) (w/encl.)
File (Groundwater Quality) (w/encl.)

Flambeau Mining Company
Quarterly Groundwater Elevations
July 1992
(Readings Taken 7/15/92)

Location	Groundwater Elevation	Location	Groundwater Elevation
MW-1000	1091.60	PZ-1008G	1138.85
MW-1000P	1088.87	PZ-1009	1145.21
MW-1001	1118.26	PZ-1009G	1144.90
MW-1001G	1117.15	MW-1010P	1088.28
MW-1001P	1117.53	PZ-1011	1140.51
MW-1002	1093.04	PZ-1012	1112.83
MW-1002G	1093.09	PZ-R1	1087.36
MW-1003	1115.30	PZ-S1	1098.92
MW-1003P	1115.30	PZ-S3	1123.35
MW-1004	1111.73	Sandpoint	1084.63
MW-1004S	1111.58	ST-9-23	1121.82 (Dry)
MW-1004P	1109.39	ST-9-23A	1121.96
MW-1005	1140.11	ST-9-26	1114.21
MW-1005S	1139.40	PZ-1A	1103.37
MW-1005P	1140.29	PZ-1B	1102.26
PZ-1006	1137.27 (Dry)	OW-7	1118.46
PZ-1006G	1137.33	OW-10	1095.19
PZ-1006S	1136.01	OW-39	1100.54
PZ-1007S	1118.14	OW-42	1090.76
PZ-1008	1139.65	OW-43	1089.40

Elevations are reported in feet above mean sea level.

Flambeau Mining Company
Monthly Staff Gauge Readings
May, June, July 1992

Month	(Reading Date)	WT-1	WT-2	WT-3	WT-4	WT-5
May 1992	(5/30/92)	0.20	0.73	Dry	0.95	0.46
June 1992	(6/30/92)	Dry	0.48	Dry	0.65	0.47
July 1992	(7/31/92)	Dry	0.27	Dry	0.40	0.11

Readings are reported in feet.

ORTEK
ENVIRONMENTAL LABORATORY
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435
414-498-2222
FAX: 414-498-4067

COPY

Client: FOTH & VAN DYKE
2737 S RIDGE ROAD
PO BOX 19012
GREEN BAY WI 54307-9012

Lab Sample No. 128006-128017
ORTEK Batch No. 9207131

Client Contact: RUSS JANESHEK
Client ID #: SEE CHAIN OF CUSTODY
Client Project: 91F6

08/03/92

1.0 SCOPE OF ANALYTICAL SERVICES

1.1 Twelve (12) aqueous samples were received at ORTEK on 07/17/92.

1.2 The twelve (12) aqueous samples were analyzed in accordance with Methods 375.2, 150.1, 160.2, 6010, 310.2, 130.2 and GFAA.

2.0 ANALYTICAL RESULTS

2.1 Based on the analytical services performed, attached is a summary of the Wet Chemistry and Metals Data and a Chain of Custody for your records.

David L. Schumacher
Technical Director

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207131
Our lab # : 128006
Your sample ID: MW-1000
Sample Matrix : WATER

Report Date: 07/31/92

COLLECTION INFORMATION

Date/Time/By: 07/15/92 14:05 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128006	Sulfate		47	MG/L	07/22/92
	pH		6.9	S.U.	7/17/92
	Total Dissolved Solids		120	MG/L	07/17/92
	Copper	<	14	UG/L	07/29/92
	Iron	<	55	UG/L	07/29/92
	Manganese		5.6	UG/L	07/29/92
	Alkalinity		29	MG/L	07/20/92
	Total Hardness		80	MG/L	07/20/92

Signed Earl G Schmoll Date 7-31-92

E41

Signed ______ Date ______

ORTEK
ENVIRONMENTAL LABORATORY

414-498-2222
FAX: 414-498-4067
2496 West Mason Street , P.O. Box 12435 , Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207131
Our lab # : 128007
Your sample ID: MW-1000P
Sample Matrix : WATER

Report Date: 07/31/92

COLLECTION INFORMATION

Date/Time/By: 07/15/92 14:00 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128007	Sulfate		12	MG/L	07/22/92
	pH		7.1	S.U.	7/17/92
	Total Dissolved Solids		140	MG/L	07/17/92
	Copper	<	14	UG/L	07/29/92
	Iron		470	UG/L	07/29/92
	Manganese		730	UG/L	07/29/92
	Alkalinity		81	MG/L	07/20/92
	Total Hardness		120	MG/L	07/20/92

Signed Carl G Pekmoll Date 7-31-92

E42

Signed ______________ Date ______________

ORTEK
ENVIRONMENTAL LABORATORY
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435
414-498-2222
FAX: 414-498-4067

- SAMPLE ANALYSIS REPORT -

TO: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 54307-9012

ATTN: RUSS JANESHEK

Batch ID : 9207131
Our Lab # : 128008
Your Sample ID: MW-1002
Sample Matrix : WATER

Report Date: 07/31/92

COLLECTION INFORMATION

Date/Time/By: 07/16/92 06:45 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128008	pH		7.0	S.U.	07/11/92
	Iron	<	55	UG/L	07/11/92
	Alkalinity		41	MG/L	07/11/92
	Total Dissolved Solids		87	MG/L	07/11/92
	Sulfate	<	10	MG/L	07/11/92
	Copper	<	14	UG/L	07/11/92
	Manganese	<	4.0	UG/L	07/11/92
	Total Hardness		120	MG/L	07/11/92

Signed: Marcia A. Kuehl Date: 8/10/92

E43

Signed: ______________ Date: ______________

Revision, 08/10/92, mmg

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street · P.O. Box 12435 · Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207131
Our lab # : 128009 Report Date: 07/31/92
Your sample ID: MW-1002G
Sample Matrix : WATER

COLLECTION INFORMATION

Date/Time/By: 07/16/92 06:48 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128009	Sulfate		11	MG/L	07/22/92
	pH		6.8	S.U.	7/17/92
	Total Dissolved Solids		150	MG/L	07/17/92
	Copper	<	14	UG/L	07/29/92
	Iron	<	55	UG/L	07/29/92
	Manganese	<	4.0	UG/L	07/29/92
	Alkalinity		79	MG/L	07/20/92
	Total Hardness		160	MG/L	07/20/92

Signed Earl S Schmidt Date 7-31-92

E44

Signed ____________ Date ____________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207131
Our lab # : 128010 Report Date: 07/31/92
Your sample ID: MW-1004
Sample Matrix : WATER

COLLECTION INFORMATION

Date/Time/By: 07/15/92 13:00 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128010	Sulfate	<	10	MG/L	07/22/92
	pH		7.0	S.U.	7/17/92
	Total Dissolved Solids		77	MG/L	07/17/92
	Copper	<	14	UG/L	07/29/92
	Iron		59	UG/L	07/29/92
	Manganese		57	UG/L	07/29/92
	Alkalinity		29	MG/L	07/20/92
	Total Hardness		160	MG/L	07/20/92

Signed Earl D Schmoll Date 7-31-92

Signed ______ Date ______

E45

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207131
Our lab # : 128011
Your sample ID: MW-1004S
Sample Matrix : WATER

Report Date: 07/31/92

COLLECTION INFORMATION

Date/Time/By: 07/15/92 13:20 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128011	Sulfate	<	10	MG/L	07/22/92
	pH		6.8	S.U.	7/17/92
	Total Dissolved Solids		110	MG/L	07/17/92
	Copper	<	14	UG/L	07/29/92
	Iron	<	55	UG/L	07/29/92
	Manganese	<	4.0	UG/L	07/29/92
	Alkalinity		74	MG/L	07/20/92
	Total Hardness		150	MG/L	07/20/92

Signed Earl G Schmoll E46 Date 7-31-92

Signed ______________ Date ______________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207131
Our lab # : 128012
Your sample ID: MW-1004P
Sample Matrix : WATER

Report Date: 07/31/92

COLLECTION INFORMATION

Date/Time/By: 07/15/92 13:35 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128012	Sulfate	<	10	MG/L	07/22/92
	pH		7.0	S.U.	7/17/92
	Total Dissolved Solids		180	MG/L	07/17/92
	Copper	<	14	UG/L	07/29/92
	Iron		380	UG/L	07/29/92
	Manganese		130	UG/L	07/29/92
	Alkalinity		160	MG/L	07/20/92
	Total Hardness		170	MG/L	07/20/92

Signed Earl G. Schmoll Date 7-31-92

Signed ______ Date ______

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street · P.O. Box 12435 · Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207131
Our lab # : 128013
Your sample ID: FB-1
Sample Matrix : WATER

Report Date: 07/31/92

COLLECTION INFORMATION

Date/Time/By: 07/15/92 14:55 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128013	Sulfate	<	10	MG/L	07/22/92
	pH		8.9	S.U.	7/17/92
	Total Dissolved Solids	<	20	MG/L	07/17/92
	Copper	<	14	UG/L	07/29/92
	Iron	<	55	UG/L	07/29/92
	Manganese	<	4.0	UG/L	07/29/92
	Alkalinity	<	10	MG/L	07/20/92
	Total Hardness		110	MG/L	07/20/92

Signed Earl Schmoll E48 Date 7-31-92

Signed ____________ Date ____________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207131
Our lab # : 128014 Report Date: 07/31/92
Your sample ID: MW-1005
Sample Matrix : WATER

COLLECTION INFORMATION

Date/Time/By: 07/16/92 07:30 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128014	Sulfate		15	MG/L	07/22/92
	pH		6.3	S.U.	7/17/92
	Total Dissolved Solids		640	MG/L	07/17/92
	Copper	<	14	UG/L	07/29/92
	Iron		19000	UG/L	07/29/92
	Manganese		440	UG/L	07/29/92
	Alkalinity		90	MG/L	07/20/92
	Total Hardness		440	MG/L	07/20/92

Signed Earl S Schmidt Date 7-31-92

Signed ____________ Date ____________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207131
Our lab # : 128015
Your sample ID: MW-1005S
Sample Matrix : WATER

Report Date: 07/31/92

COLLECTION INFORMATION

Date/Time/By: 07/16/92 07:29 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128015	Sulfate	<	10	MG/L	07/22/92
	pH		6.8	S.U.	7/17/92
	Total Dissolved Solids		220	MG/L	07/17/92
	Copper	<	14	UG/L	07/29/92
	Iron		4100	UG/L	07/29/92
	Manganese		210	UG/L	07/29/92
	Alkalinity		170	MG/L	07/20/92
	Total Hardness		220	MG/L	07/20/92

Signed Earl G. Kfinoll Date 7-31-92

E50

Signed ______________ Date ______________

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207131
Our lab # : 128016
Your sample ID: MW-1005P
Sample Matrix : WATER

Report Date: 07/31/92

COLLECTION INFORMATION

Date/Time/By: 07/16/92 07:28 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128016	Sulfate	<	10	MG/L	07/22/92
	pH		6.9	S.U.	7/17/92
	Total Dissolved Solids		270	MG/L	07/17/92
	Copper	<	14	UG/L	07/29/92
	Iron		950	UG/L	07/29/92
	Manganese		150	UG/L	07/29/92
	Alkalinity		270	MG/L	07/20/92
	Total Hardness		260	MG/L	07/20/92

Signed Earl Eckmoll E51 Date 7-31-92

Signed ______ Date ______

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207131
Our lab # : 128017 Report Date: 07/31/92
Your sample ID: MW-1010P
Sample Matrix : WATER

COLLECTION INFORMATION

Date/Time/By: 07/15/92 10:15 SDJ
Location : 91F6 FLAMBEAU

Lab#	Test		Result	Units	Analysis Date
128017	Sulfate	<	10	MG/L	07/22/92
	Mercury	<	0.2	UG/L	07/27/92
	Silver	<	0.4	UG/L	07/21/92
	Arsenic		4.3	UG/L	07/29/92
	Cadmium		1.6	UG/L	07/23/92
	Chromium	<	2.0	UG/L	07/22/92
	Lead	<	2.0	UG/L	07/22/92
	Selenium	<	3.0	UG/L	07/29/92
	pH		7.0	S.U.	7/17/92
	Total Dissolved Solids		180	MG/L	07/17/92
	Barium		62	UG/L	07/29/92
	Copper	<	14	UG/L	07/29/92
	Iron	<	55	UG/L	07/29/92
	Manganese		86	UG/L	07/29/92
	Zinc	<	20	UG/L	07/29/92
	Alkalinity		160	MG/L	07/20/92
	Total Hardness		180	MG/L	07/20/92

Signed Earl G Schnell E52 Date 7-31-92

Signed __________ Date __________

ORTEK CHAIN OF CUSTODY/ANALYSIS REQUEST FORM

1 of 3

No.: 5802

Company Name: FVD

Project No./Client 91F6

Sampling Location: Flambeau

Sampler SDJ

ORTEK Batch No. 9207131

Bottle Size/Preservative: 1000ml; 1000ml HNO3

Date	Time	Sample I.D./Description	No. of Bottles (1000ml)	No. of Bottles (1000ml HNO3)					Total	*Sample Type	Ph LAB	TDS	IRON	MANGANESE	SULFATE	COPPER	T. ALKALINITY	T. HARDNESS			Remarks	Lab Use Only ID Number
7/15/92	1405	mw-1000	1	1					2	G.W.	X	X	X	X	X	X	X	X				128006
↓	1400	mw-1000P	1	1					↓	↓	X	X	X	X	X	X	X	X				128007
7/16/92	0645	mw-1002	1	1							X	X	X	X	X	X	X	X				128008
↓	0648	mw-1002G	1	1							X	X	X	X	X	X	X	X				128009
7/15/92	1300	mw-1004	1	1							X	X	X	X	X	X	X	X				128010
	1320	mw-1004S	1	1							X	X	X	X	X	X	X	X				128011
	1335	mw-1004P	1	1							X	X	X	X	X	X	X	X				128012
↓	1455	FB-1	1	1					↓	↓	X	X	X	X	X	X	X	X				128013

COMMENTS/SPECIAL INSTRUCTIONS:

E53

☐ If Pb > 5ppm do TCLP

*Sample Type: S - Soil; SE - Sediment; SO - Solid; SW - Surface Water; DW - Drinking Water; WW - Wastewater; GW - Groundwater (circled); H - Hazardous Liquid; A - Air; O - Oil; X - Other ______

Date Received: 7/17/92
Date Due: 8/3/92 ☐RUSH (approved by lab)
Quotation #:
Purchase Order #:

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☒Yes ☐No

Packed By: SDJ

Sealed For Shipping By: SDS Seal # 001

Results To: FVD

Attention: Russ Janeshek

Billing Address:

Phone: FAX

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott Jansen	7/17/92	0745			
2.						

Received for Laboratory: Gloria Dotstator 7/17/92 07:45

Prop Rec: 8/7/92

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☒Yes ☐No

Method of Shipment: FVD

Contents Temperature on ice °C Refrig. # H4 3

ORTEK 2496 West Mason Street Green Bay, WI 54307-2435 (414) 498-2222

ORTEK CHAIN OF CUSTODY/ANALYSIS REQUEST FORM

2 of 3

No.: 5802

Company Name: FVD
Project No./Client: 91F6
Sampling Location: Flambeau
Sampler: SDJ

ORTEK Batch No. 9207131

Bottle Size/Preservative: 1000ml; 1000ml HNO3

Date	Time	Sample I.D./Description	No. of Bottles (1000ml)	No. of Bottles (1000ml HNO3)					Total	*Sample Type	Ph LAB	TDS	IRON	MANGANESE	SULFATE	COPPER	TOTAL ALKALINITY	TOTAL HARDNESS	ARSENIC	BARIUM	Remarks	Lab Use Only ID Number
7/16/92	0730	mw-1005	1	1					2	G.W.	X	X	X	X	X	X	X	X				128014
7/16/92	0729	mw-1005S	1	1					↓	↓	X	X	X	X	X	X	X	X				128015
↓	0728	mw-1005P	1	1							X	X	X	X	X	X	X	X				128016
7/15/92	1015	mw-1010P	1	1							X	X	X	X	X	X	X	X	X	X		128017

COMMENTS/SPECIAL INSTRUCTIONS:

E54

☐ If Pb > 5ppm do TCLP

*Sample Type: S - Soil; SE - Sediment; SO - Solid; SW - Surface Water; DW - Drinking Water; WW - Wastewater; GW - Groundwater; H - Hazardous Liquid; A - Air; O - Oil; X - Other

Date Received: 7/17/92
Date Due: 8/3/92 ☐RUSH (approved by lab)
Quotation #:
Purchase Order #:

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☒Yes ☐No
Packed By: SDJ
Sealed For Shipping By: SDJ Seal # 001

Results To: FVD
Attention: RUSS JANESHEK

Billing Address:
Phone: FAX

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott Jansen	7/17/92	0745			
2.						

Disp Due: 8/7/92

Received for Laboratory: Gloria Doftator 7/17/92 07:45

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☒Yes ☐No
Method of Shipment: FVD
Contents Temperature 4°/2.6 ° C Refrig. # H4, 3

ORTEK
2498 West Mason Street
Green Bay, WI 54307-2435
(414) 499-2222

ORTEK

CHAIN OF CUSTODY/ANALYSIS REQUEST FORM

3 of 3

No.: ~~3432~~ 580

Company Name: FVD

Project No./Client 91F6

Sampling Location: Flambeau

Sampler SDJ

Bottle Size/Preservative: 1000ml HNO3; 1000ml

ORTEK Batch No. 9207131

Date	Time	Sample I.D./Description	No. of Bottles (1000ml HNO3)	No. of Bottles (1000ml)	Total	*Sample Type	Cadmium	T. Chromium	Lead	Mercury	Selenium	Silver	Zinc	Remarks	Lab Use Only ID Number
7/15/92	1015	mw-1010P	1	1	2	G.W.	X	X	X	X	X	X	X		138017

COMMENTS/SPECIAL INSTRUCTIONS:

E55

☐ If Pb > 5ppm do TCLP

*Sample Type
S - Soil
SE - Sediment
SO - Solid
SW - Surface Water
DW - Drinking Water
WW - Wastewater
GW - Groundwater
H - Hazardous Liquid
A - Air
O - Oil
X - Other ______

Date Received: 7/17/92
Date Due: 8/3/92 ☐RUSH (approved by lab)
Quotation #:
Purchase Order #:

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☒Yes ☐No
Packed By: SDJ
Sealed For Shipping By: SDJ Seal # 001

Results To: FVD

Attention: Russ Janeshek

Billing Address:

Phone: FAX

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott Jansen	7/17/92	0745			
2.						

Pre Due: 8/7/92

Received for Laboratory: Gloria Doftater 7/17/92 07:45

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☒Yes ☐No
Method of Shipment: FVD
Contents Temperature on ice °C Refrig. # H4, 3

ORTEK
2496 West Mason Street
Green Bay, WI 54307-2435
(414) 498-2222

ORTEK CHAIN OF CUSTODY/ANALYSIS REQUEST FORM

No.: 5802

Company Name: FVD
Project No./Client: 91FG
Sampling Location: Flambeau
Sampler: SDJ

Bottle Size/Preservative: 1000ml — ; 1000ml HNO3

Analysis Requested: PK LAB; TDS; Iron; Manganese; Sulfate; Copper; T. Alkalinity; T. Hardness

ORTEK Batch No.

Date	Time	Sample I.D./Description	No. of Bottles (1000ml)	No. of Bottles (1000ml HNO3)					Total	*Sample Type	PK LAB	TDS	Iron	Manganese	Sulfate	Copper	T. Alkalinity	T. Hardness			Remarks	Lab Use Only ID Number
7/15/92	1405	mw-1000	1	1					2	G.W.	X	X	X	X	X	X	X	X				
↓	1400	mw-1000P	1	1					↓	↓	X	X	X	X	X	X	X	X				
7/16/92	0615	mw-1002	1	1							X	X	X	X	X	X	X	X				
↓	0642	mw-1002G	1	1							X	X	X	X	X	X	X	X				
7/15/92	1300	mw-1004	1	1							X	X	X	X	X	X	X	X				
	1320	mw-1004S	1	1							X	X	X	X	X	X	X	X				
	1335	mw-1004P	1	1							X	X	X	X	X	X	X	X				
↓	1455	FB-1	1	1					↓	↓	X	X	X	X	X	X	X	X				

COMMENTS/SPECIAL INSTRUCTIONS:

E56

☐ If Pb>5ppm do TCLP

*Sample Type
S - Soil
SE - Sediment
SO - Solid
SW - Surface Water
DW - Drinking Water
WW - Wastewater
GW - Groundwater
H- Hazardous Liquid
A - Air
O - Oil
X - Other ______

Date Received: 7/17/92
Date Due: ______ ☐RUSH (approved by lab)
Quotation #: ______
Purchase Order #: ______

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☒Yes ☐No
Packed By: SDJ
Sealed For Shipping By: SDS
Seal # 001

Results To: FVD

Attention: Russ Janeshek

Billing Address: ______

Phone: ______ FAX ______

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott H. Jansen	7/17/92	0715			
2.						

Received for Laboratory: Diana Mattetta 7/17/92 0845

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☒Yes ☐No
Method of Shipment: FVD
Contents Temperature ____ o C Refrig. # ______

ORTEK
2496 West Mason Street
Green Bay, WI 54303-2435
(414) 498-2222

ORTEK **CHAIN OF CUSTODY/ANALYSIS REQUEST FORM**

No.: 3432

Company Name: FVD

Project No./Client 91F6

Sampling Location: Flambeau

Sampler SDJ

Bottle Size/Preservative: 1000ml HNO3; 1000ml

ORTEK Batch No.

Date	Time	Sample I.D./Description	No. of Bottles (1000ml HNO3)	No. of Bottles (1000ml)					Total	*Sample Type	Cadmium	T. Chromium	Lead	Mercury	Selenium	Silver	Zinc				Remarks	Lab Use Only ID Number
7/15/92	1015	MW-1010P	1	1					2	G.W.	X	X	X	X	X	X	X					

COMMENTS/SPECIAL INSTRUCTIONS:

E57

☐ If Pb > 5ppm do TCLP

*Sample Type
S - Soil
SE - Sediment
SO - Solid
SW - Surface Water
DW - Drinking Water
WW - Wastewater
GW - Groundwater
H- Hazardous Liquid
A - Air
O - Oil
X - Other ______

Date Received: 7/17/92
Date Due: ______ ☐RUSH (approved by lab)
Quotation #: ______
Purchase Order #: ______

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☑Yes ☐No
Packed By: SDJ
Sealed For Shipping By: SDJ Seal # 061

Results To: FVD

Billing Address: ______

Attention: Russ Janeshek

Phone: ______ FAX ______

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott Jansen	7/17/92	0715			
2.						

Received for Laboratory: [illegible signature] 7/17/92 07:45

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☑Yes ☐No
Method of Shipment: FVD
Contents Temperature on ice °C Refrig. # ______

ORTEK
2496 West Mason Street
Green Bay, WI 54307-2435
(414) 498-2222

ORTEK CHAIN OF CUSTODY/ANALYSIS REQUEST FORM

No.: 5801

Company Name: FVD

Project No./Client: 91FG

Sampling Location: Flambeau

Sampler: SDS

ORTEK Batch No.

Bottle Size/Preservative: 1000 ml / 1000 ml HNO3

Analysis: Ph LAB, TDS, Iron, Manganese, Sulfate, Copper, Total Alkalinity, Total Hardness, Arsenic, Barium

Date	Time	Sample I.D./Description	No. of Bottles: 1000 ml	1000 ml HNO3					Total	*Sample Type	Ph LAB	TDS	Iron	Manganese	Sulfate	Copper	Total Alkalinity	Total Hardness	Arsenic	Barium	Remarks	Lab Use Only ID Number
7/6/92	0730	mw-1005	1	1					2	G.W.	X	X	X	X	X	X	X	X				
7/6/92	0729	mw-1005S	1	1							X	X	X	X	X	X	X	X				
↓	0728	mw-1005P	1	1							X	X	X	X	X	X	X	X				
7/15/92	1015	mw-1010P	1	1					↓	↓	X	X	X	X	X	X	X	X	X	X		

COMMENTS/SPECIAL INSTRUCTIONS:

E58

☐ If Pb>5ppm do TCLP

*Sample Type: S - Soil; SE - Sediment; SO - Solid; SW - Surface Water; DW - Drinking Water; WW - Wastewater; GW - Groundwater; H - Hazardous Liquid; A - Air; O - Oil; X - Other ____

Date Received: 7/1?/92

Date Due: ____ ☐RUSH (approved by lab)

Quotation #: ____

Purchase Order #: ____

To Be Completed by Client

Seal Intact Upon Receipt by Sampling Co.: ☒Yes ☐No

Packed By: SDS

Sealed For Shipping By: SDS Seal # 001

Results To: FVD

Attention: Russ Janecilek

Billing Address: ____

Phone: ____ FAX ____

CUSTODY TRANSFERS

	Relinquished by:	Date:	Time:	Received by:	Date:	Time:
1.	Scott Jonson	7/7/92	0745			
2.						

Received for Laboratory: [illegible signature] 7/?/92 0945

Shipping Details - To Be Completed By ORTEK

Seal Intact Upon Receipt by Laboratory ☒Yes ☐No

Method of Shipment: FVD

Contents Temperature ____ °C Refrig. # ____

ORTEK
2496 West Mason Street
Green Bay, WI 54307-2435
(414) 498-2222

Flambeau Mining Company
N4095 Highway 27
Ladysmith, Wisconsin 54848
(715) 532-7620

Kennecott

December 29, 1992

Mr. Lawrence J. Lynch
Hydrogeologist
Mine Reclamation Unit
Bureau of Solid and Hazardous Waste Management
State of Wisconsin
Department of Natural Resources
P.O. Box 7921
Madison, WI 53707

Dear Mr. Lynch:

RE: FLAMBEAU MINING COMPANY, ENVIRONMENTAL MONITORING
GROUNDWATER QUALITY RESULTS (October 1992)

Attached are copies of the Turn Around Documents (TADs) which contain analytical results for groundwater samples collected on October 6 and 7, 1992 on behalf of Flambeau Mining Company. In addition, groundwater elevations for on-site wells and piezometers and water level readings from the staff gauge locations have been included.

It has been and remains Flambeau's intent to provide timely submittal of project monitoring data as per Section 4.0 of the project Updated Monitoring Plan dated July 1991. As was agreed during telephone conversations between you and representatives of Foth & Van Dyke with regard to this matter, submittals of monitoring data are due thirty days after receiving validated results from the laboratory. This means if a review of laboratory data by Flambeau results in a data challenge, the thirty day timeline does not begin until the data challenge has been responded to in writing by the laboratory. Under this scenario, the respective WDNR submittal is due thirty days from the date of the written laboratory data validation letter. Project monitoring data, then, will be submitted in accordance with the requirements of the monitoring plan and this clarification of these requirements.
If there are any questions regarding this submittal, please contact me at 715-532-7620 Ext. 717.

Sincerely,

Flambeau Mining Co.

Jana E. Murphy

Jana Murphy
Supervisor of Environmental Affairs

Enclosure

cc: Gerald W. Sevick, P.E., Foth & Van Dyke (w/o/ encl.)
Gordon Reinke, Wisconsin DNR (w/encl.)
Lawrence Mercando, Flambeau Mining Company (w/encl.)
Henry Handzel, DeWitt, Porter, et al. (w/encl.)
Bernice Durkerschein, Rusk County (w/encl.)
Robert Plantz, Town of Grant (w/encl.)
Al Christianson, City of Ladysmith (w/o encl.)
Clarence Glotfelty, Rusk County (w/o encl.)
Teresa Harding, Wisconsin DNR (Park Falls) (w/encl.)
Jim Hutchison, F&VD (w/encl.)
File (Groundwater Quality) (w/encl.) E59

MONITORING FOR: KENNECOTT MINING SITE
LICENSE NO.: 03180 FID 855034730

REPORTING PERIOD: OCTOBER

TO BE RETURNED BY: 1992

DATE SAMPLE TAKEN: 10 / 07 (06) / 92
MONTH DAY YEAR

SAMPLE COLLECTED BY: (NAME OF COMPANY AND PERSON)
Foth & Van Dyke and Associates
Scott D. Janssen

COMMENTS
MW-1000P-Slight Odor
MW-1002 -Slight Odor
MW-1002G-Slight Odor
MW-1004 -Slight Odor
MW-1004S- Slight Odor

SAMPLES ANALYZED BY (FILL IN THE FOLLOWING)
LAB I.D. NO.: 405099530
LAB NAME: ORTEK
CITY: Green Bay, WI

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE, THE INFORMATION REPORTED AND THE STATEMENTS MADE ON THIS PAGE AND ON ALL SEQUENTIALLY NUMBERED PAGES FOLLOWING THIS PAGE ARE TRUE AND CORRECT.

SIGNATURE OF PRINCIPAL OFFICER OR AUTHORIZED AGENT: Jana E. Murphy

DATE SIGNED: 12-29-92

RETAIN BOTTOM COPY — RETURN REMAINING COPIES TO
WDNR - BUREAU OF SOLID WASTE
SW/3
P.O. BOX 7921
MADISON, WI 53707

01

IF YOU HAVE ANY QUESTIONS ABOUT THIS FORM, PLEASE CALL:
(715) 762-4414

NAME AND ADDRESS OF MONITORING CONTACT 83-55-03180
Jim Hutchison
~~B. POISSON~~ - FOTH & VAN DYKE
KENNECOTT MINING SITE
P.O. BOX 19012
GREEN BAY WI 54307

INSTRUCTIONS ON BACK

Form 3400-73 Rev. 4-91

801	SAMPLE POINT MW-1000			PAL/ACL
00123	COPPER, TOT	< 14	UG/L	500
00253	MANGANESE, TOT	< 4.0	UG/L	25
00360	DISS SOLIDS, TOT	< 50	MG/L	
00403	PH (LAB)	7.0	SU	
00410	ALKALINITY, TOT	30	MG/L	
00900	TOT HARD, CACO3	150	MG/L	
00945	SULFATE, TOT	120	MG/L	125
74010	IRON, TOT	< 0.055	MG/L	.15

Sample Has: 1☐ Odor 2☐ Color 3☐ Turbidity Well Is: 4☐ Broken 5☐ Frozen 6☐ Dry

807	SAMPLE POINT MW-1002G			PAL/ACL
00123	COPPER, TOT	< 14	UG/L	500
00253	MANGANESE, TOT	< 4.0	UG/L	25
00360	DISS SOLIDS, TOT	180	MG/L	
00403	PH (LAB)	7.2	SU	
00410	ALKALINITY, TOT	85	MG/L	
00900	TOT HARD, CACO3	130	MG/L	
00945	SULFATE, TOT	11	MG/L	125
74010	IRON, TOT	< 0.055	MG/L	.15

Sample Has: 1☒ Odor 2☐ Color 3☐ Turbidity Well Is: 4☐ Broken 5☐ Frozen 6☐ Dry

093

802	SAMPLE POINT MW-1000P			PAL/ACL
00123	COPPER, TOT	< 14	UG/L	500
00253	MANGANESE, TOT	780	UG/L	25
00360	DISS SOLIDS, TOT	160	MG/L	
00403	PH (LAB)	7.1	SU	
00410	ALKALINITY, TOT	95	MG/L	
00900	TOT HARD, CACO3	100	MG/L	
00945	SULFATE, TOT	12	MG/L	125
74010	IRON, TOT	0.800	MG/L	.15

Sample Has: 1☒ Odor 2☐ Color 3☐ Turbidity Well Is: 4☐ Broken 5☐ Frozen 6☐ Dry

810	SAMPLE POINT MW-1004			PAL/ACL
00123	COPPER, TOT	< 14	UG/L	500
00253	MANGANESE, TOT	< 4.0	UG/L	25
00360	DISS SOLIDS, TOT	48	MG/L	
00403	PH (LAB)	7.0	SU	
00410	ALKALINITY, TOT	40	MG/L	
00900	TOT HARD, CACO3	84	MG/L	
00945	SULFATE, TOT	< 10	MG/L	125
74010	IRON, TOT	< 0.055	MG/L	.15

Sample Has: 1☒ Odor 2☐ Color 3☐ Turbidity Well Is: 4☐ Broken 5☐ Frozen 6☐ Dry

806	SAMPLE POINT MW-1002			PAL/ACL
00123	COPPER, TOT	< 14	UG/L	500
00253	MANGANESE, TOT	15	UG/L	25
00360	DISS SOLIDS, TOT	130	MG/L	
00403	PH (LAB)	7.5	SU	
00410	ALKALINITY, TOT	53	MG/L	
00900	TOT HARD, CACO3	82	MG/L	
00945	SULFATE, TOT	11	MG/L	125
74010	IRON, TOT	< 0.055	MG/L	.15

Sample Has: 1☒ Odor 2☐ Color 3☐ Turbidity Well Is: 4☐ Broken 5☐ Frozen 6☐ Dry

811	SAMPLE POINT MW-1004S			PAL/ACL
00123	COPPER, TOT	< 14	UG/L	500
00253	MANGANESE, TOT	< 4.0	UG/L	25
00360	DISS SOLIDS, TOT	220	MG/L	
00403	PH (LAB)	7.0	SU	
00410	ALKALINITY, TOT	100	MG/L	
00900	TOT HARD, CACO3	110	MG/L	
00945	SULFATE, TOT	< 10	MG/L	125
74010	IRON, TOT	< 0.055	MG/L	.15

Sample Has: 1☒ Odor 2☐ Color 3☐ Turbidity Well Is: 4☐ Broken 5☐ Frozen 6☐ Dry

MONITORING FOR: KENNECOTT MINING SITE
LICENSE NO. 03180 FID 855034730

REPORTING PERIOD: OCTOBER

TO BE RETURNED BY:

DATE SAMPLE TAKEN: MONTH 10 / DAY 06 07 / YEAR 92

SAMPLE COLLECTED BY: (NAME OF COMPANY AND PERSON)

SAMPLES ANALYZED BY (FILL IN THE FOLLOWING)

LAB I.D. NO

LAB NAME:

CITY:

RETAIN BOTTOM COPY — RETURN REMAINING COPIES TO:

PAGE 02

IF YOU HAVE ANY QUESTIONS ABOUT THIS FORM, PLEASE CALL:

NAME AND ADDRESS OF MONITORING CONTACT

Form 3400-73 Rev. 4-91

INSTRUCTIONS ON BACK

COMMENTS ~~MW-1010P-Arsenic 8.8 ug/L~~
MW-1005P-Slight Odor
MW-1004P-Slight Odor
MW-1005 -Moderate Odor
MW-1005S-V. Light Gray, Slight Odor
V. Slight Turbidity
MW-1010P- Slight Odor

I HEREBY CERTIFY THAT TO THE BEST OF MY KNOWLEDGE, THE INFORMATION REPORTED AND THE STATEMENTS MADE ON THIS PAGE AND ON ALL SEQUENTIALLY NUMBERED PAGES FOLLOWING THIS PAGE ARE TRUE AND CORRECT

SIGNATURE OF PRINCIPAL OFFICER OR AUTHORIZED AGENT: Dana E. Murphy

DATE SIGNED: 12-29-92

812 SAMPLE POINT MW-1004P

				PAL/ACL
00123	COPPER, TOT	< 14	UG/L	500
00253	MANGANESE, TOT	130	UG/L	25
00360	DISS SOLIDS, TOT	260	MG/L	
00403	PH (LAB)	7.8	SU	
00410	ALKALINITY, TOT	190	MG/L	
00900	TOT HARD, CACO3	180	MG/L	
00945	SULFATE, TOT	410	MG/L	125
74010	IRON, TOT	0.320	MG/L	.15

Sample Has: 1 [X] Odor 2 [ ] Color 3 [ ] Turbidity Well Is: 4 [ ] Broken 5 [ ] Frozen 6 [ ] Dry

815 SAMPLE POINT MW-1005P

				PAL/ACL
00123	COPPER, TOT	< 14	UG/L	500
00253	MANGANESE, TOT	100	UG/L	25
00360	DISS SOLIDS, TOT	320	MG/L	
00403	PH (LAB)	7.6	SU	
00410	ALKALINITY, TOT	270	MG/L	
00900	TOT HARD, CACO3	260	MG/L	
00945	SULFATE, TOT	< 10	MG/L	125
74010	IRON, TOT	1.200	MG/L	.15

Sample Has: 1 [X] Odor 2 [ ] Color 3 [ ] Turbidity Well Is: 4 [ ] Broken 5 [ ] Frozen 6 [ ] Dry

813 SAMPLE POINT MW-1005

				PAL/ACL
00123	COPPER, TOT	< 14	UG/L	500
00253	MANGANESE, TOT	470	UG/L	25
00360	DISS SOLIDS, TOT	600	MG/L	
00403	PH (LAB)	6.5	SU	
00410	ALKALINITY, TOT	110	MG/L	
00900	TOT HARD, CACO3	420	MG/L	
00945	SULFATE, TOT	15	MG/L	125
74010	IRON, TOT	22.000	MG/L	.15

Sample Has: 1 [X] Odor 2 [ ] Color 3 [ ] Turbidity Well Is: 4 [ ] Broken 5 [ ] Frozen 6 [ ] Dry

816 SAMPLE POINT MW-1010P

				PAL/ACL
00120	CADMIUM, TOT	0.3	UG/L	1.0
00122	CHROMIUM, TOT	< 2.0	UG/L	5.0
00123	COPPER, TOT	< 14	UG/L	500
00125	LEAD, TOT	< 2.0	UG/L	5.0
00126	MERCURY, TOT	< 0.2	UG/L	.2
00131	ZINC, TOT	< 20	UG/L	2500
00253	MANGANESE, TOT	140	UG/L	25
00360	DISS SOLIDS, TOT	280	MG/L	

Sample Has: 1 [X] Odor 2 [ ] Color 3 [ ] Turbidity Well Is: 4 [ ] Broken 5 [ ] Frozen 6 [ ] Dry

814 SAMPLE POINT MW-1005S

				PAL/ACL
00123	COPPER, TOT	< 14	UG/L	500
00253	MANGANESE, TOT	200	UG/L	25
00360	DISS SOLIDS, TOT	260	MG/L	
00403	PH (LAB)	7.3	SU	
00410	ALKALINITY, TOT	190	MG/L	
00900	TOT HARD, CACO3	270	MG/L	
00945	SULFATE, TOT	< 10	MG/L	125
74010	IRON, TOT	3.900	MG/L	.15

Sample Has: 1 [X] Odor 2 [X] Color 3 [X] Turbidity Well Is: 4 [ ] Broken 5 [ ] Frozen 6 [ ] Dry

816 SAMPLE POINT MW-1010P (CONT.)

				PAL/ACL
00403	PH (LAB)	7.8	SU	
00410	ALKALINITY, TOT	180	MG/L	
00900	TOT HARD, CACO3	160	MG/L	
00945	SULFATE, TOT	< 10	MG/L	125
01007	BARIUM, TOT	82	UG/L	200
01077	SILVER, TOT	< 0.40	UG/L	10.0
74010	IRON, TOT	< 0.055	MG/L	.15
00270	SELENIUM, TOT	< 3.0	UG/L	10

Sample Has: 1 [ ] Odor 2 [ ] Color 3 [ ] Turbidity Well Is: 4 [ ] Broken 5 [ ] Frozen 6 [ ] Dry

Flambeau Mining Company
Quarterly Groundwater Elevations
October 1992
(Readings Taken 10/6-7/92)

Location	Groundwater Elevation	Location	Groundwater Elevation
MW-1000	1089.54	PZ-1008G	1136.95
MW-1000P	1089.22	PZ-1009	1143.70
MW-1001	1116.70	PZ-1009G	1143.59
MW-1001G	1115.64	MW-1010P	1086.55
MW-1001P	1116.01	PZ-1011	1138.75
MW-1002	1091.69	PZ-1012	1112.06
MW-1002G	1091.73	PZ-R1	1084.93
MW-1003	1115.20	PZ-S1	1095.20
MW-1003P	1115.21	PZ-S3	1121.66
MW-1004	1108.33	Sandpoint	1083.56
MW-1004S	1108.44	ST-9-23	1120.16
MW-1004P	1107.39	ST-9-23A	1119.51
MW-1005	1139.07	ST-9-26	1113.69
MW-1005S	1138.13	PZ-1A	1103.34
MW-1005P	1137.84	PZ-1B	1100.90
PZ-1006	1137.27 (Dry)	OW-7	1116.71
PZ-1006G	1135.94	OW-10	1094.19
PZ-1006S	1134.70	OW-39	1099.14
PZ-1007S	1117.07	OW-42	1089.55
PZ-1008	1137.67	OW-43	1087.70

Elevations are reported in feet above mean sea level.

[32-10]91F6.F51

Flambeau Mining Company
Monthly Staff Gauge Readings
August, September, October 1992

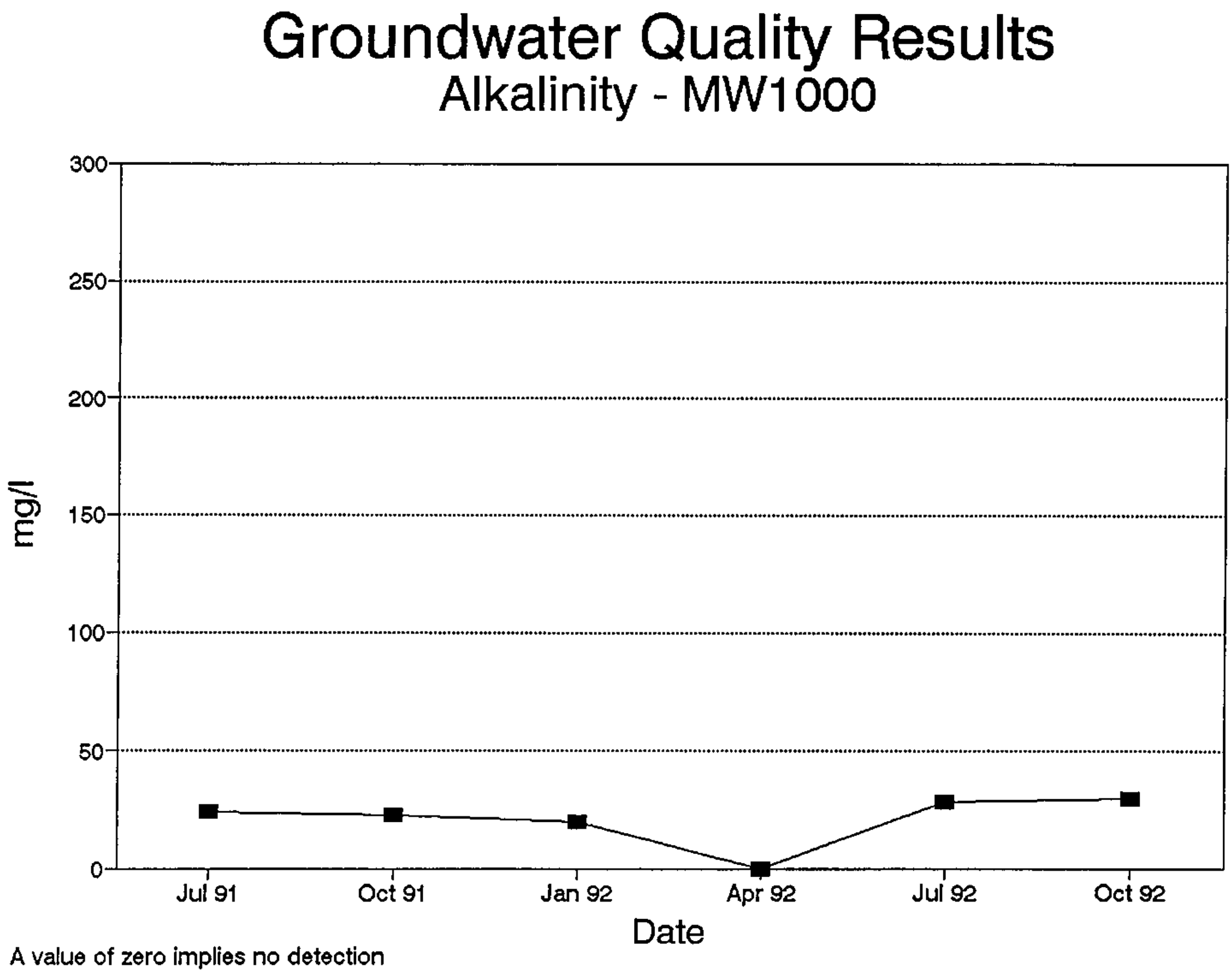
Month	(Reading Date)	WT-1	WT-2	WT-3	WT-4	WT-5
August 1992	(8/31/92)	Dry	0.26	Dry	0.49	0.42
September 1992	(9/30/92)	0.08	0.37	Dry	0.61	0.67
October 1992	(10/31/92)	0.67	0.27	Dry	0.83	0.58

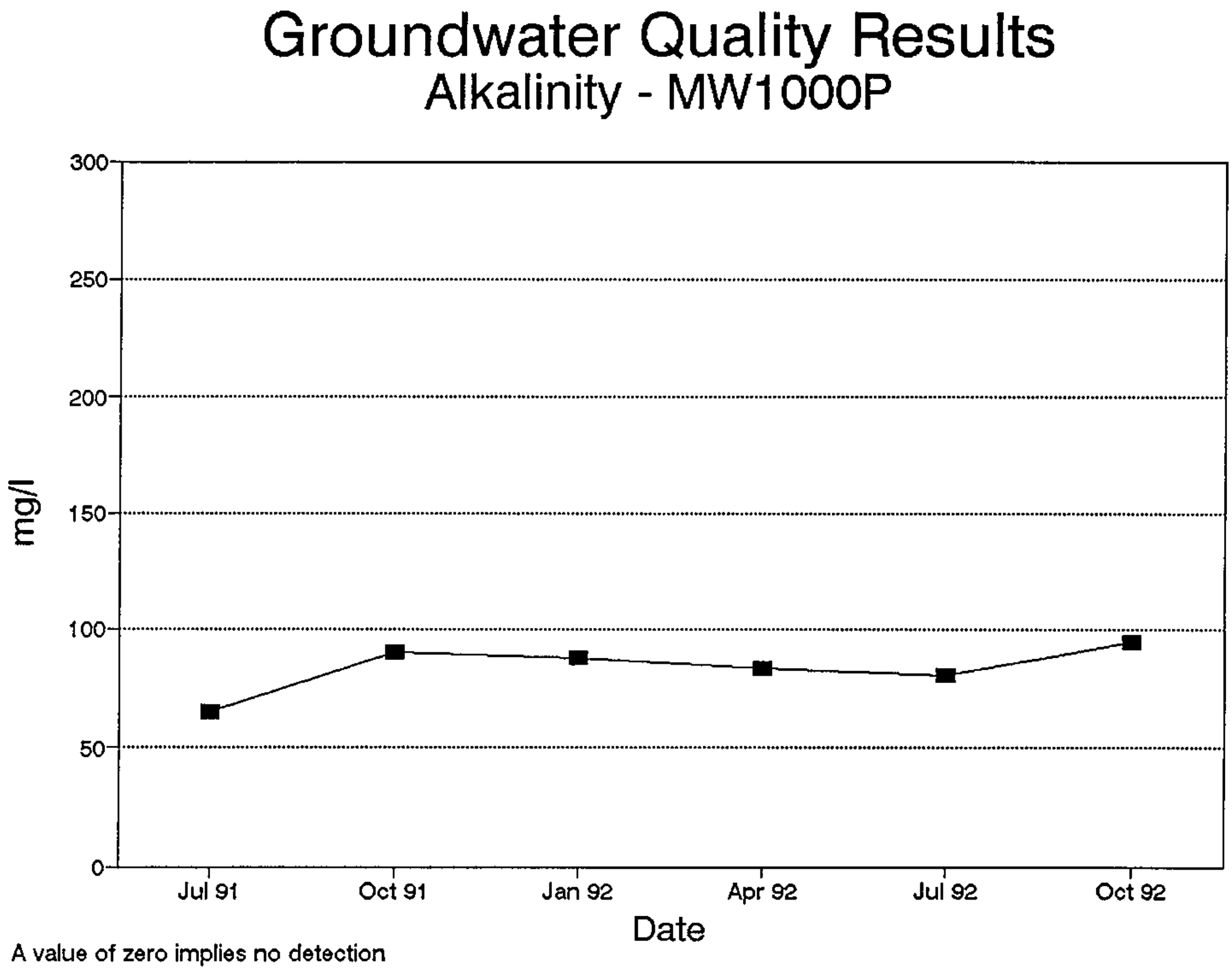
Readings are reported in feet.

Appendix F

Groundwater Quality Graphs

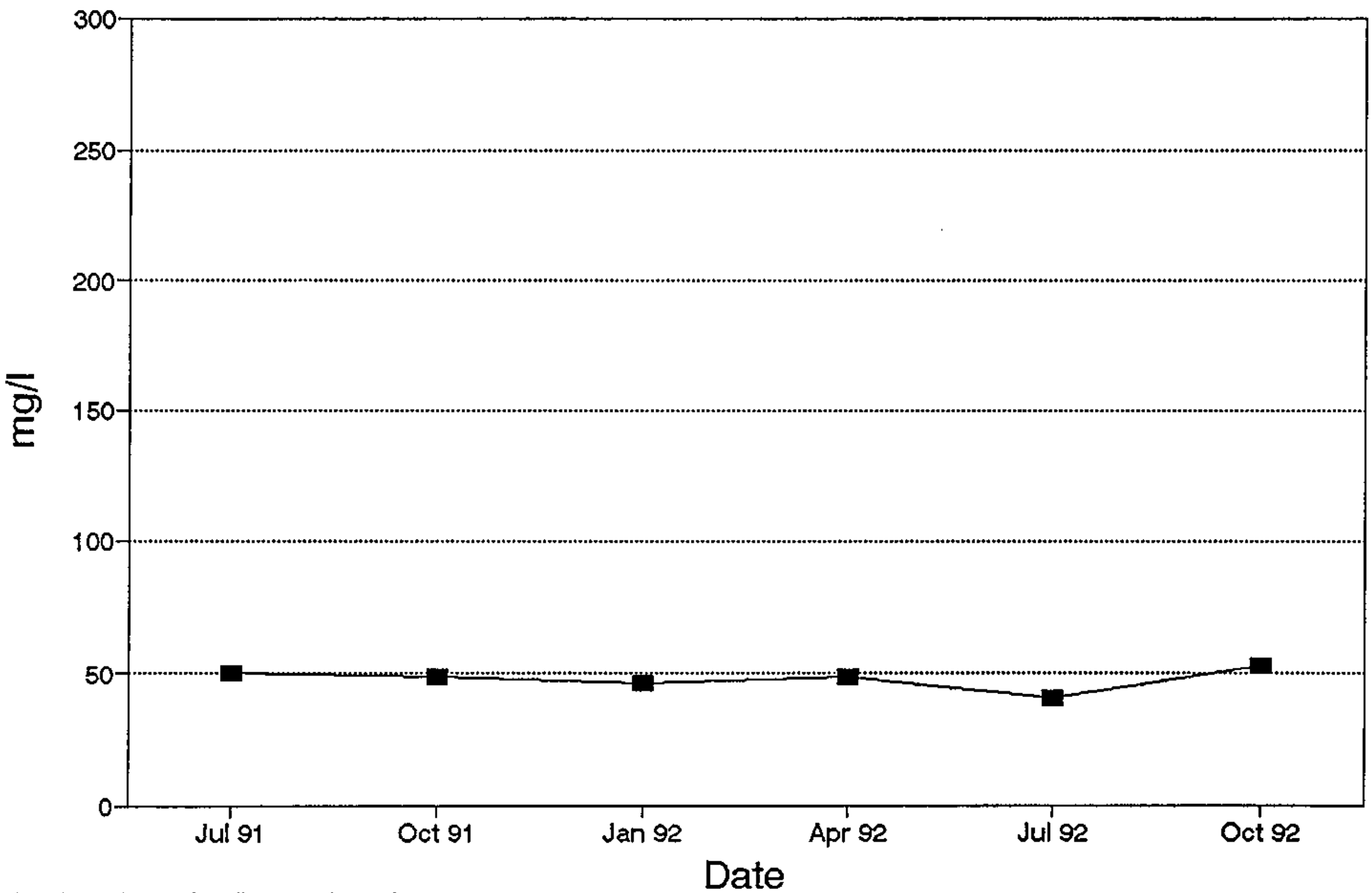
Groundwater Quality Graphs
Alkalinity


Groundwater Quality Results
Alkalinity - MW1000
300
250
200
150
100
50
0
mg/l
Jul 91
Oct 91
Jan 92
Apr 92
Jul 92
Oct 92
Date
A value of zero implies no detection



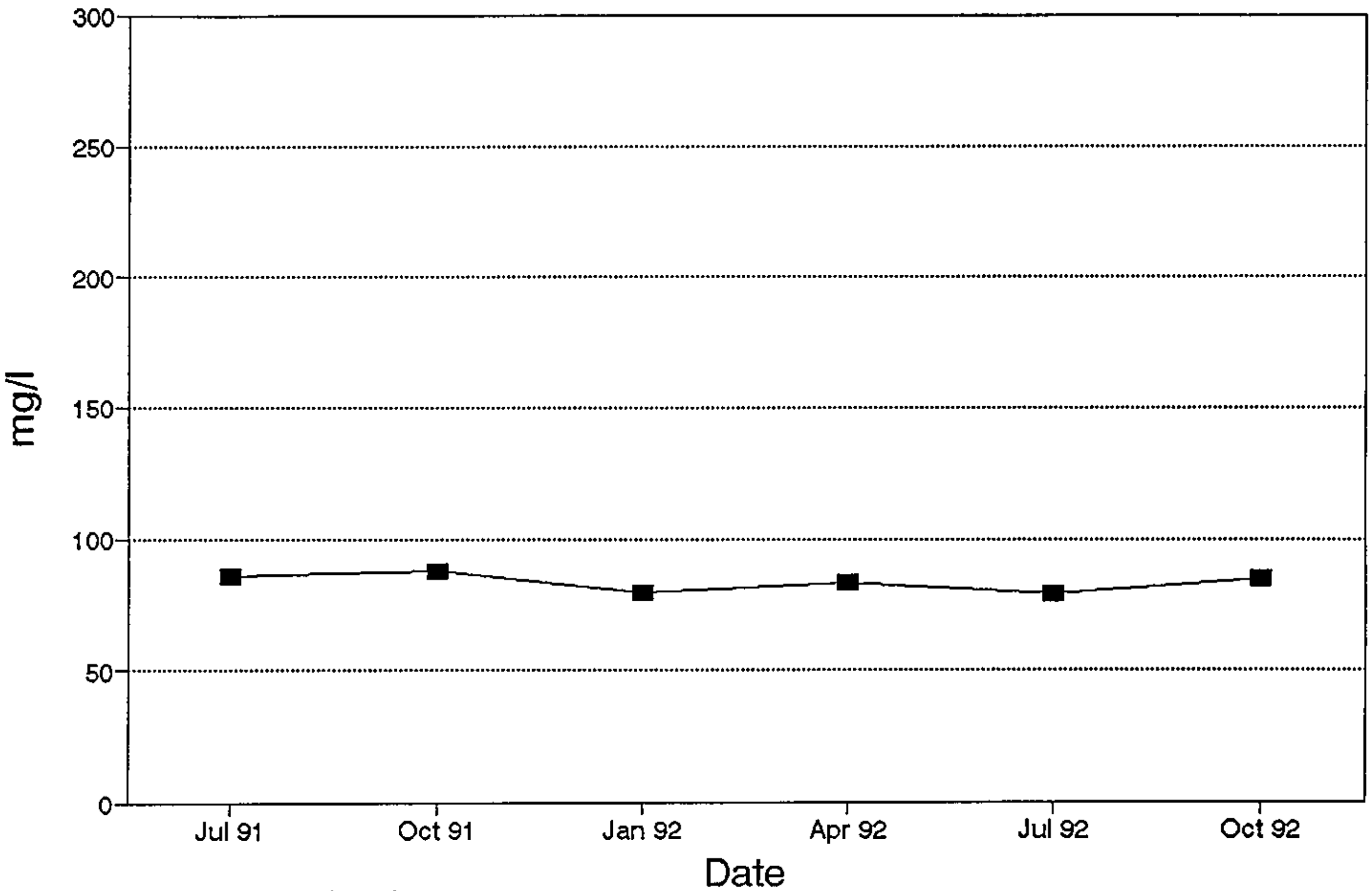
Groundwater Quality Results
Alkalinity - MW1000P
300
250
200
150
100
50
0
mg/l
Jul 91
Oct 91
Jan 92
Apr 92
Jul 92
Oct 92
Date
A value of zero implies no detection

Groundwater Quality Results
Alkalinity - MW1002



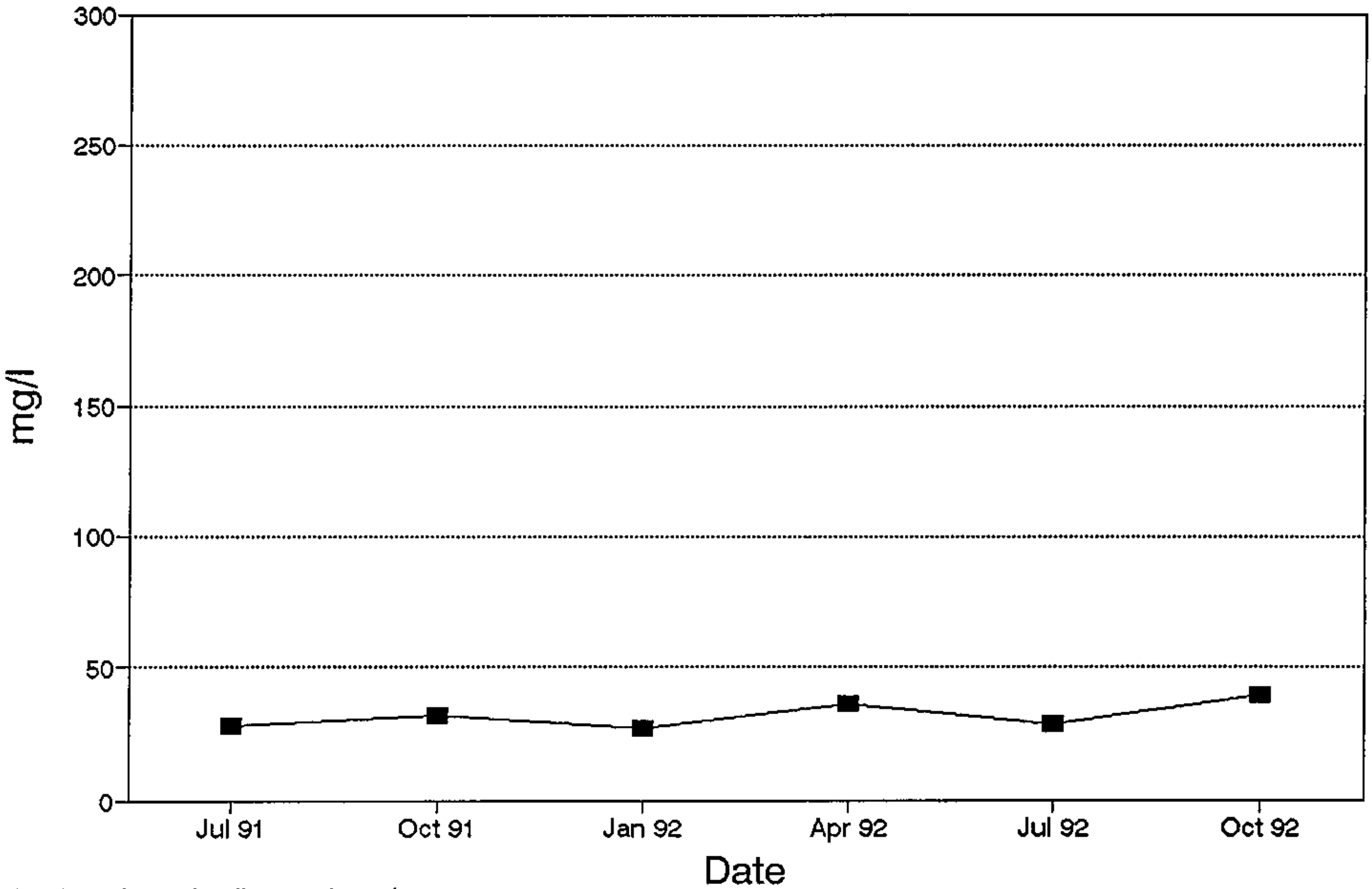
A value of zero implies no detection

Groundwater Quality Results
Alkalinity - MW1002G



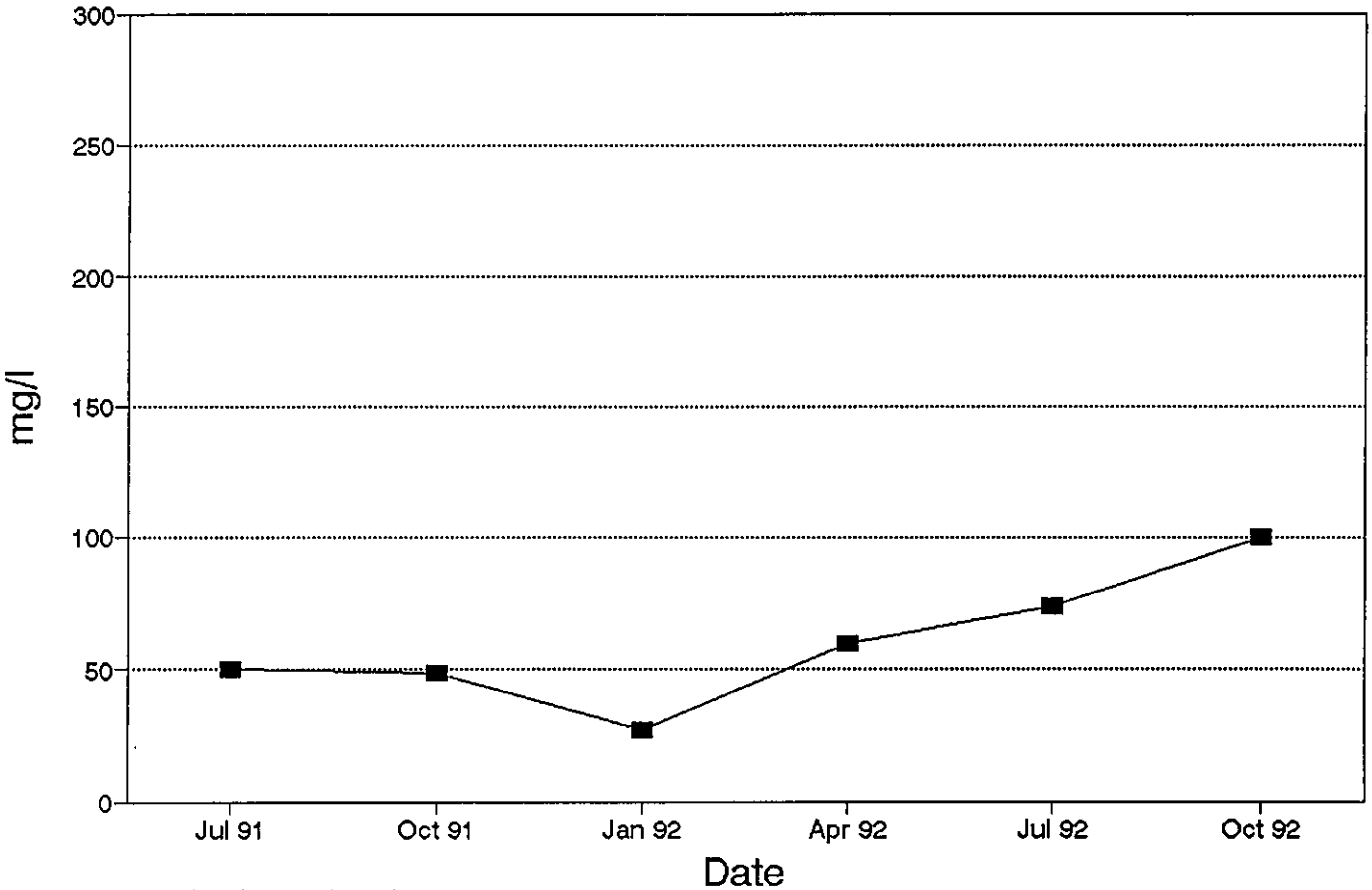
A value of zero implies no detection

Groundwater Quality Results
Alkalinity - MW1004



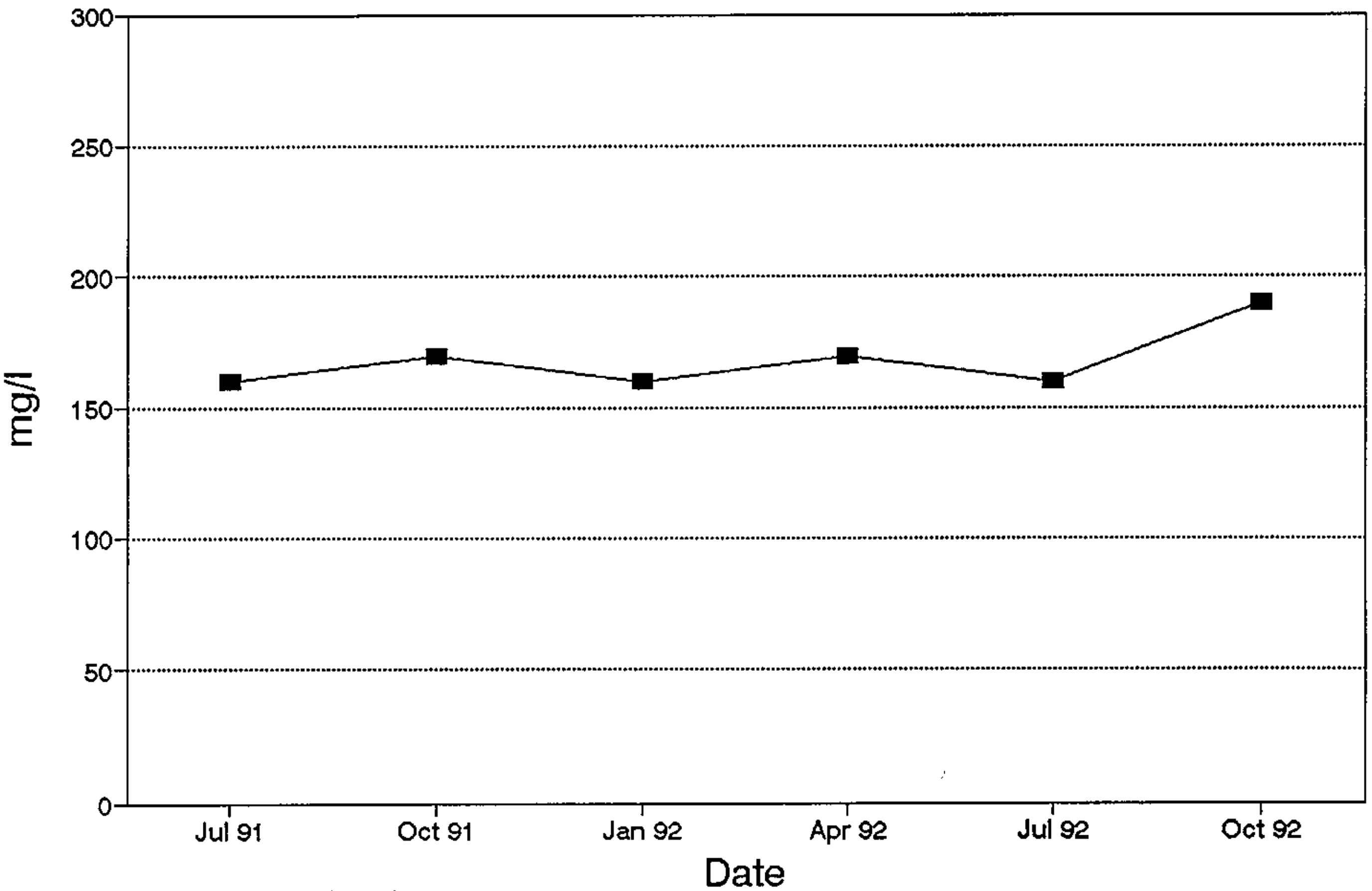
A value of zero implies no detection

Groundwater Quality Results
Alkalinity - MW1004S



A value of zero implies no detection

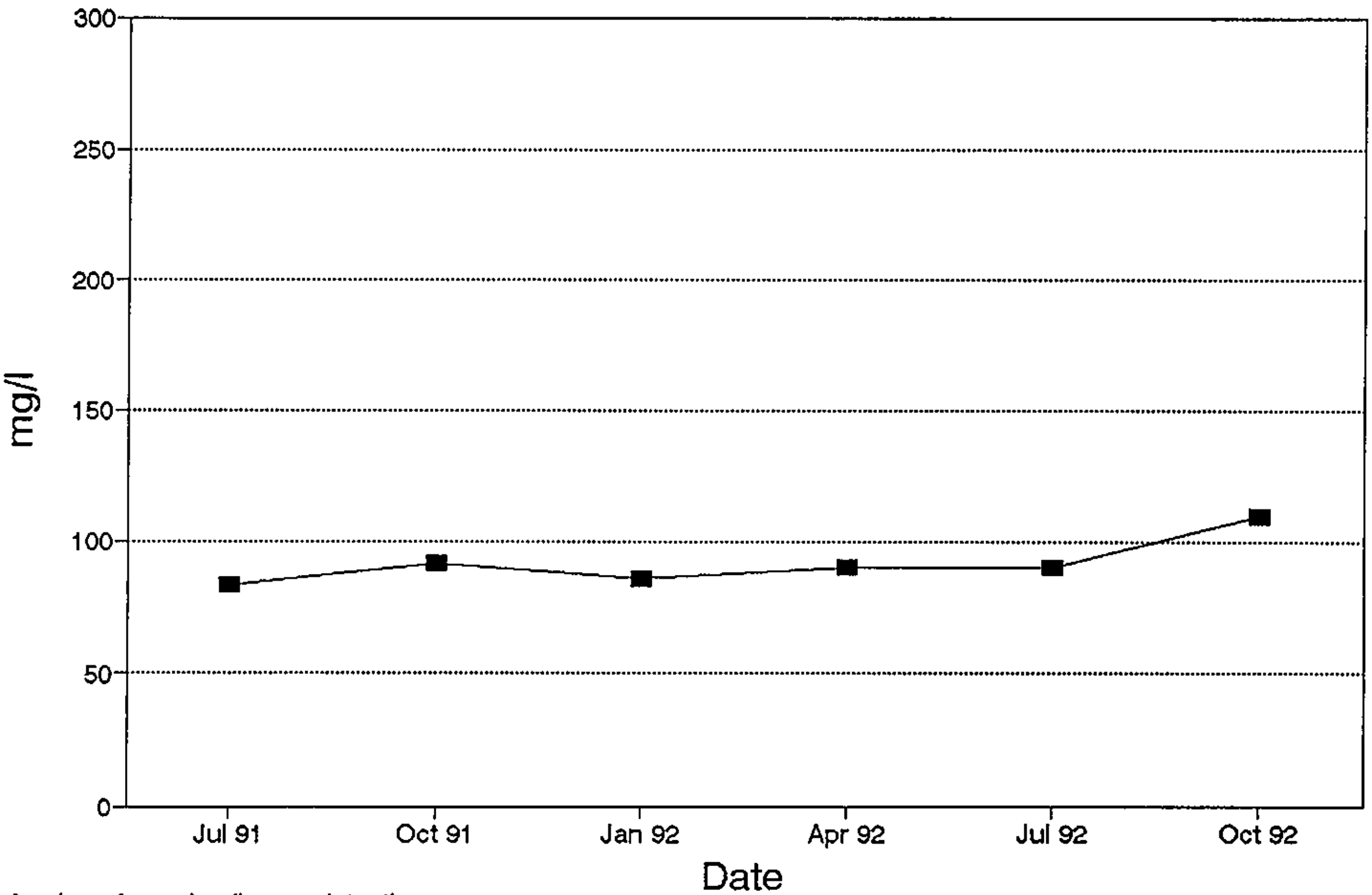
Groundwater Quality Results
Alkalinity - MW1004P



A value of zero implies no detection

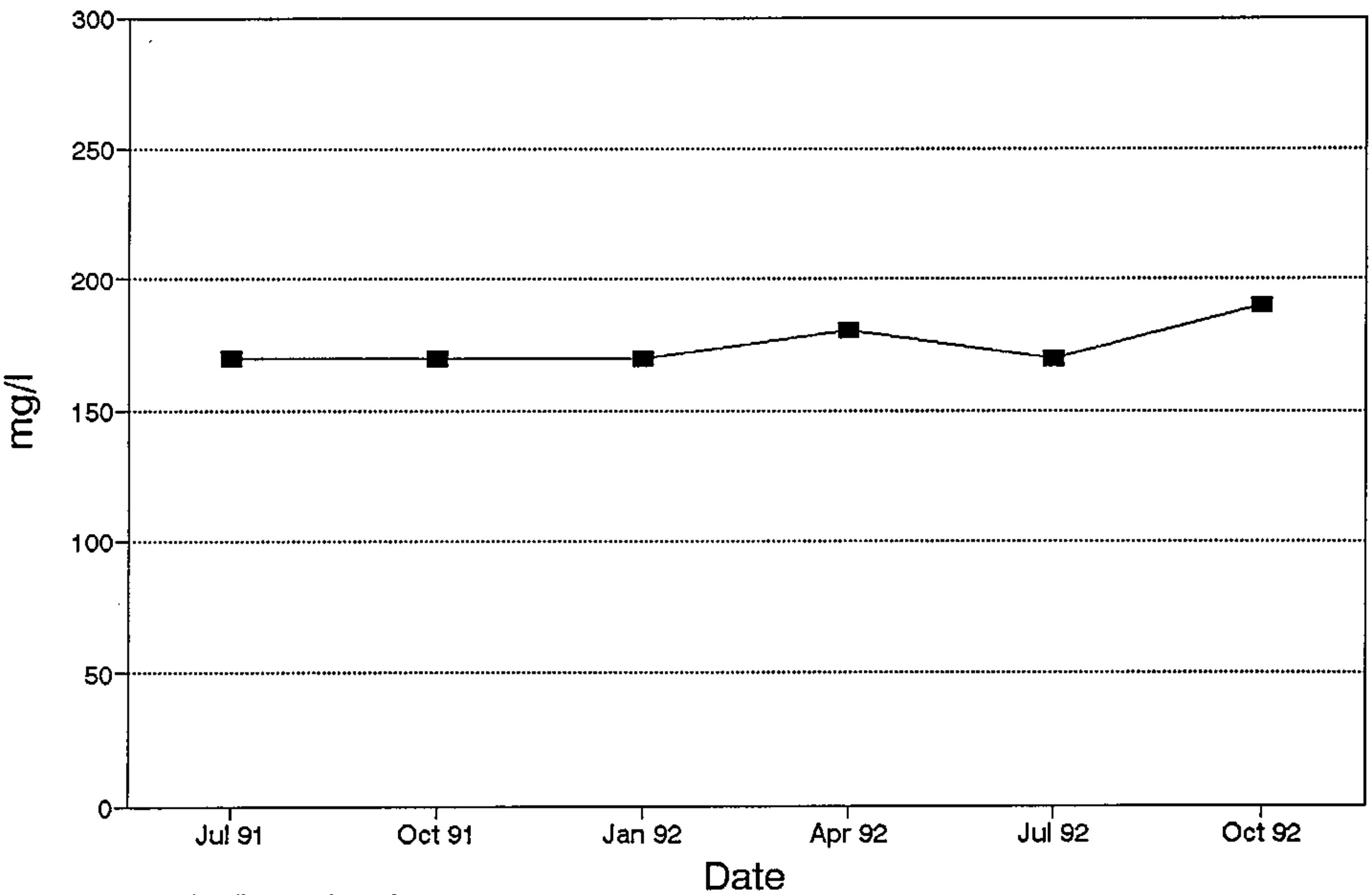
Groundwater Quality Results

Alkalinity - MW1005

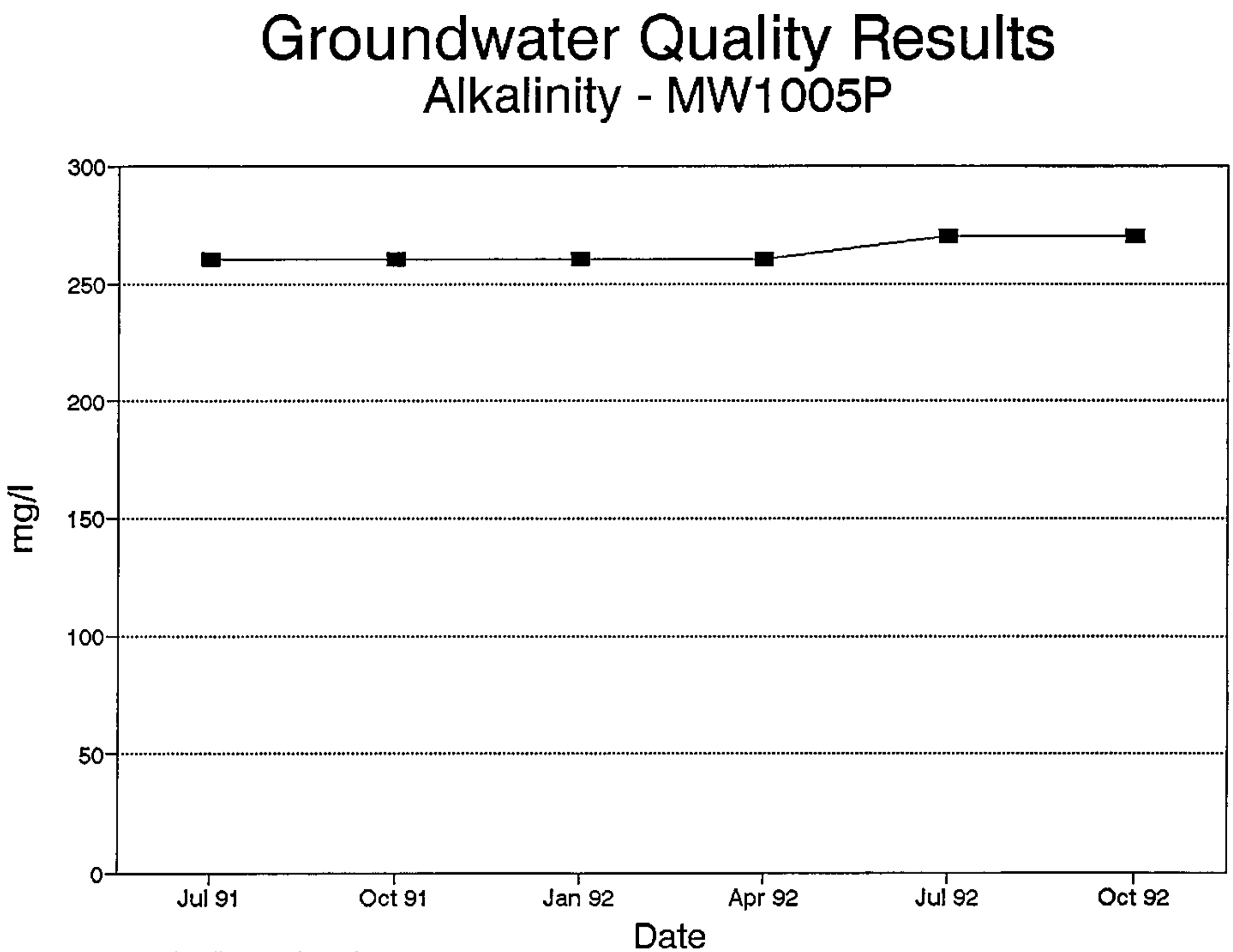


A value of zero implies no detection

Groundwater Quality Results
Alkalinity - MW1005S

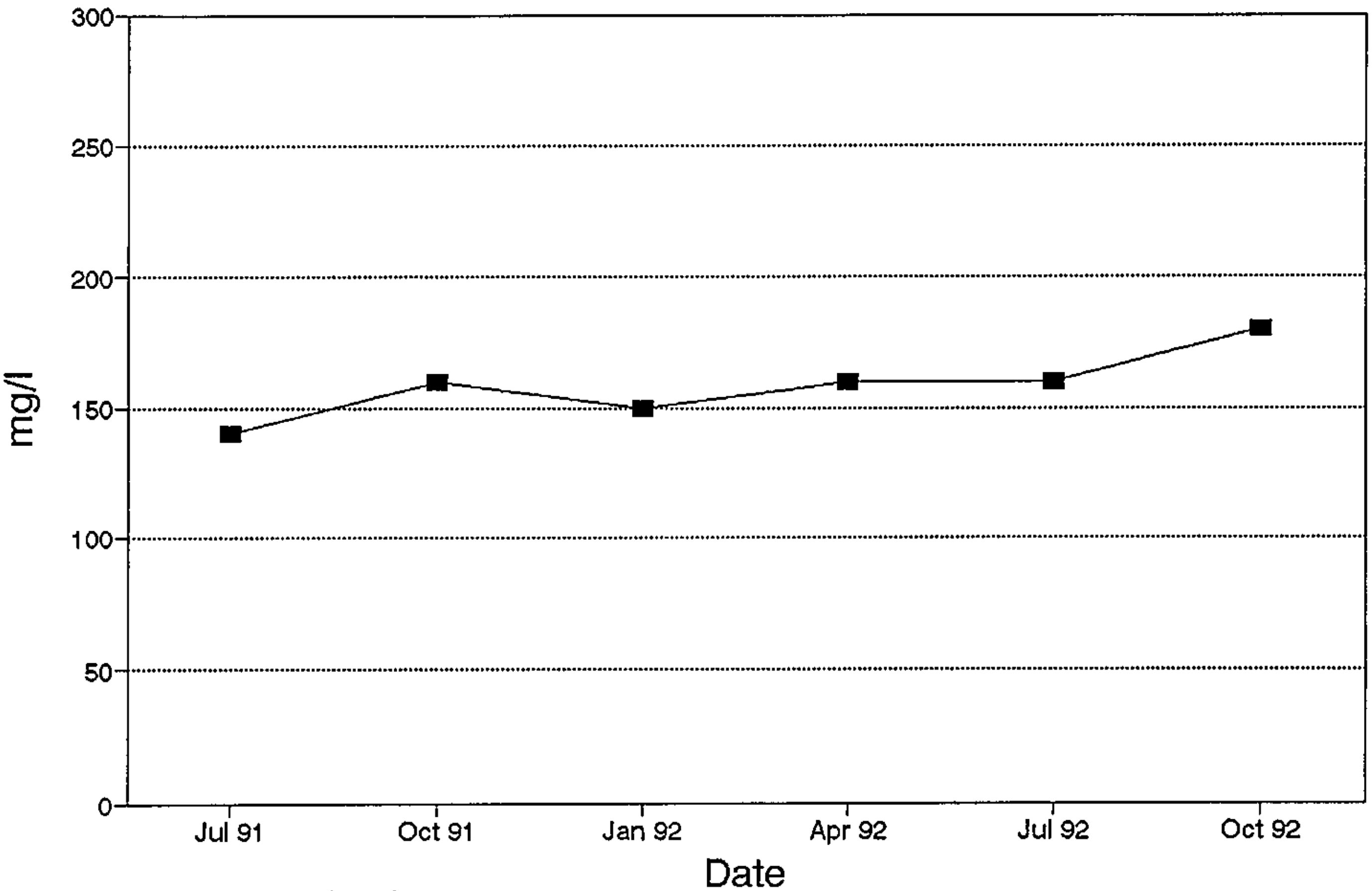


A value of zero implies no detection



A value of zero implies no detection

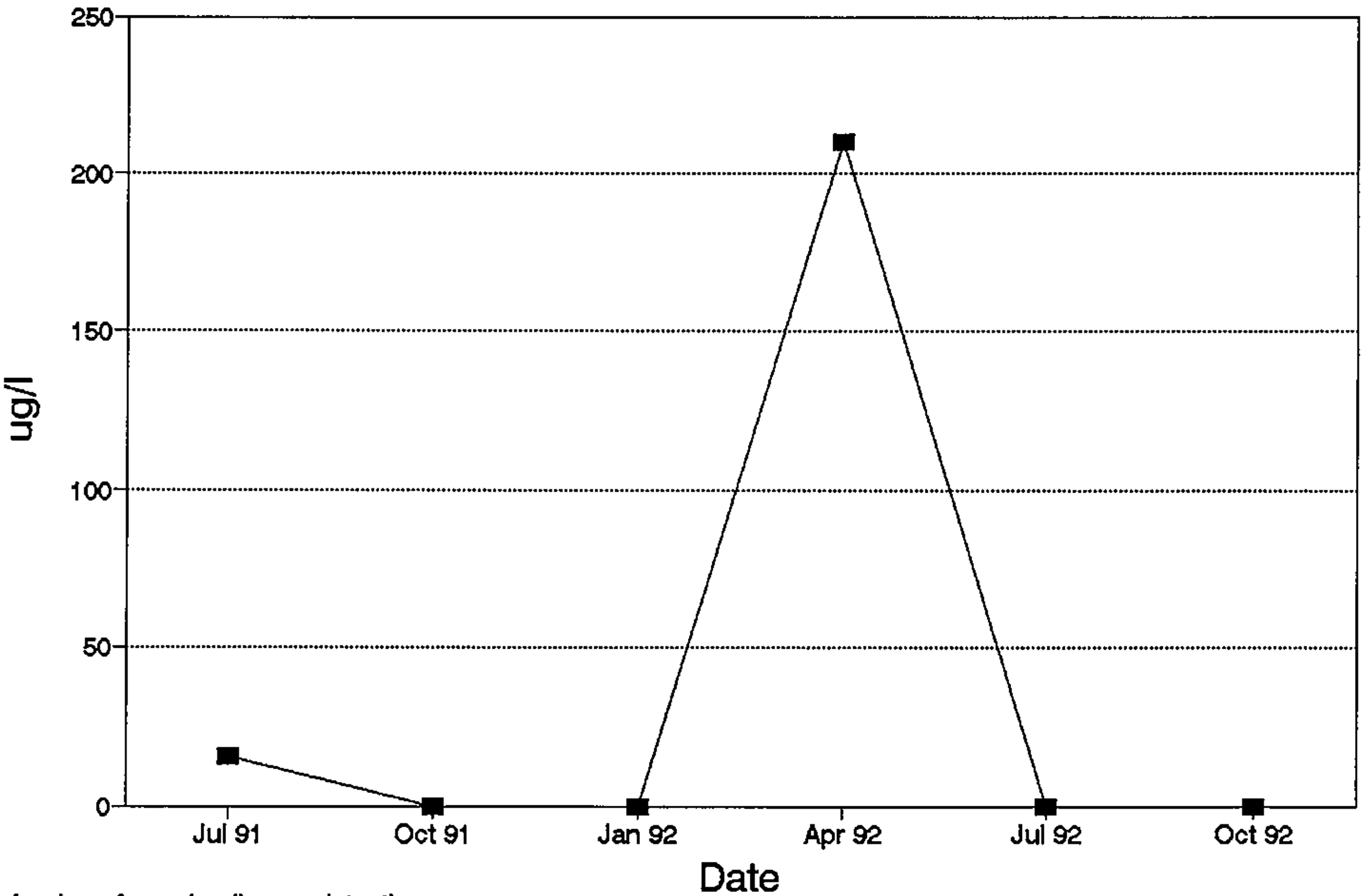
Groundwater Quality Results
Alkalinity - MW1010P



A value of zero implies no detection

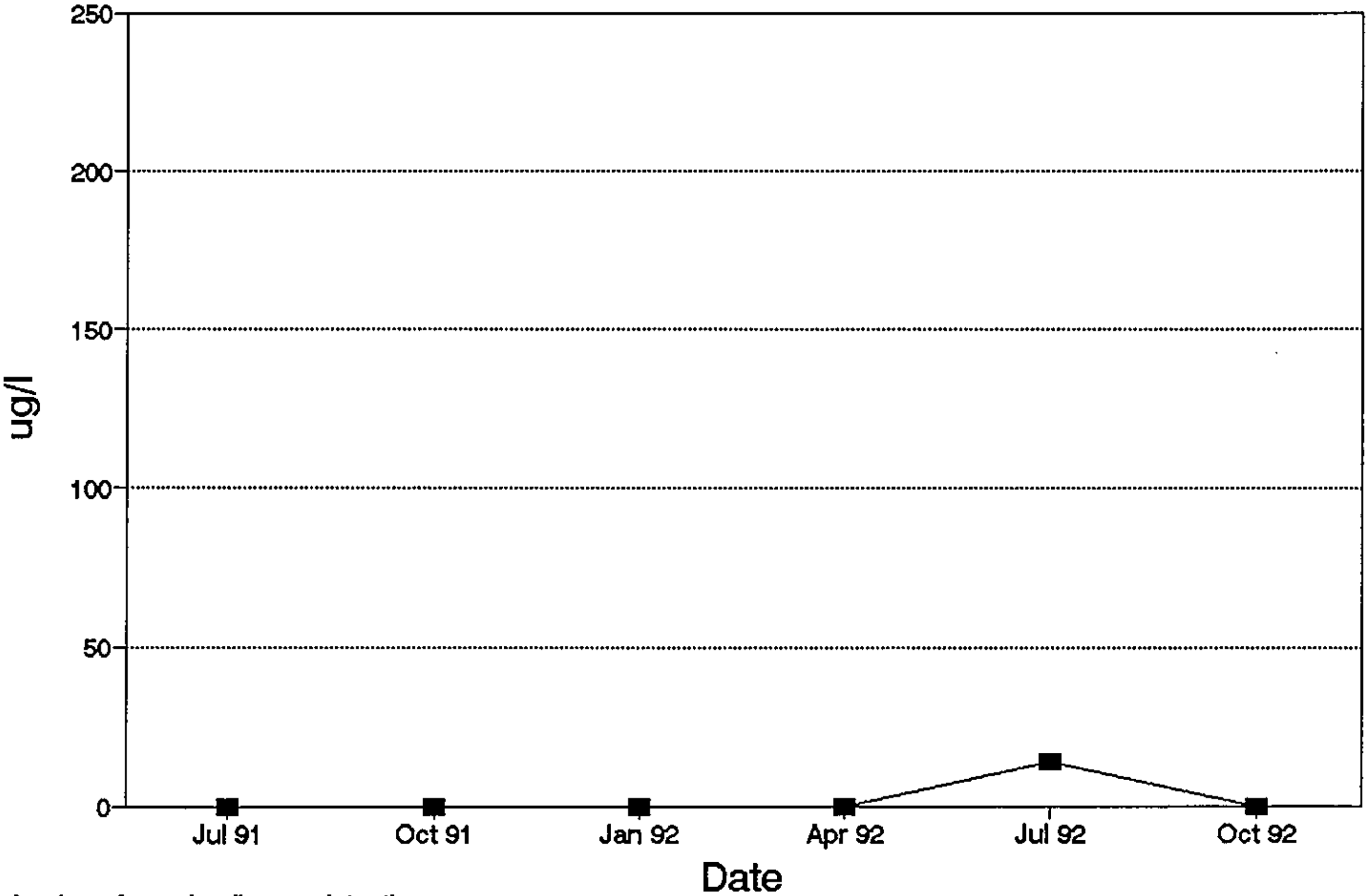
Groundwater Quality Graphs
Copper

Groundwater Quality Results
Copper - MW1000



A value of zero implies no detection

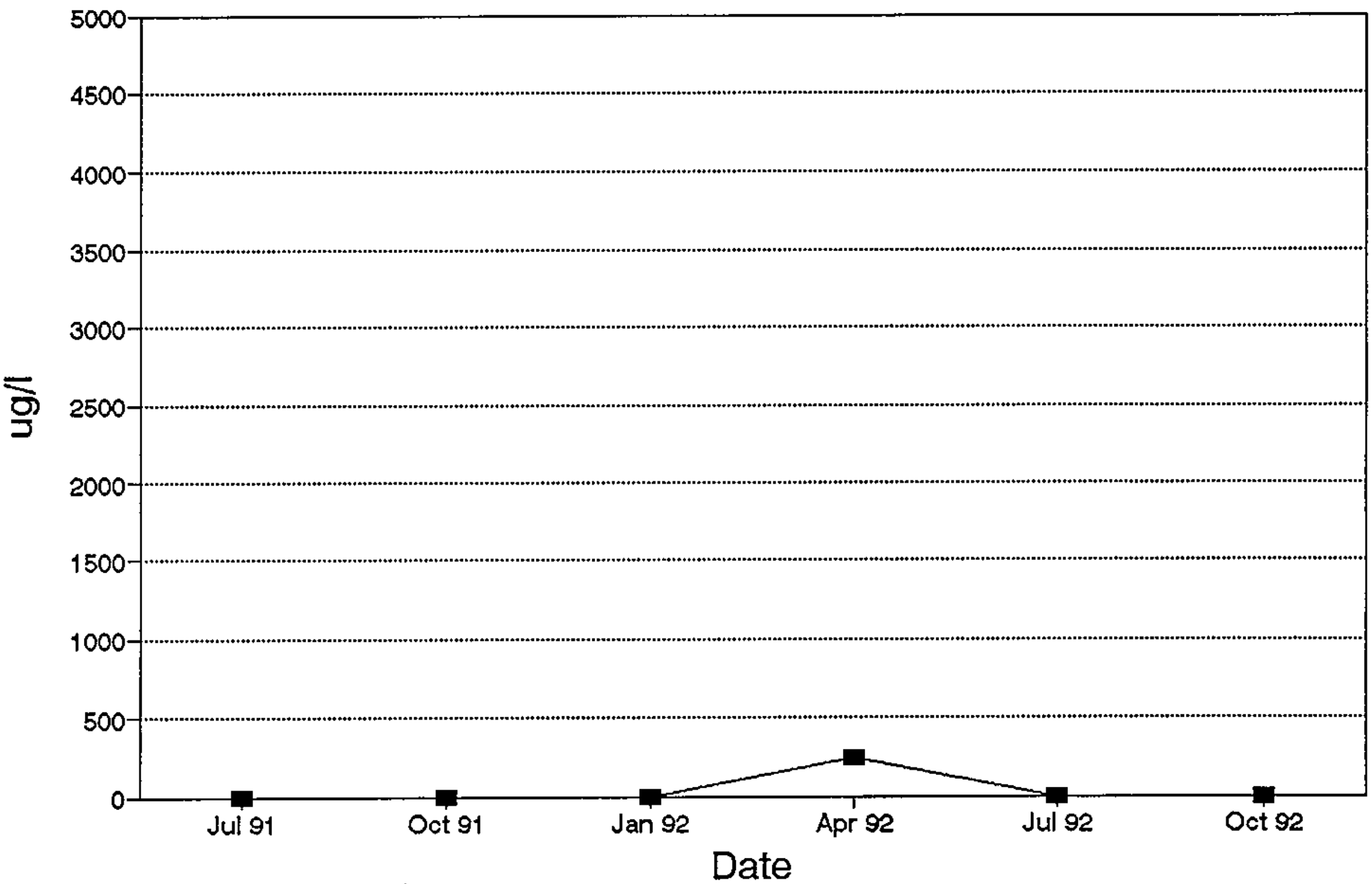
Groundwater Quality Results
Copper - MW1000P



A value of zero implies no detection

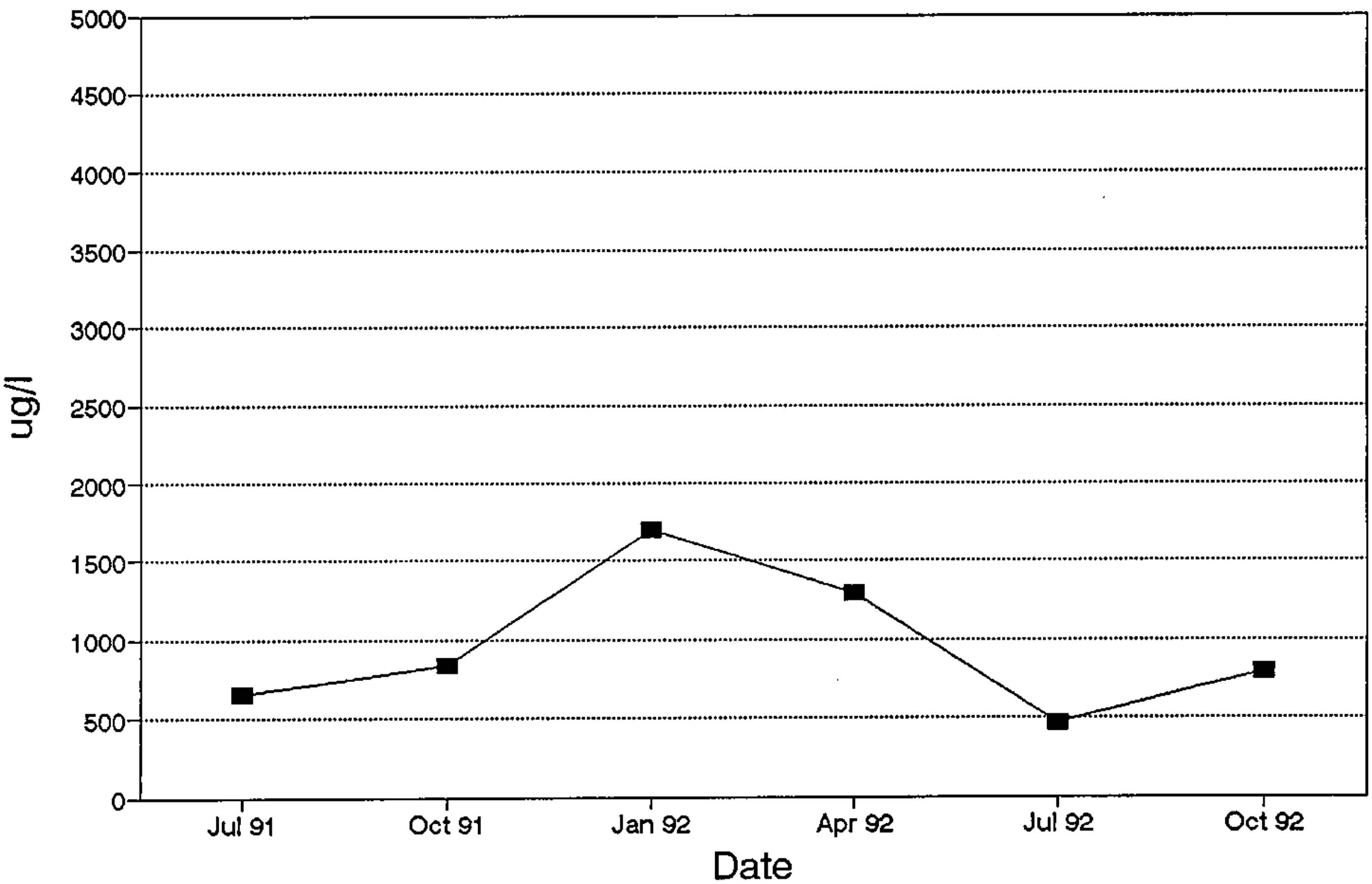
Groundwater Quality Graphs
Iron

Groundwater Quality Results
Iron - MW1000



A value of zero implies no detection

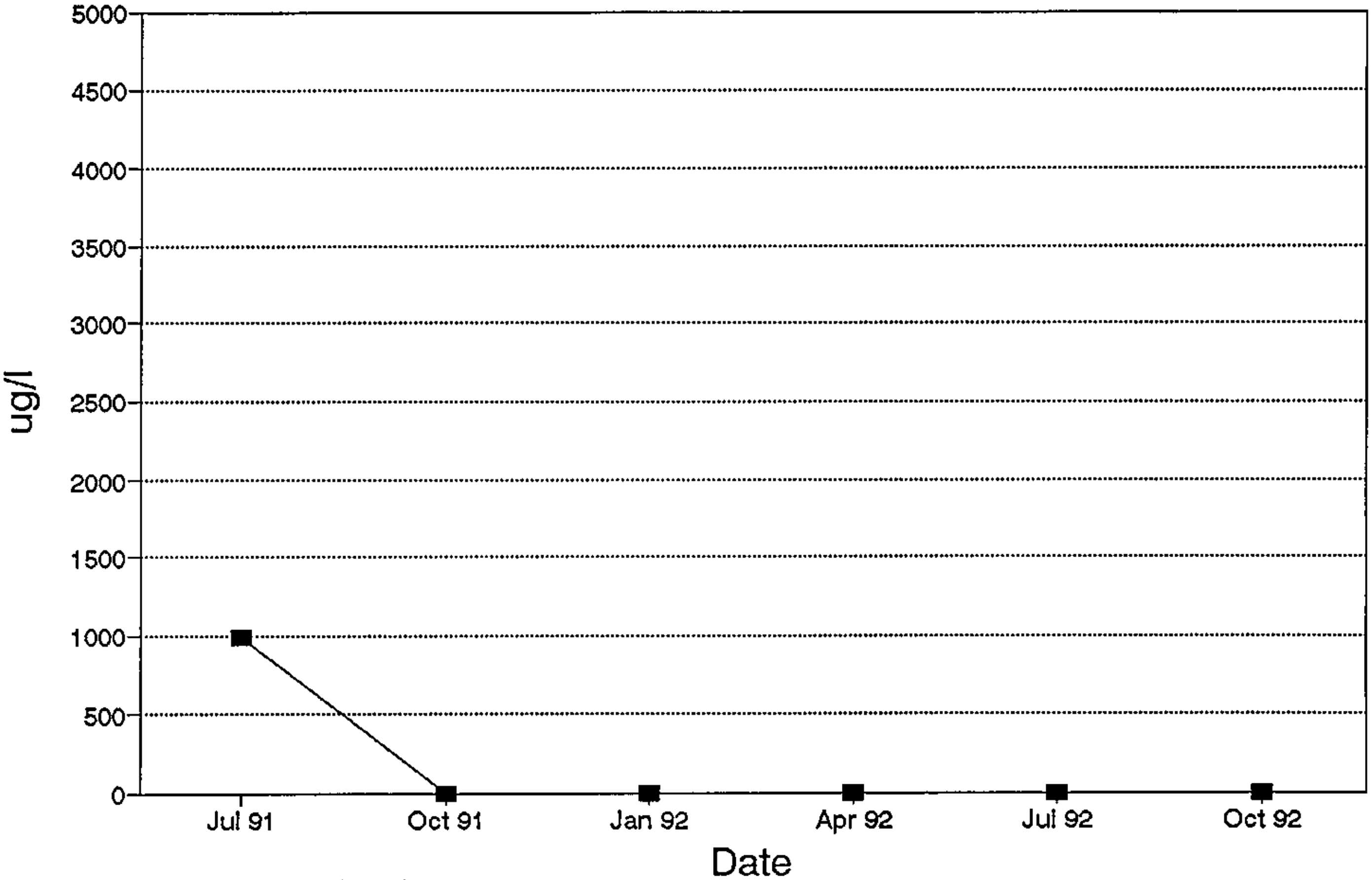
Groundwater Quality Results
Iron - MW1000P



A value of zero implies no detection

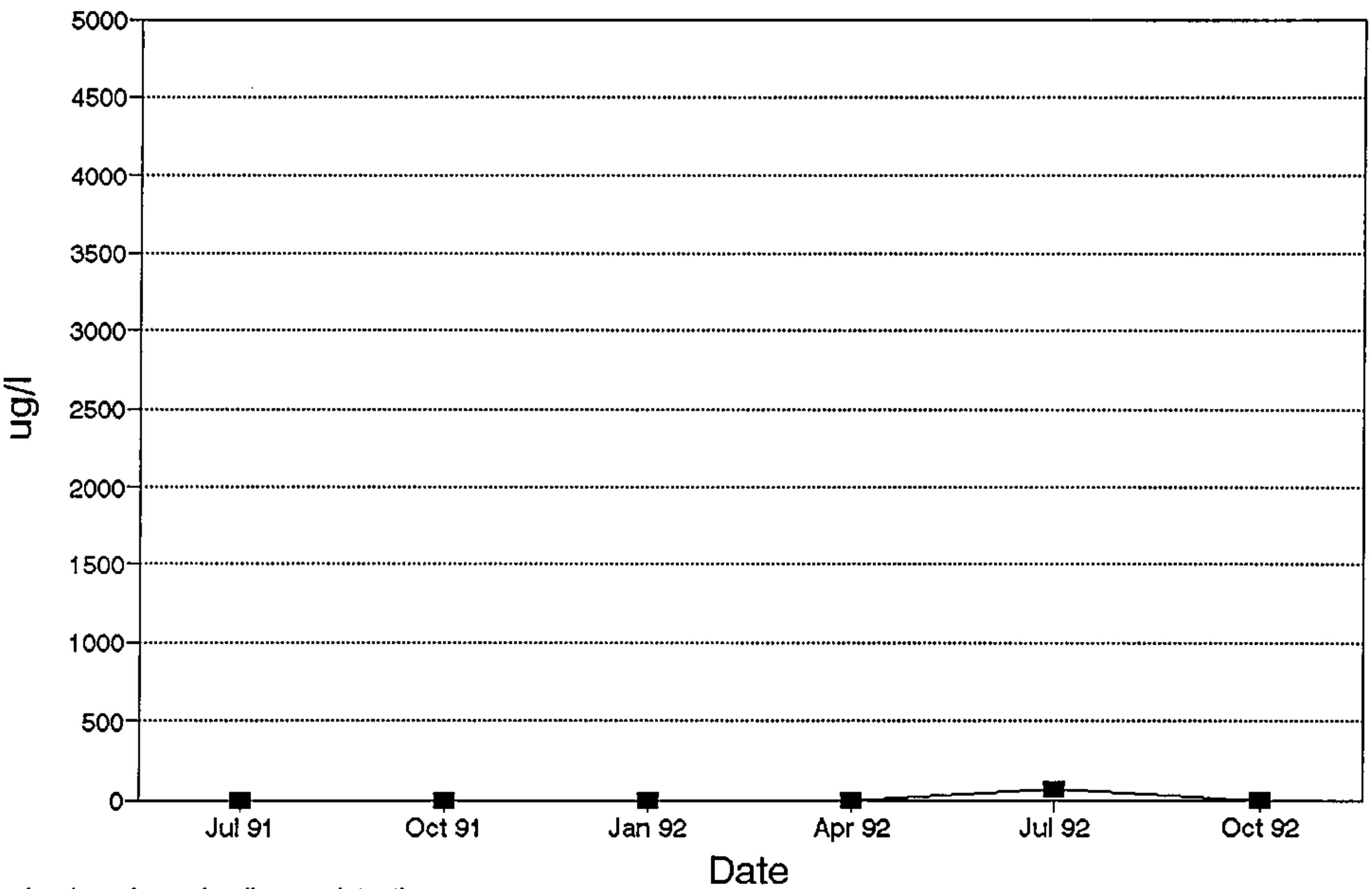
Groundwater Quality Results

Iron - MW1002



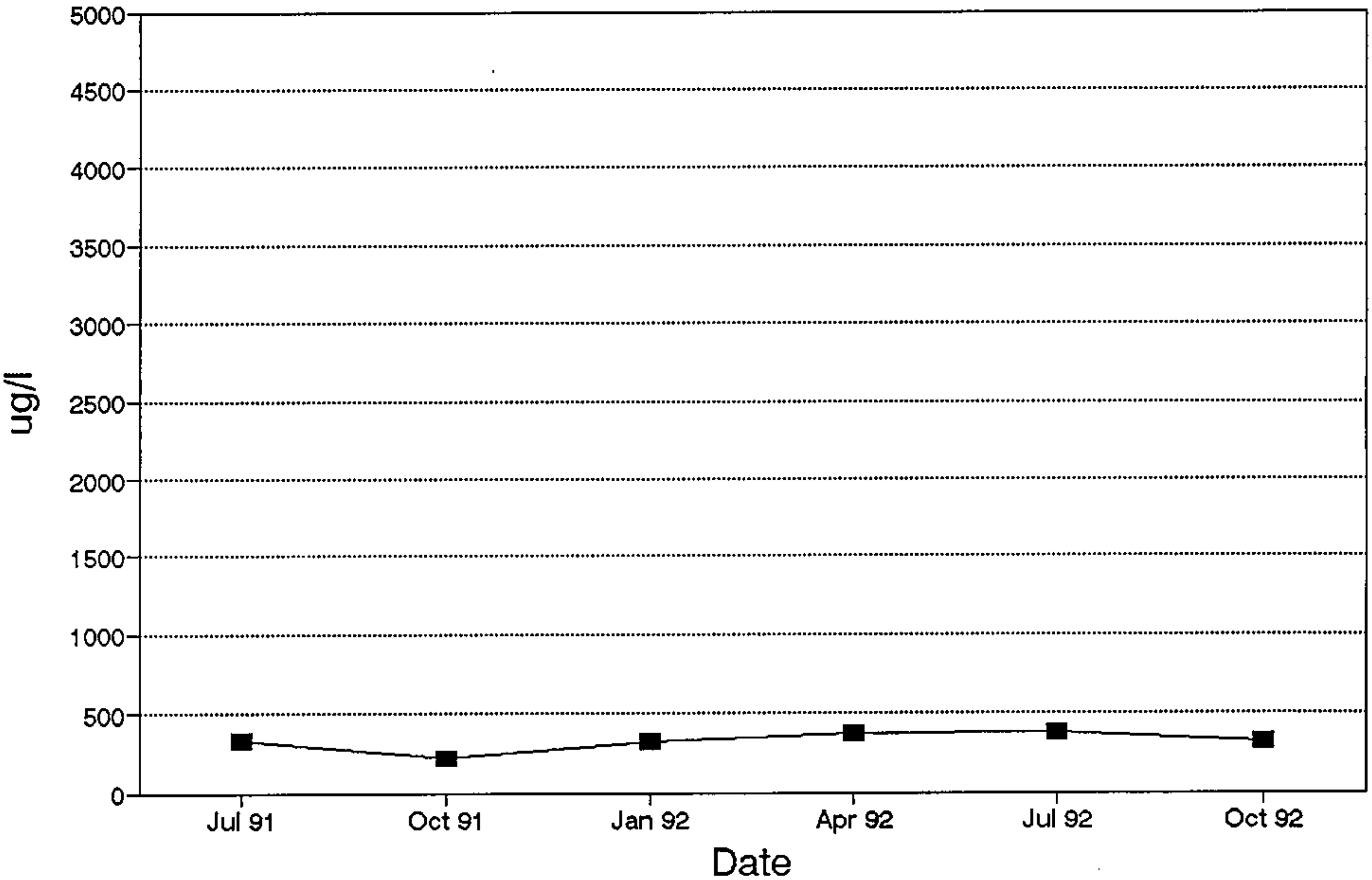
A value of zero implies no detection

Groundwater Quality Results
Iron - MW1004



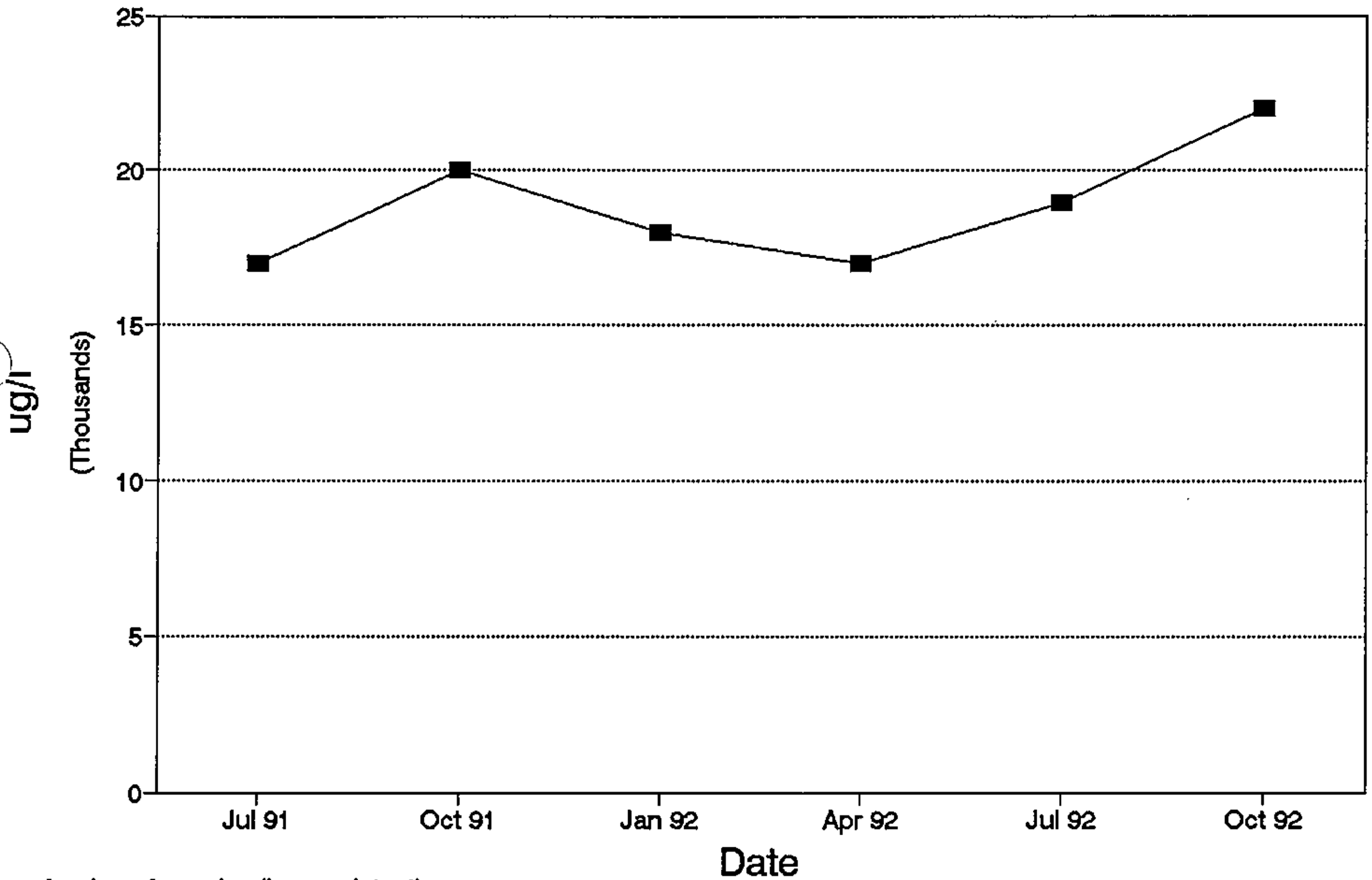
A value of zero implies no detection

Groundwater Quality Results
Iron - MW1004P

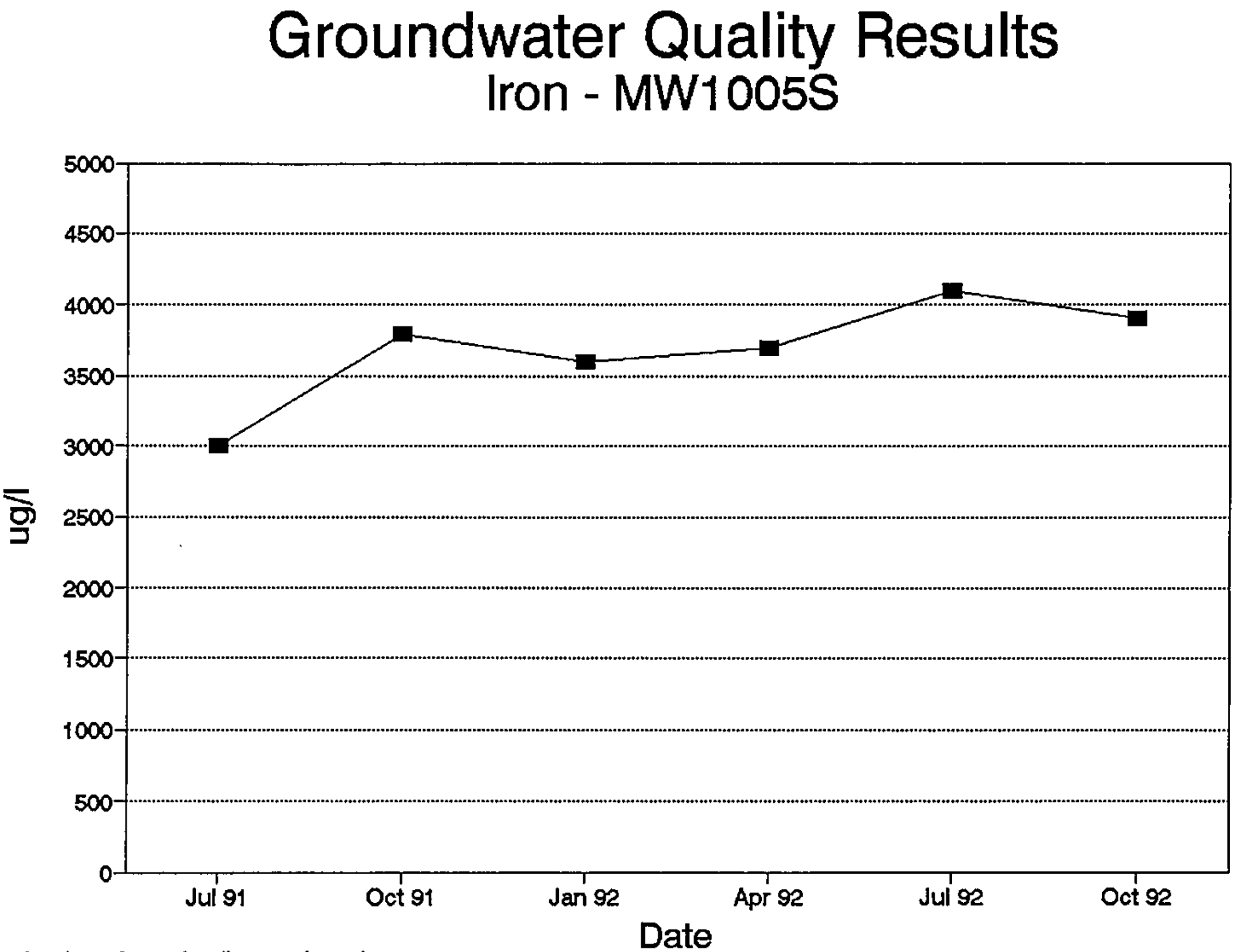


A value of zero implies no detection

Groundwater Quality Results
Iron - MW1005



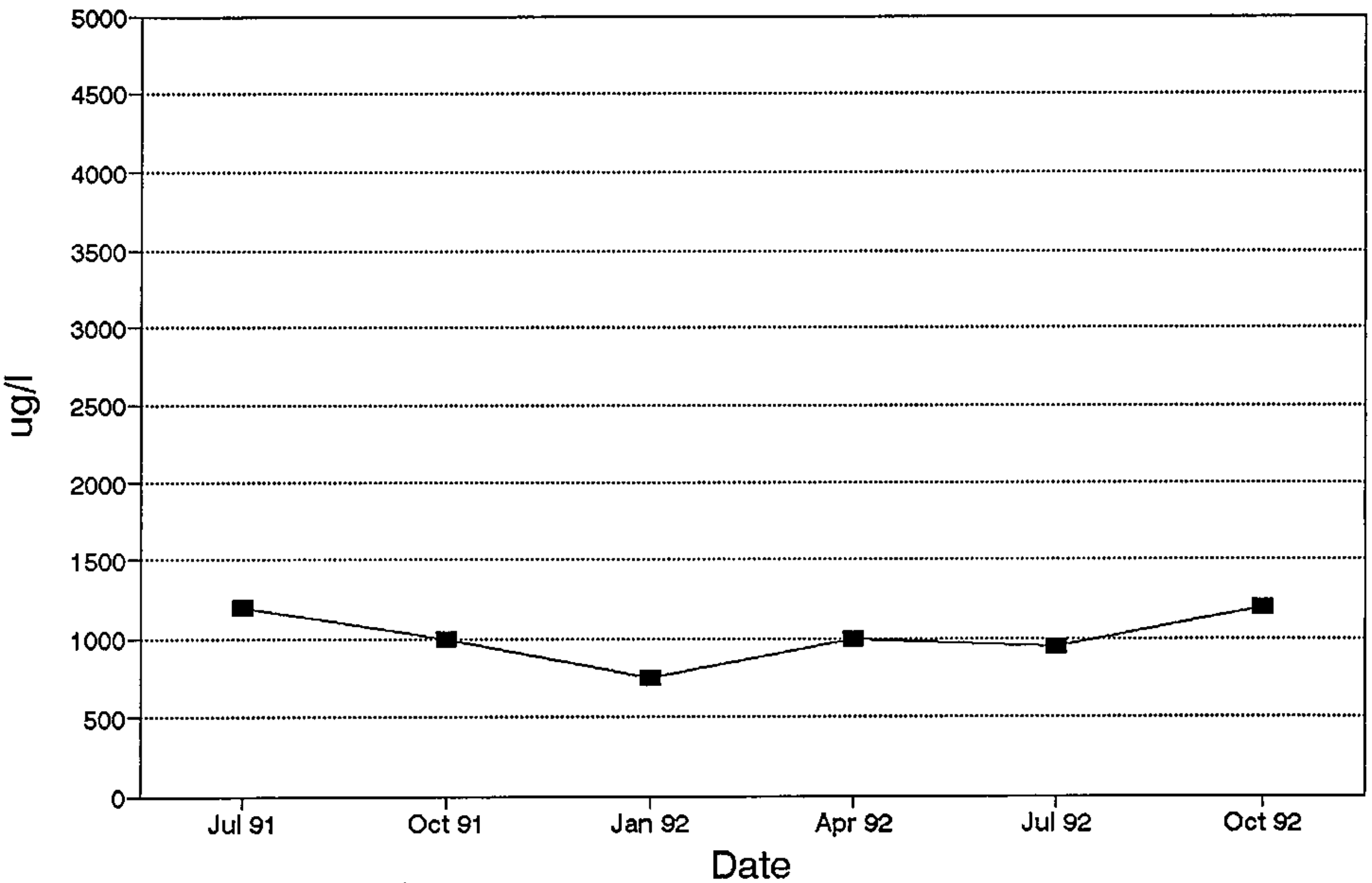
A value of zero implies no detection



A value of zero implies no detection

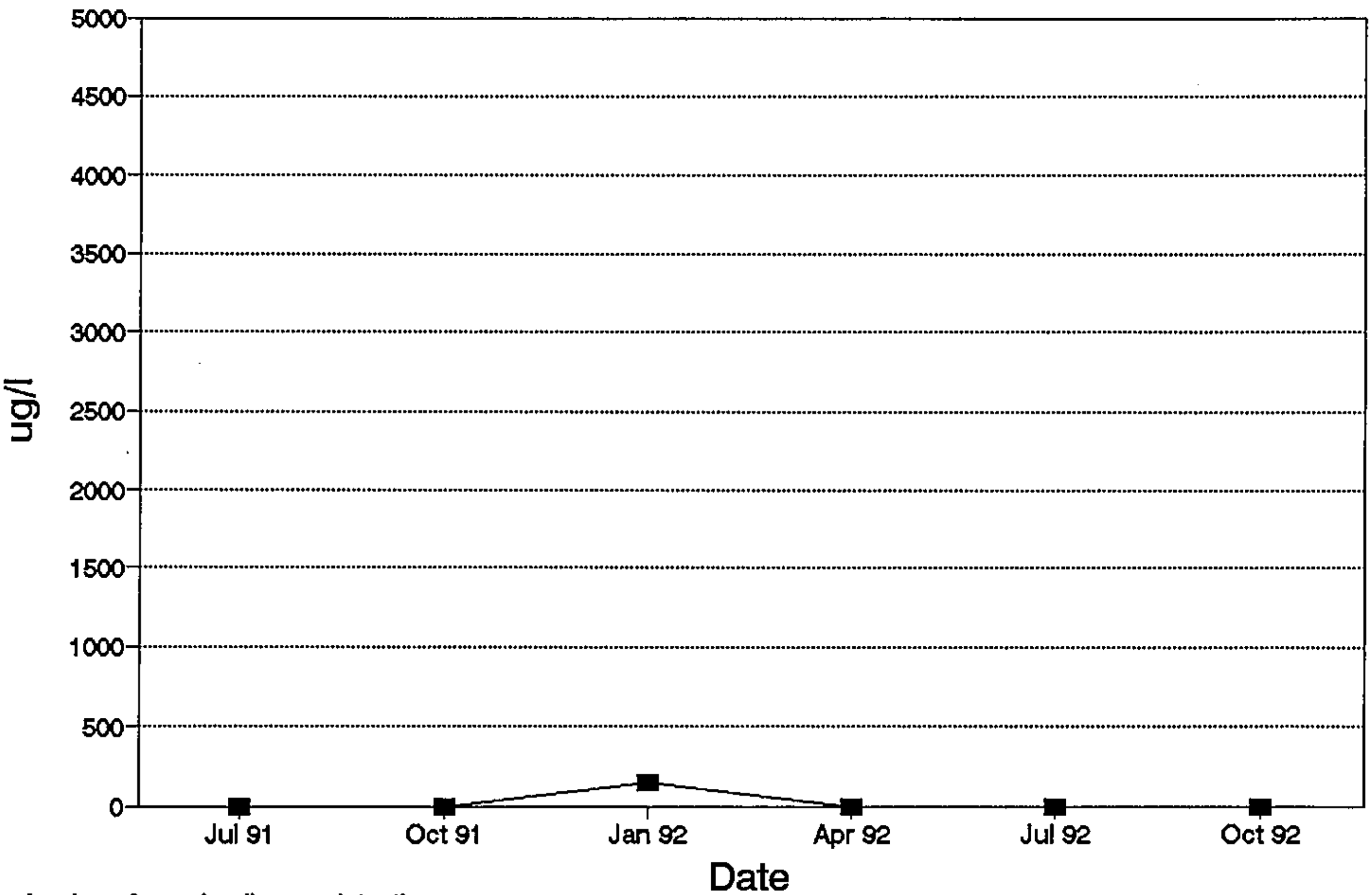
Groundwater Quality Results

Iron - MW1005P



A value of zero implies no detection

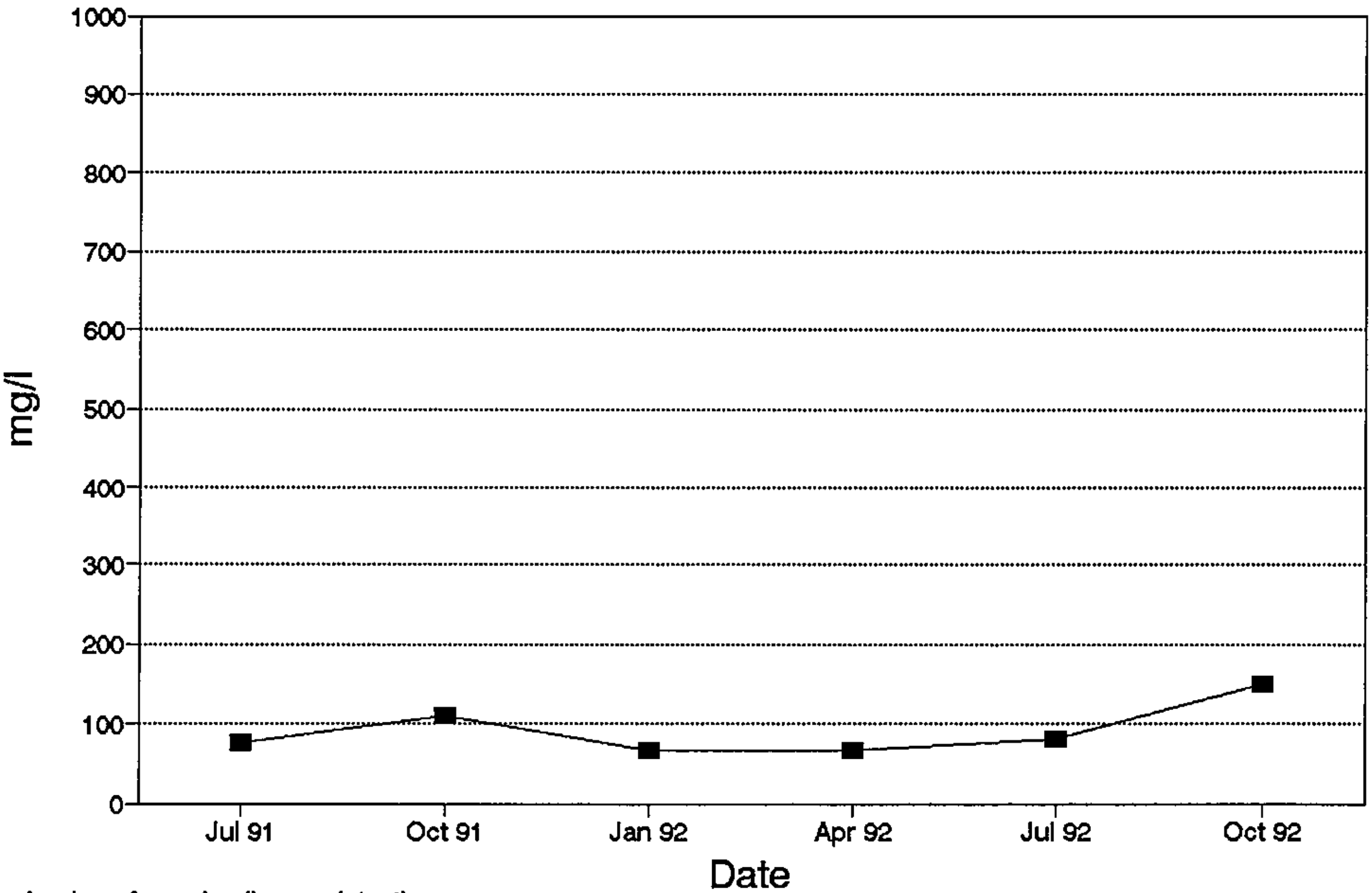
Groundwater Quality Results
Iron - MW1010P



A value of zero implies no detection

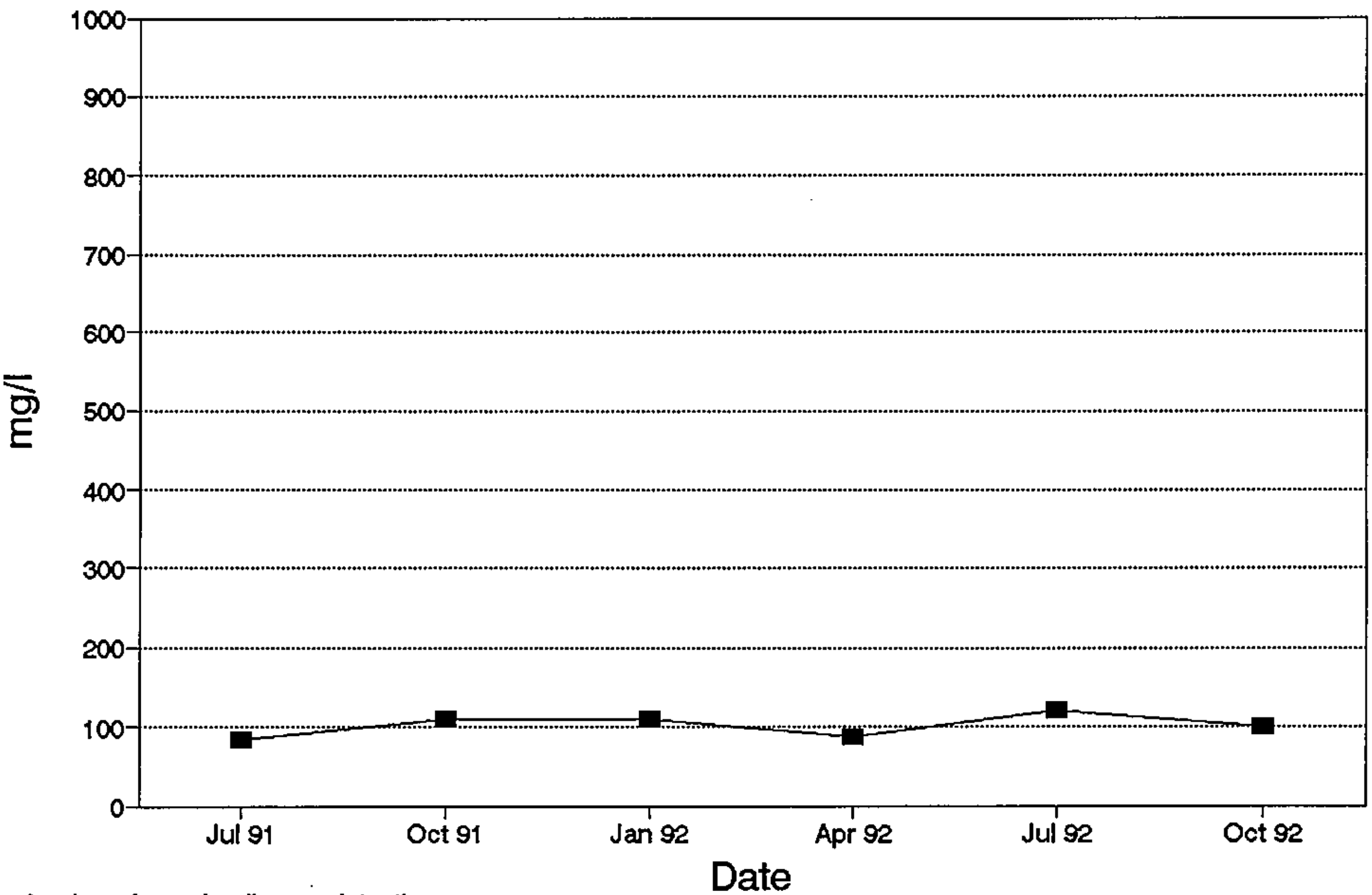
Groundwater Quality Graphs
Hardness

Groundwater Quality Results
Hardness - MW1000



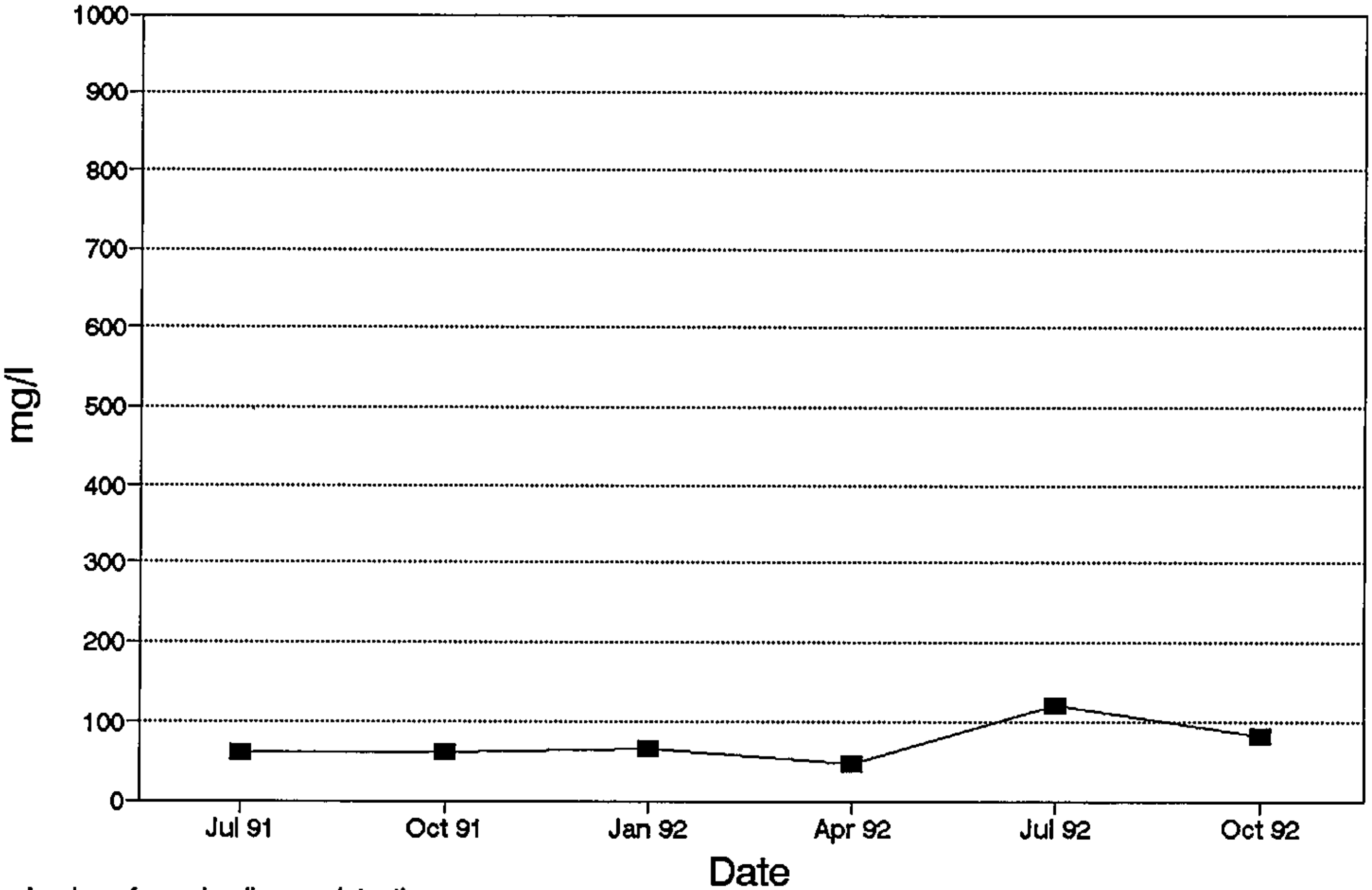
A value of zero implies no detection

Groundwater Quality Results
Hardness - MW1000P



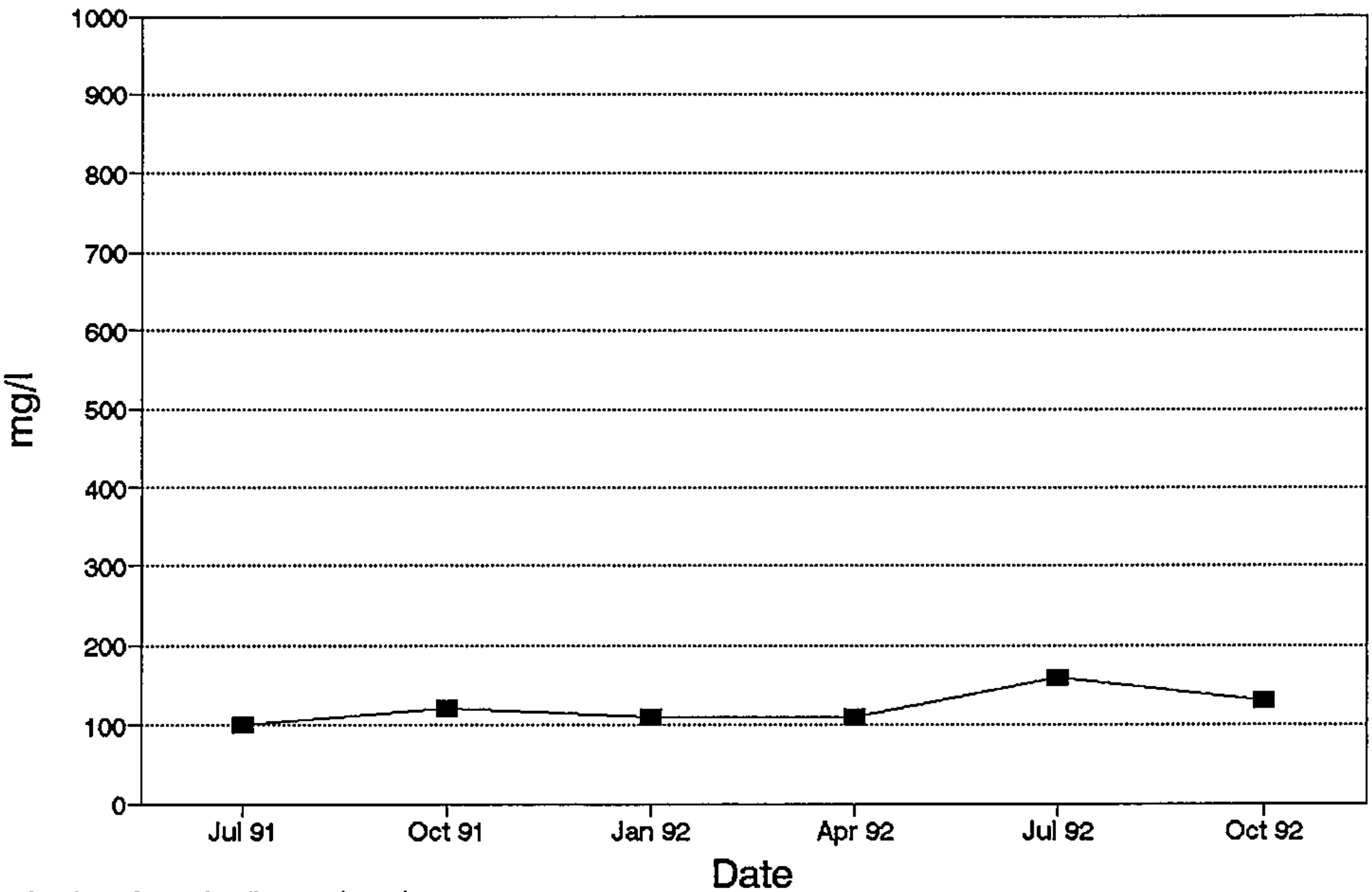
A value of zero implies no detection

Groundwater Quality Results
Hardness - MW1002



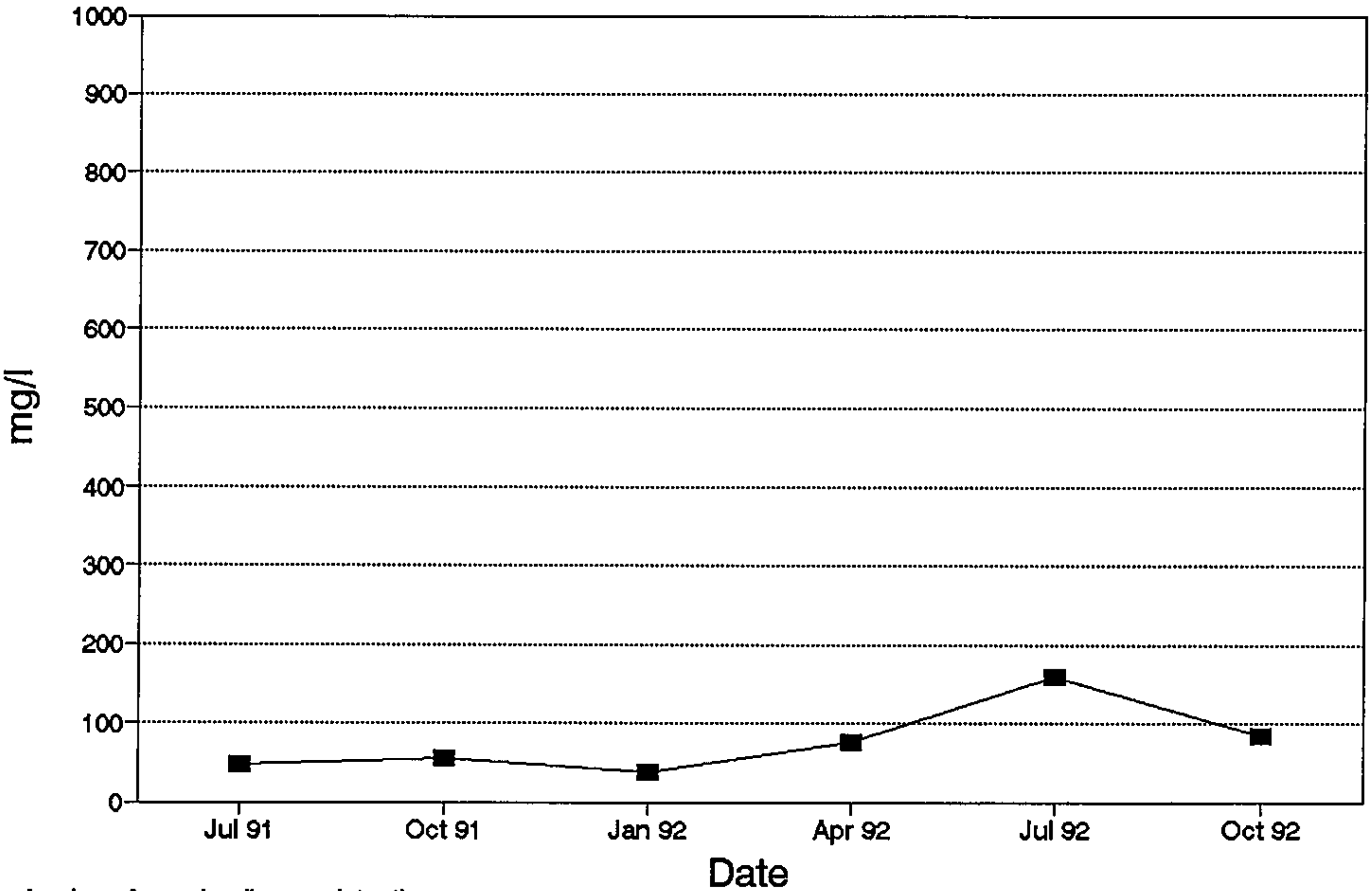
A value of zero implies no detection

Groundwater Quality Results
Hardness - MW1002G



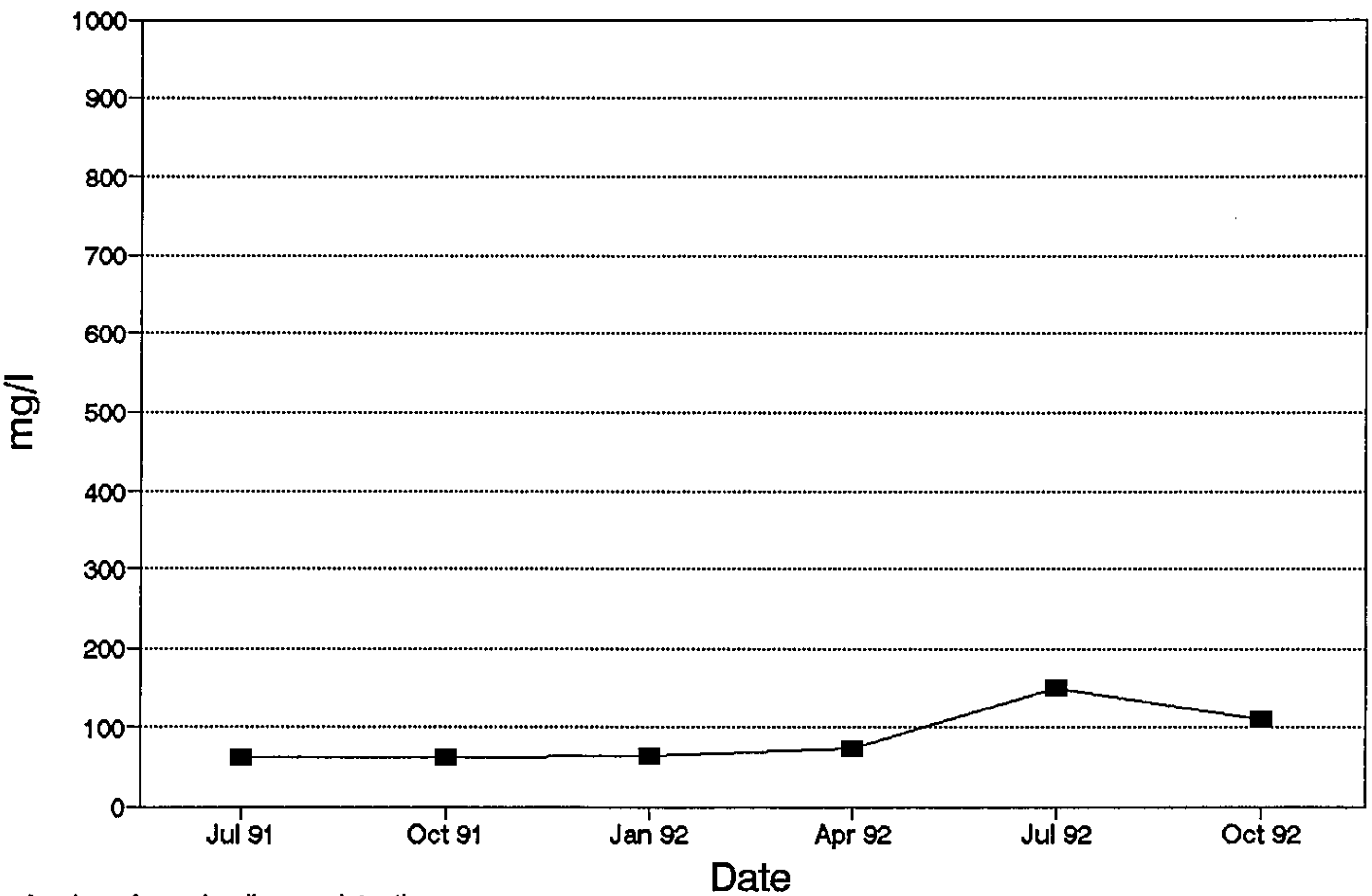
A value of zero implies no detection

Groundwater Quality Results
Hardness - MW1004



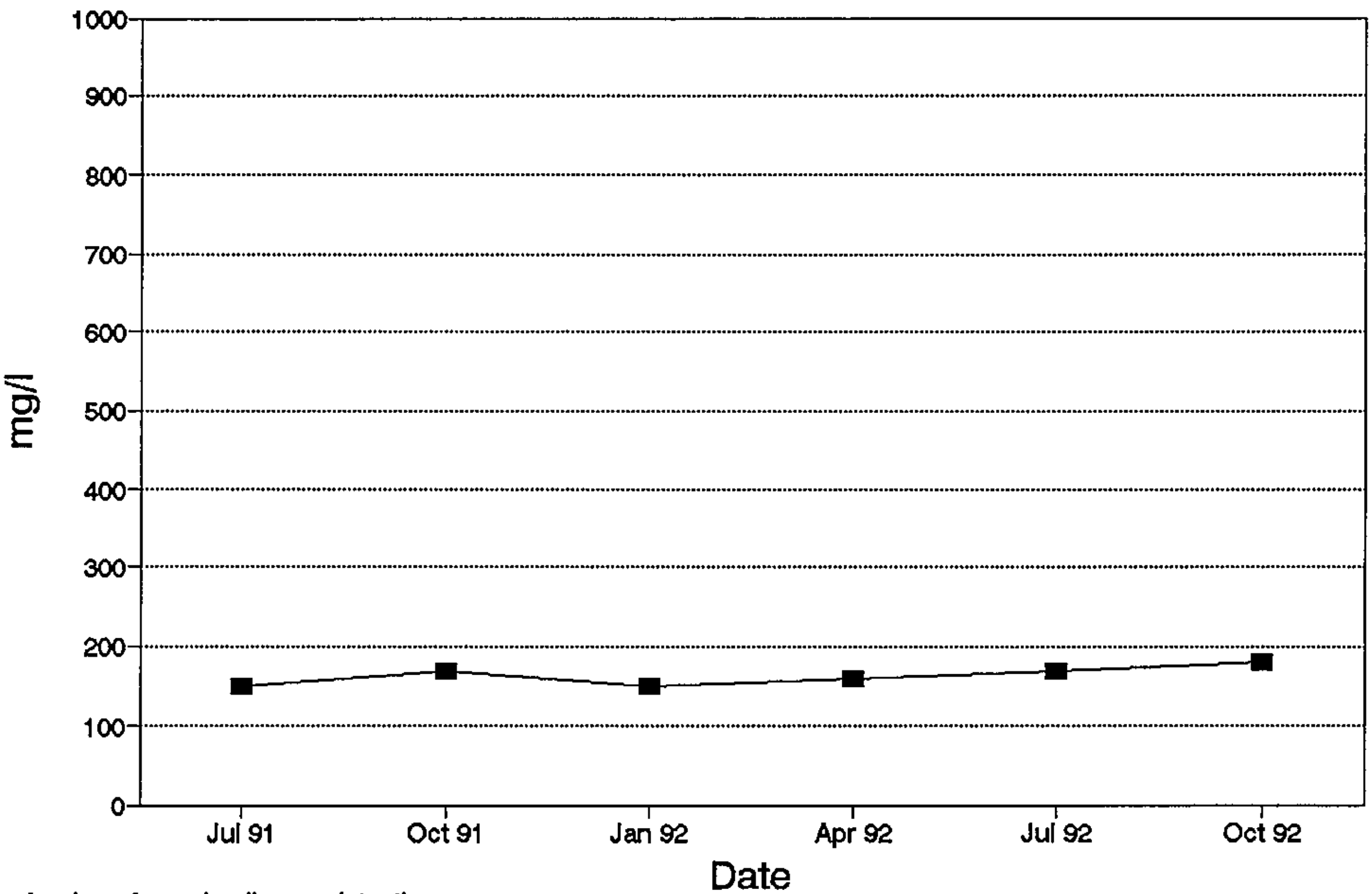
A value of zero implies no detection

Groundwater Quality Results
Hardness - MW1004S



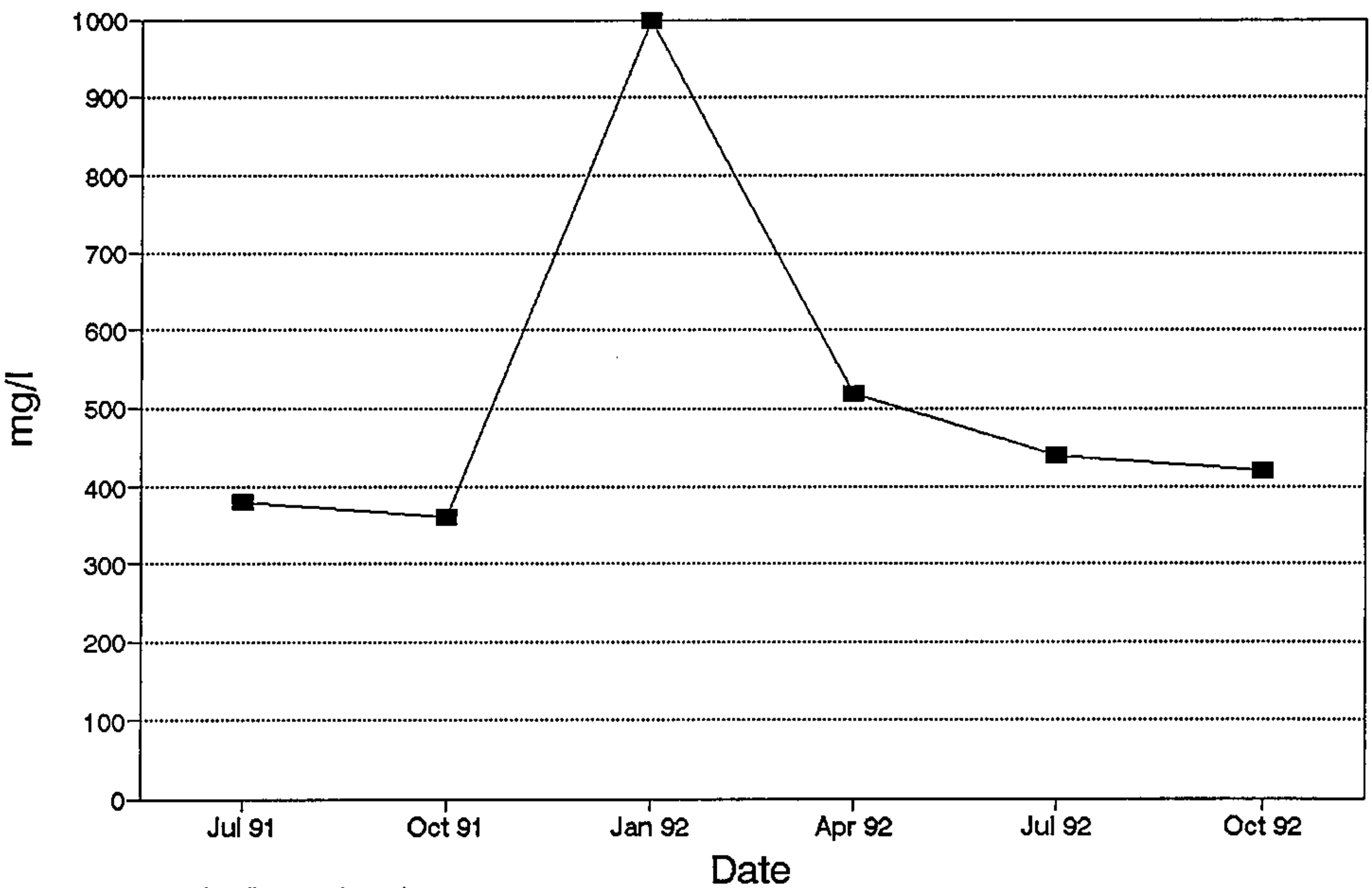
A value of zero implies no detection

Groundwater Quality Results
Hardness - MW1004P



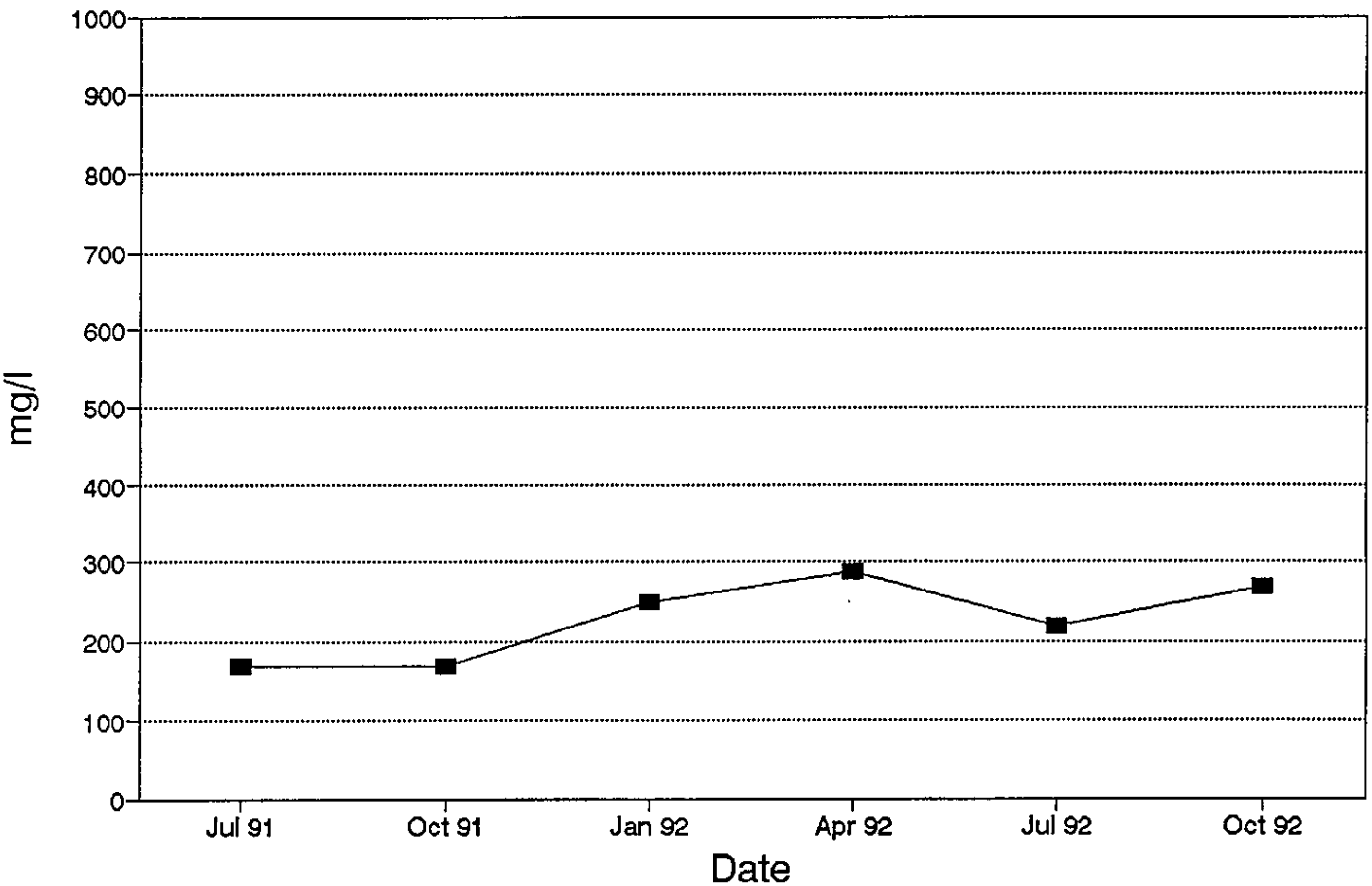
A value of zero implies no detection

Groundwater Quality Results
Hardness - MW1005



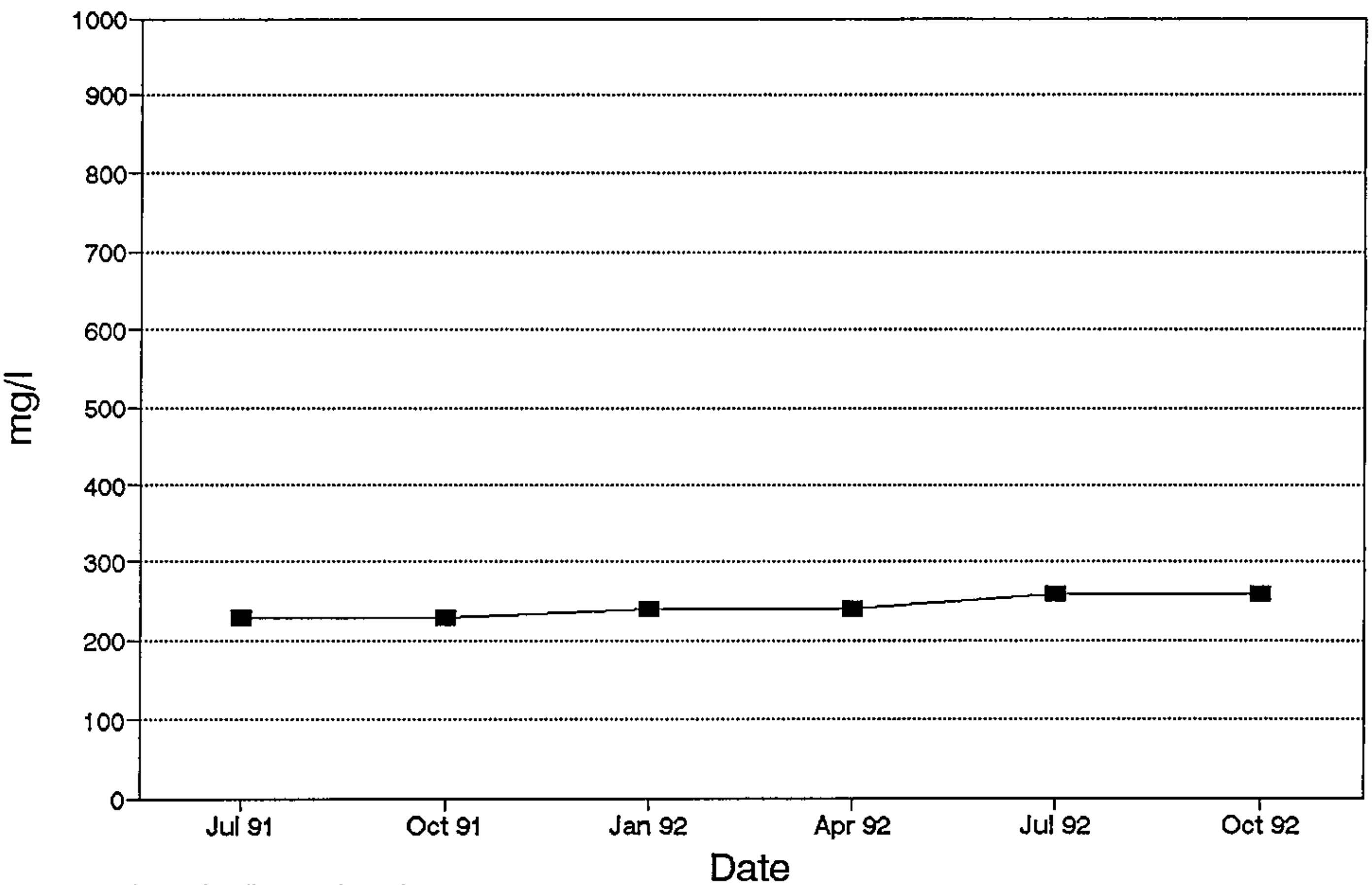
A value of zero implies no detection

Groundwater Quality Results
Hardness - MW1005S



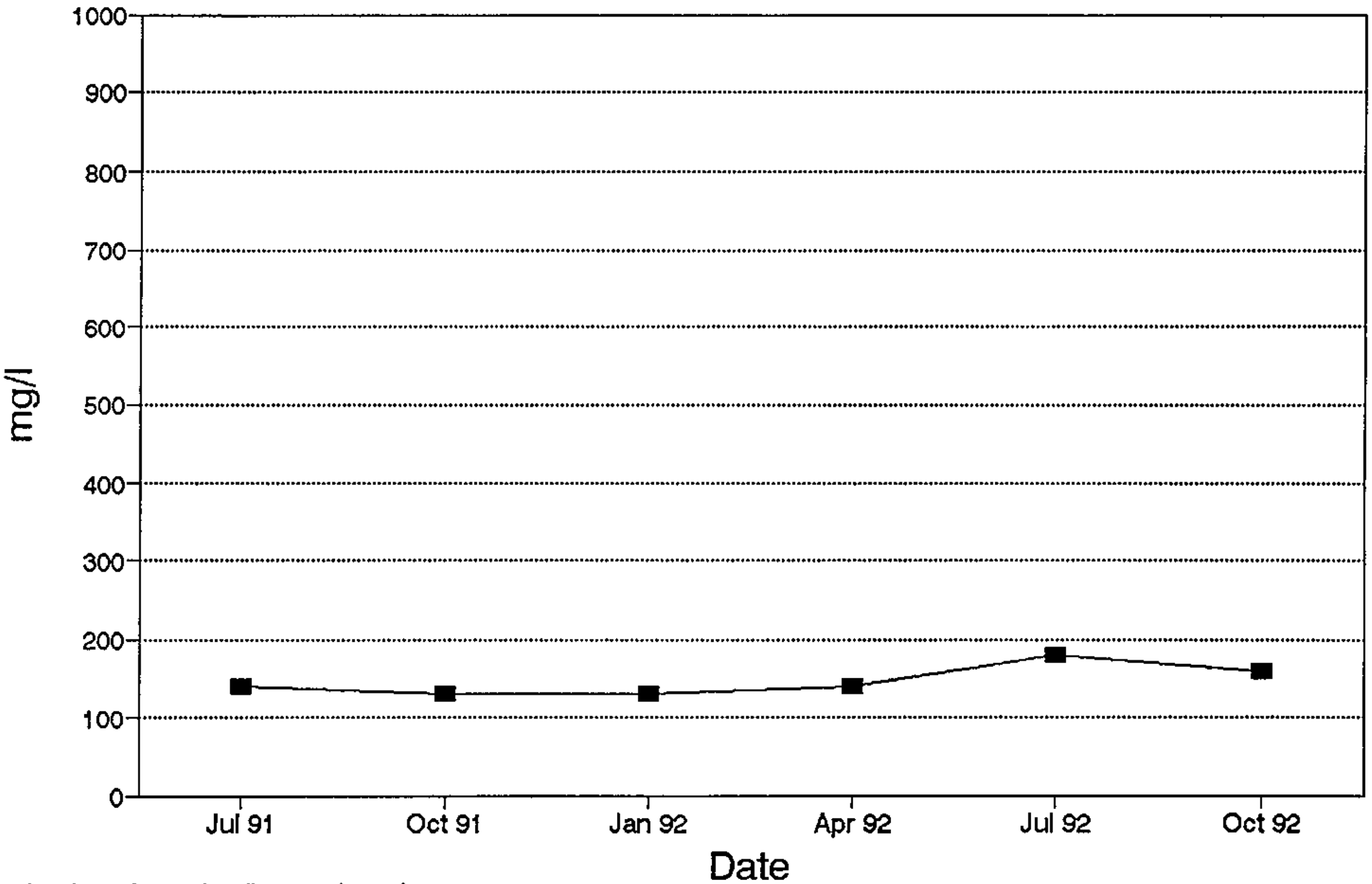
A value of zero implies no detection

Groundwater Quality Results
Hardness - MW1005P



A value of zero implies no detection

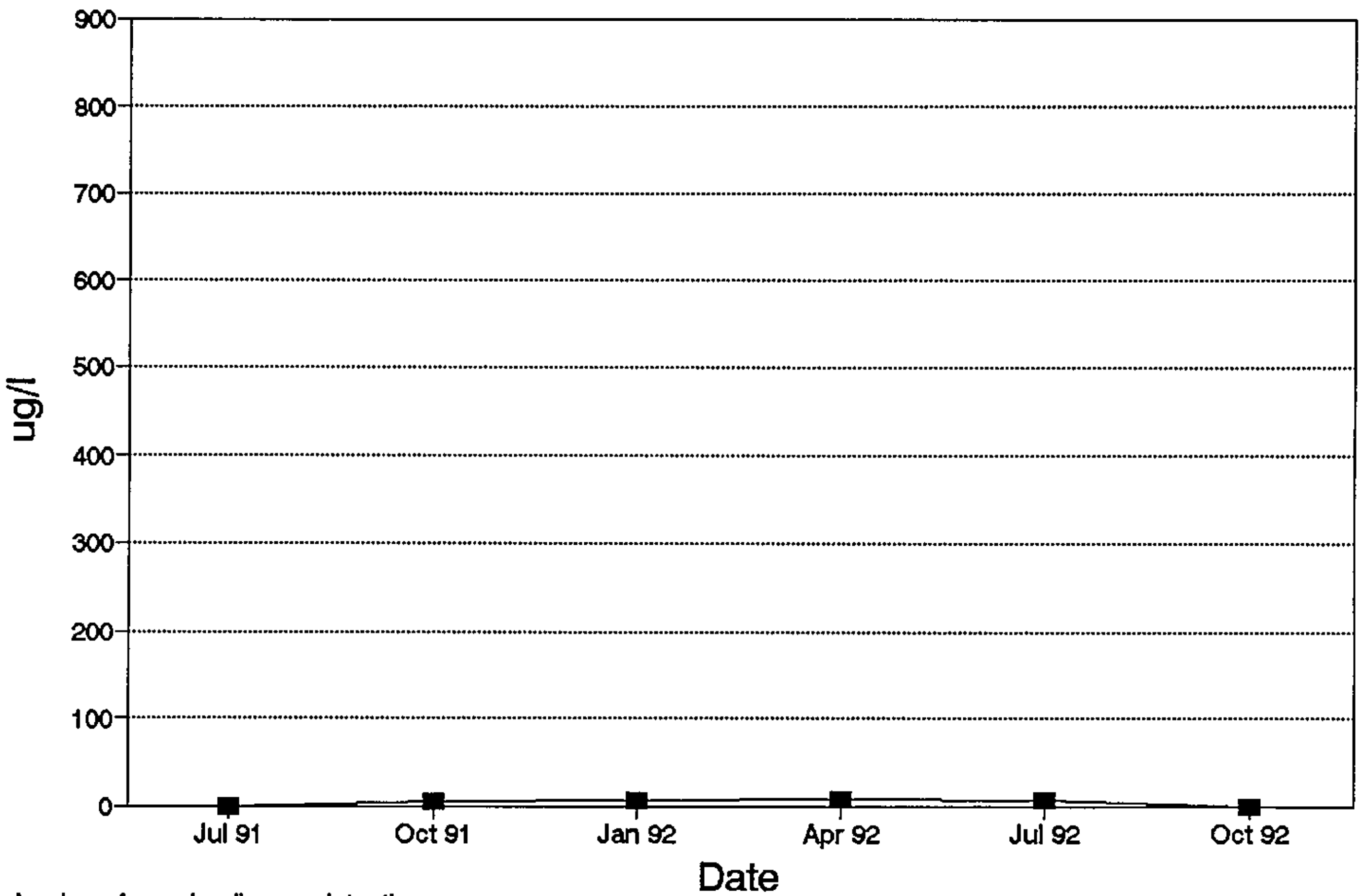
Groundwater Quality Results
Hardness - MW1010P



A value of zero implies no detection

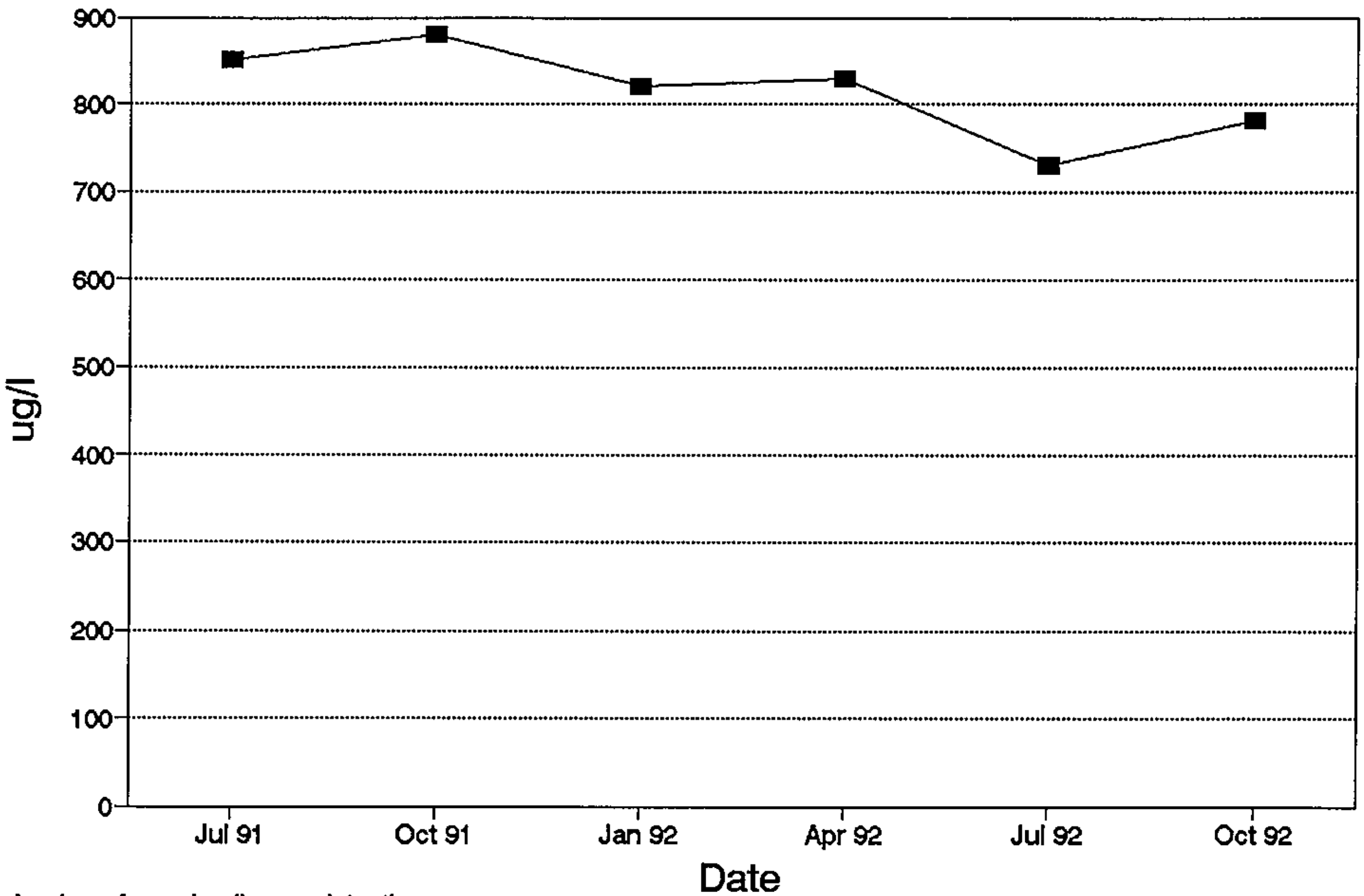
Groundwater Quality Results
Manganese

Groundwater Quality Results
Manganese - MW1000



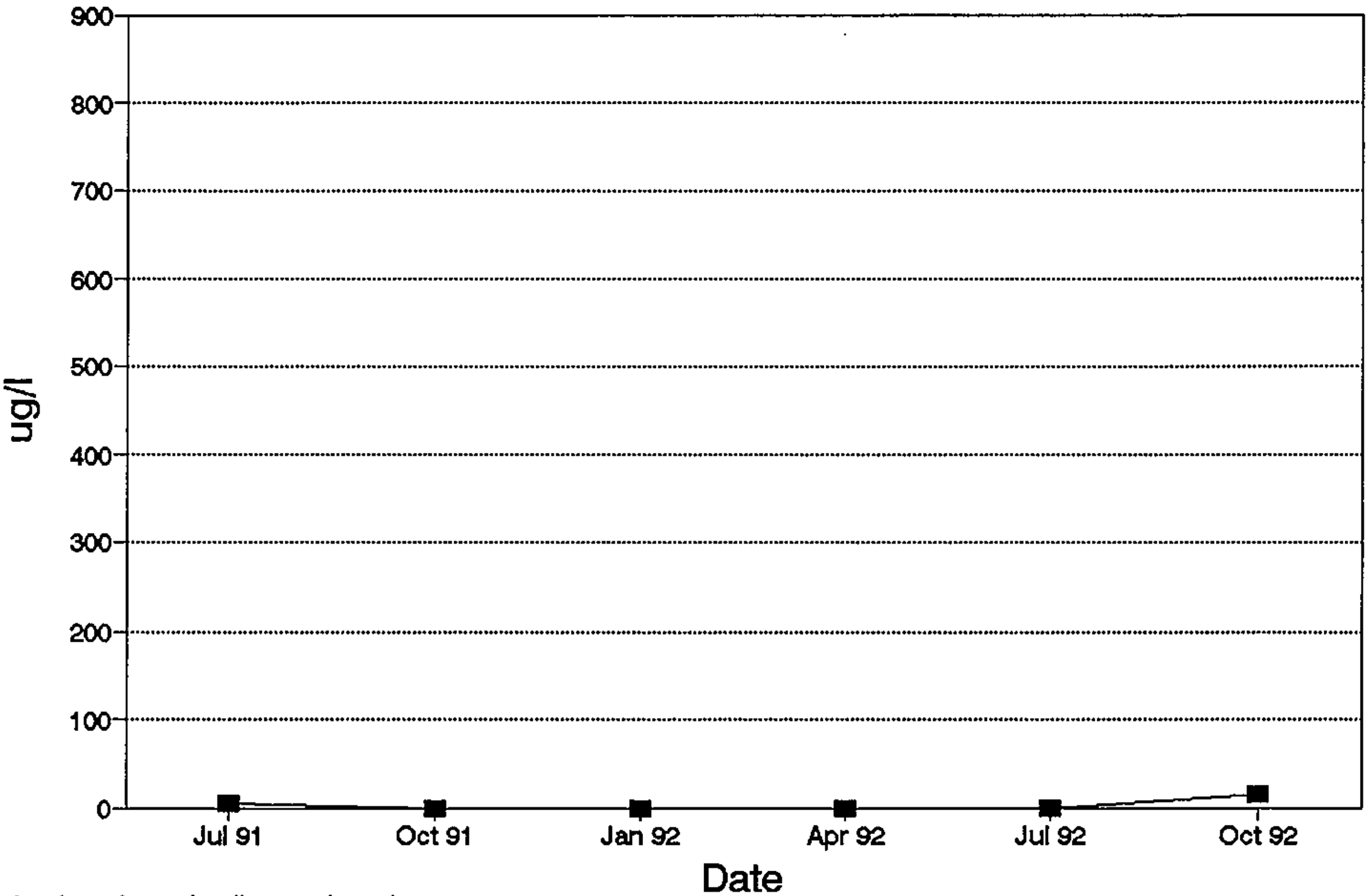
A value of zero implies no detection

Groundwater Quality Results
Manganese - MW1000P



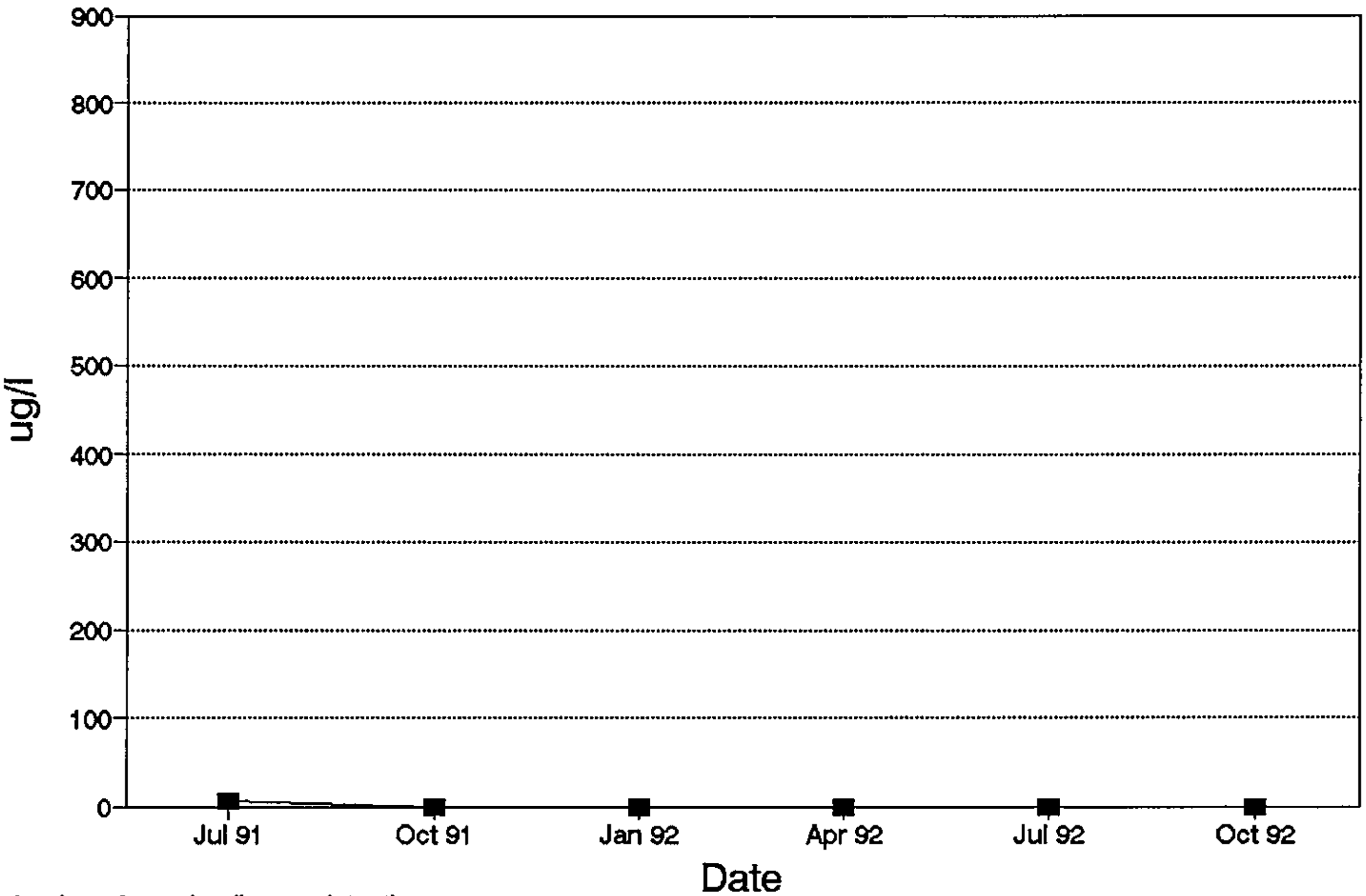
A value of zero implies no detection

Groundwater Quality Results
Manganese - MW1002



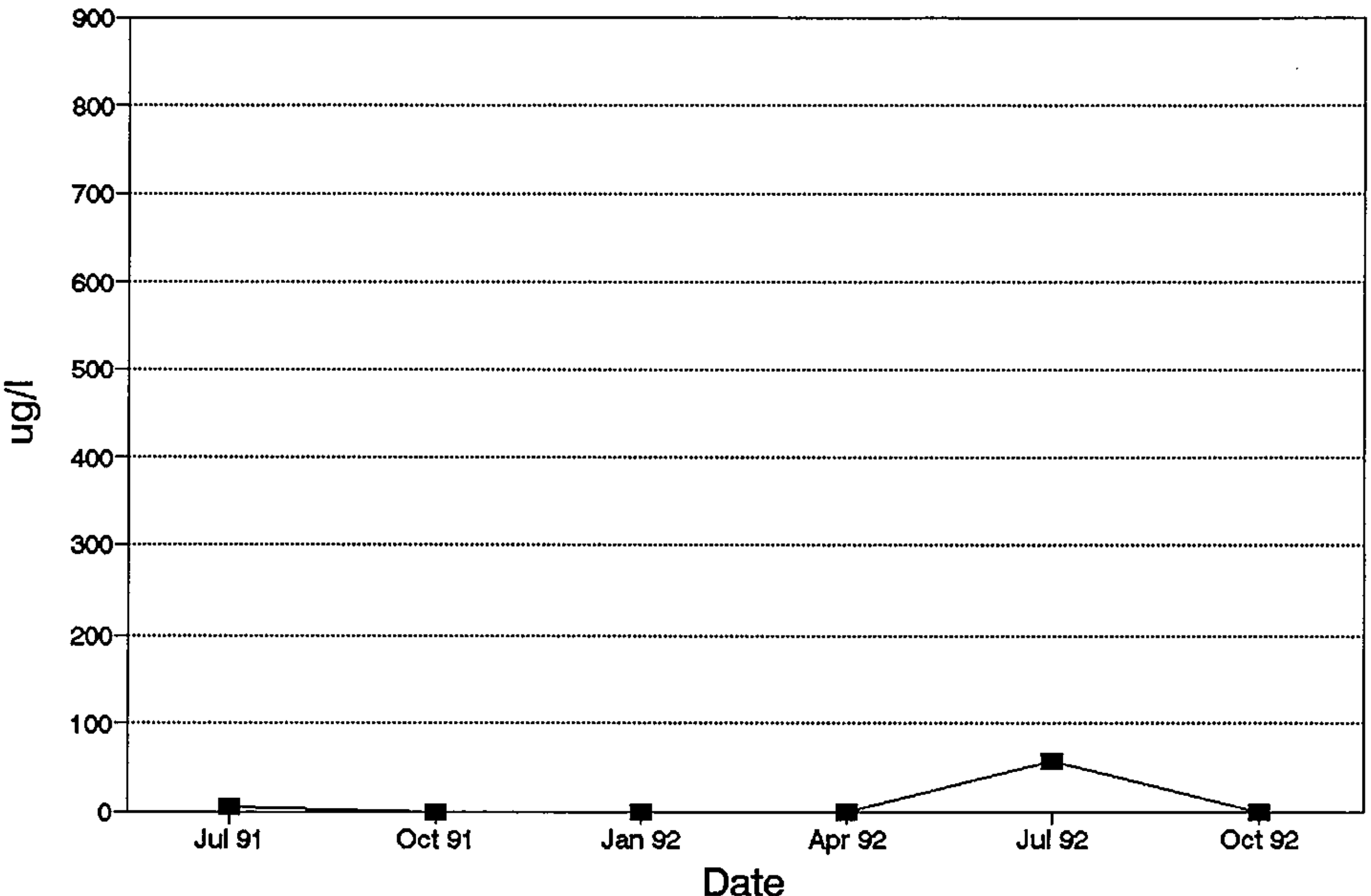
A value of zero implies no detection

Groundwater Quality Results
Manganese - MW1002G



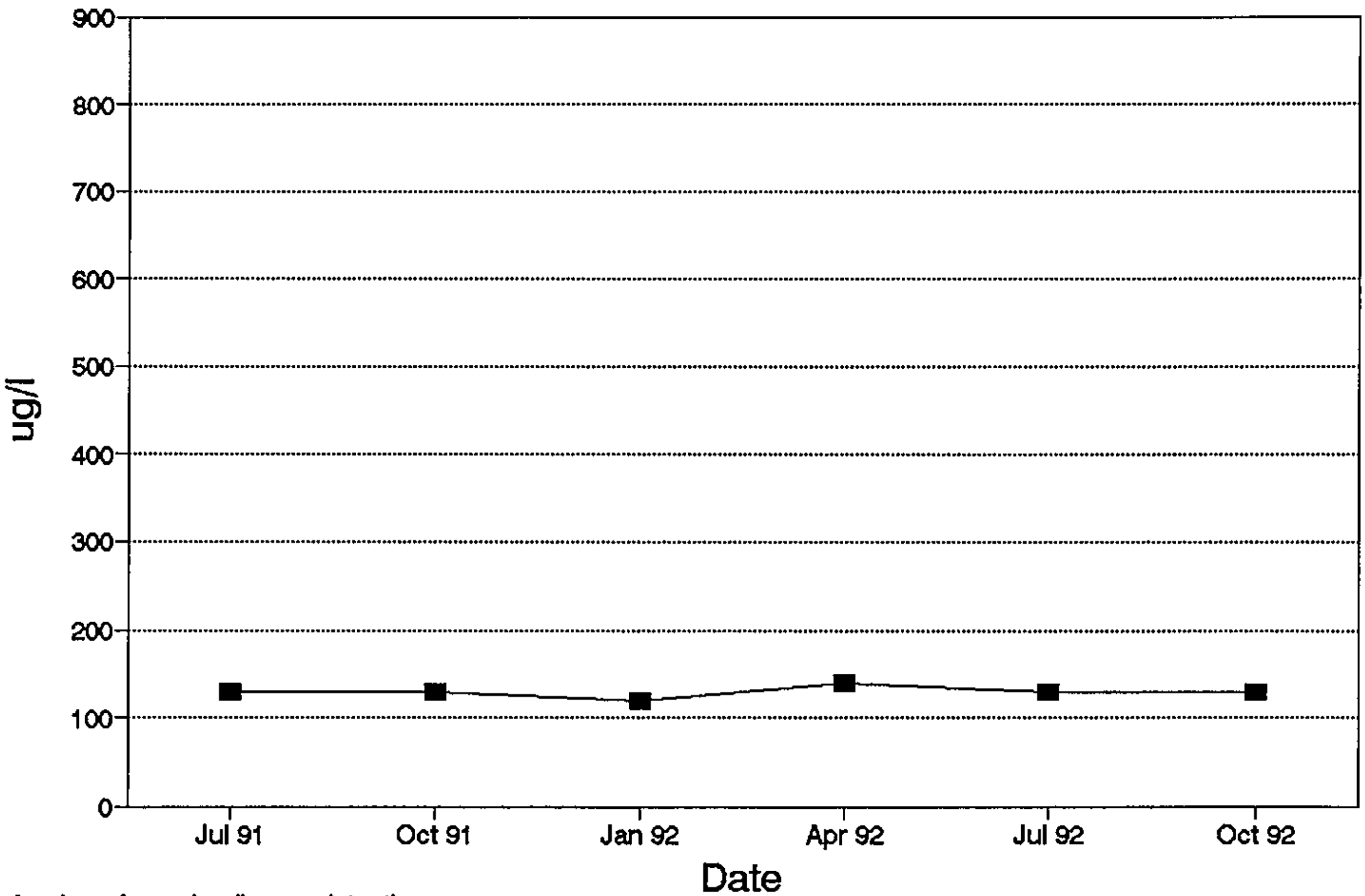
A value of zero implies no detection

Groundwater Quality Results
Manganese - MW1004



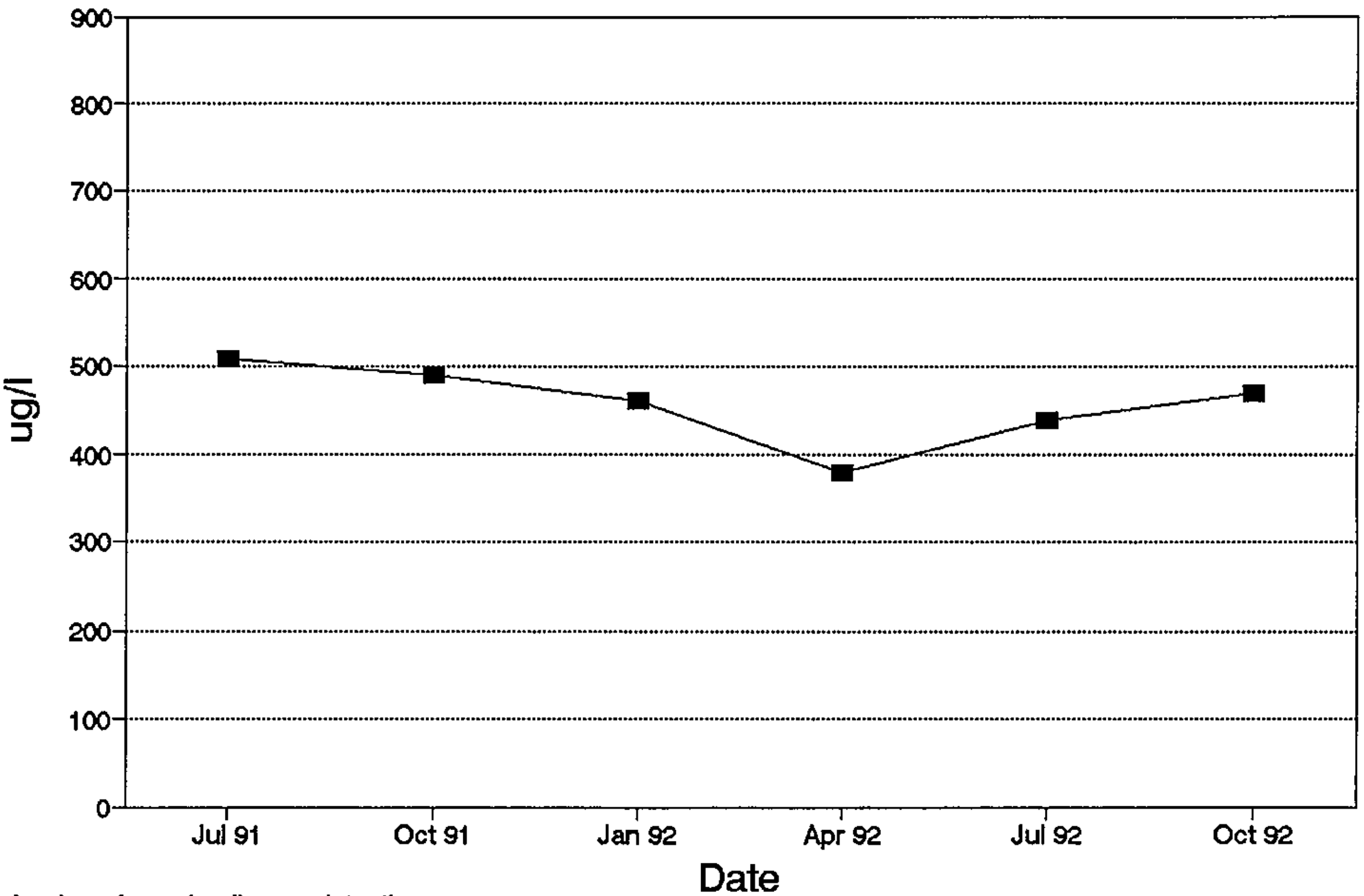
A value of zero implies no detection

Groundwater Quality Results
Manganese - MW1004P



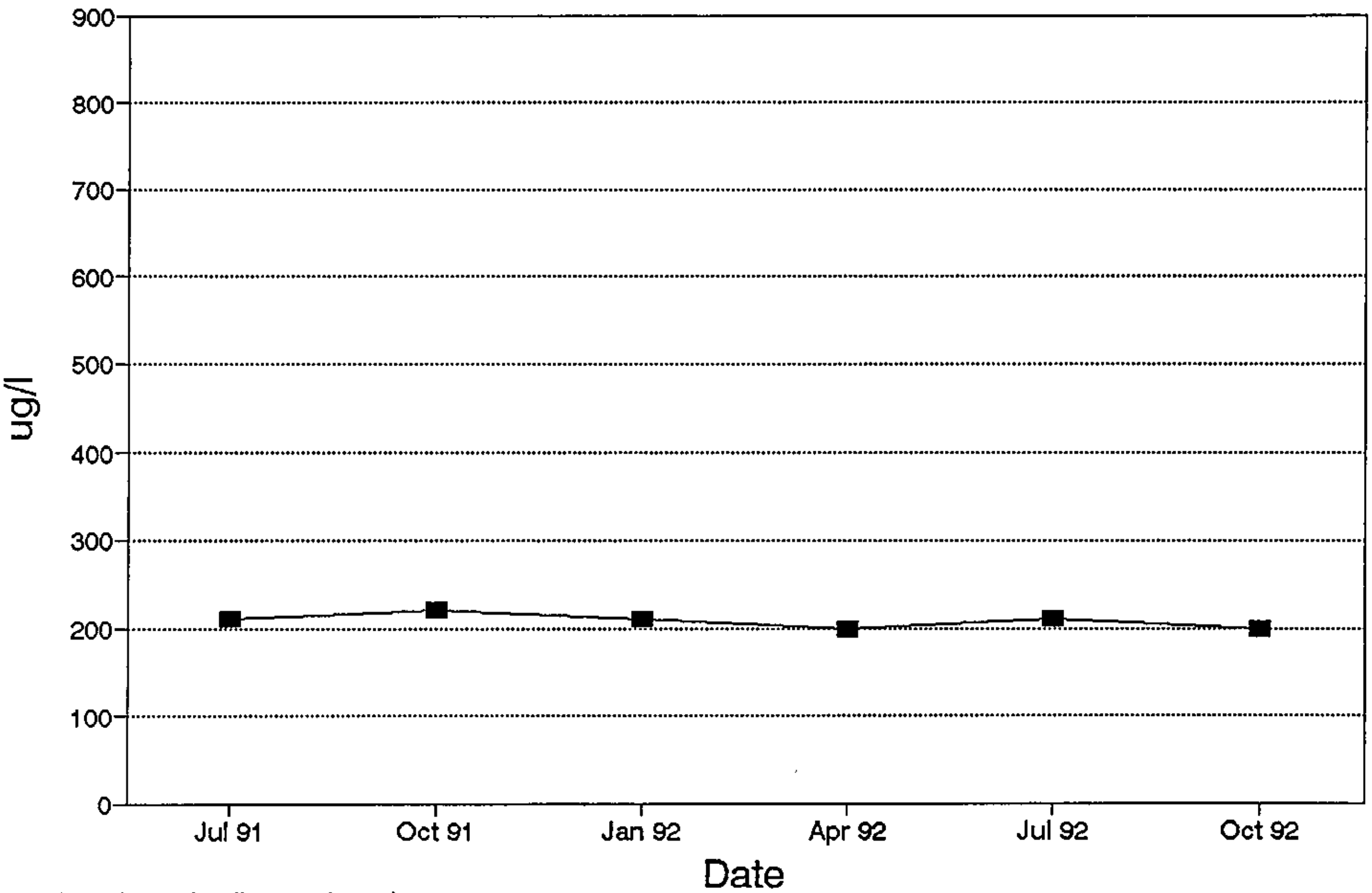
A value of zero implies no detection

Groundwater Quality Results
Manganese - MW1005



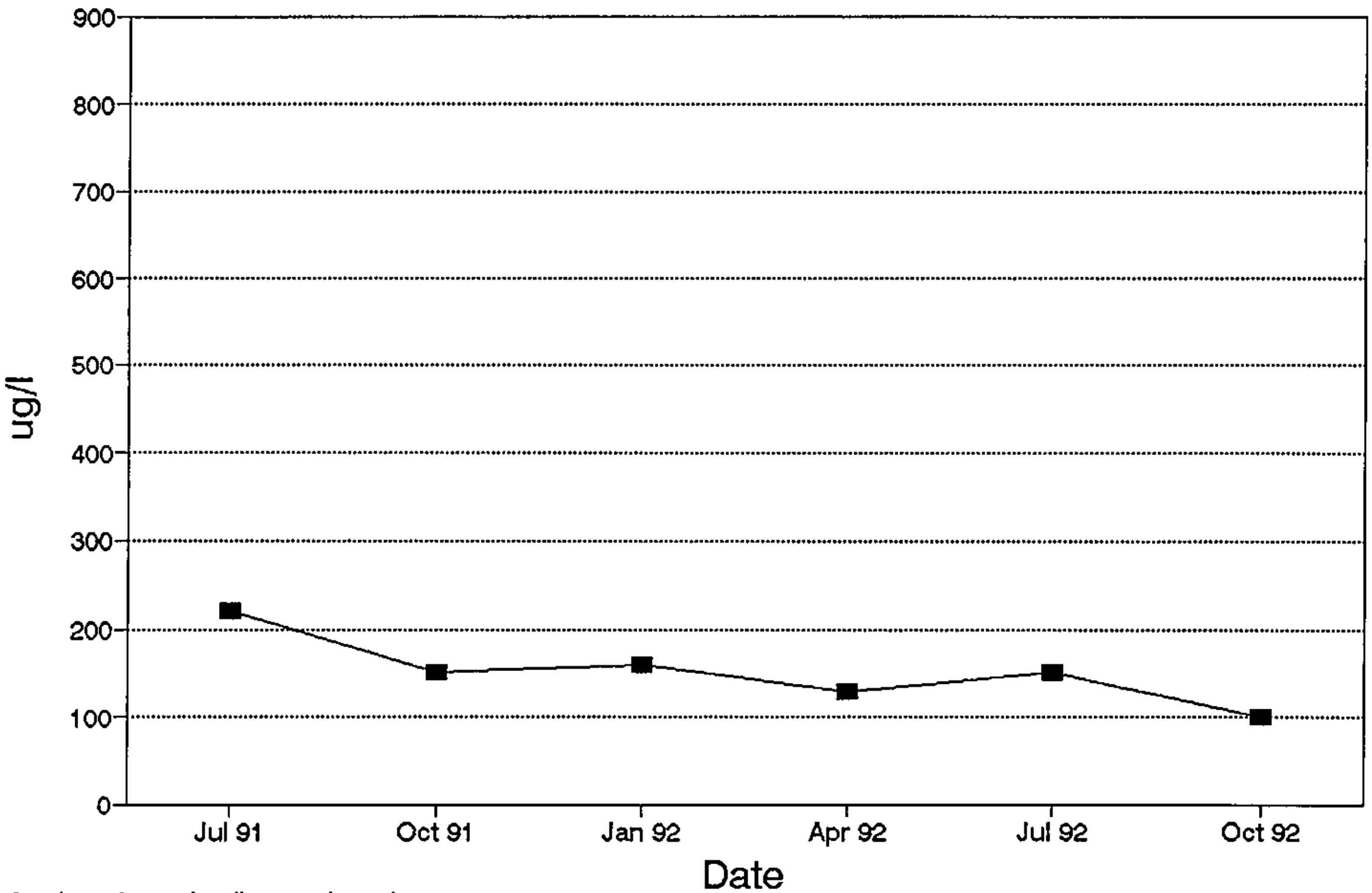
A value of zero implies no detection

Groundwater Quality Results
Manganese - MW1005S



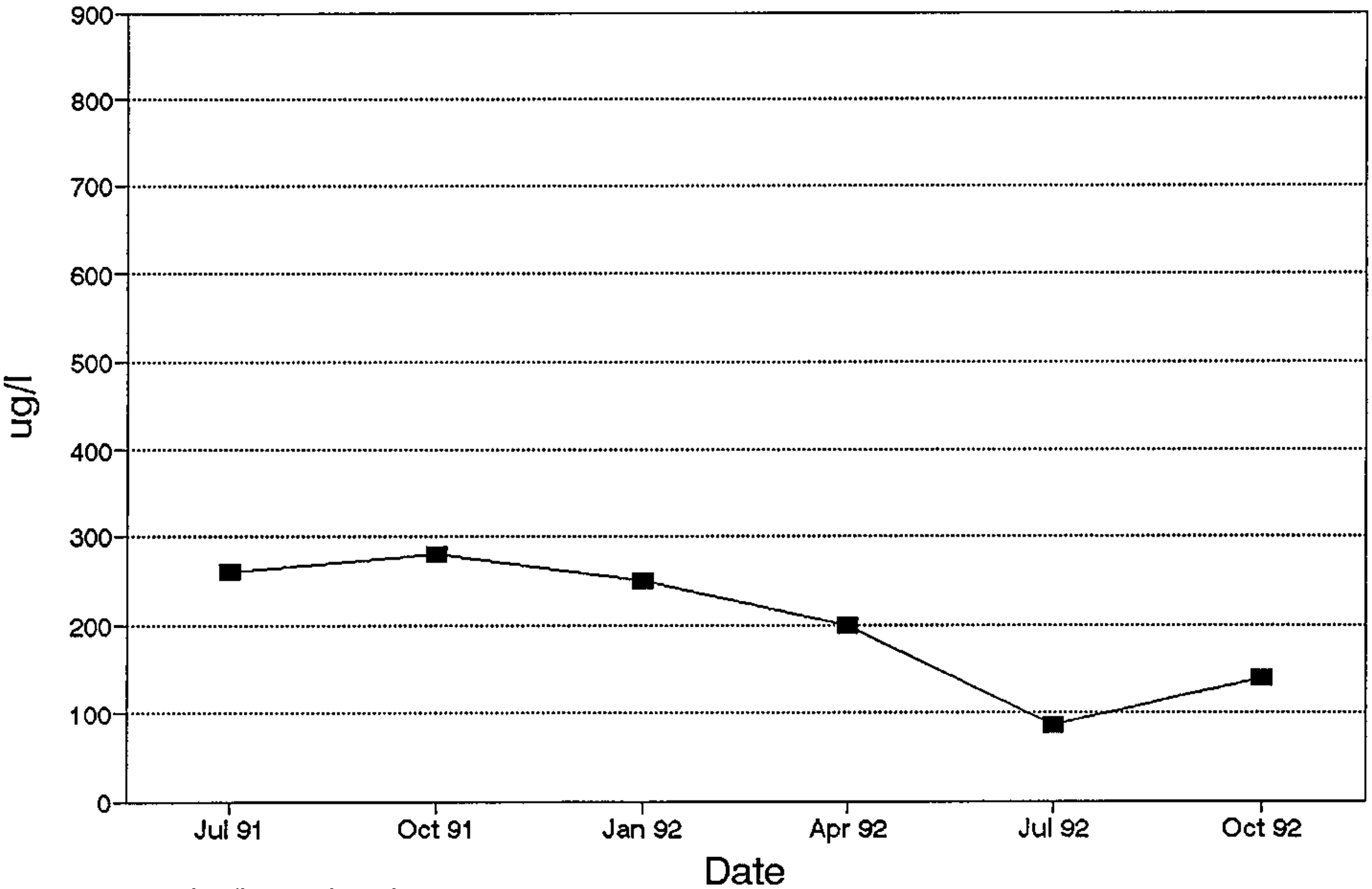
A value of zero implies no detection

Groundwater Quality Results
Manganese - MW1005P



A value of zero implies no detection

Groundwater Quality Results
Manganese - MW1010P

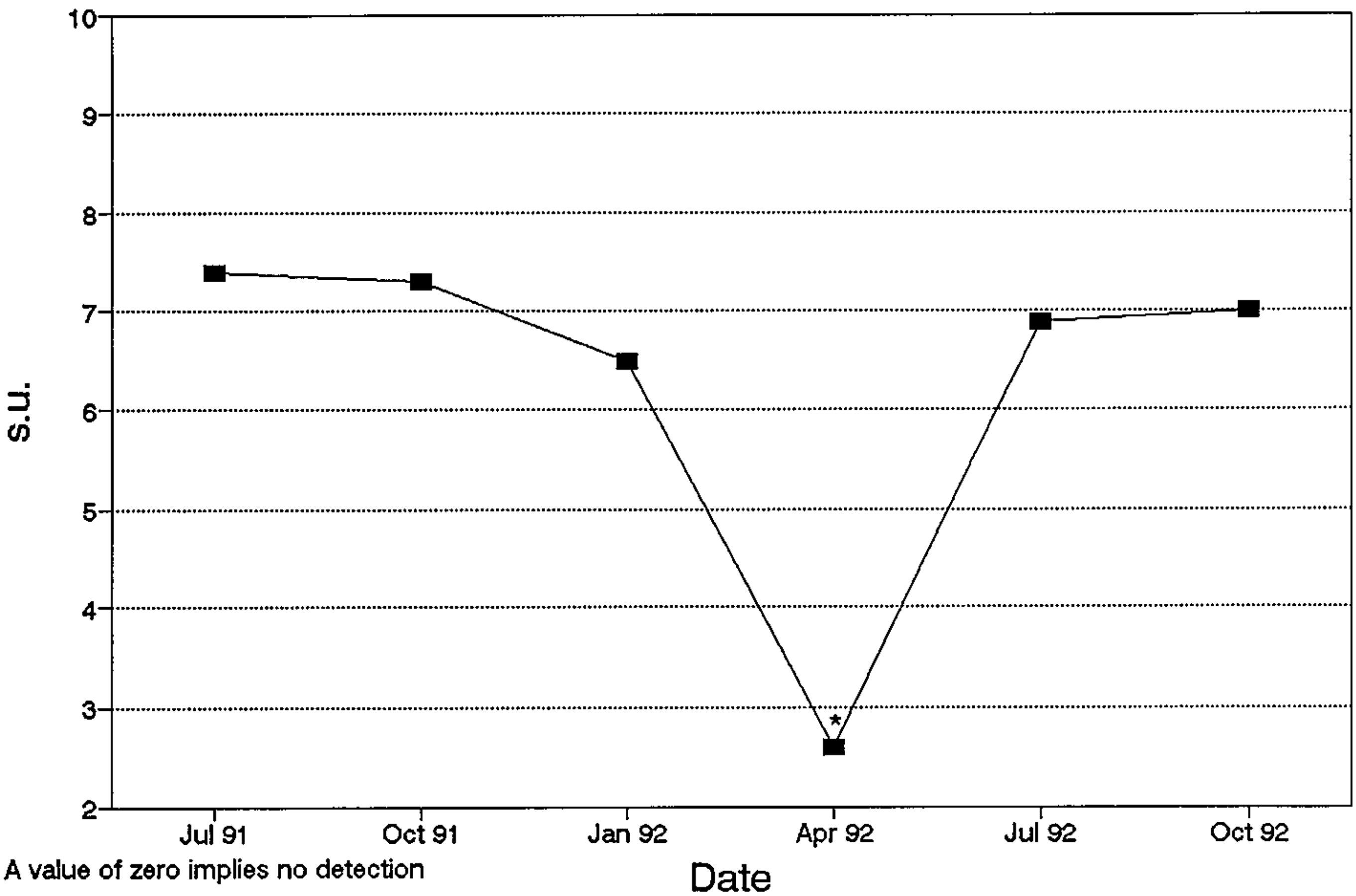


A value of zero implies no detection

Groundwater Quality Graphs
pH

Groundwater Quality Results

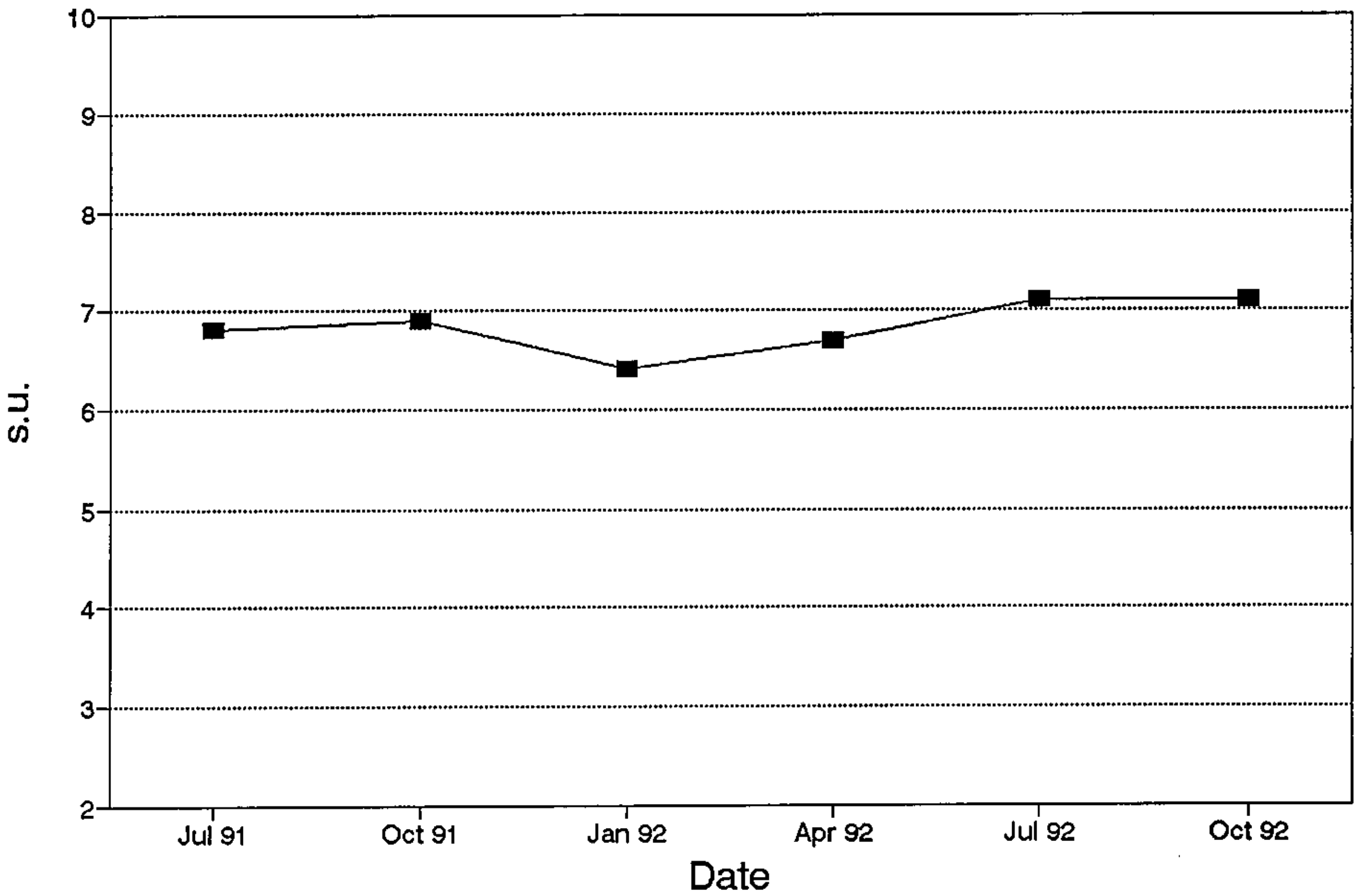
pH - MW1000



A value of zero implies no detection

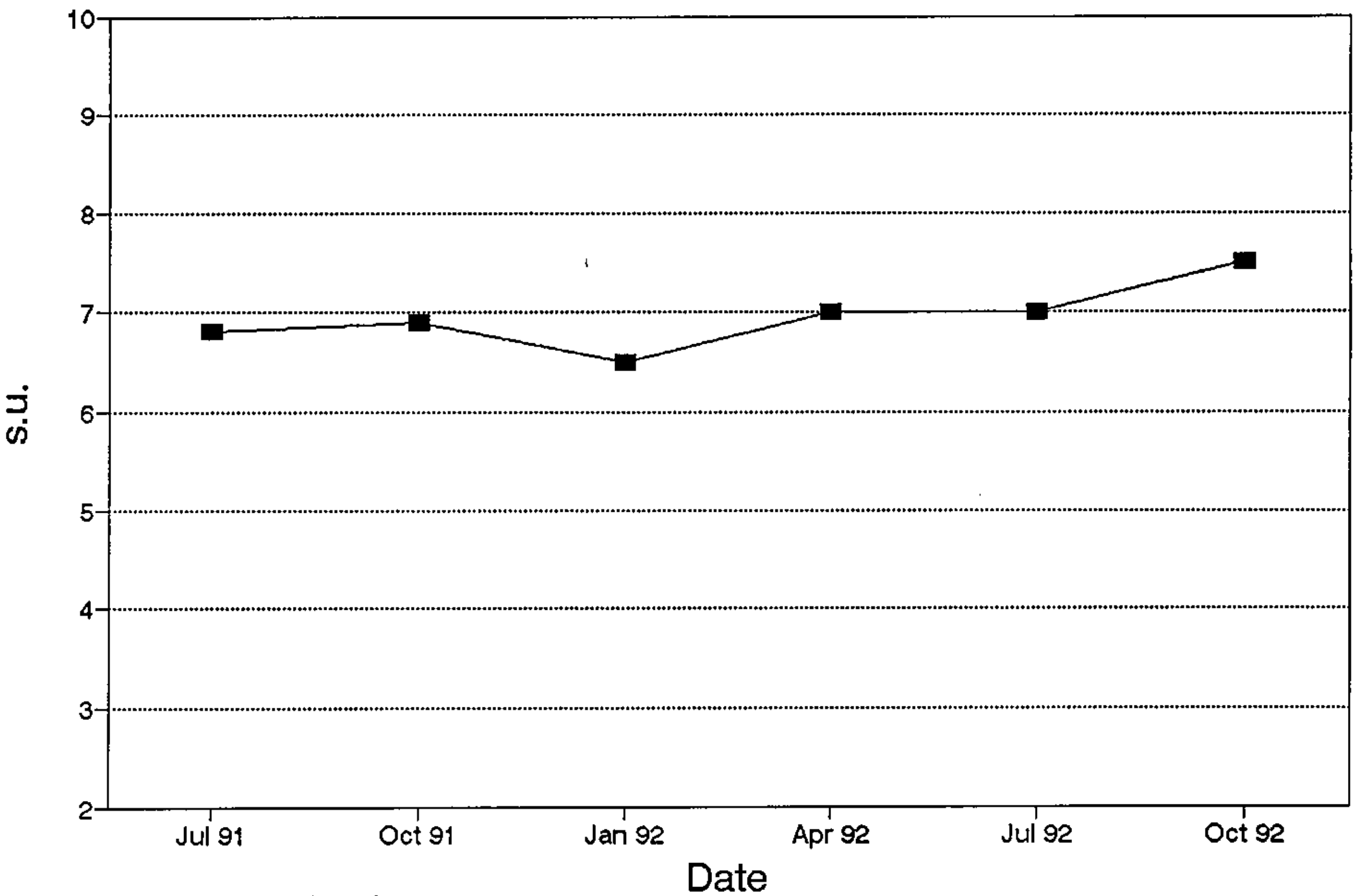
* Results of April 1992 were not considered representative. See section 4.1.3.

Groundwater Quality Results
pH - MW1000P



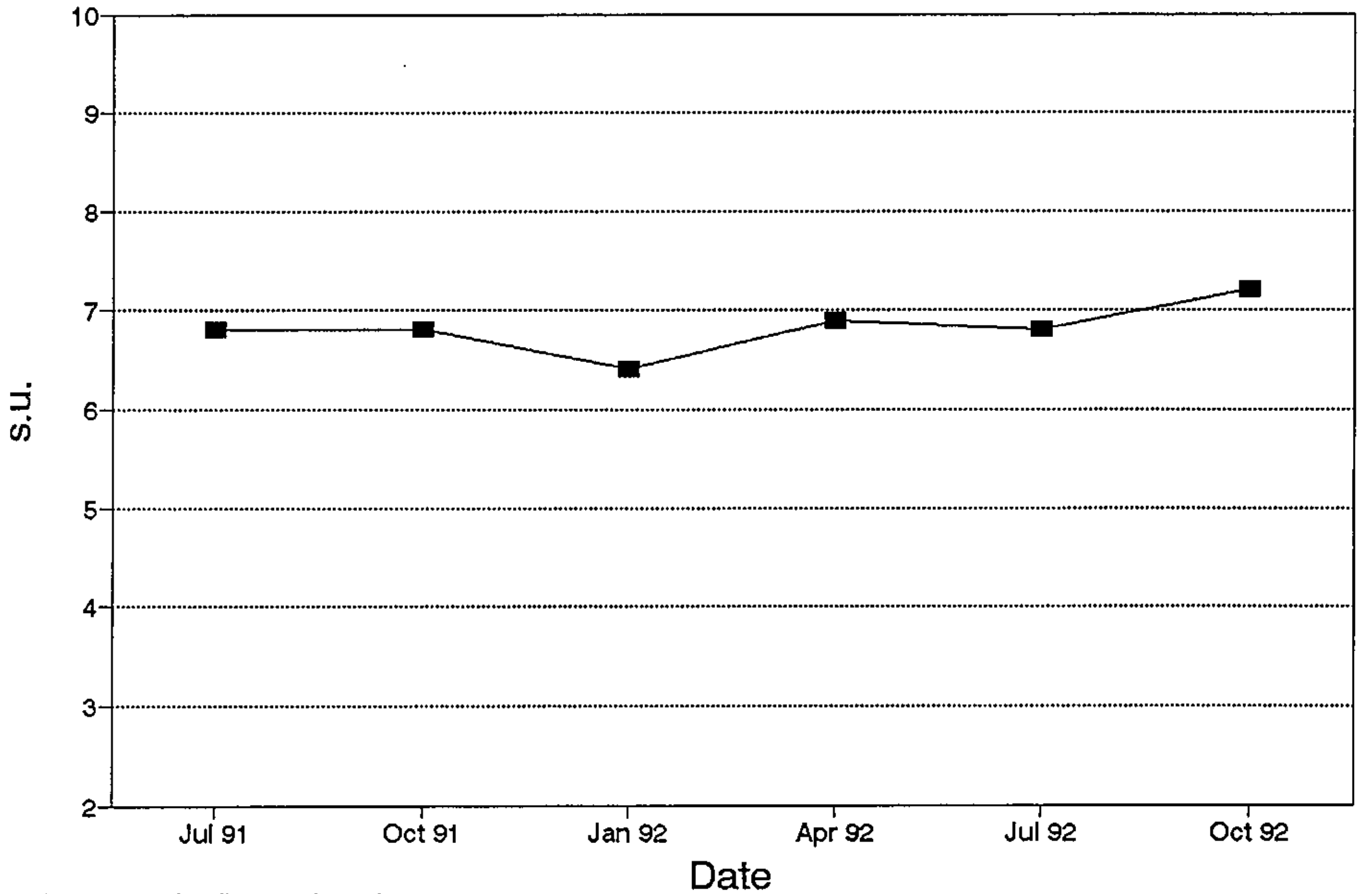
A value of zero implies no detection

Groundwater Quality Results
pH - MW1002



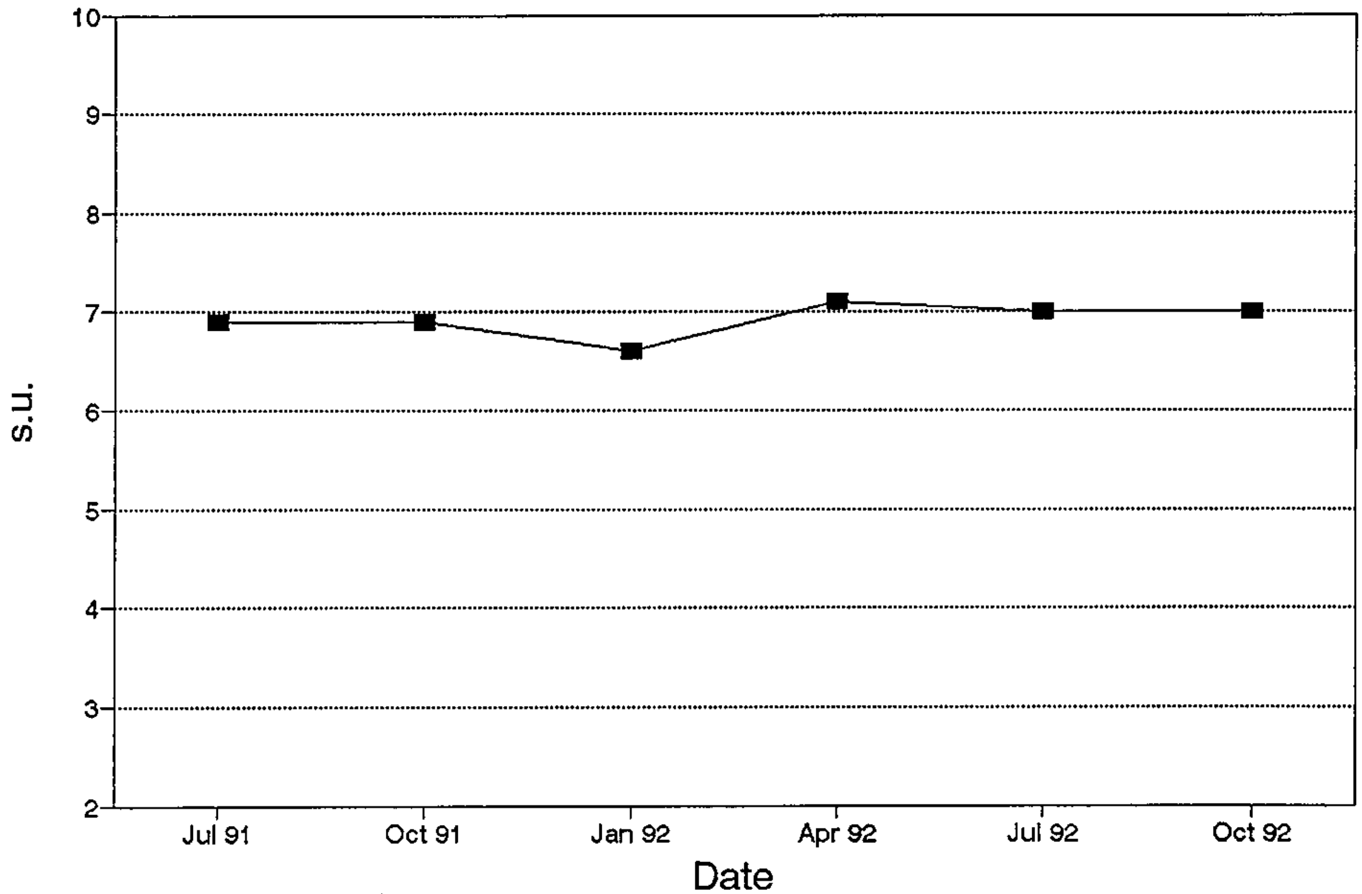
A value of zero implies no detection

Groundwater Quality Results
pH - MW1002G



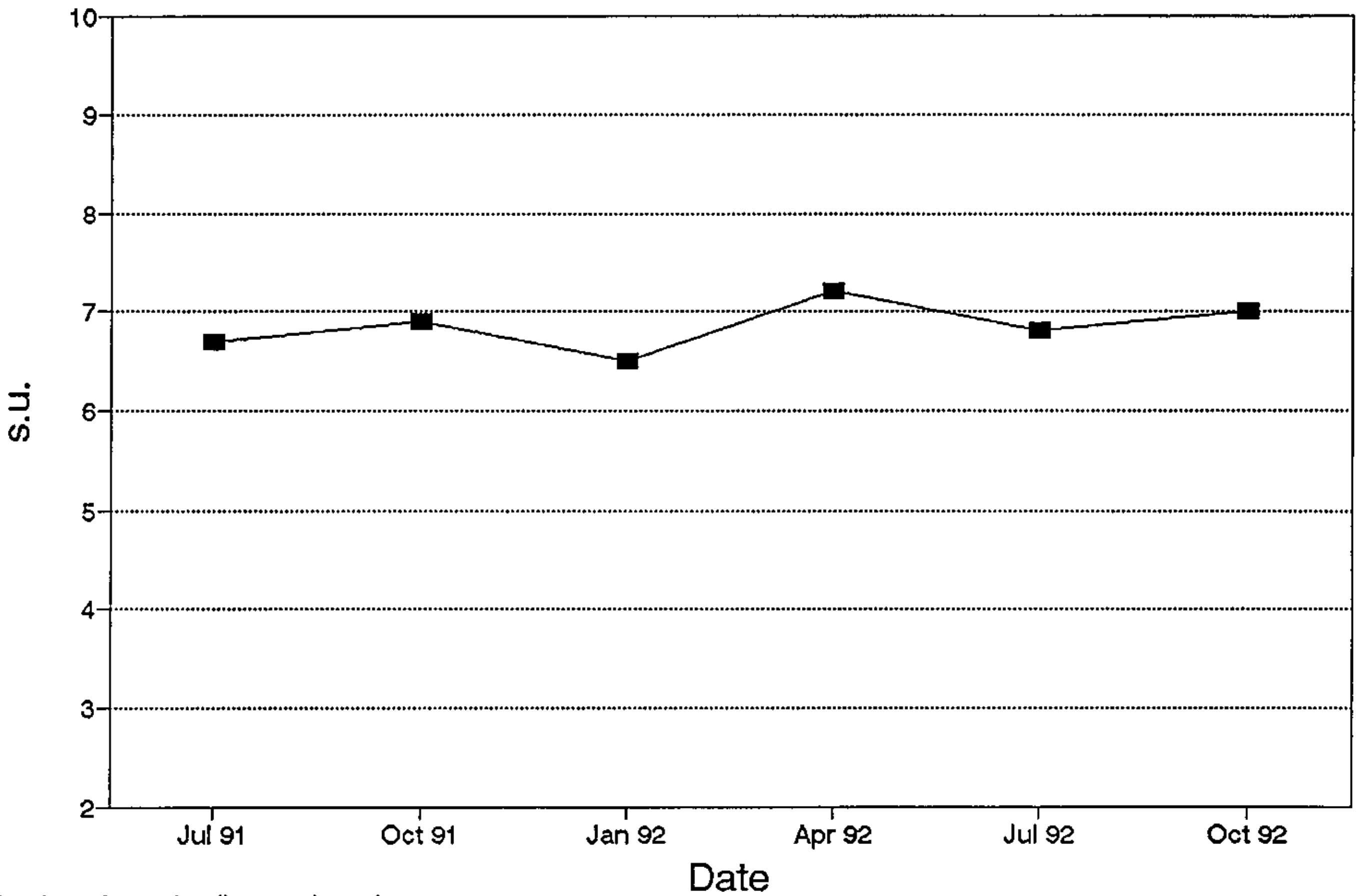
A value of zero implies no detection

Groundwater Quality Results
pH - MW1004



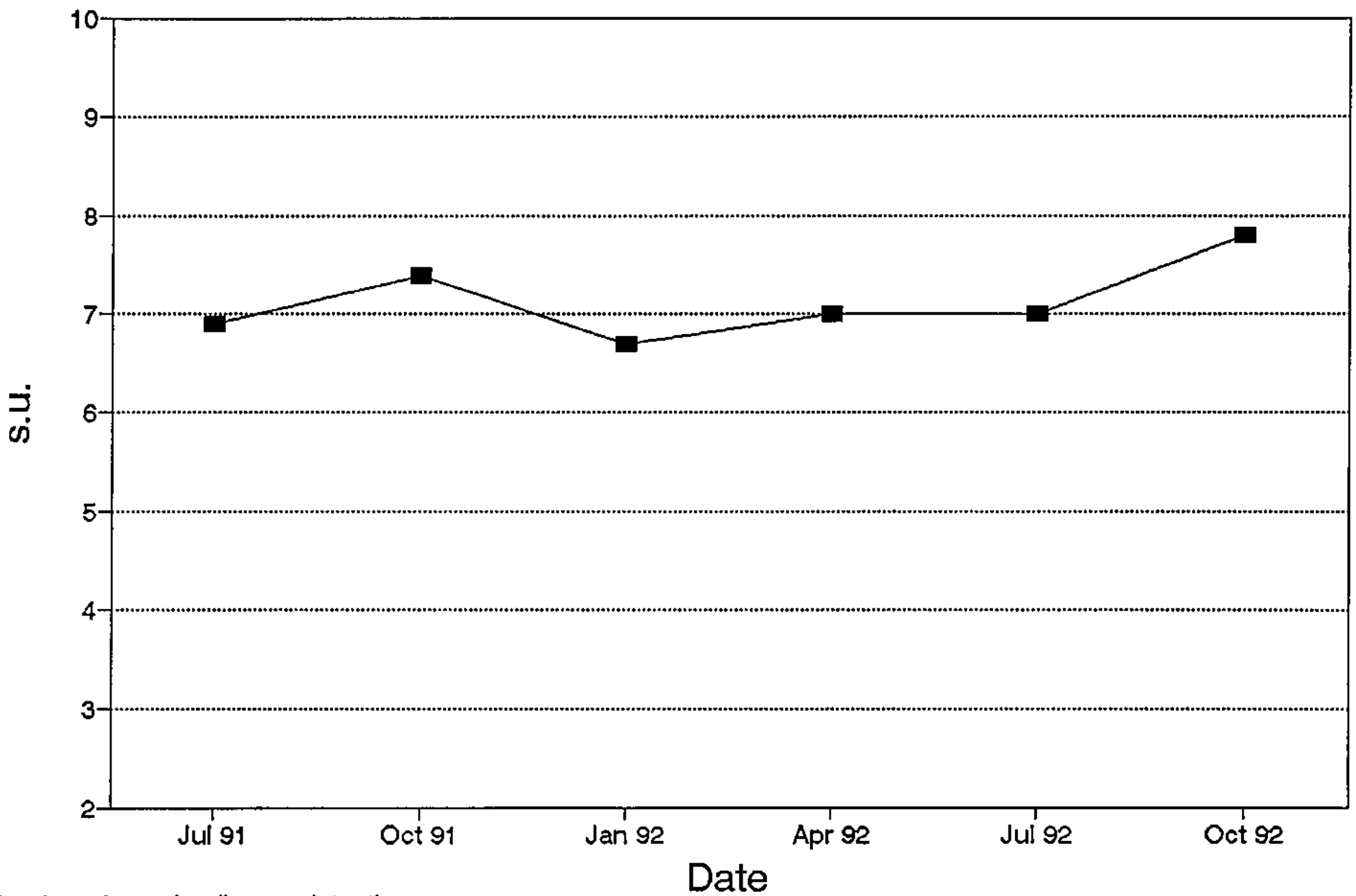
A value of zero implies no detection

Groundwater Quality Results
pH - MW1004S



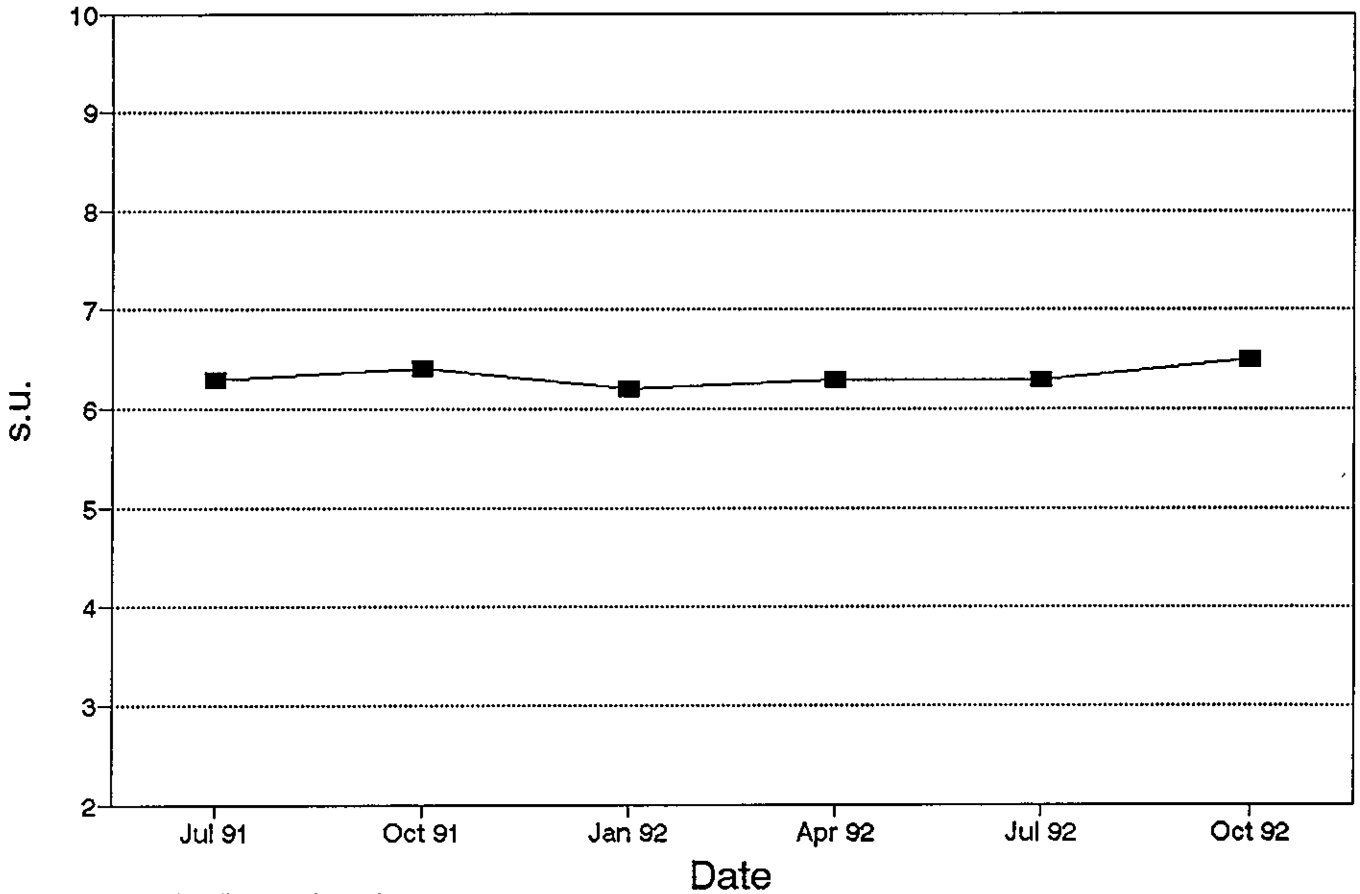
A value of zero implies no detection

Groundwater Quality Results
pH - MW1004P



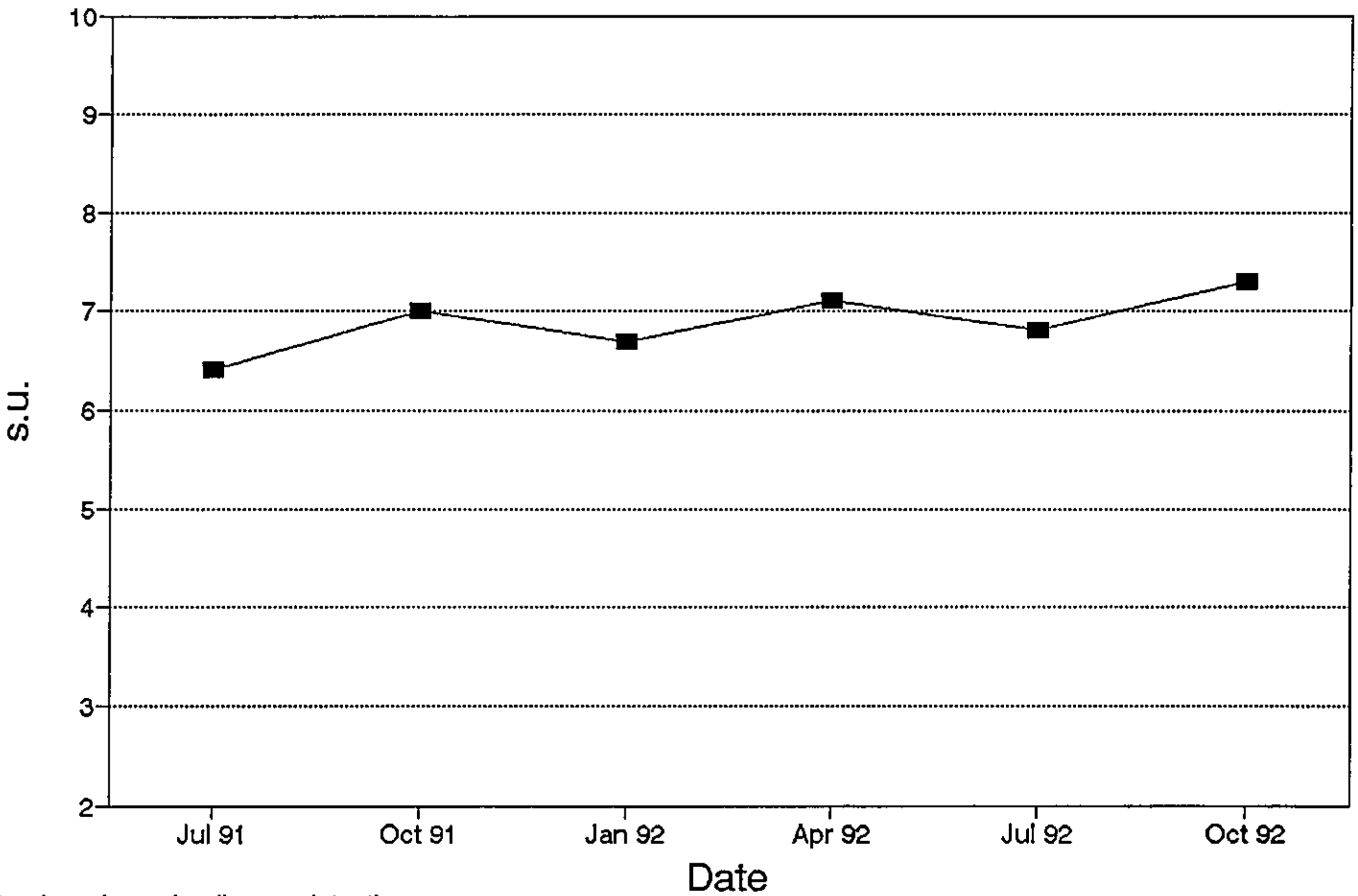
A value of zero implies no detection

Groundwater Quality Results
pH - MW1005



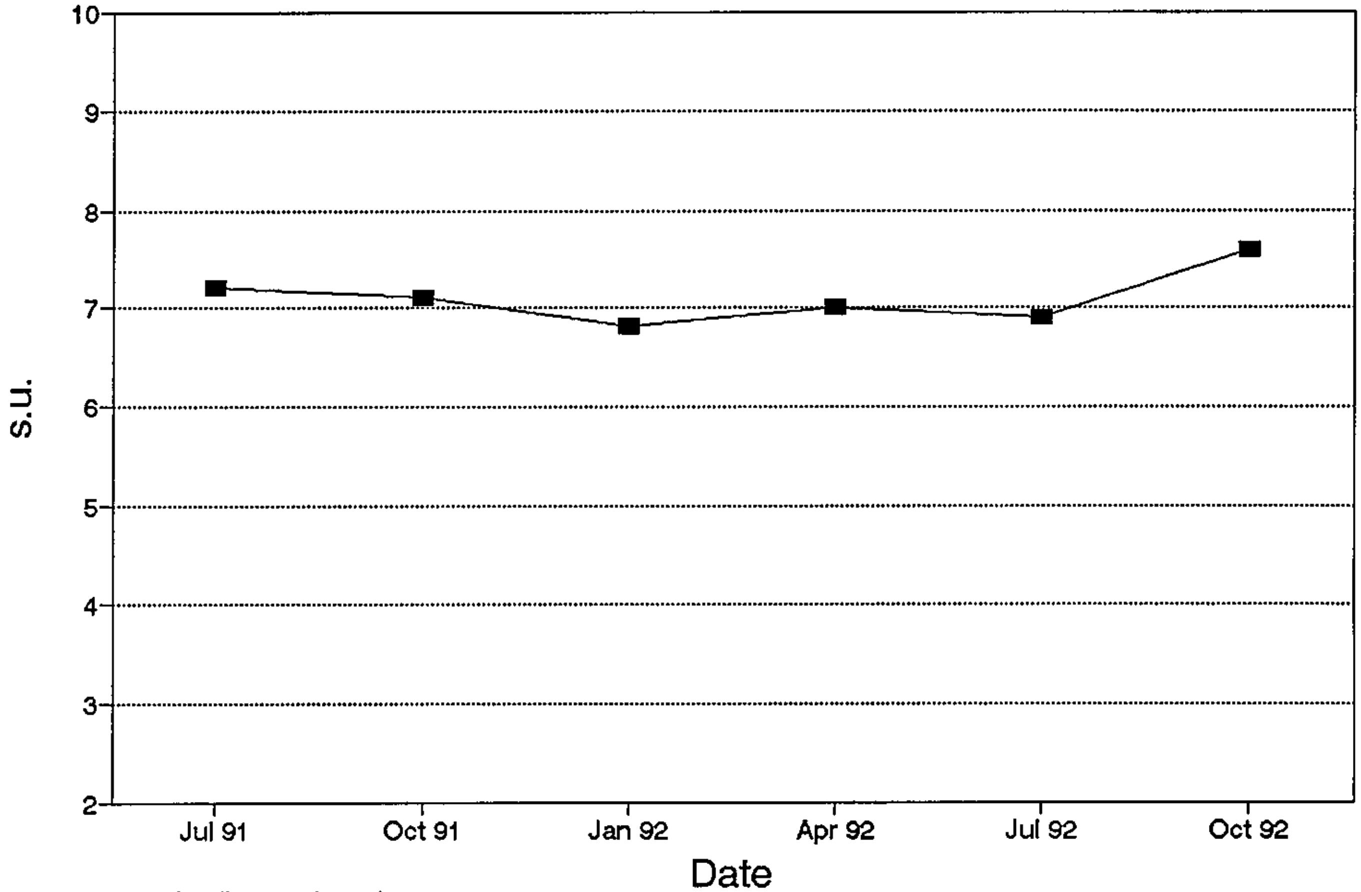
A value of zero implies no detection

Groundwater Quality Results
pH - MW1005S

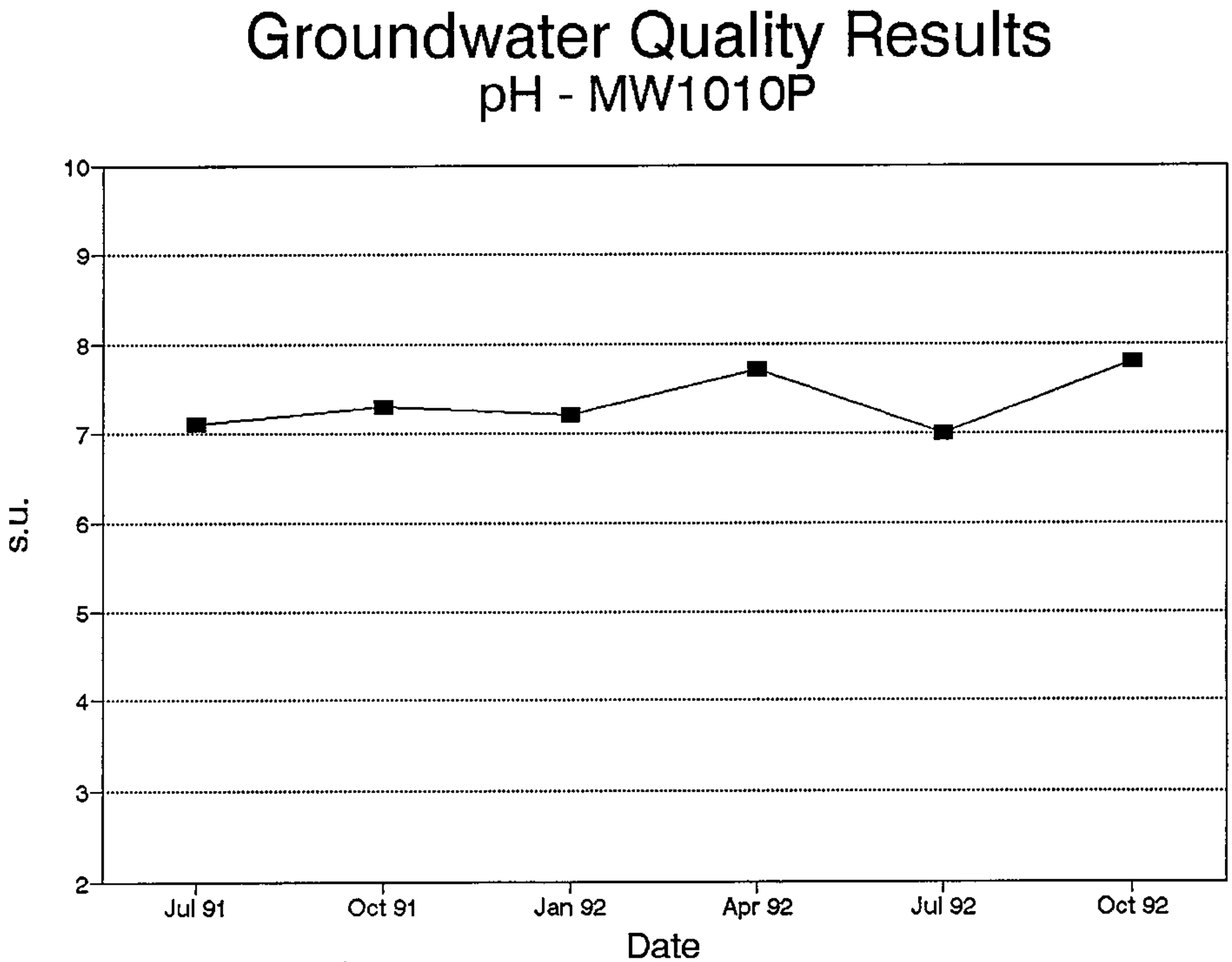


A value of zero implies no detection

Groundwater Quality Results
pH - MW1005P



A value of zero implies no detection

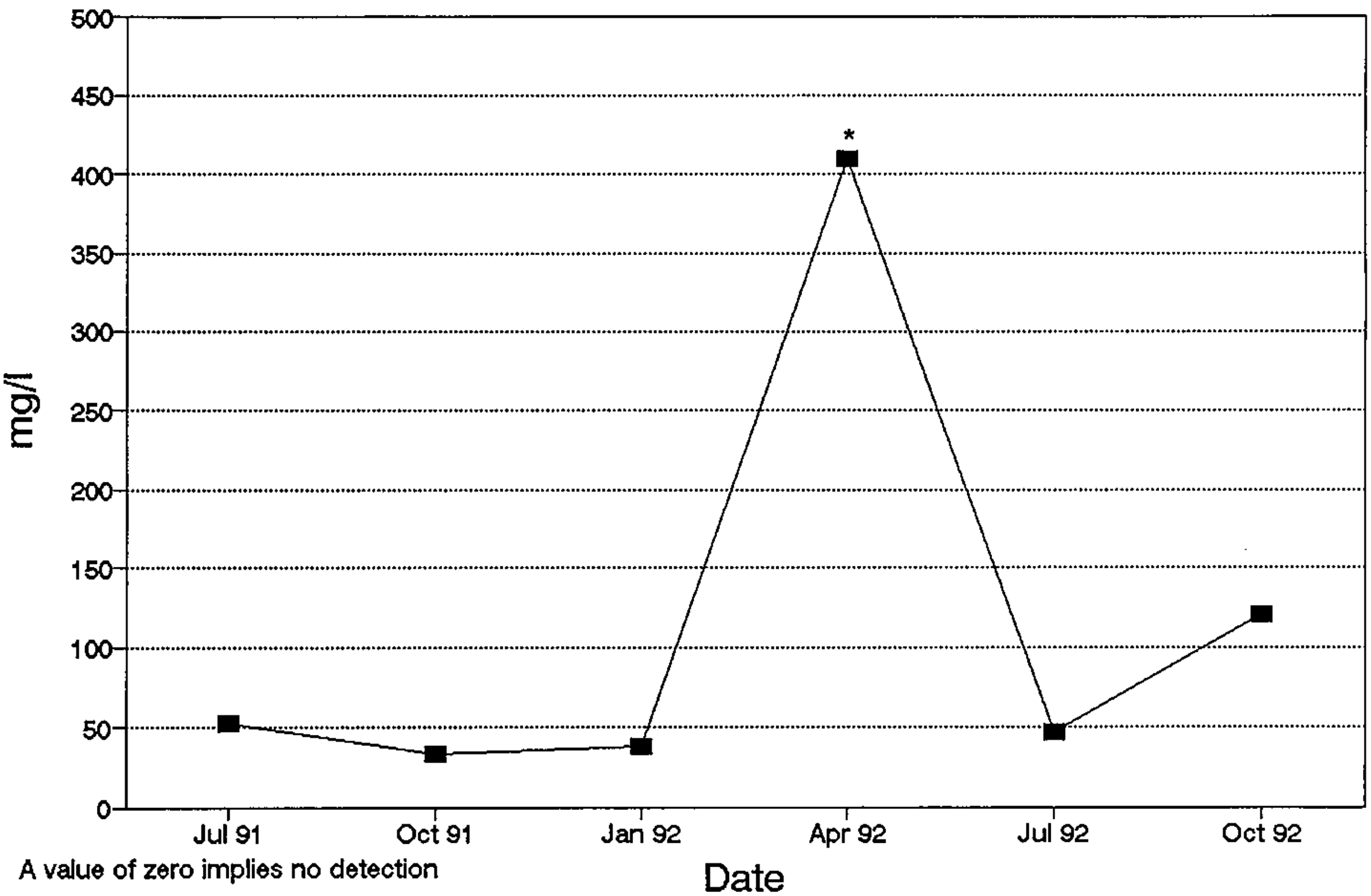


A value of zero implies no detection

Groundwater Quality Graphs
Sulfate

Groundwater Quality Results

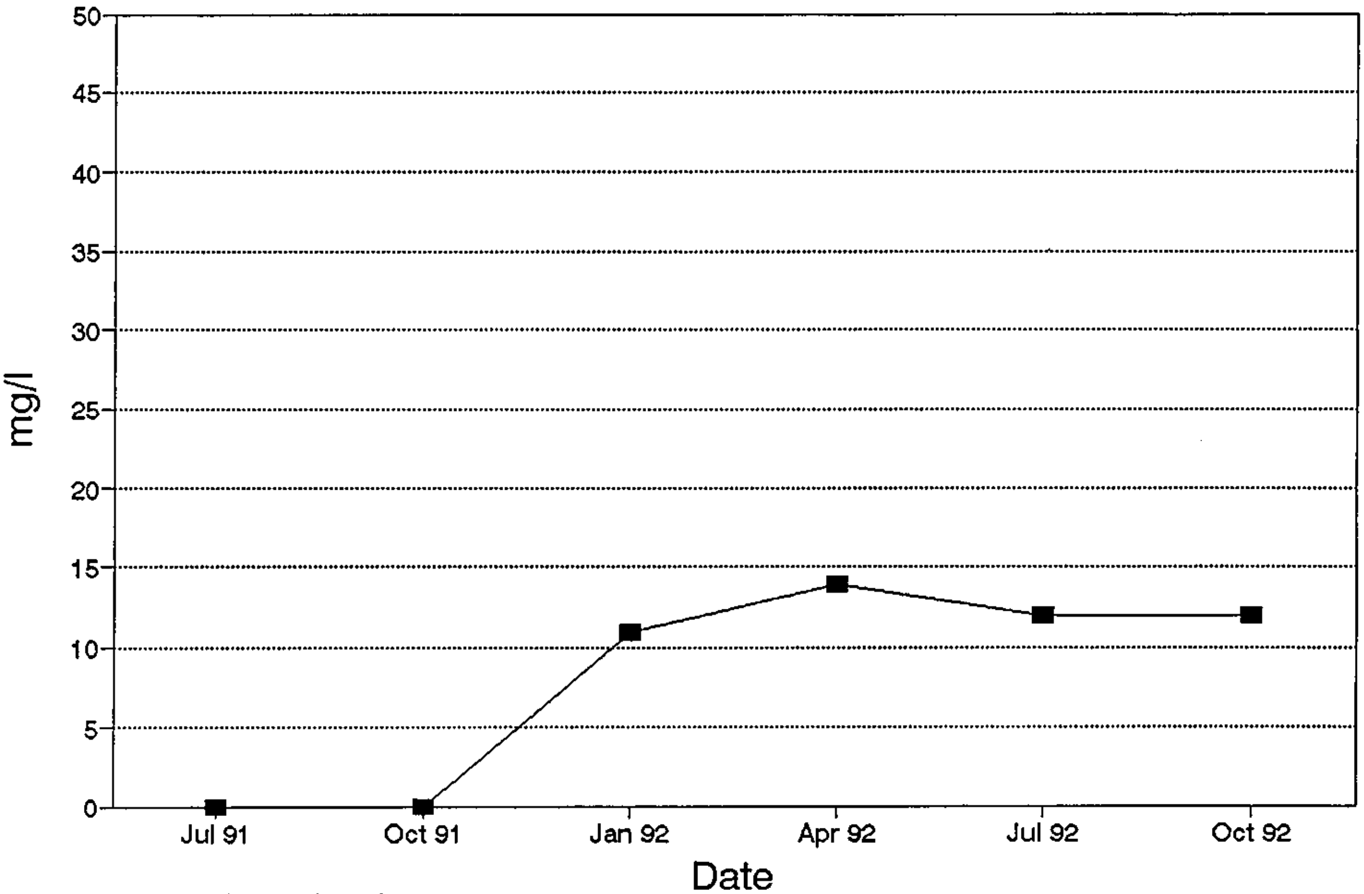
Sulfate - MW1000



A value of zero implies no detection

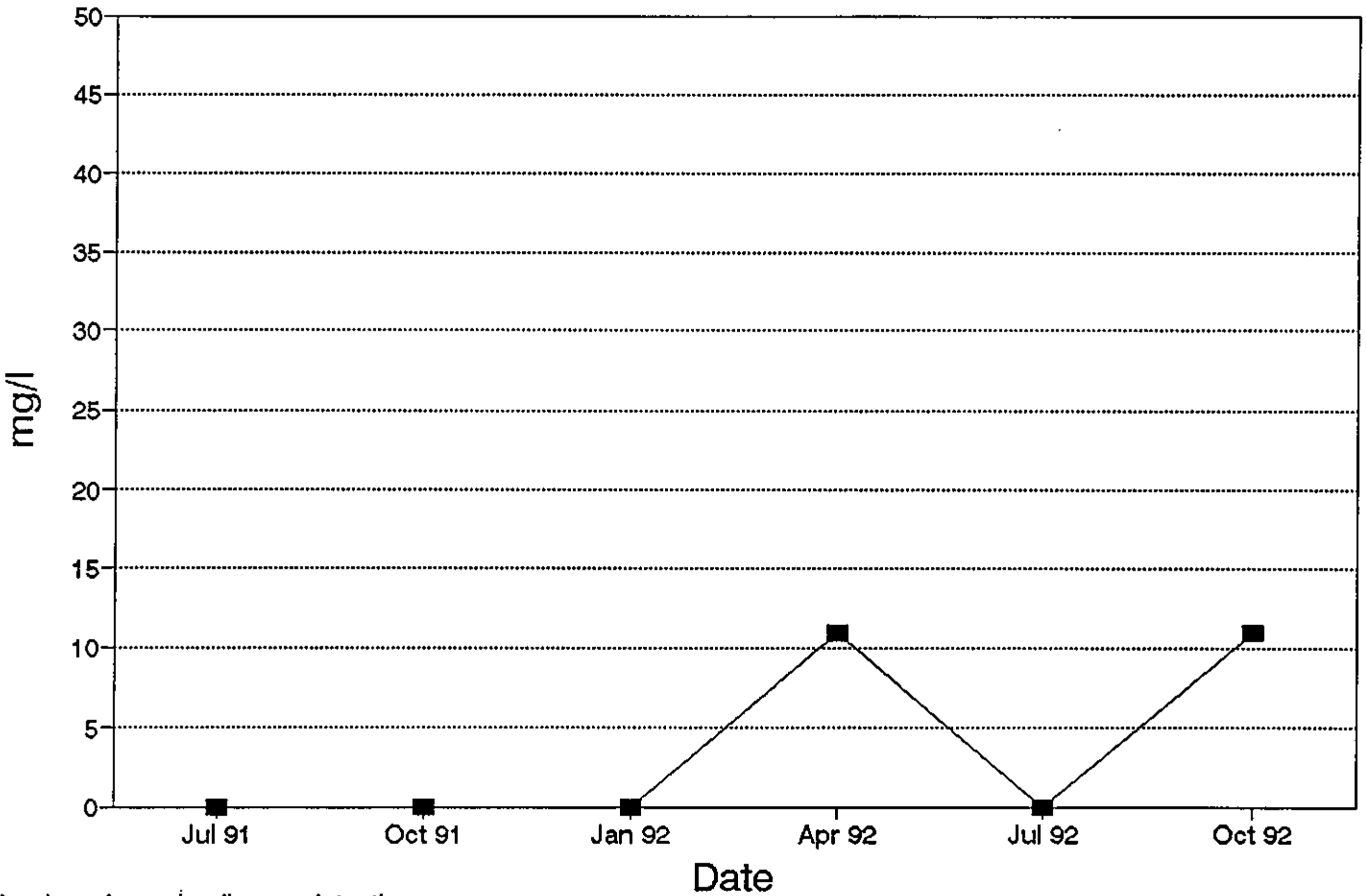
* Results of April 1992 were not considered representative. See section 4.1.3.

Groundwater Quality Results
Sulfate - MW1000P



A value of zero implies no detection

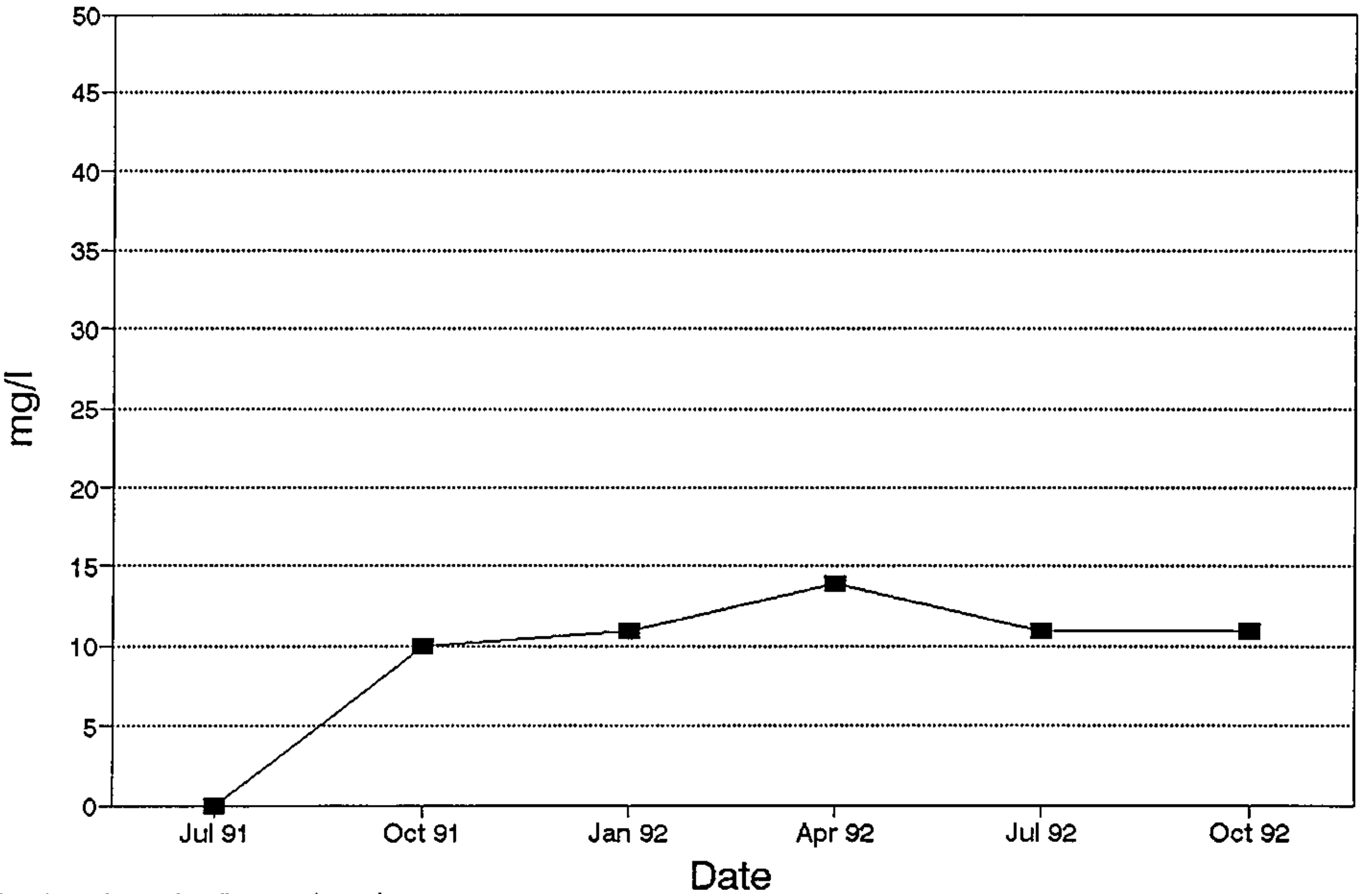
Groundwater Quality Results
Sulfate - MW1002



A value of zero implies no detection

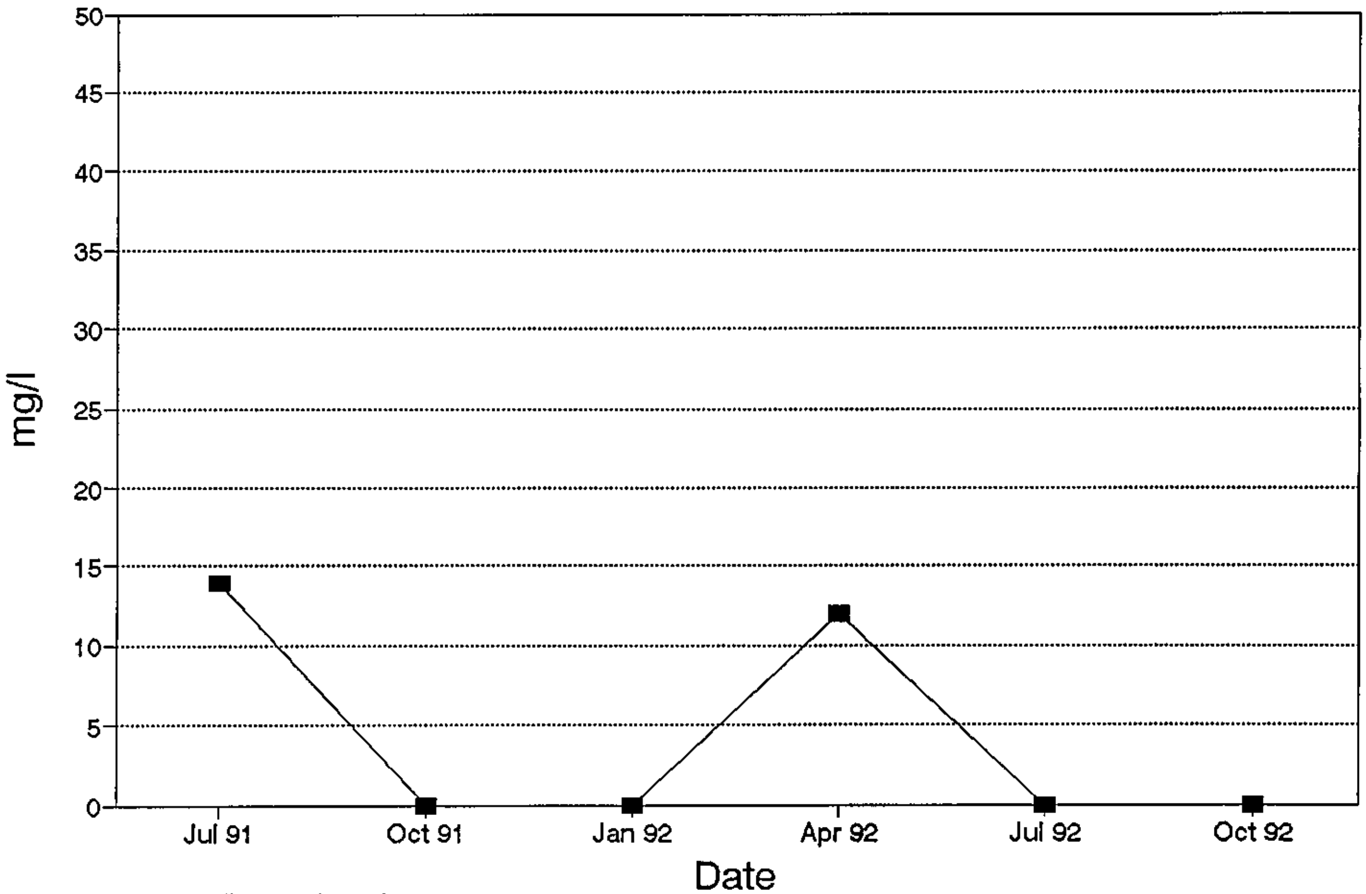
Groundwater Quality Results

Sulfate - MW1002G

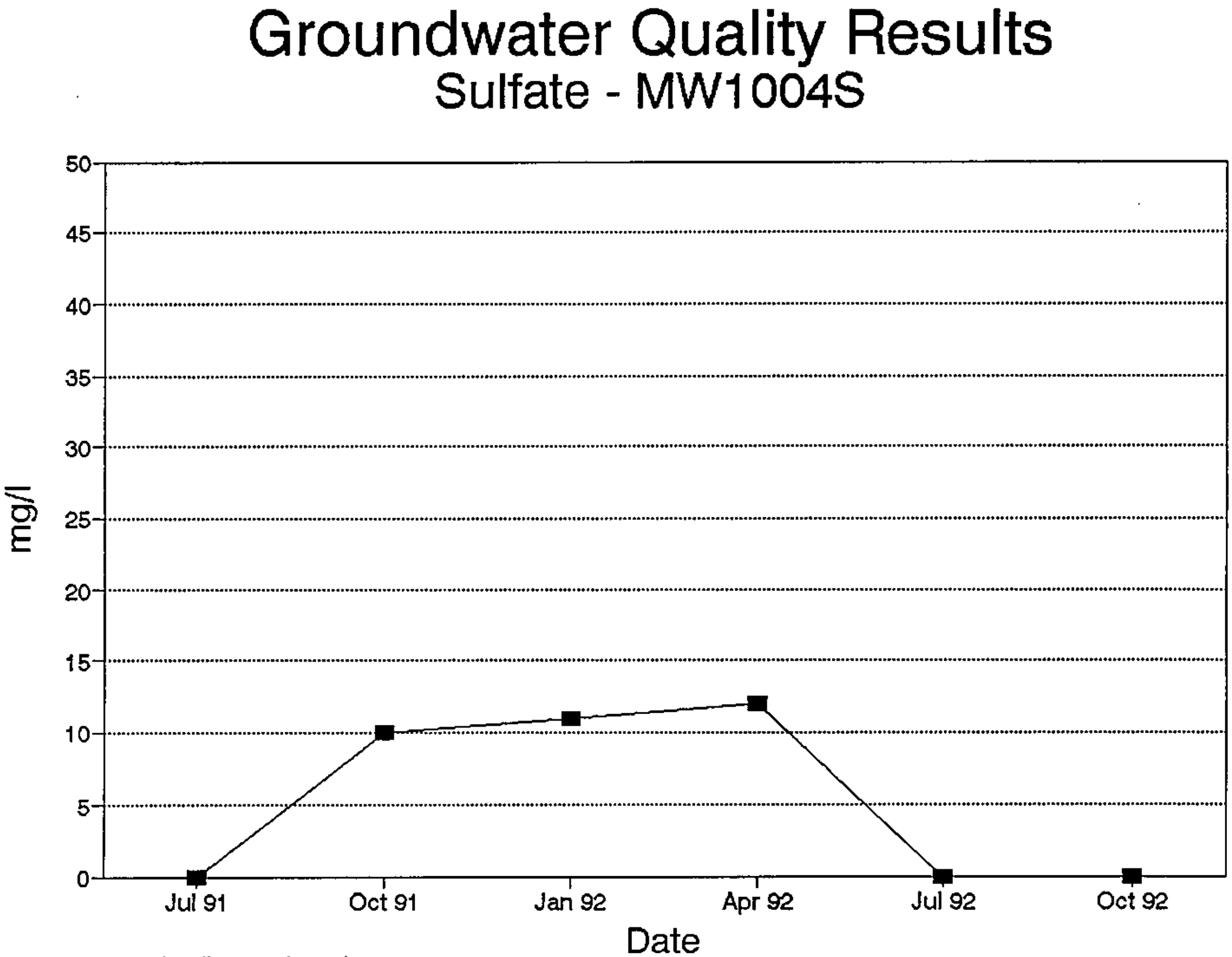


A value of zero implies no detection

Groundwater Quality Results
Sulfate - MW1004



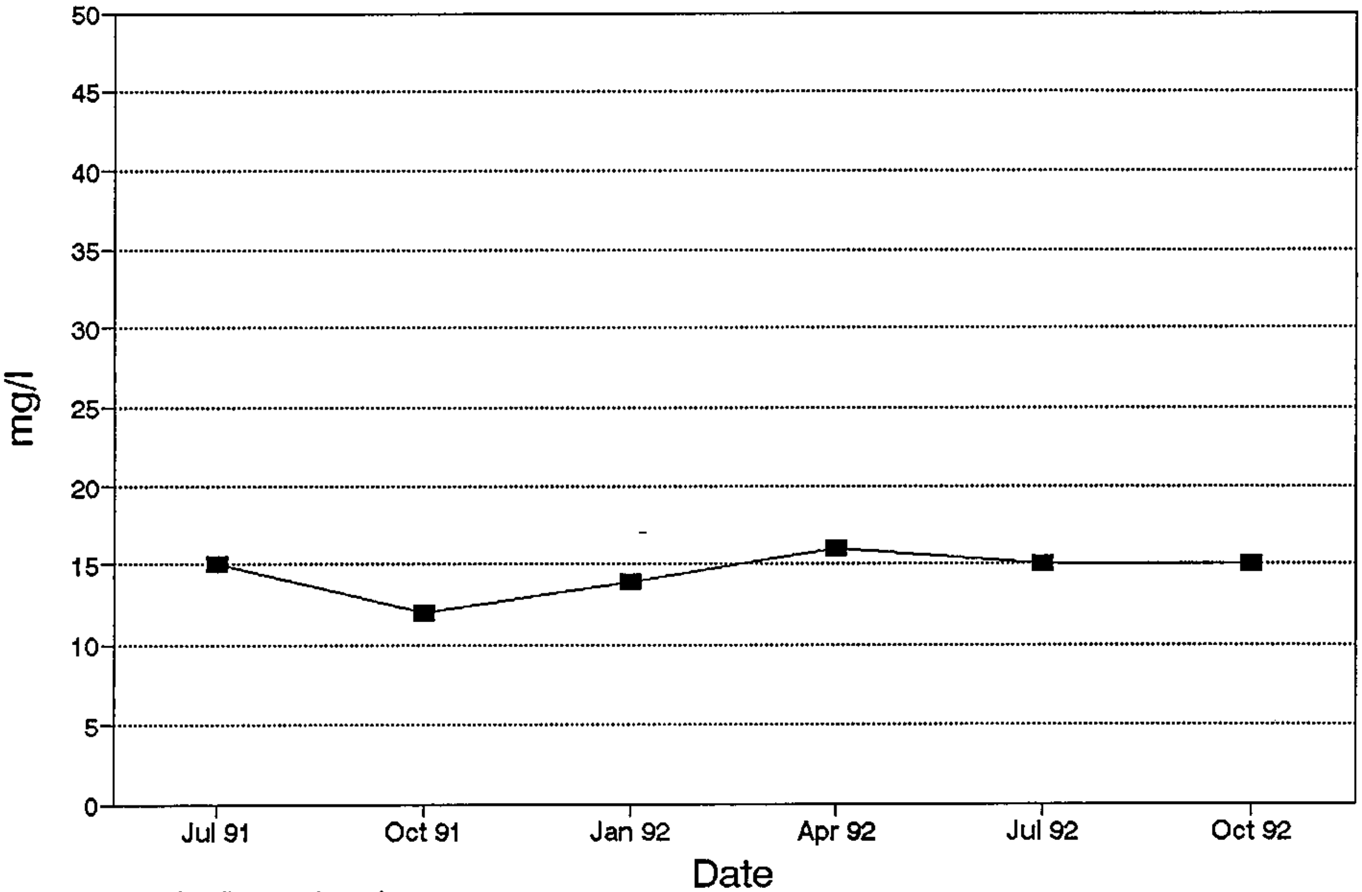
A value of zero implies no detection



A value of zero implies no detection

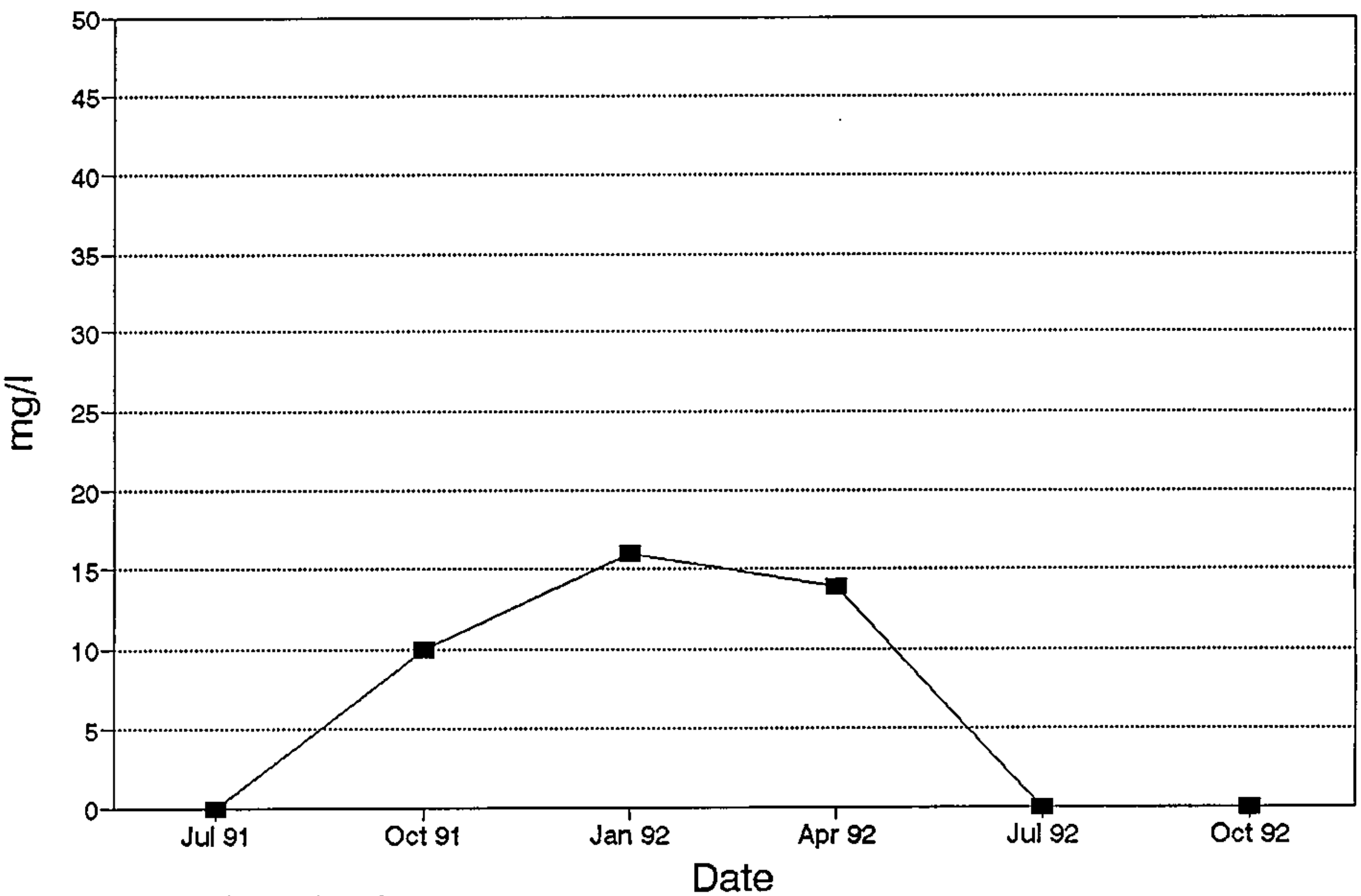
Groundwater Quality Results

Sulfate - MW1005



A value of zero implies no detection

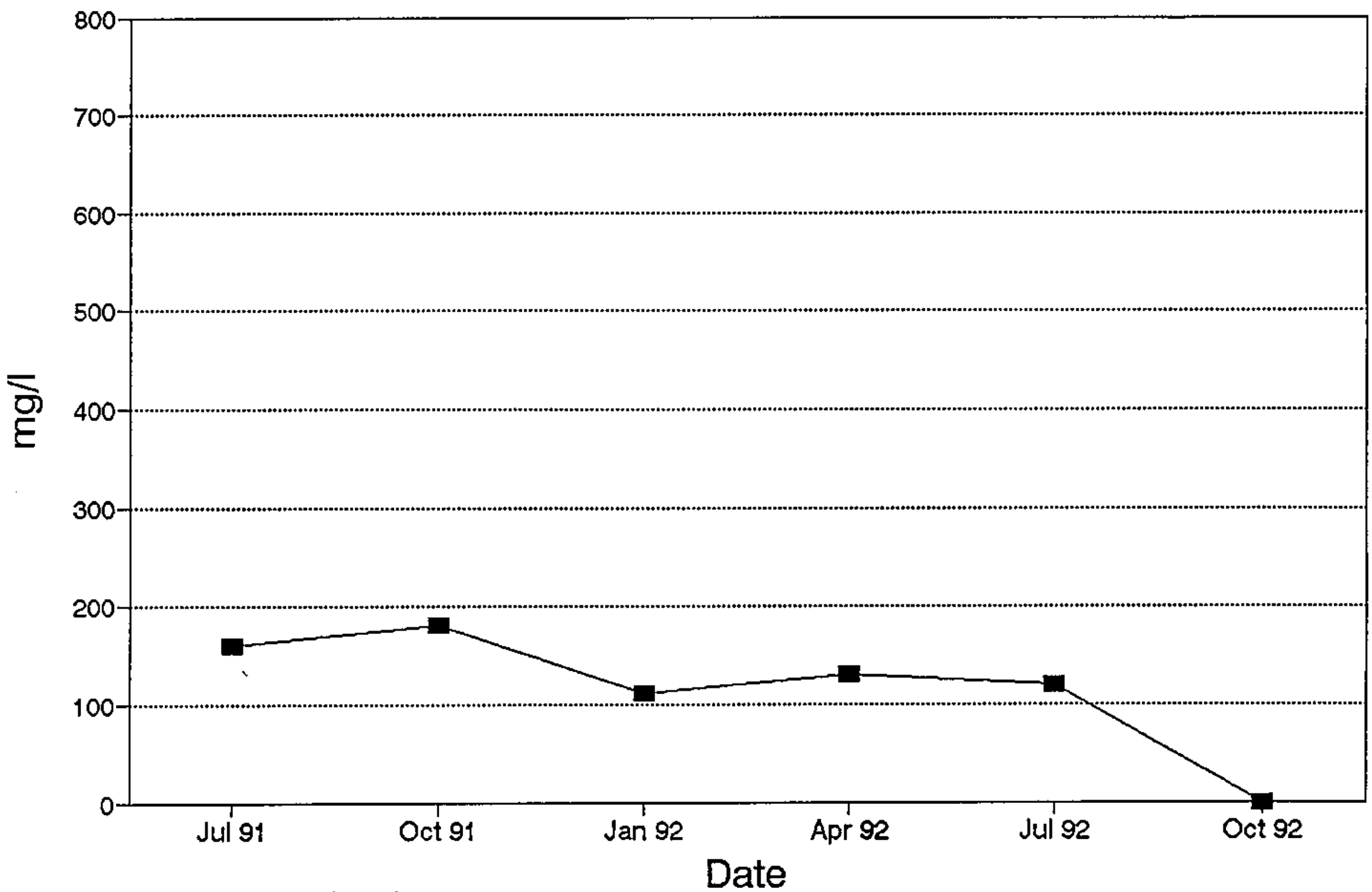
Groundwater Quality Results
Sulfate - MW1010P



A value of zero implies no detection

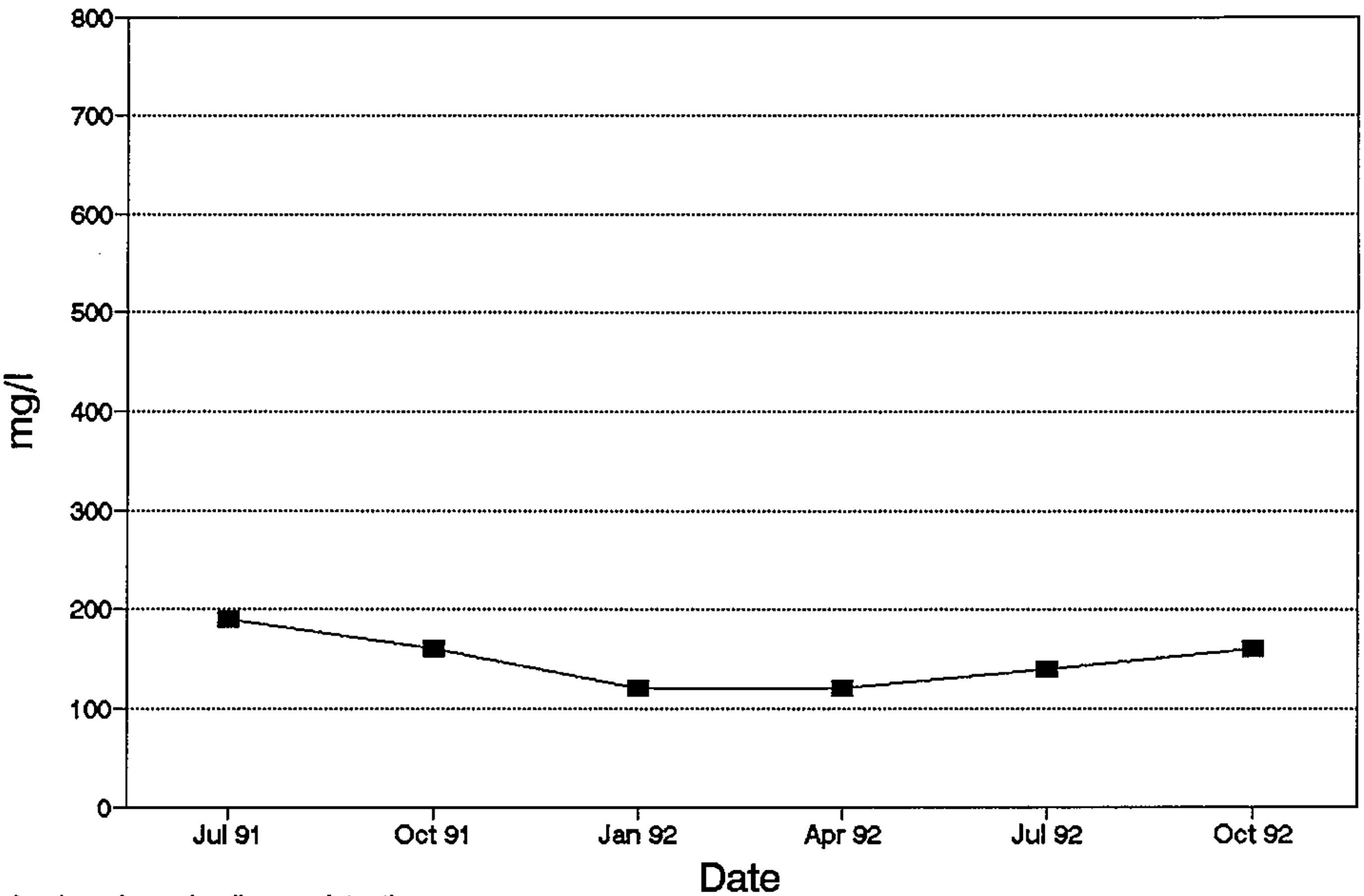
Groundwater Quality Graphs
Total Dissolved Solids

Groundwater Quality Results
TDS - MW1000



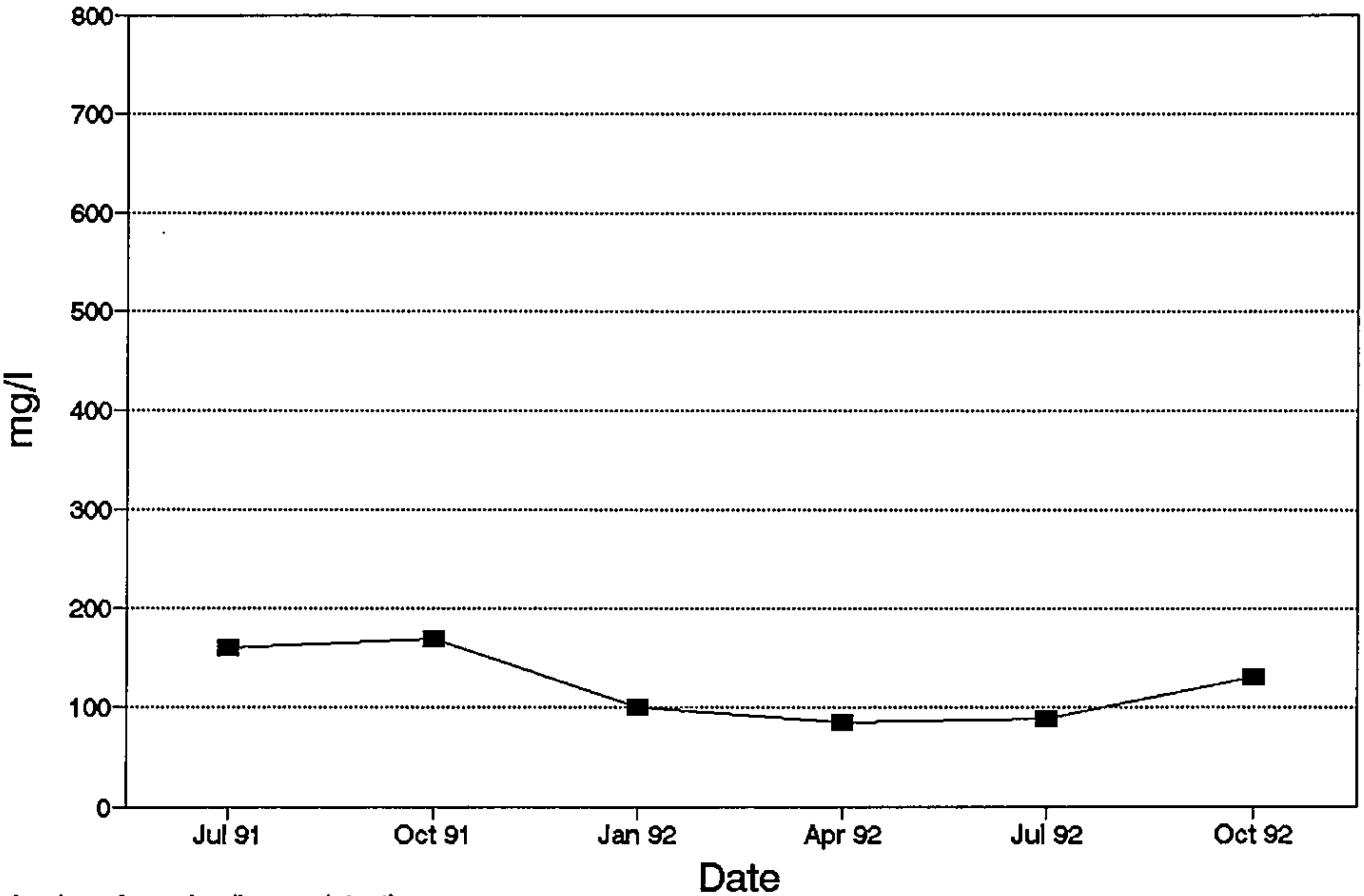
A value of zero implies no detection

Groundwater Quality Results
TDS - MW1000P



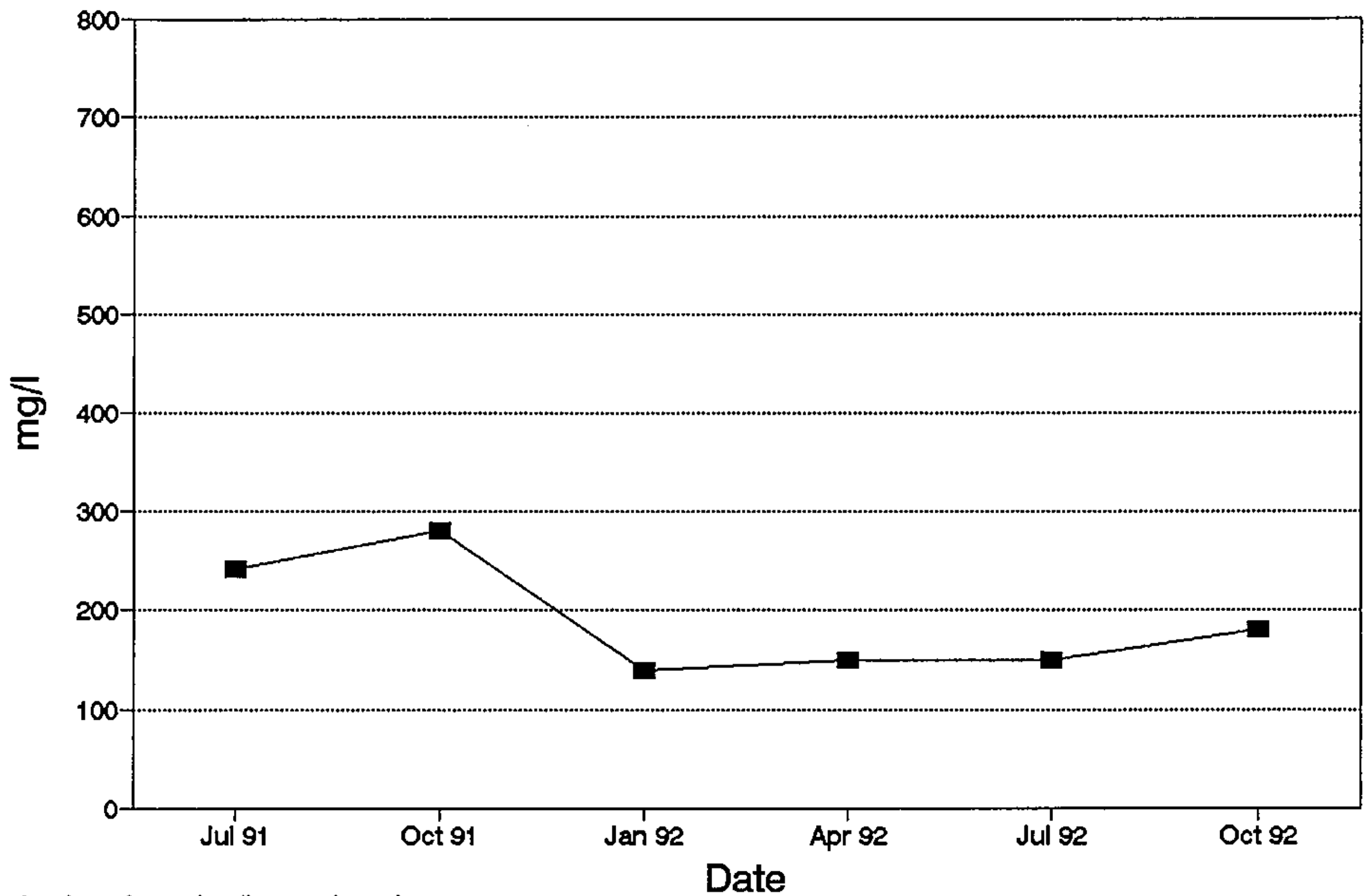
A value of zero implies no detection

Groundwater Quality Results
TDS - MW1002



A value of zero implies no detection

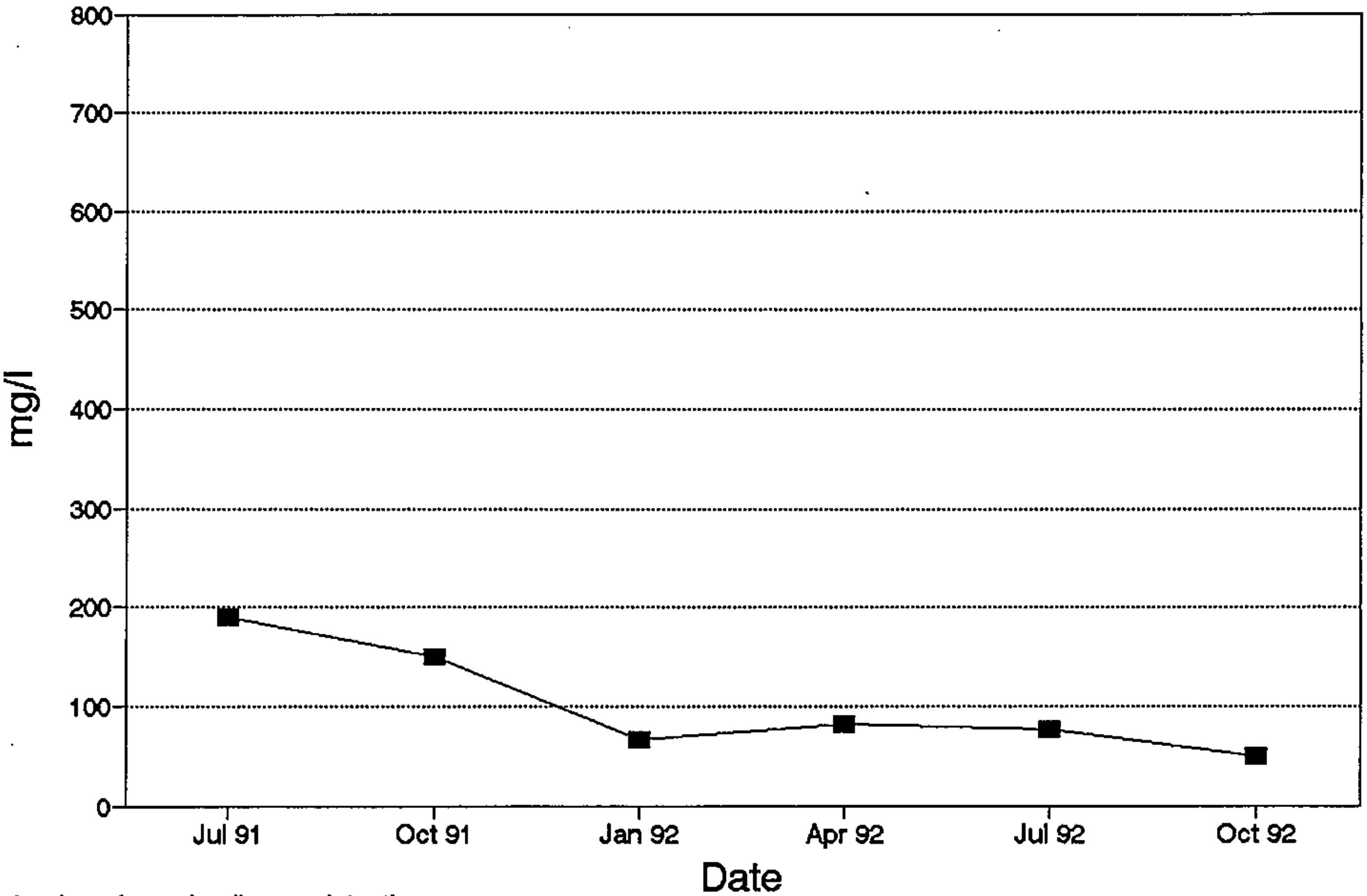
Groundwater Quality Results
TDS - MW1002G



A value of zero implies no detection

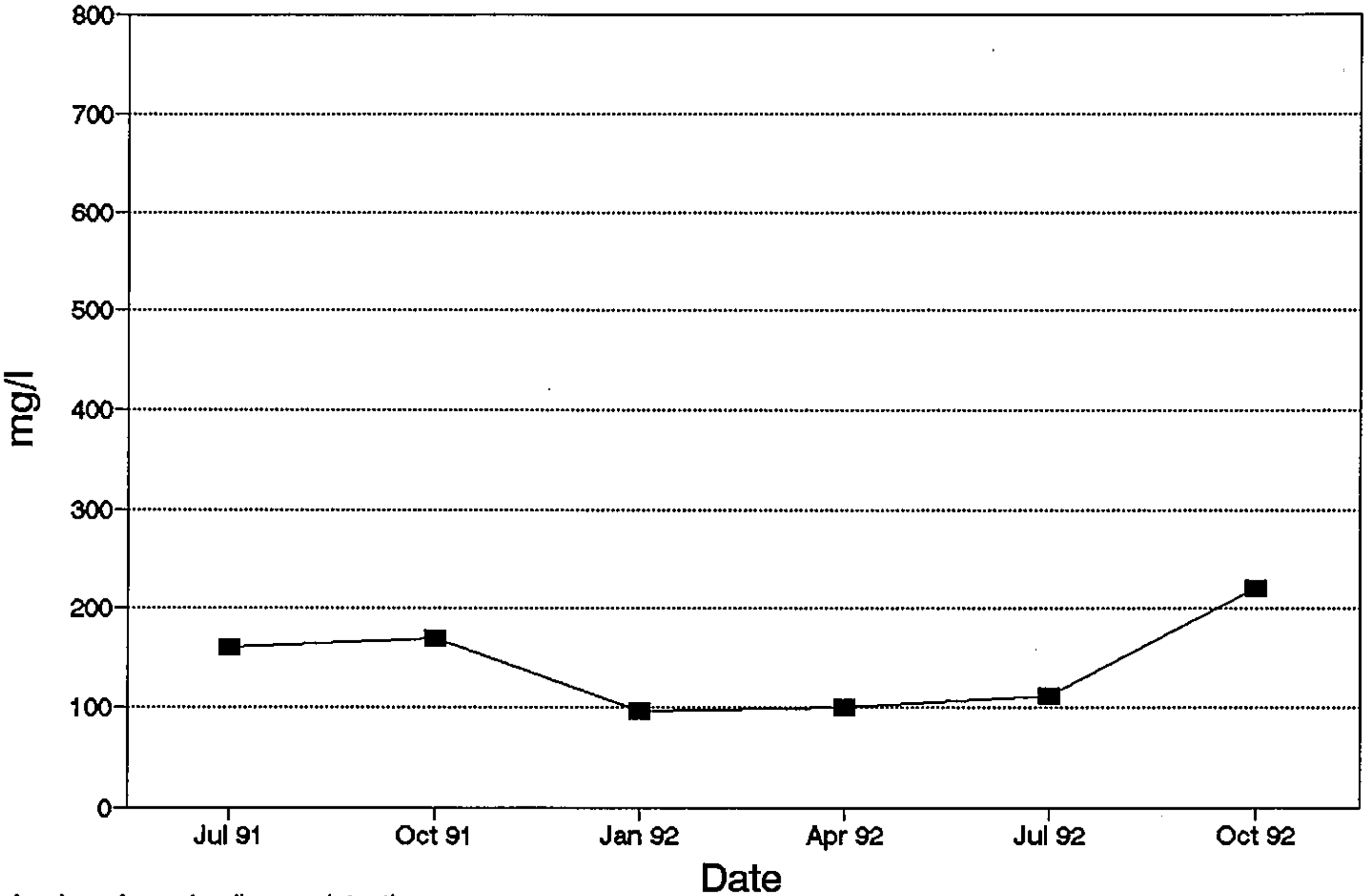
Groundwater Quality Results

TDS - MW1004



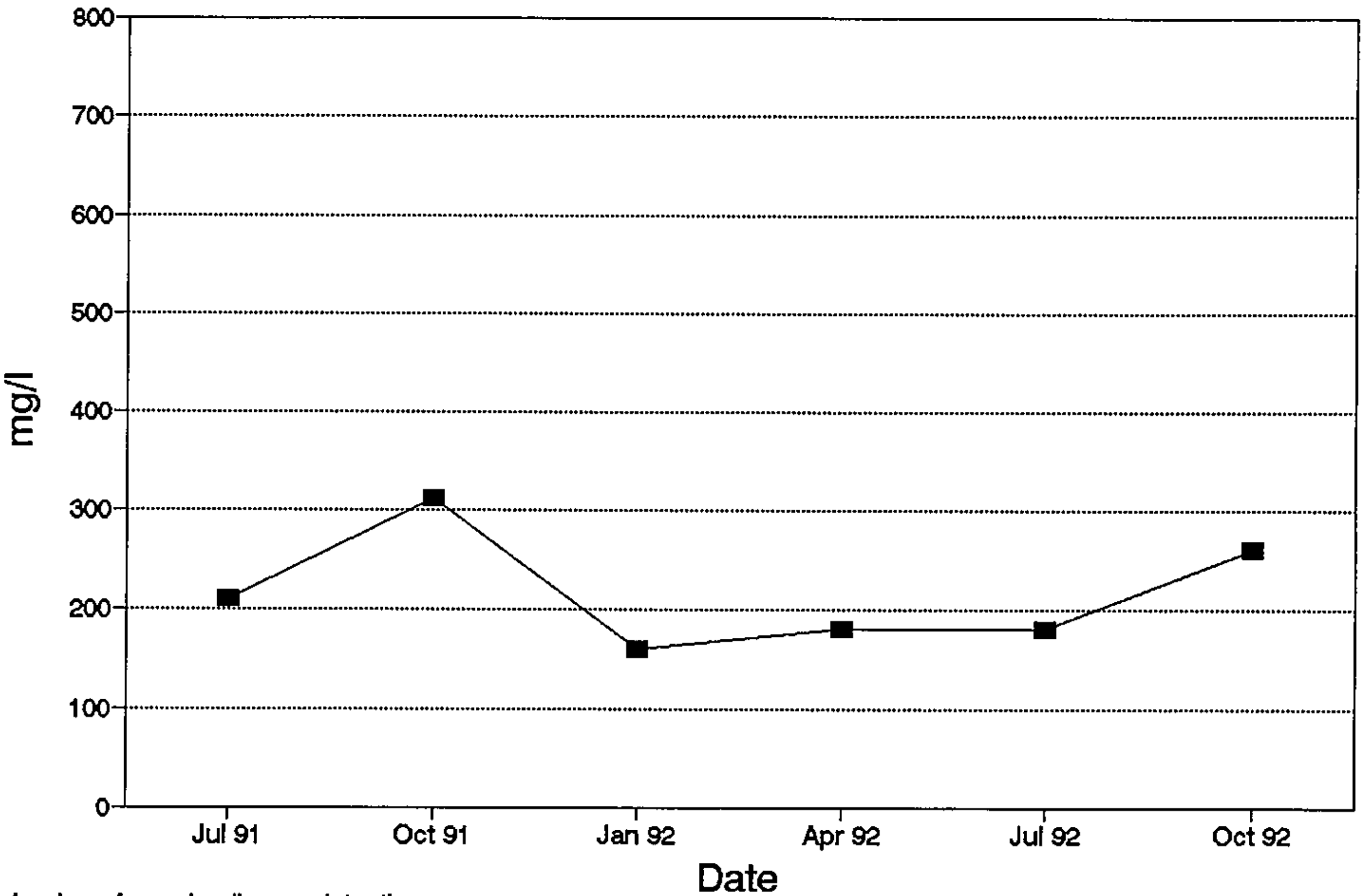
A value of zero implies no detection

Groundwater Quality Results
TDS - MW1004S



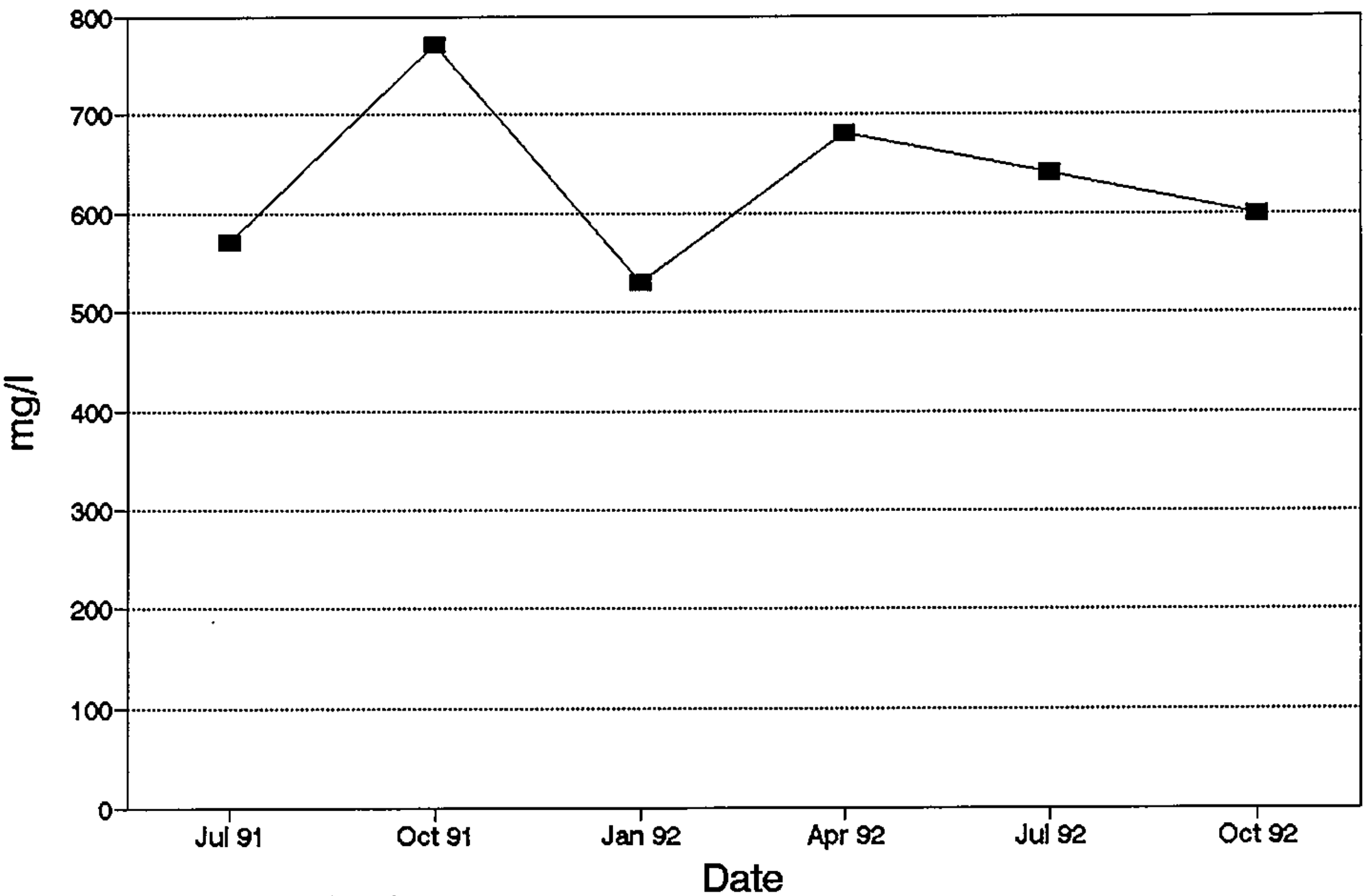
A value of zero implies no detection

Groundwater Quality Results
TDS - MW1004P



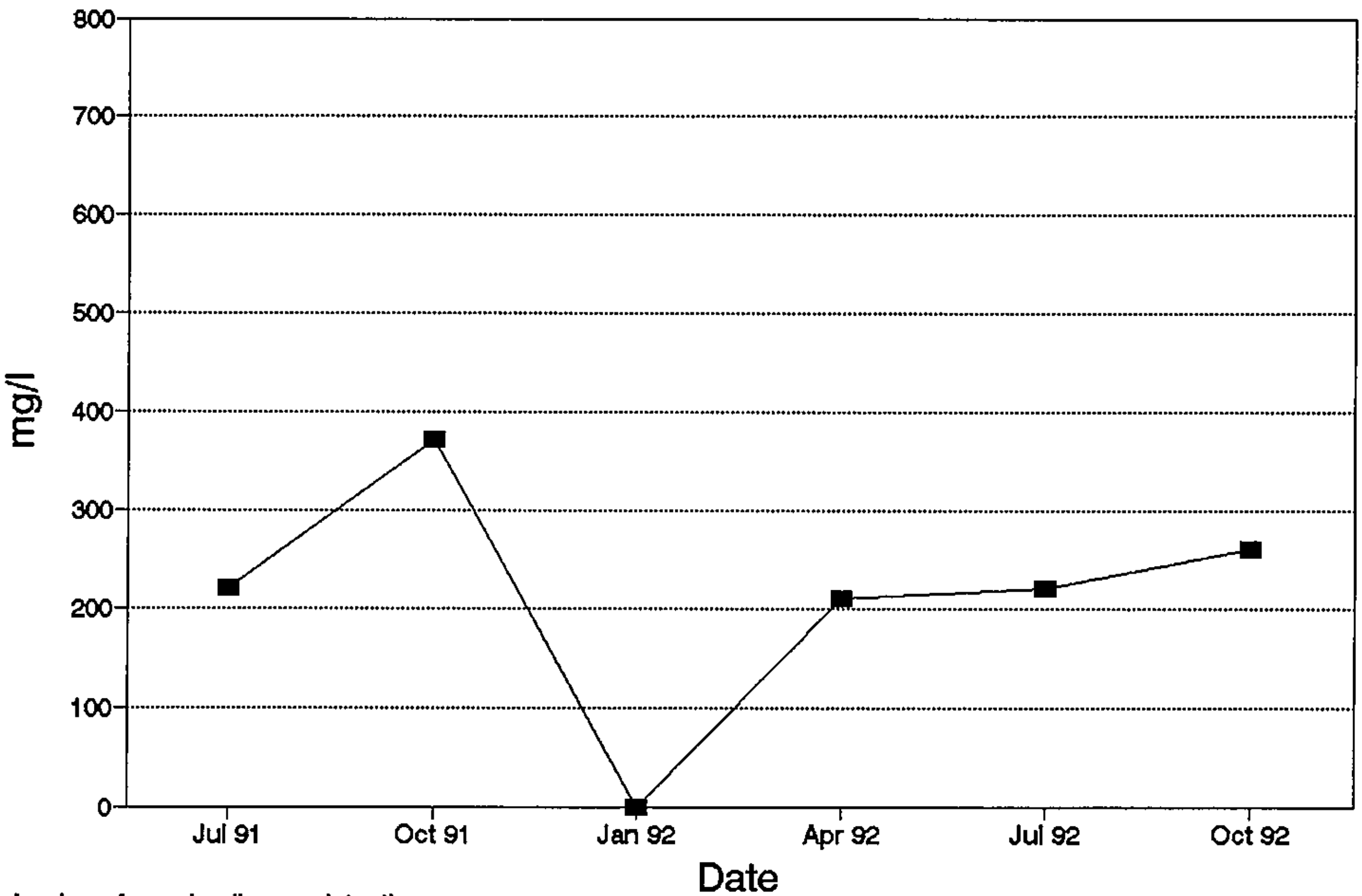
A value of zero implies no detection

Groundwater Quality Results
TDS - MW1005



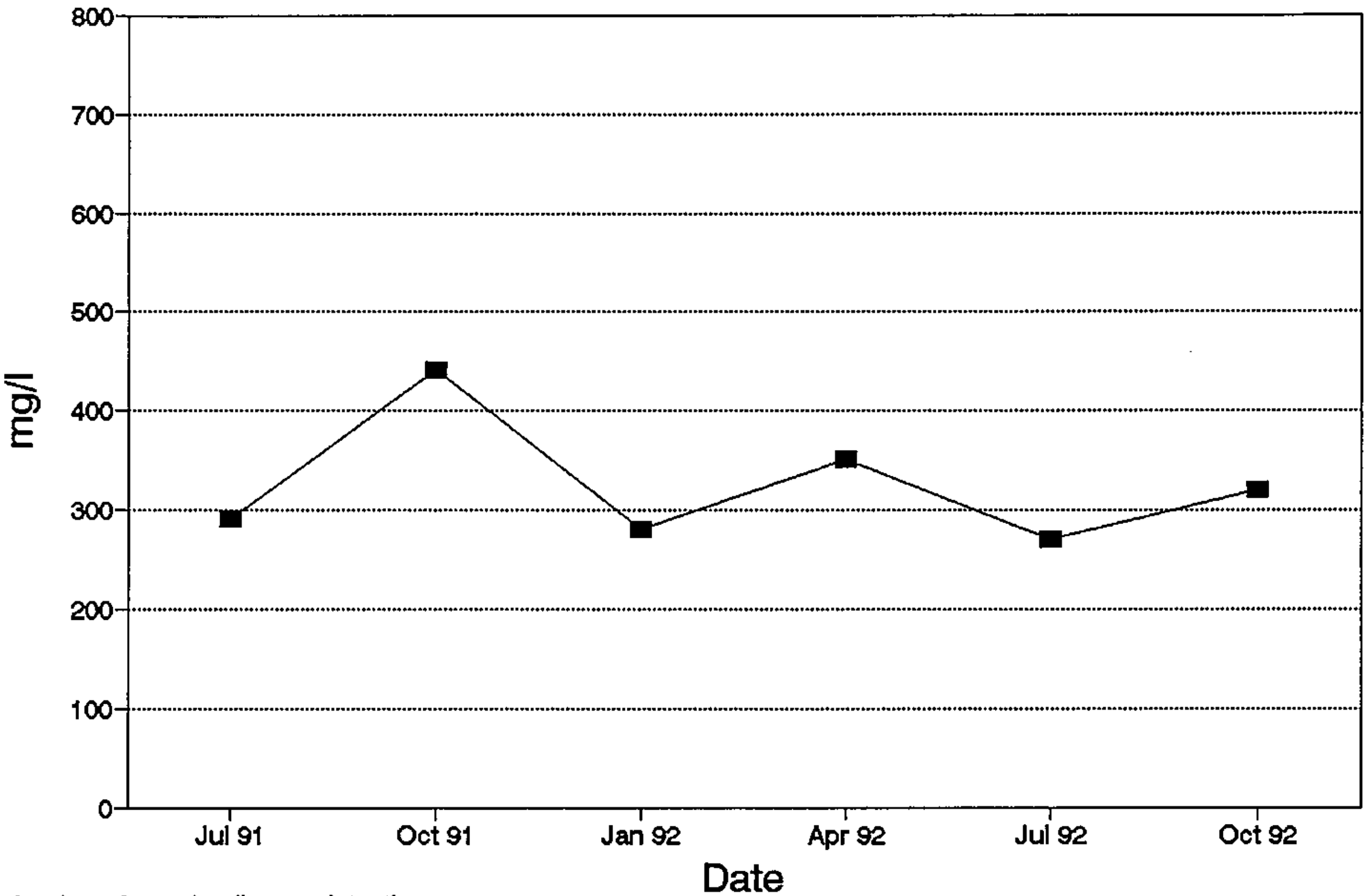
A value of zero implies no detection

Groundwater Quality Results
TDS - MW1005S



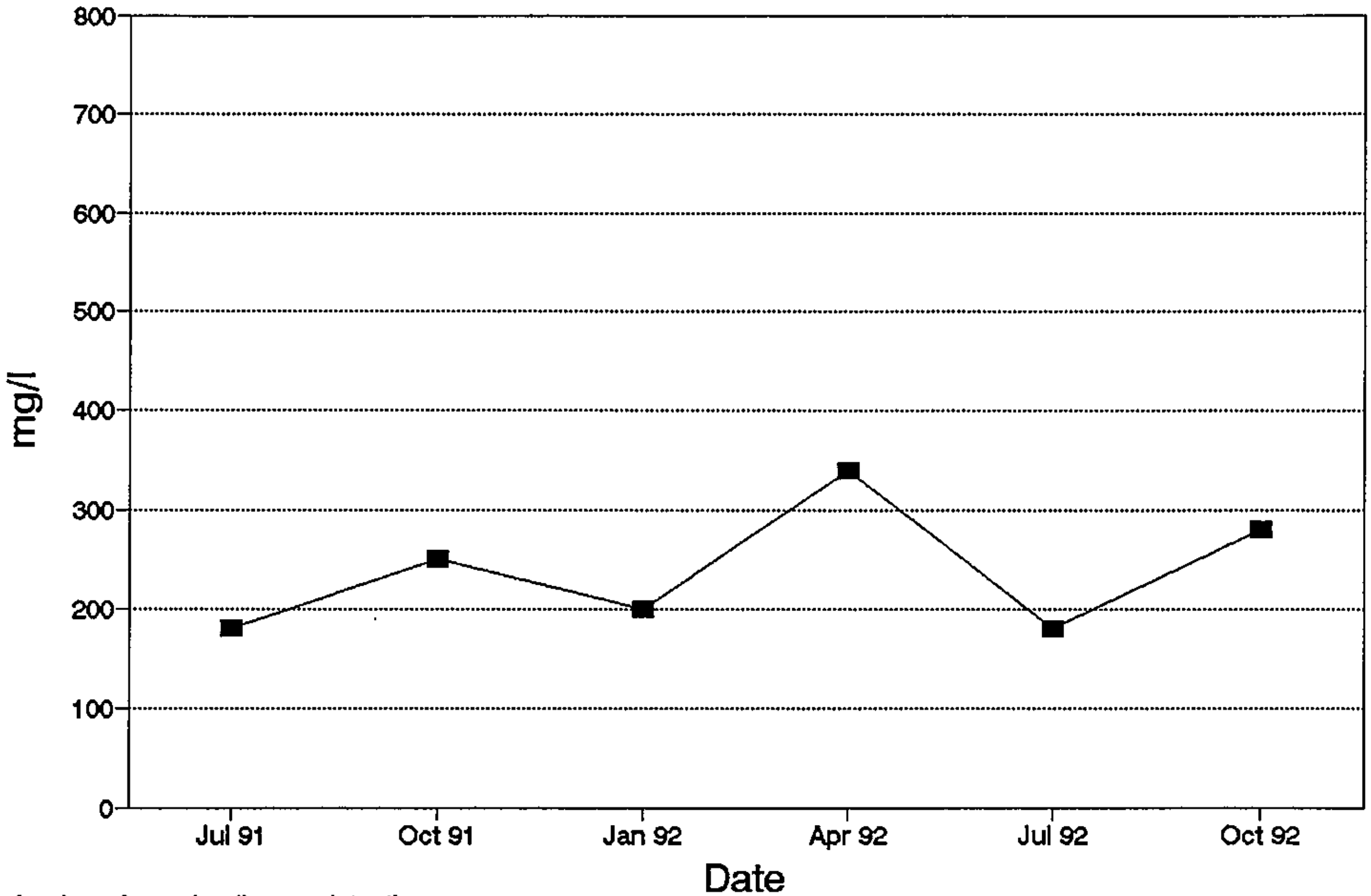
A value of zero implies no detection

Groundwater Quality Results
TDS - MW1005P



A value of zero implies no detection

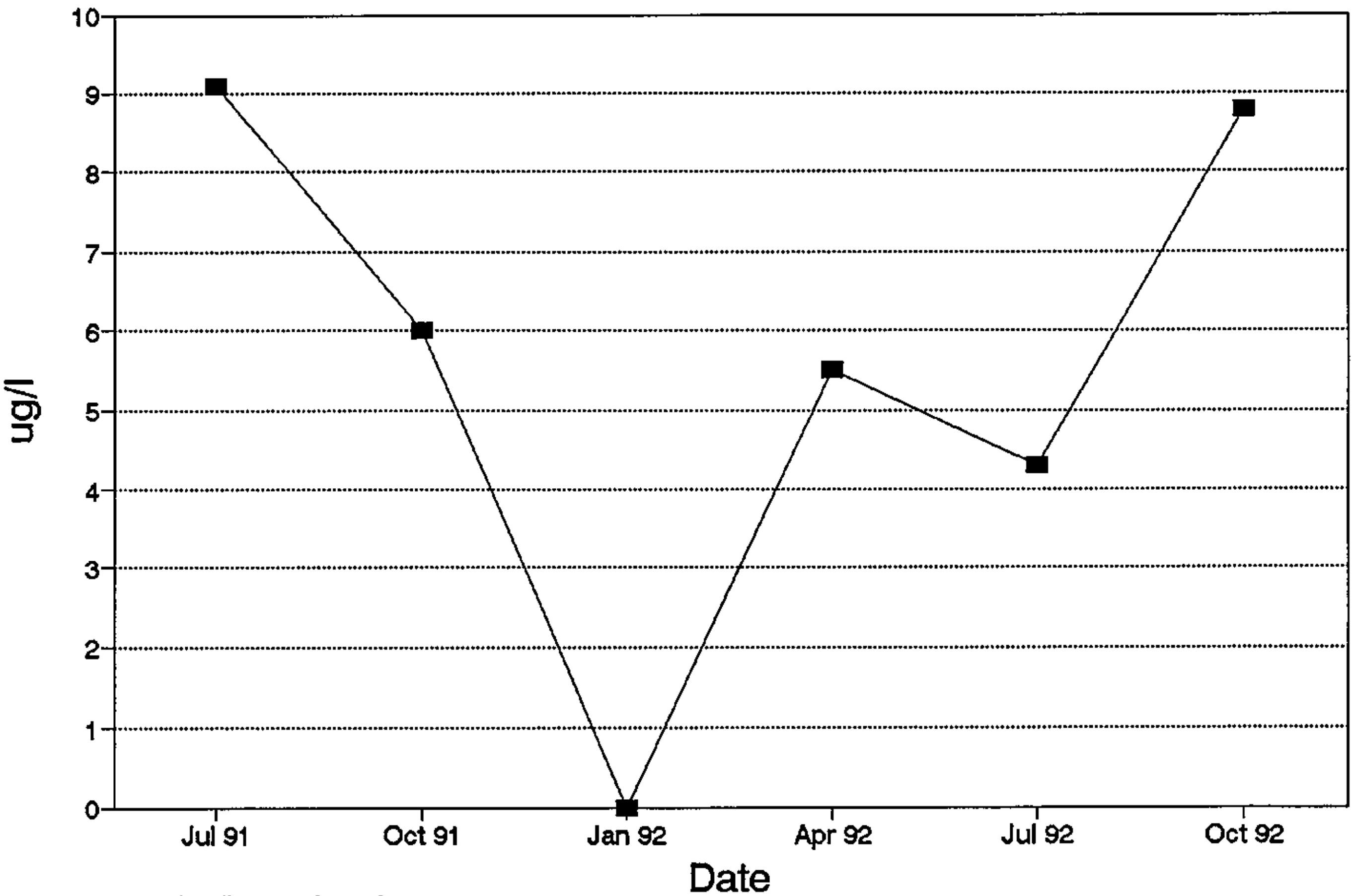
Groundwater Quality Results
TDS - MW1010P



A value of zero implies no detection

Groundwater Quality Graphs
Arsenic

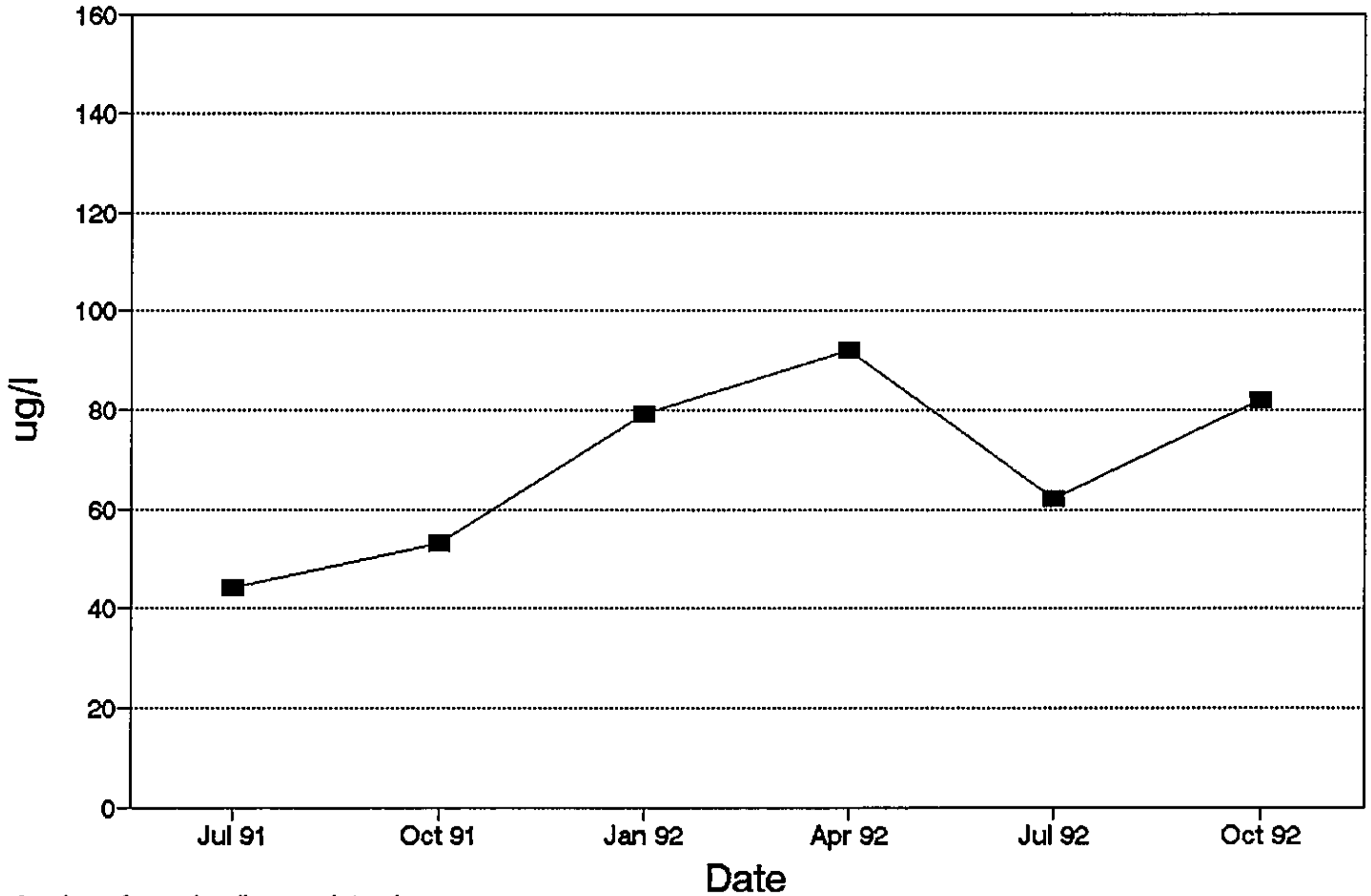
Groundwater Quality Results
Arsenic - MW1010P



A value of zero implies no detection

Groundwater Quality Graphs
Barium

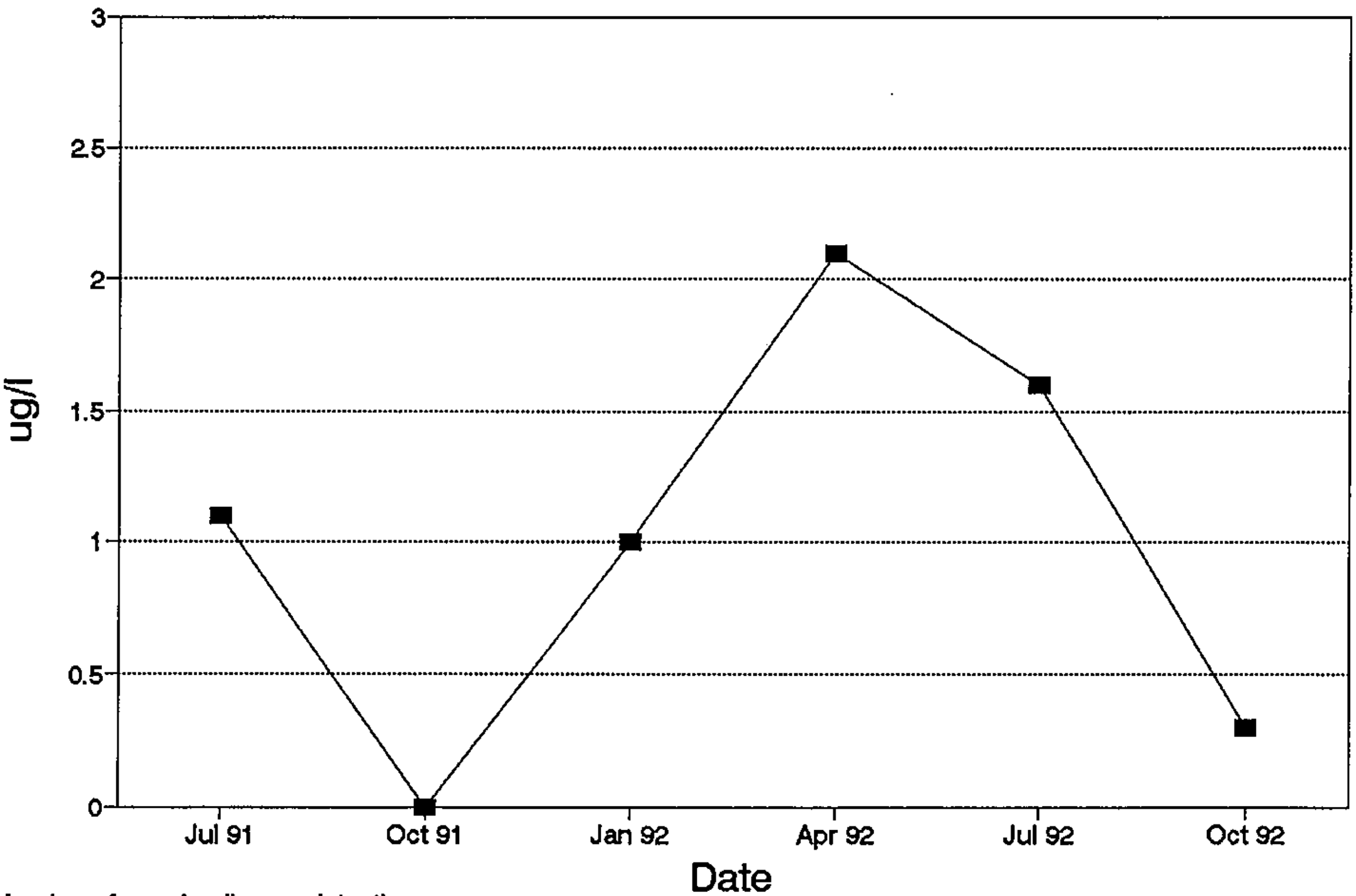
Groundwater Quality Results
Barium - MW1010P



A value of zero implies no detection

Groundwater Quality Graphs
Cadmium

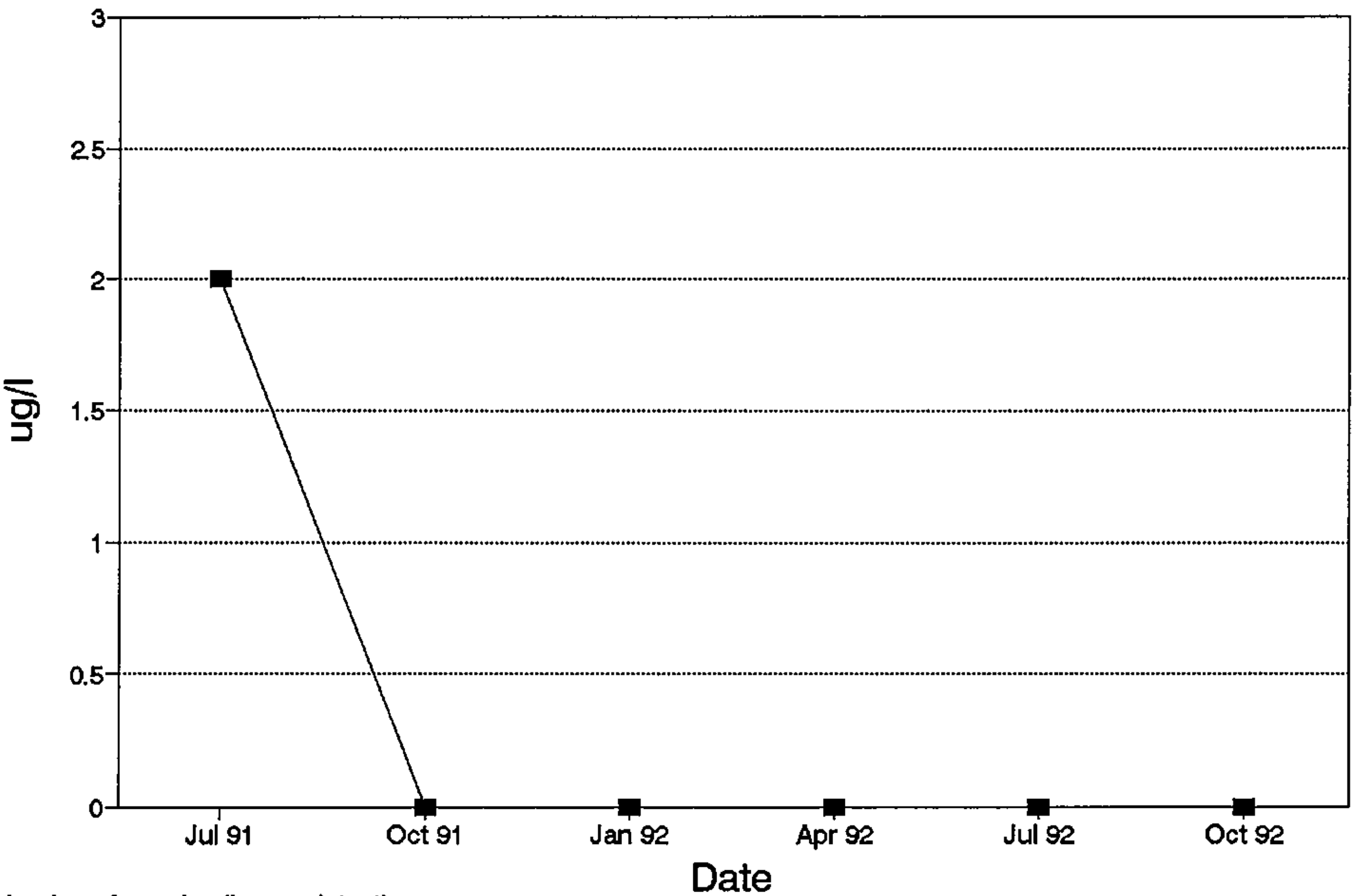
Groundwater Quality Results
Cadmium - MW1010P



A value of zero implies no detection

Groundwater Quality Graphs
Chromium

Groundwater Quality Results
Chromium - MW1010P



A value of zero implies no detection

Appendix G

Example of Regression Output for Alkalinity Results in MW 1000

DEP VAR:ALKALINI N: 6 MULTIPLE R: 0.137 SQUARED MULTIPLE R: 0.019
ADJUSTED SQUARED MULTIPLE R: .000 STANDARD ERROR OF ESTIMATE: 12.133

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	18.200	11.295	0.000	.	1.611	0.182
QUARTER	0.800	2.900	0.137	1.000	0.276	0.796

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	11.200	1	11.200	0.076	0.796
RESIDUAL	588.800	4	147.200		

Appendix H

Flambeau River Sediment Results
June 1992 Correspondence

Foth & Van Dyke

Engineers
Architects
Planners
Scientists

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

91F6 (4000)

September 24, 1992

Mr. Lawrence J. Lynch, Hydrogeologist
Mine Reclamation Unit
Bureau of Solid and Hazardous Waste Management
State of Wisconsin
Department of Natural Resources
P.O. Box 7921
Madison, WI 53707

Dear Mr. Lynch:

RE: Flambeau Project
Environmental Monitoring
Flambeau River Sediment Results (June 1992 Sampling Event)

Attached are copies of the laboratory results sheets for analyses performed on sediment samples collected from the Flambeau River on behalf of the Flambeau Mining Company (Flambeau) in June 1992.

Table 1 contains a comparison of the 1991 and 1992 Flambeau Project river sediment sampling results. 1991 data showed similar results at the Blackberry Lane and Port Arthur Dam sites. Results from samples collected in 1992 from the Blackberry Lane site were relatively comparable to 1991 results with the exception of manganese concentrations, which decreased from 1900 ppm to 1000 ppm.

Samples collected in 1992, when compared to 1991 data from the Port Arthur Dam location, show increases in concentrations or laboratory method detection limits of 12 metal analytes, while manganese concentrations decreased from 1600 ppm to 570 ppm. Decreases in percent total solids was also observed from 76.8% to 35.0%. Percent total volatile solids increased from 2.5% to 12.0%.

1992 results of particle size analysis (ASTM C136 and C117) show the sample collected from Blackberry Lane was dominated by a coarse gravel to medium sand fraction (gravel with sand), whereas the sample collected from Port Arthur Dam was dominated by a fine gravel to silt fraction (silty gravel with sand). 1991 particle size analysis results showed fine to medium grained sand at both sample locations.

To assess the variation in analytical results from the Port Arthur Dam sampling location, Foth & Van Dyke reviewed 1992 sampling methodology and undertook a comparison of the 1991 and 1992 sediment sampling work to that completed in 1988 as part of the collection of Flambeau River background data for the project's Environmental Impact Report. A discussion of this review follows.

1992 Sample Collection Methodology

On May 27, 1992, per the project's monitoring plan, a representative from Foth & Van Dyke installed three sediment samplers at two designated locations [Blackberry Lane (location S-1) and Port Arthur Dam (location S-2)] within the Flambeau River near the Flambeau Mining Company Site. The samplers consisted of one-quart mason jars placed above the river bed.

The samples were collected on July 1, 1992 by a Foth & Van Dyke representative. The sample containers were capped below the water surface with a parafilm seal allowing for zero headspace. Immediately following collection, the containers were labeled and placed into a cooler with ice. The samples were thermally preserved during transportation and hand delivered to ORTEK Laboratory in Green Bay, Wisconsin on July 1, 1992, accompanied with chain of custody documentation. Representatives of the WDNR Northeast District were informed as to when both the samples were to be placed and to be removed prior to the work being conducted in the field.

The sampling methodology used in 1992 was the same as that used in 1991 with the exception that the sample collection point at the Port Arthur Dam was located approximately 120 feet further downstream in 1992. The reason for choosing a different location related to natural bank erosion that was evident in 1992 adjacent to the 1991 sampling location. No such erosion was evident in 1991.

Actually, erosion of the adjacent bank was noted from approximately the 1991 sampling location to a significant distance downstream of the 1992 sampling location. The 1991 sampling location was at a transition point in the river where flow changed from lower to higher velocities. Since sample collection was targeted for areas where higher velocities occur, the 1992 sampling location was moved downstream rather than upstream.

The natural erosion conditions occurring at the Port Arthur Dam sampling site could very well be responsible for the analytical results noted from the 1992 sediment sampling program at Port Arthur Dam. The lower percent total solids observed at Port Arthur Dam in 1992, coupled with the increases in percent total volatile solids and the fine textured sediments (silty gravel with sand) would be indicative of the occurrence of possible erosion of old Port Arthur Dam impoundment sediments.

Bulk Chemical Analyses Comparison

As part of the waste characterization work completed to support the project's mine permit application, bulk chemical analyses were conducted on the topsoil and till from the Flambeau project site. A comparison of the results of these analyses to the 1992 Port Arthur Dam sediment tests can be made to determine if similar characteristics are evident. Such a comparison is presented in Table 2 for those analytes that are common to both analytical programs.

Data in Table 2 shows that of seven analytes common to both programs, five from the 1992 Port Arthur Dam sediment program show concentrations that are slightly higher than concentrations from the on-site topsoil and till bulk chemical analyses. One analyte, manganese, shows a concentration similar to topsoil and till. Aluminum shows a concentration several times less than the topsoil and till. The copper concentration for the west-till result was discounted in this comparison since till on the west end of the open pit area was not generally exposed in June of 1992. Given the fact that the majority of the 1992 Port Arthur Dam sediment analytes show concentrations much higher than on-site till and topsoil, which were the only on-site materials disturbed through June of 1992, it is our conclusion that project activities have had no bearing on the 1992 Port Arthur Dam sediment results.

Thornapple Dam Impoundment Bottom Sediment Comparison

Also as a part of environmental data collection during project permitting, Thornapple Dam impoundment bottom sediments were collected and analyzed. A comparison of these results to 1992 Port Arthur Dam sediment analyses is shown in Table 3 for parameters common to both testing programs. In reviewing the data, there appears to be a good correlation between arsenic, copper, lead, manganese and zinc. Also, it is interesting to note that total solids for the Thornapple bottom sediments are more closely associated with the 1992 Port Arthur Dam sediment results than 1991 and 1992 Blackberry Lane or 1991 Port Arthur results. It appears that the cadmium and mercury comparison is inconclusive, while there does not appear to be a correlation in the case of chromium or iron. Based on this data review, it appears that the Port Arthur Dam sediments collected in 1992 are more closely comparable to the Thornapple Dam Impoundment sediments than to Flambeau on-site topsoil and till. This fact lends further support to the probability that the 1992 Port Arthur Dam sediment test results were influenced by natural erosion conditions local to the Port Arthur Dam sampling location.

Conclusions

It is our opinion that the 1992 Port Arthur Dam sediment test results have not been influenced by Flambeau project activities and that the Flambeau project has not caused any adverse impact on the Flambeau River. The most likely reason for the changes in the concentrations noted in 1992 Port Arthur Dam sediment is the observed accelerated erosion occurring in the vicinity of the sampling location. This erosion led to a different type of sediment (richer in fines and organic matter) being sampled during the 1992 season. This difference in sediment type could easily account for the differences in the chemical constituents of Port Arthur 1991-1992 samples.

To address the sampling location issue, Flambeau is proposing to adjust its 1993 sediment sampling program to add a third sampling location upriver of the current Port Arthur Dam sampling site. This location would be selected such that it had similar characteristics to the 1991 sampling location, and would not be an area subject to accelerated erosion. After the 1993 sediment sampling, Flambeau proposes to terminate sampling at the original Port Arthur Dam sediment sampling location in lieu of the alternative location selected in 1993.

If there are any questions regarding this submittal, please contact either of the undersigned.

Sincerely,

Foth & Van Dyke

Russell T. Janeshek
Associate

James B. Hutchison, P.E.
Project Manager

RTJ:JBH:pab
Attachments

cc/encl.: Jerry Sevick, Foth & Van Dyke
Gordon Reinke, Wisconsin DNR
Lawrence Mercando, Flambeau Mining Company
Henry Handzel, DeWitt, Porter, *et al.*
John Kaiser, Rusk County Board
Robert Plantz, Town of Grant
Al Christianson, City Administrator; City of Ladysmith
Clarence Glotfelty, Rusk County Zoning Administrator
FMC River - Sediment File

TABLE 1

FLAMBEAU MINING COMPANY
Flambeau River Sediment Sampling Results
1991 and 1992

SAMPLE LOCATION/NUMBER

	Blackberry Lane		Port Arthur Dam	
	S-1-01 (1991)	**S-1-02 (1992)**	**S-2-01 (1991)**	**S-2-02 (1992)**
METALS (ppm)				
Silver	<1.2	<1.1	<1.1	<2.6
Aluminum	3,800	3,300	4,000	12,000
Arsenic	2.2	2.2	1.5	4.1
Cadmium	<0.7	<0.6	0.6	<1.4
Chromium	11.0	10.0	13.0	24.0
Copper	7.3	6.0	7.2	24.0
Iron	18,000	16,000	16,000	25,000
Mercury	0.1	<0.1	0.1	<0.3
Manganese	1,900	1,000	1,600	570
Nickel	5.8	6.1	7.3	12.0
Lead	6.0	5.8	6.9	20.0
Selenium	0.4	<0.4	0.4	<0.9
Zinc	47.0	33.0	45.0	79.0
OTHER				
Total Solids (%)	73.0	78.6	76.8	35.0
Total Volatile Solids (%)	1.80	1.60	2.5	12.0
Field Temp. (C)	25.0	16.2	25.0	15.8

132-22191F6.mercando

Table 2

Comparison of Major Element Concentrations from the 1988 Bulk Chemical Analysis of Topsoil and Till to 1991 and 1992 Flambeau River Sediment Sample Testing

Parameters	Units	Topsoil			Till			Blackberry Lane		Port Arthur Dam	
		West	Central	East	West	Central	East	1991	1992	1991	1992
Aluminum	ug/g	30,600	28,000	32,600	52,600	38,900	41,200	3,800	3,300	4,000	1,200
Chromium	ug/g	9.5	6.0	7.5	9.1	9.6	11	11.0	10.0	13.0	24.0
Copper	ug/g	4.0	2.7	2.8	83	13	15	7.3	6.0	7.2	24.0
Iron	ug/g	10,000	4,400	6,000	10,000	5,700	7,000	18,000	16,000	16,000	25,000
Manganese	ug/g	610	280	470	460	160	190	1,900	1,000	1,600	570
Lead	ug/g	9.0	5.0	10	2.3	3.5	2.3	6.0	5.8	6.4	20.0
Zinc	ug/g	18	19	17	21	18	22	47.0	33.0	45.0	79.0

[32-11/22] 91F6.flwp

Table 3

Comparison of 1988 Thornapple Dam Impoundment Bottom Sediment Analytical Data to Analytical Data from 1991 and 1992 Flambeau River Sediment Sampling

		Sample I D									
		Thornapple Dam						Blackberry Lane		Port Arthur Dam	
		1-1	1-2	2-1	2-2	3-1	3-2				
Parameters	Units Dry Weight	3/1/88	3/1/88	3/1/88	3/1/88	3/1/88	3/1/88	1991	1992	1991	1992
Arsenic	ug/g	4.8	8.5	5.3	6.0	3.7	4.2	2.2	2.2	1.5	4.1
Cadmium	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.7	<0.6	0.6	<1.4
Chromium	ug/g	11	13	9.8	13	11	7.9	11.0	10.0	13.0	24.0
Copper	ug/g	17	29	18	25	16	14	7.3	6.0	7.6	24.0
Iron	ug/g	8,800	13,000	12,000	13,000	12,000	9,000	18,000	16,000	16,000	25,000
Lead	ug/g	22	26	18	28	20	12	6.0	5.8	6.9	20.0
Manganese	ug/g	260	380	410	500	480	230	1900	1000	1600	570
Mercury	ug/g	0.15	0.41	0.16	0.24	0.22	0.26	0.1	<0.1	0.1	<0.3
Total Solids	%	62	50	54	46	50	64	73	78.6	76.8	35.0
Zinc	ug/g	58	85	77	82	69	58	47	33	45	79

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207023
Our lab # : 127065
Your sample ID: S-1-02 SOIL
Sample Matrix : SOIL

Report Date: 07/24/92

COLLECTION INFORMATION

Date/Time/By: 07/01/92 06:45 J G
Location : 91F6/FLAMBEAU MINING CO

Lab#	Test		Result	Units	Analysis Date
127065	Silver	<	1.1	MG/KG	07/15/92
	Aluminum		3300 **	MG/KG	07/15/92
	Arsenic		2.2	MG/KG	07/09/92
	Cadmium	<	0.6	MG/KG	07/15/92
	Chromium		10	MG/KG	07/15/92
	Copper		6.0	MG/KG	07/15/92
	Iron		16000	MG/KG	07/15/92
	Mercury	<	0.1	MG/KG	07/08/92
	Manganese		1000	MG/KG	07/15/92
	Nickel		6.1	MG/KG	07/15/92
	Lead		5.8	MG/KG	07/09/92
	Selenium	<	0.4	MG/KG	07/09/92
	Total Solids		78.6	%	07/07/92
	Total Volatile Solids		1.60	%	07/07/92
	Zinc		33	MG/KG	07/15/92

* - DUPLICATE OUT OF CONTROL, SAMPLE MATRIX PROBLEMS

Signed ________________ Date 7-24-92

Signed ________________ Date ________

Foth & Van Dyke

Client: ORTEK Scope I.D.: 9205
Project: Page: 1
Prepared by: Bill Ouinette Date: 7/9/92
Checked by: James L Bernardi Date: 7/21/92

REPORT OF:

SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES

Contractor: **Report Number:** 11

Test Performed in General Accordance with: ASTM: C117 & C136

General Data:

Sample Location:
Sample Number: 127065
Depth of Sample:
Sampled by:
Sample Designated for: Classification

Date Sampled: 7/1/92
Date Received: 7/9/92
Source of Sample:
Munsell Color Code: 10 YR. 3/3

Laboratory Data:

Date Tested: July 10-14, 1992
Test Performed by: WAQ

24 hrs. turn-around ____Yes _X_No
Washed Gradation _X_Yes ____No

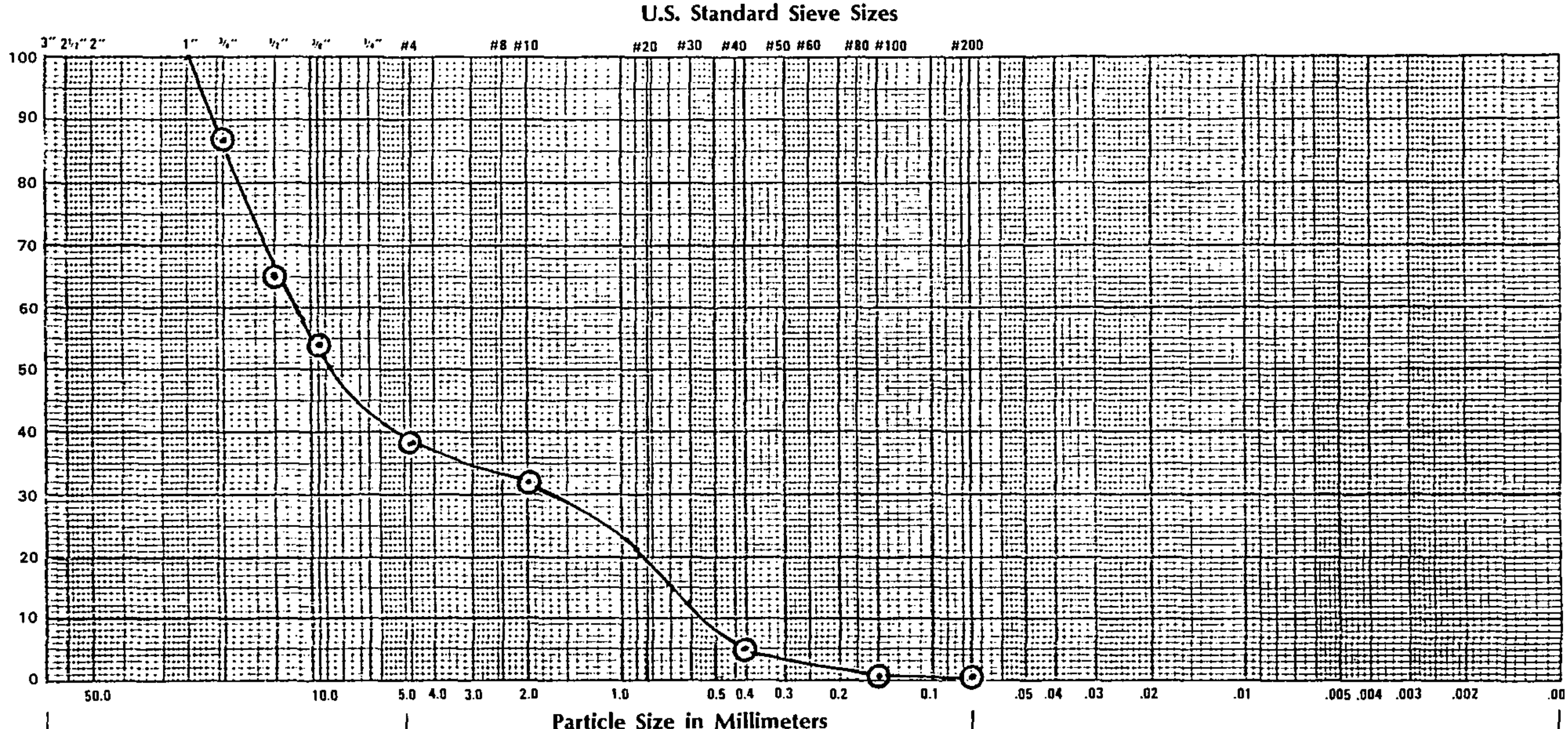
Weight of Test Sample 867.6 Grams

Sieve Size	Weight Retained (gms)	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					
1½					
1	0.0	0.0	100		
3/4	116.5	13.4	86.6		
1/2	191.5	22.0	64.6		
3/8	90.0	10.5	54.1		
#4	136.9	15.8	38.3		
10	55.0	6.3	32.0		
40	232.1	36.8	5.2		
100	41.2	4.7	0.5		
200	1.2	0.1	0.4		
Pan	2.4	0.3			

Remarks:

FORM CE5036 (Rev. 5/92)

GRAIN SIZE DISTRIBUTION CURVE



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		
% = 13.4	% = 48.3	% = 6.3	% = 26.8	% = 4.9	% = 0.3	% =

Location Sampled: Sample No. 127065 Elev. or Depth: Date Sampled: 7/1/92

Sample Source: Sampled Moisture Content (%): 12.6 Report No.: 11

Soil Classification (ASTM: D2487): GRAVEL W/SAND, dark brown (GP)

Atterberg Limits: LL PL PI

Munsell Color Code: 10 YR. 2/1

Date Received: 7/9/92

Coefficients: Cc = 0.5 Cu= 6.5

Foth & Van Dyke

Client: ORTEK Scope I.D.: 9205

Project: Page: 2

Prepared by: Jim Bernardi Date: 7/17/9

Checked by: James L Bernardi Date: 7/21/92

ORTEK
ENVIRONMENTAL LABORATORY
2496 West Mason Street P.O. Box 12435 Green Bay, WI 54307-2435
414-498-2222
FAX: 414-498-4067

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 543079012

Attn: RUSS JANESHEK

Batch ID : 9207023
Our lab # : 127067
Your sample ID: S-2-02 SOIL
Sample Matrix : SOIL

Report Date: 07/24/92

COLLECTION INFORMATION

Date/Time/By: 07/01/92 08:10 J G
Location : 91F6/FLAMBEAU MINING CO

Lab#	Test		Result	Units	Analysis Date
127067	Silver	<	2.6	MG/KG	07/15/92
	Aluminum		12000	MG/KG	07/15/92
	Arsenic		4.1	MG/KG	07/09/92
	Cadmium	<	1.4	MG/KG	07/15/92
	Chromium		24	MG/KG	07/15/92
	Copper		24	MG/KG	07/15/92
	Iron		25000	MG/KG	07/15/92
	Mercury	<	0.3	MG/KG	07/08/92
	Manganese		570	MG/KG	07/15/92
	Nickel		12	MG/KG	07/15/92
	Lead		20	MG/KG	07/09/92
	Selenium	<	0.9	MG/KG	07/09/92
	Total Solids		35.0	%	07/07/92
	Total Volatile Solids		12.00	%	07/07/92
	Zinc		79	MG/KG	07/15/92

Signed [signature] Date 7-24-92

Signed ____________ Date ____________

Foth & Van Dyke

Client: ORTEK Scope I.D: 9205
Project: Page: 1
Prepared by: Bill Quinette Date: 7/9/92
Checked by: James L Bernardi Date: 7/21/92

REPORT OF:

SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES

Contractor: **Report Number:** 10

Test Performed in General Accordance with: ASTM: C117 & C136

General Data:

Sample Location:
Sample Number: 127067
Depth of Sample:
Sampled by:
Sample Designated for: Classification

Date Sampled: 7/1/92
Date Received: 7/9/92
Source of Sample:
Munsell Color Code: 10 YR. 3/3

Laboratory Data:

Date Tested: July 10-14, 1992
Test Performed by: WZQ

24 hrs. turn-around ____Yes _x__No
Washed Gradation _x__Yes ____No

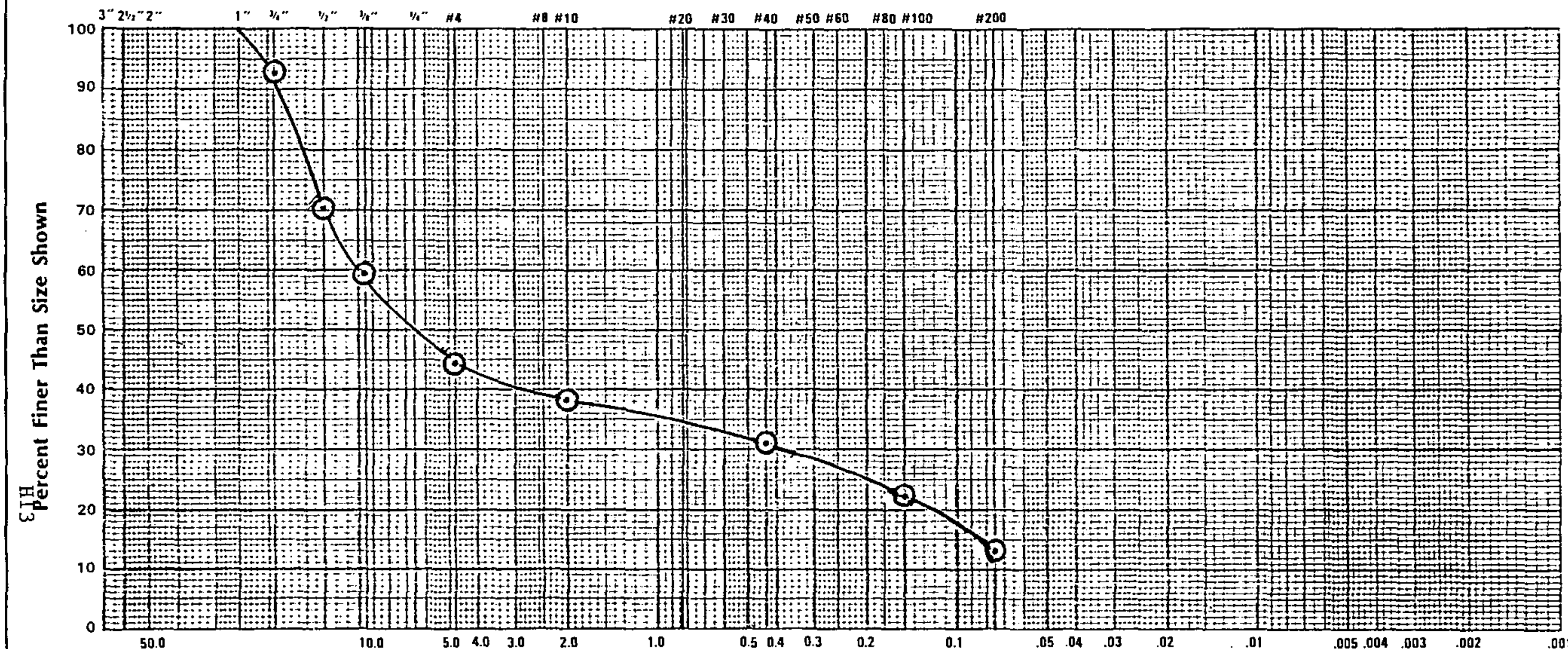
Weight of Test Sample 383.4 Grams

Sieve Size	Weight Retained (gms)	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					
1½					
1	0.0	0.0	100		
3/4	28.3	7.4	92.6		
1/2	85.0	22.2	70.4		
3/8	41.6	10.9	59.5		
#4	57.5	15.0	44.5		
10	23.4	6.1	38.4		
40	28.8	7.5	30.9		
100	33.1	8.6	22.3		
200	35.1	9.2	13.1		
Pan	50.7	13.2			

Remarks:

FORM CE5036 (Rev. 5/92)

GRAIN SIZE DISTRIBUTION CURVE



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		
% = 7.4	% = 48.1	% = 6.1	% = 7.5	% = 17.7	% = 13.2	% =

Location Sampled: Sample No. 127067 Elev. or Depth: ______ Date Sampled: 7/1/92

Sample Source: ______ Sampled Moisture Content (%): 59.3 Report No.: 10

Soil Classification (ASTM: D2487): SILTY GRAVEL W/SAND, dark brown (GM)

Atterberg Limits: LL ______ PL ______ PI ______

Munsell Color Code: 10 YR. 3/3

Date Received: 7/9/92

Coefficients: Cc = ______ Cu= ______

Foth & Van Dyke

Client: ORTEK Scope I.D.: 9205

Project: ______ Page: 2

Prepared by: Jim Bernardi Date: 7/17/92

Checked by: James L Bernardi Date: 7/21/92

FORM CE5019 (1

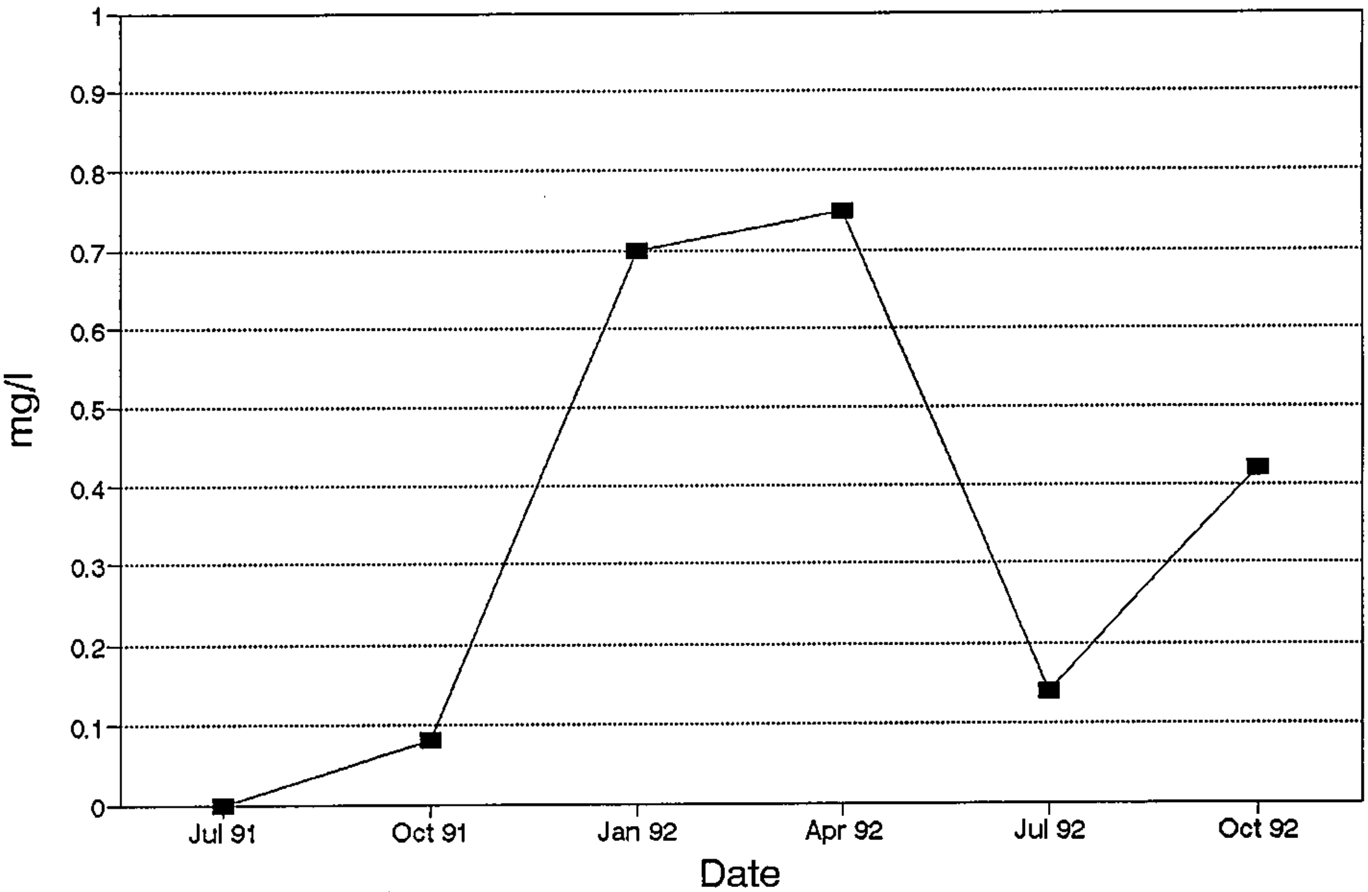
Appendix I

Surface Water Quality Graphs

Surface Water Quality Graphs
Aluminum

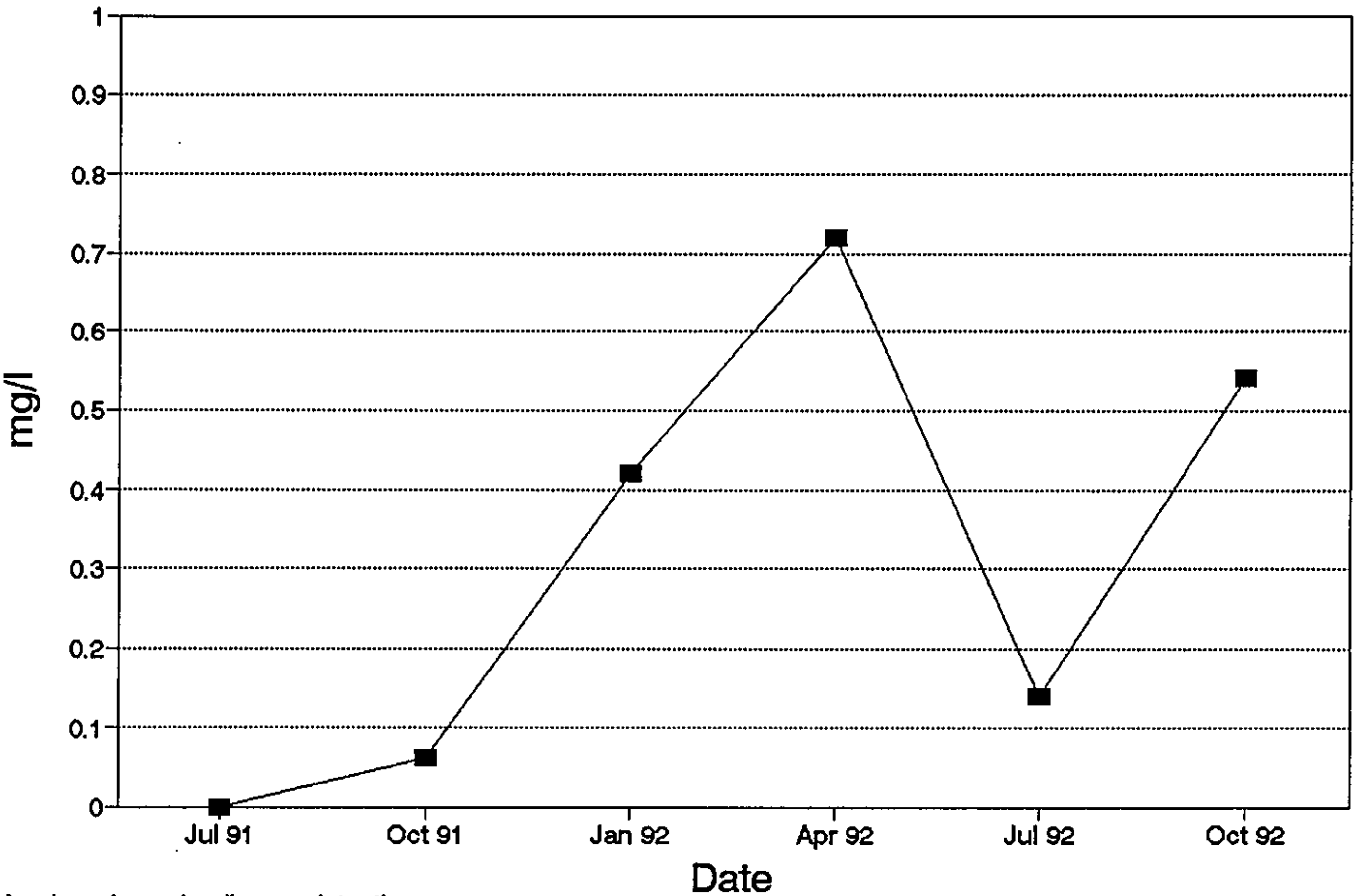
Surface Water Quality Results

Aluminum - SW1



A value of zero implies no detection

Surface Water Quality Results
Aluminum - SW2

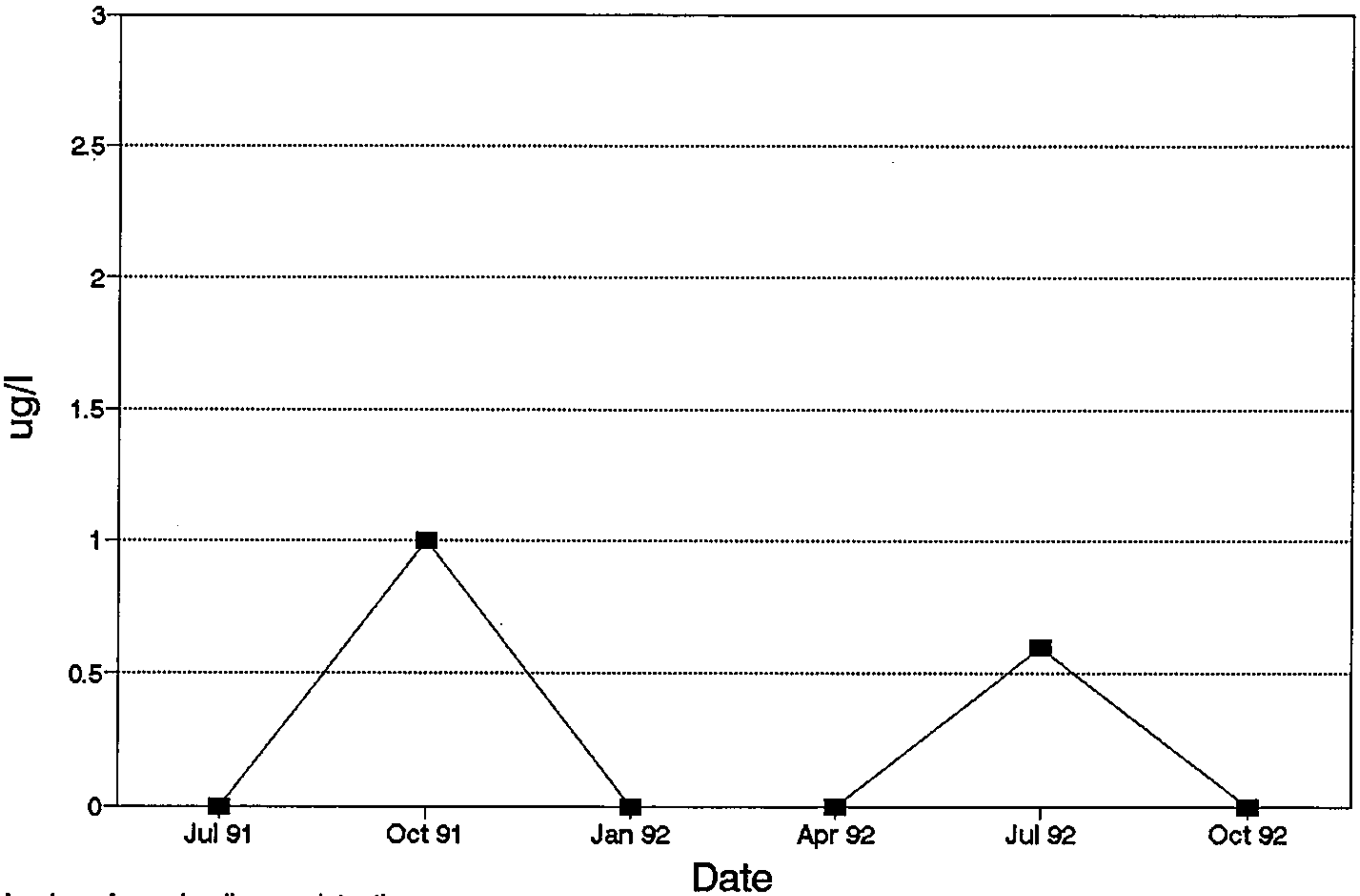


A value of zero implies no detection

Surface Water Quality Graphs
Cadmium

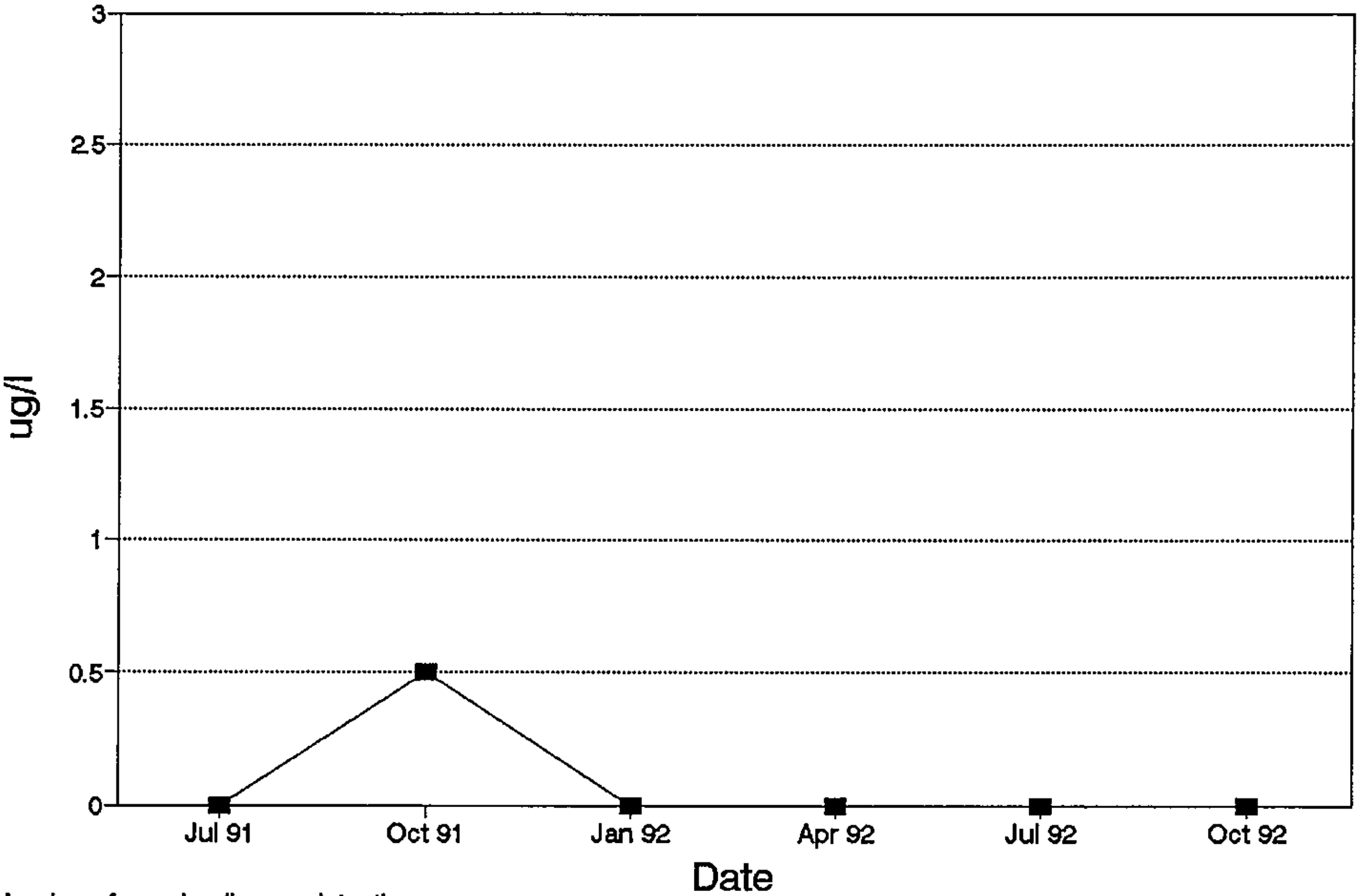
Surface Water Quality Results

Cadmium - SW1



A value of zero implies no detection

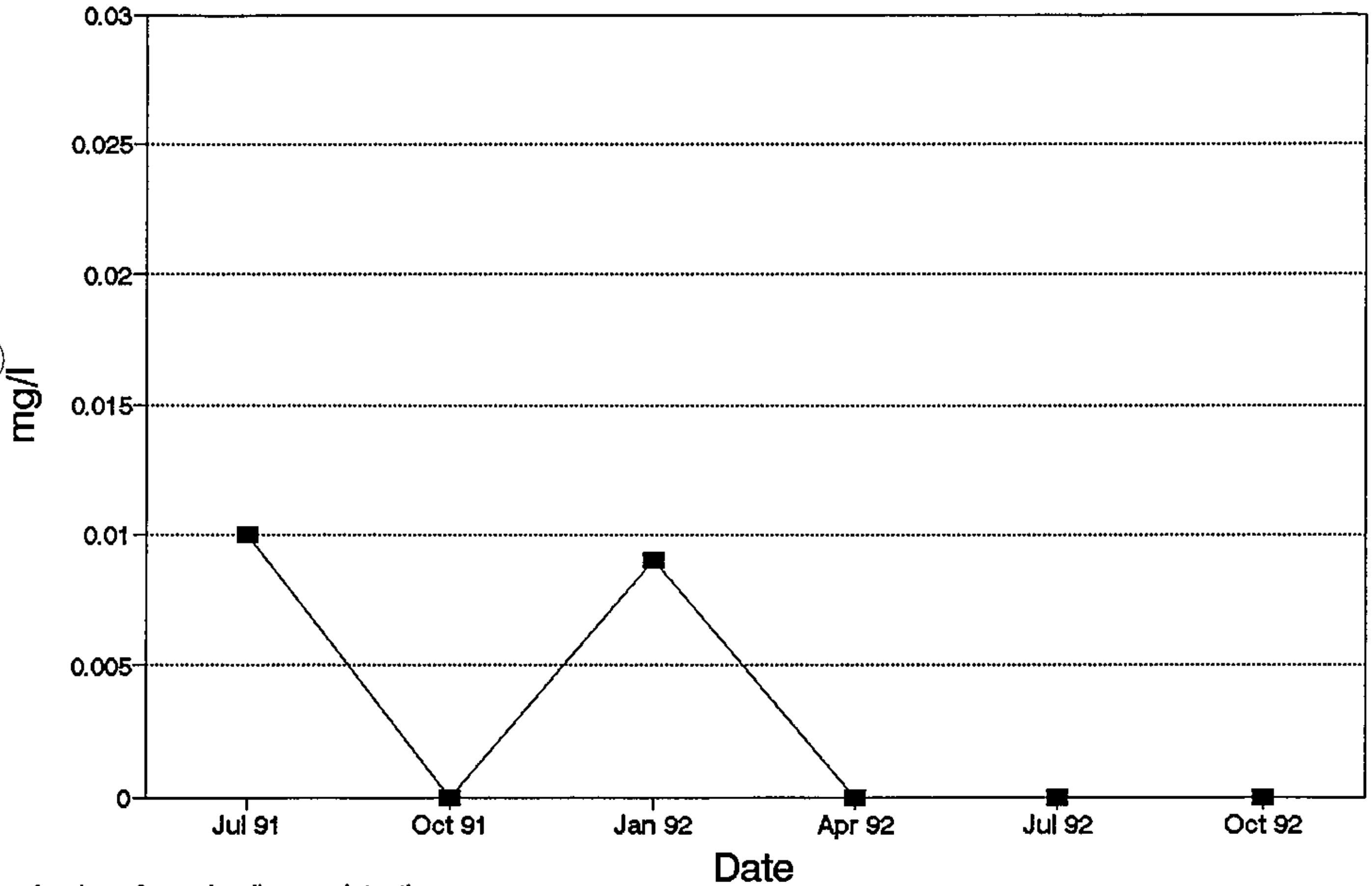
Surface Water Quality Results
Cadmium - SW2



A value of zero implies no detection

Surface Water Quality Graphs
Chromium VI

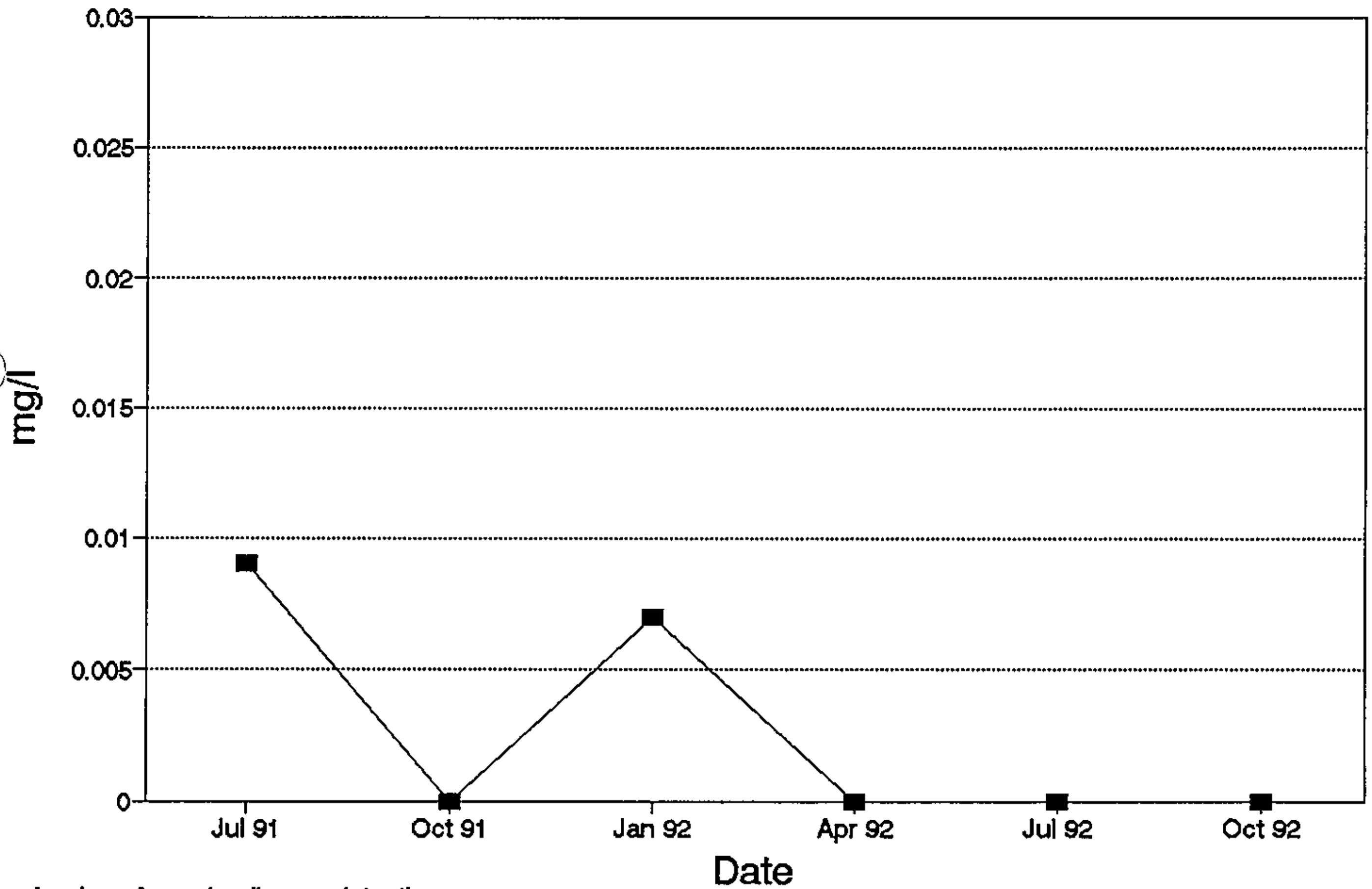
Surface Water Quality Results
Chromium VI - SW1



A value of zero implies no detection

Surface Water Quality Results

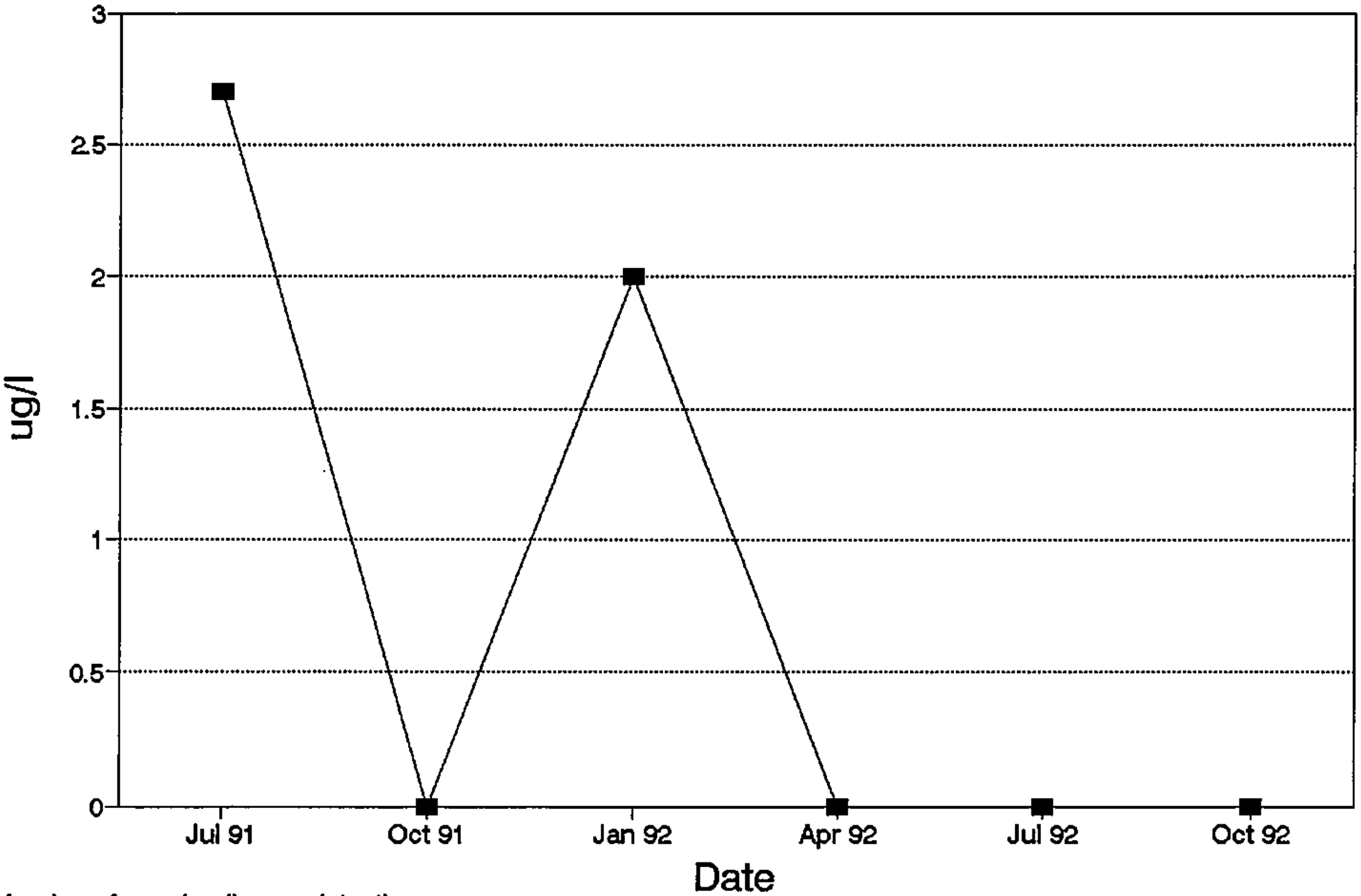
Chromium VI - SW2



A value of zero implies no detection

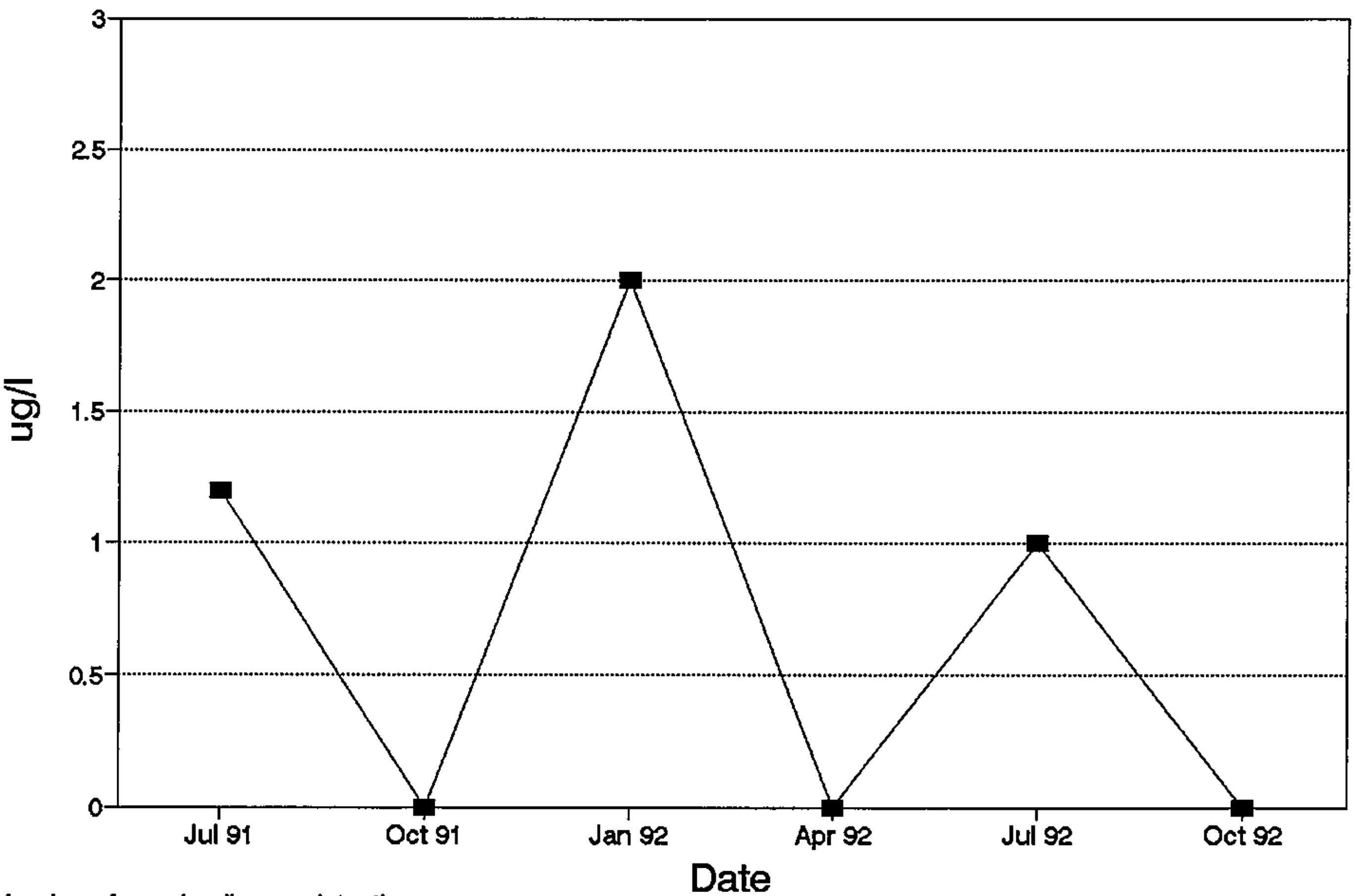
Surface Water Quality Graphs
Chromium

Surface Water Quality Results
Chromium - SW1



A value of zero implies no detection

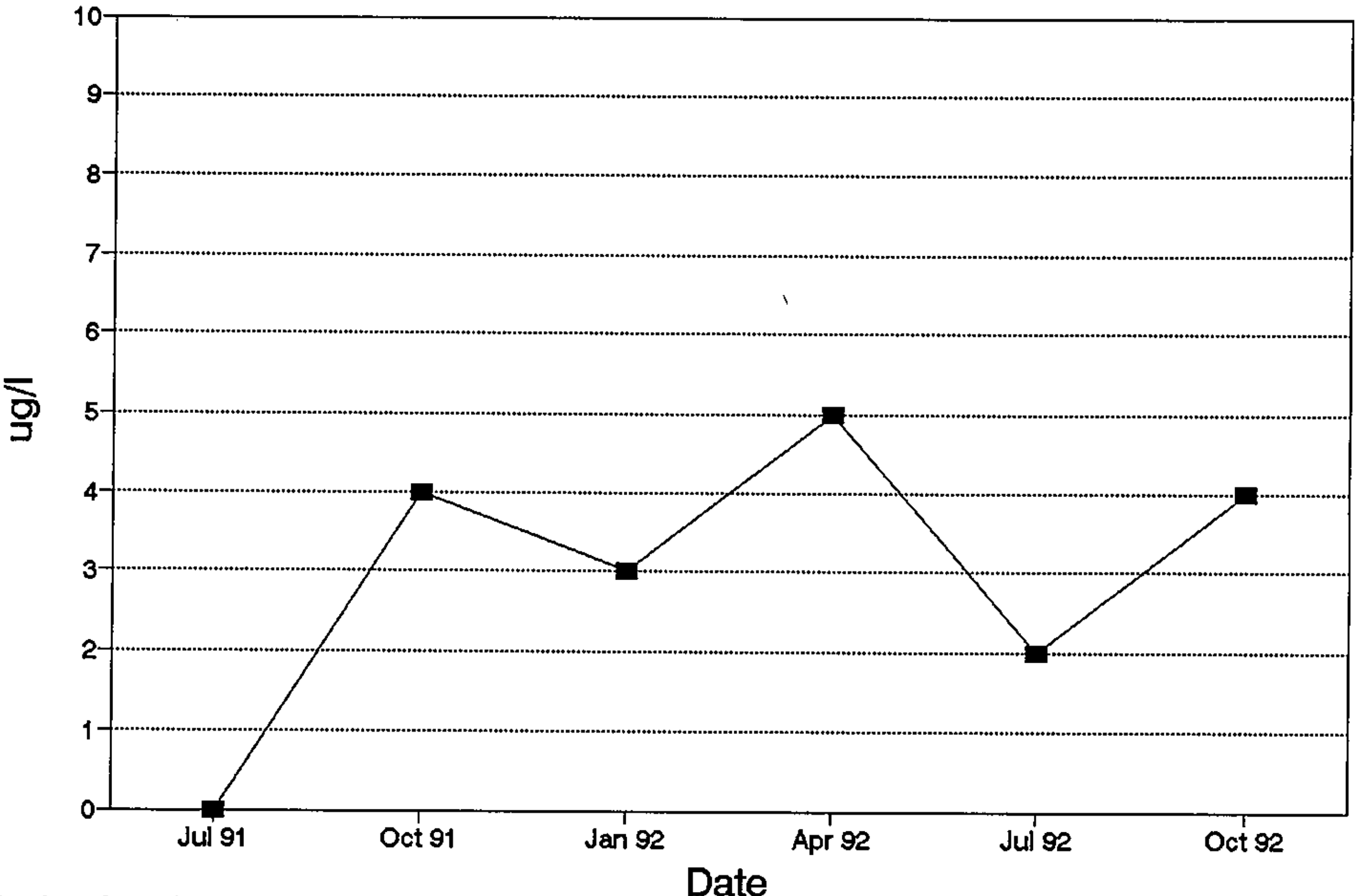
Surface Water Quality Results
Chromium - SW2



A value of zero implies no detection

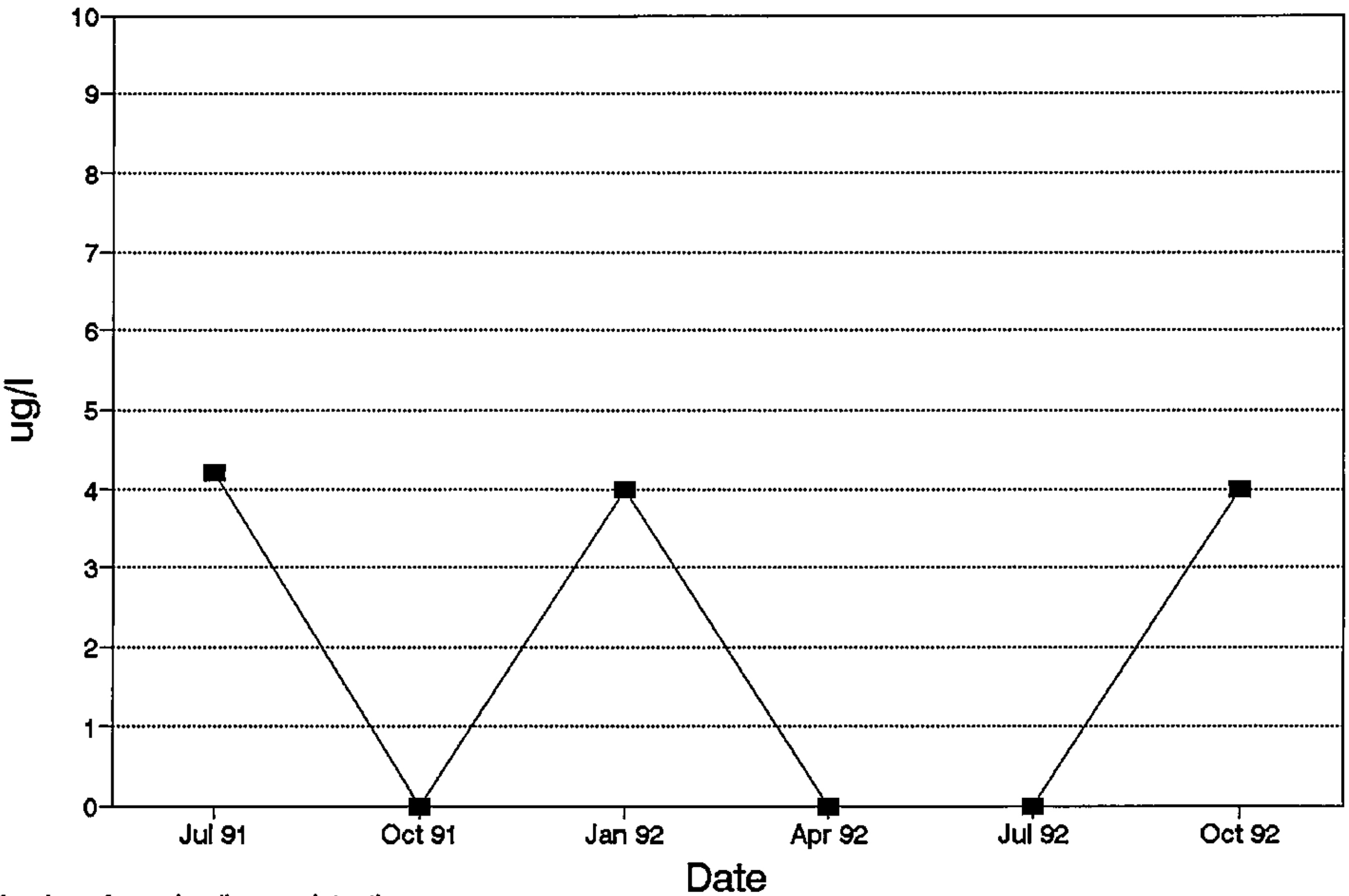
Surface Water Quality Graphs
Copper

Surface Water Quality Results
Copper - SW1



A value of zero implies no detection

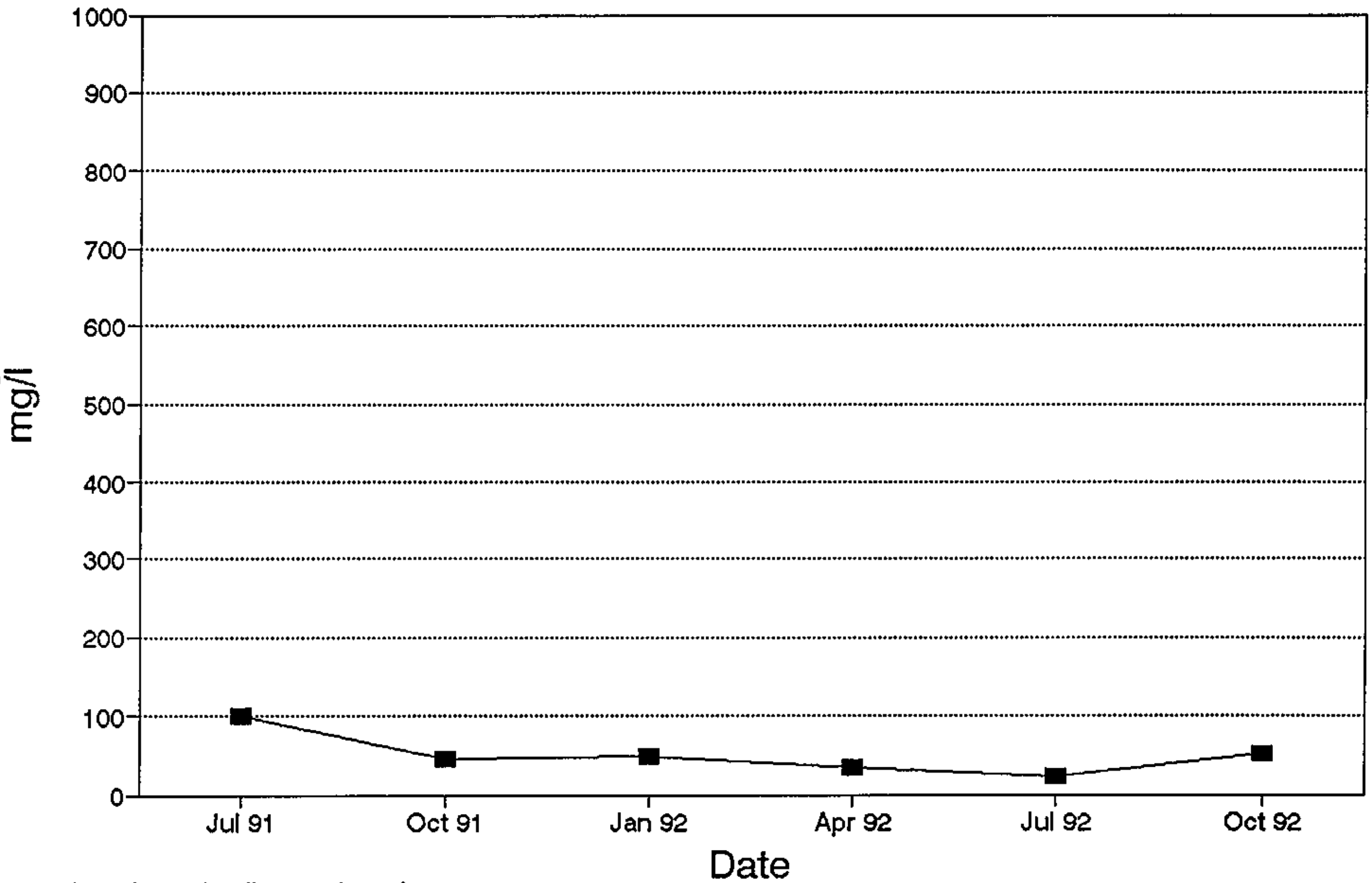
Surface Water Quality Results
Copper - SW2



A value of zero implies no detection

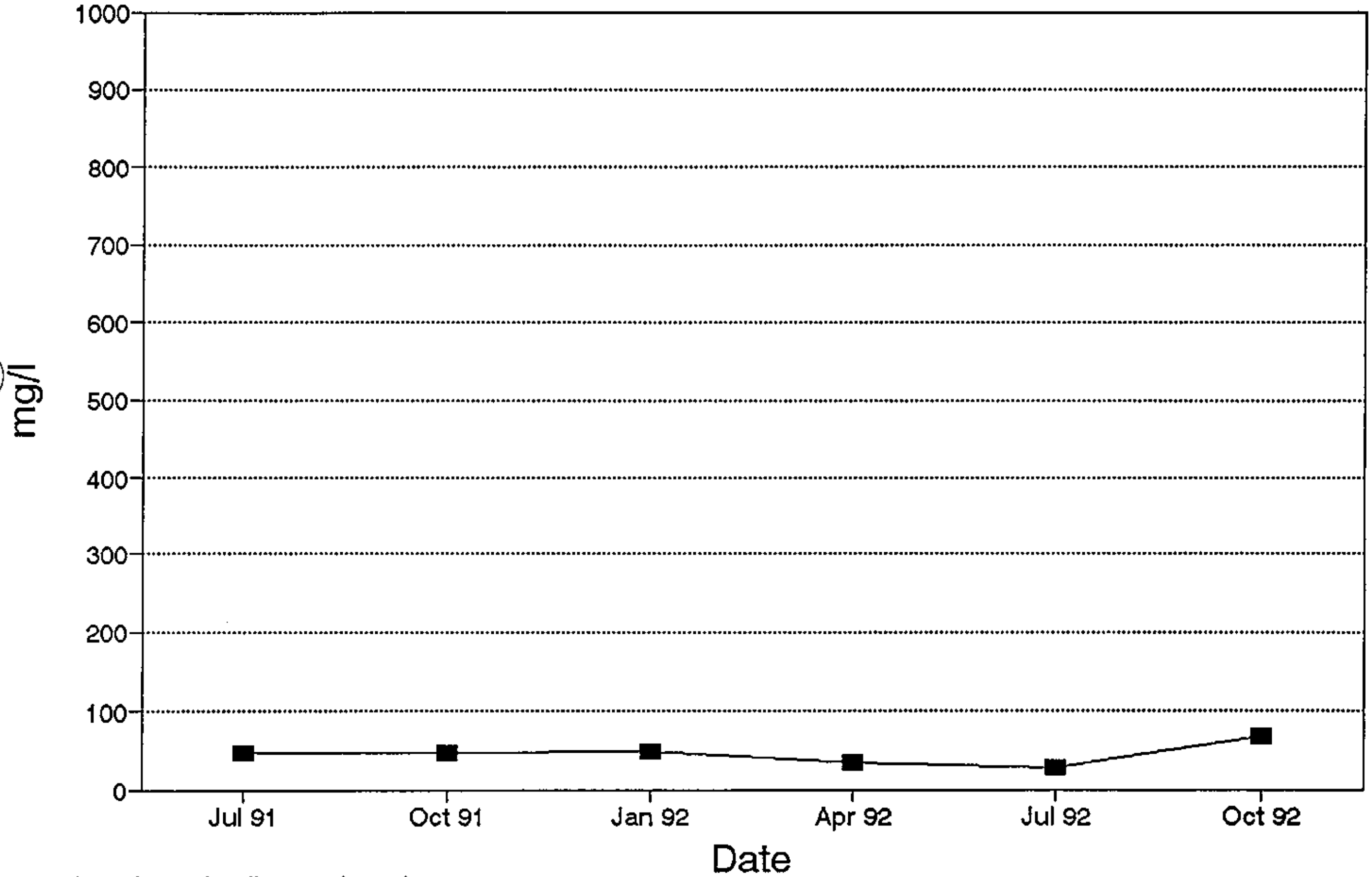
Surface Water Quality Graphs
Hardness

Surface Water Quality Results
Hardness - SW1



A value of zero implies no detection

Surface Water Quality Results
Hardness - SW2

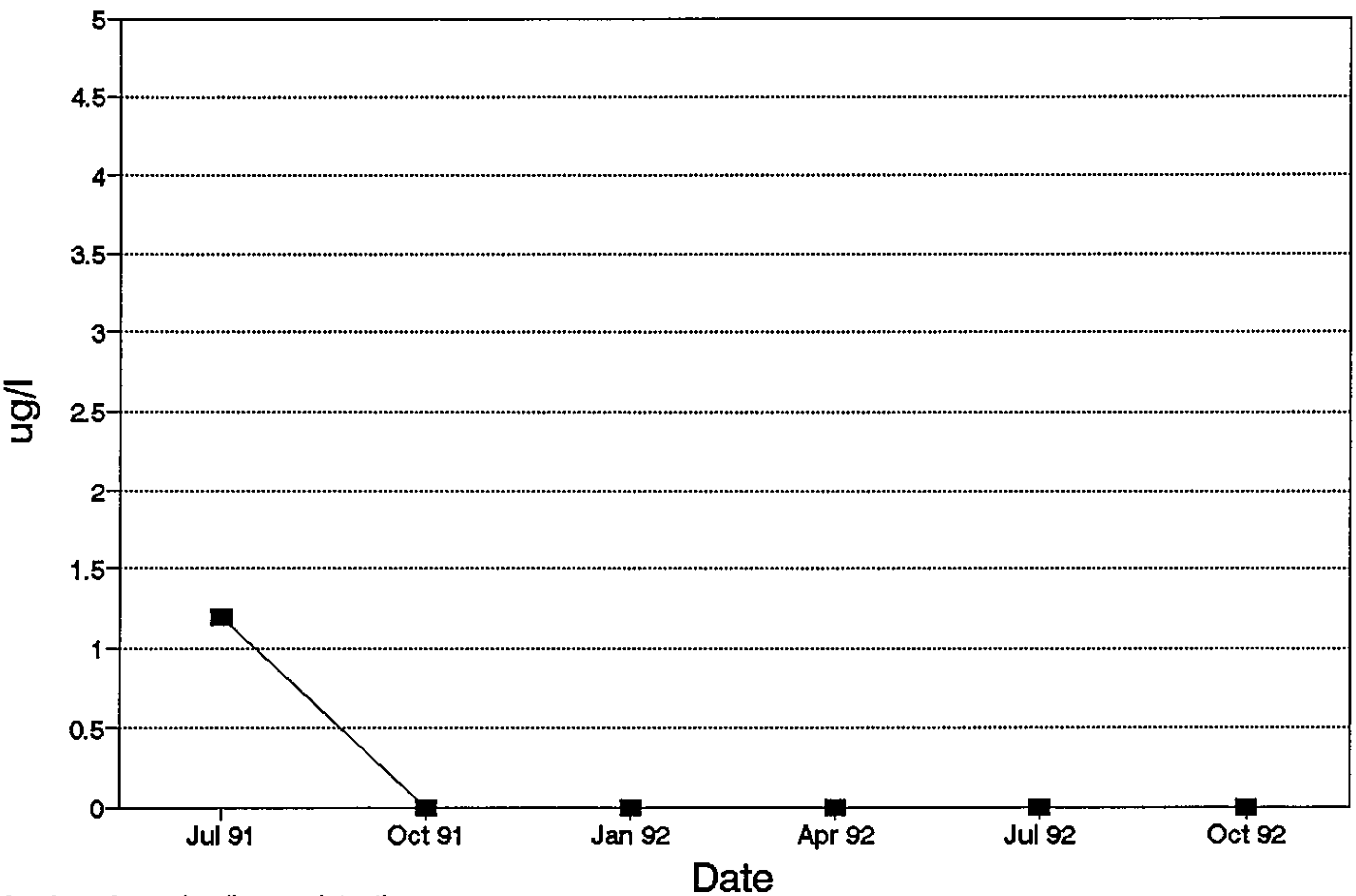


A value of zero implies no detection

Surface Water Quality Graphs
Lead

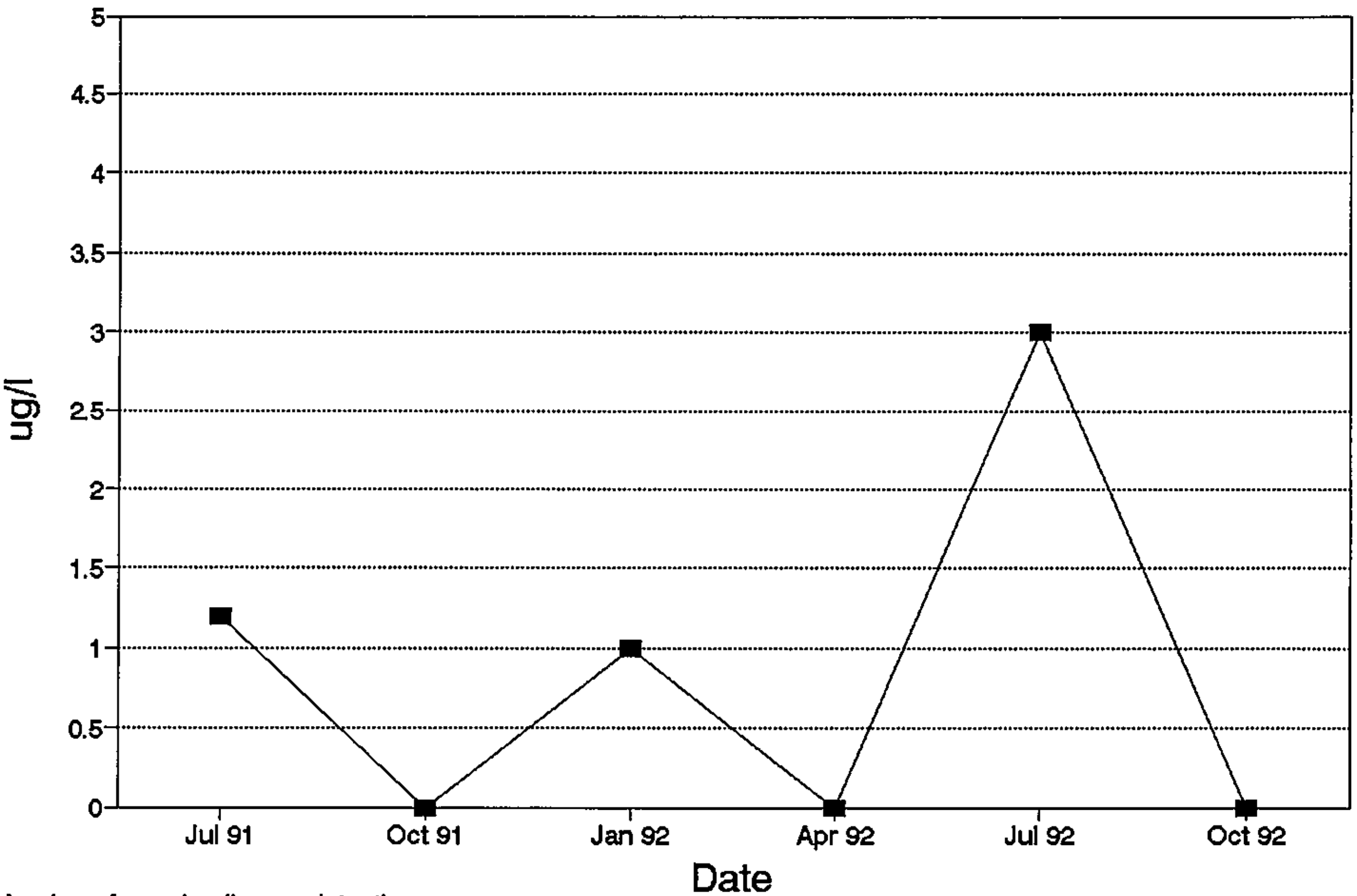
Surface Water Quality Results

Lead - SW1



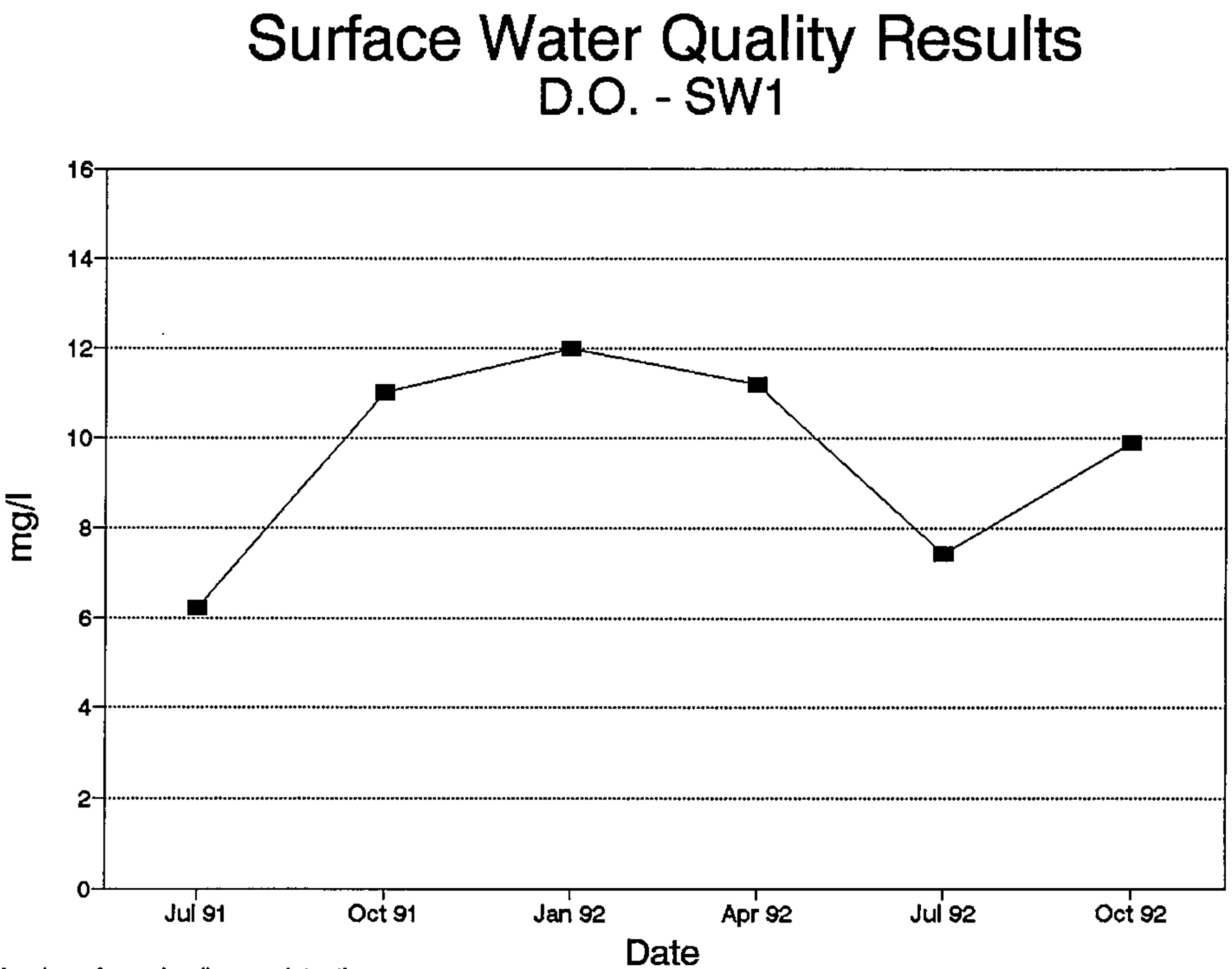
A value of zero implies no detection

Surface Water Quality Results
Lead - SW2



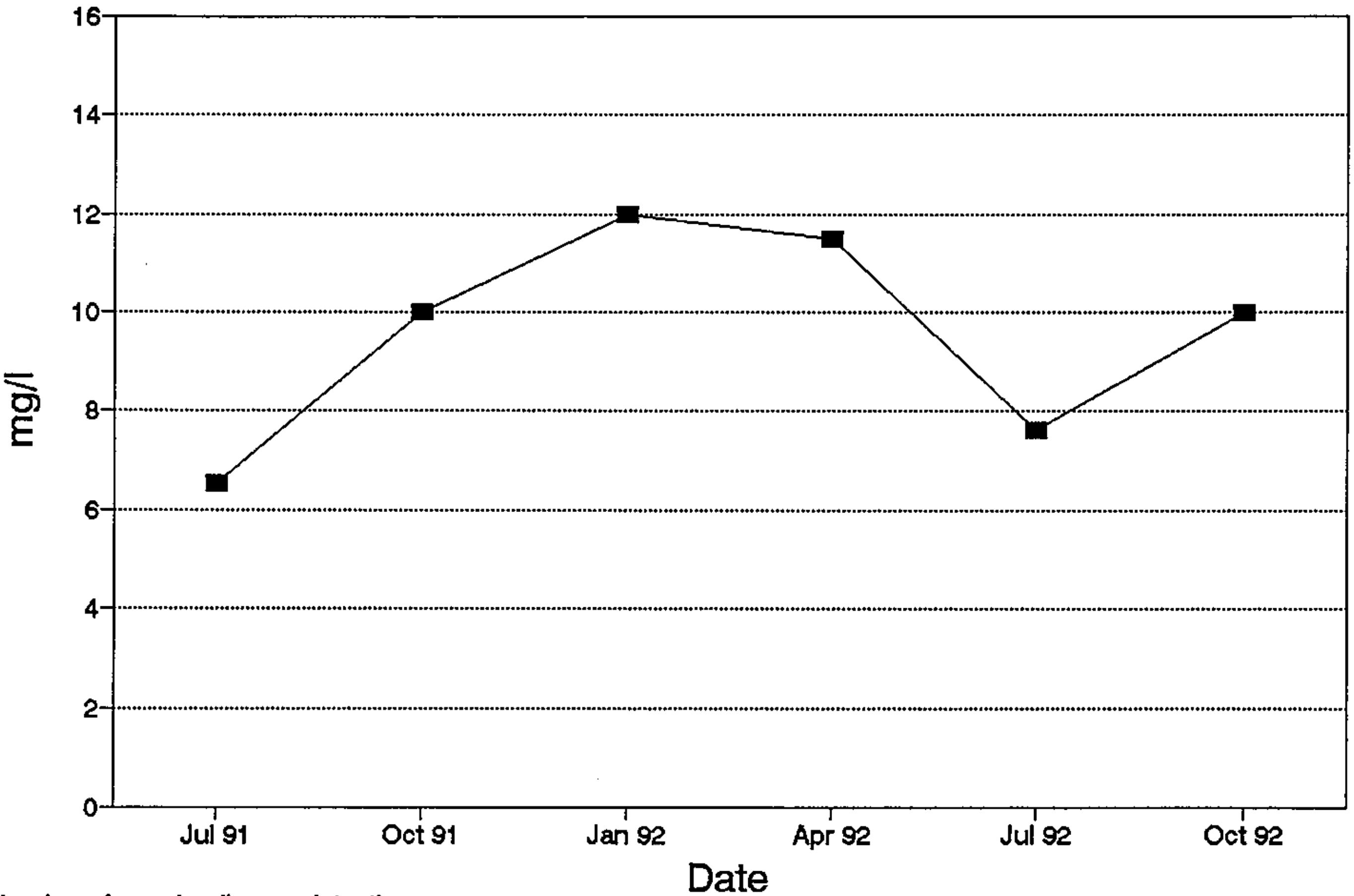
A value of zero implies no detection

Surface Water Quality Graphs
Dissolved Oxygen



A value of zero implies no detection

Surface Water Quality Results
D.O. - SW2

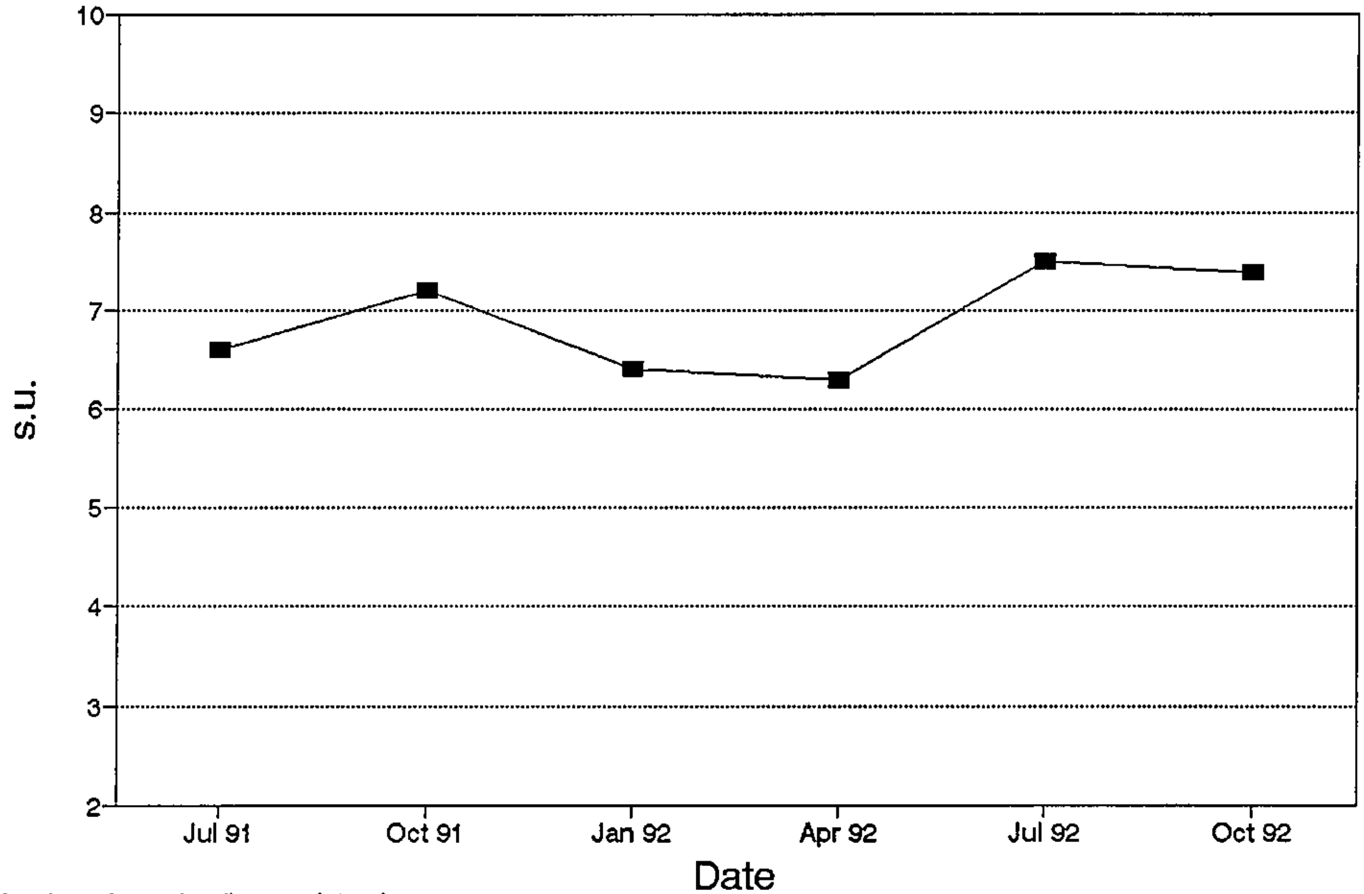


A value of zero implies no detection

Surface Water Quality Graphs
pH

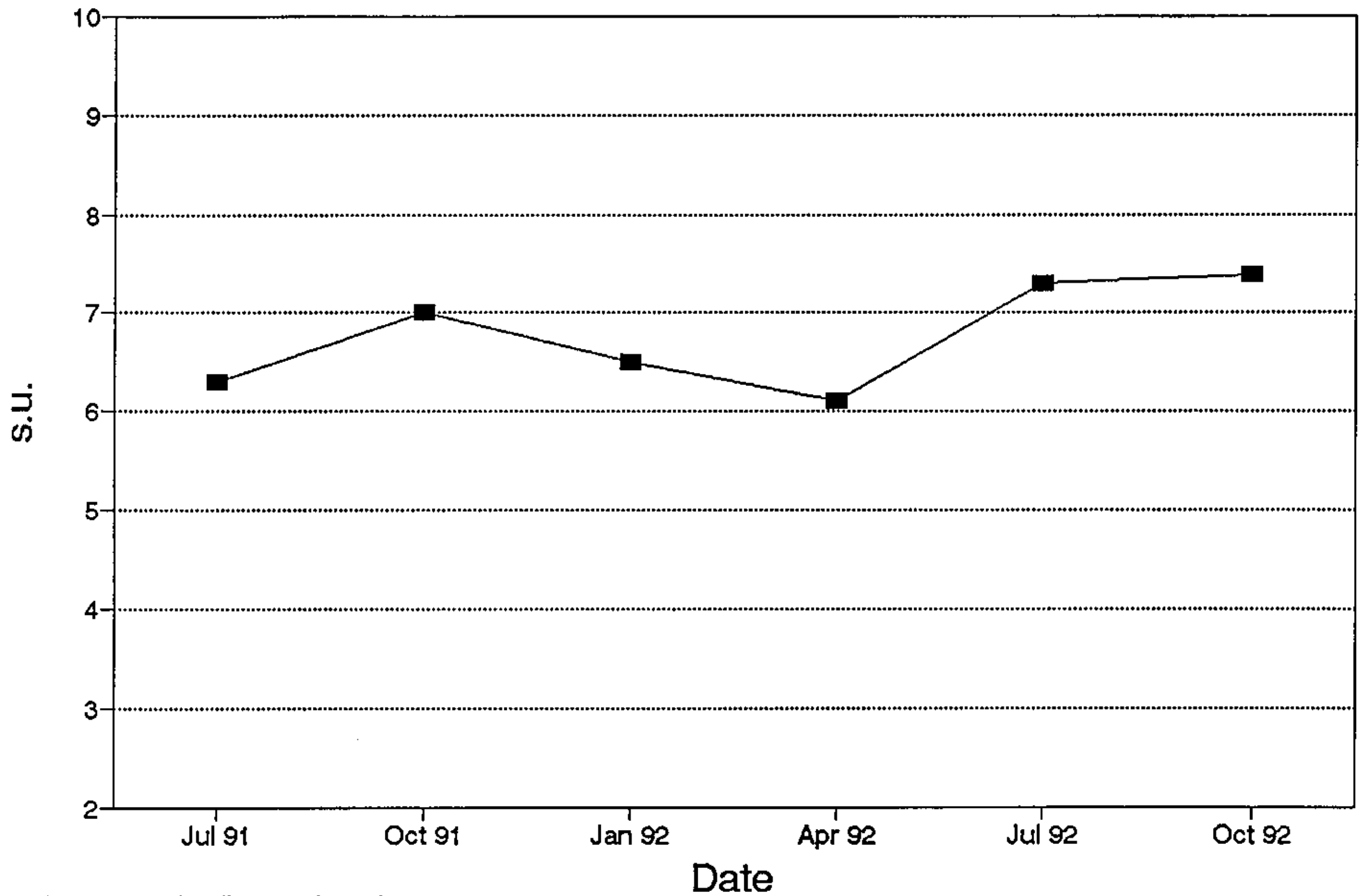
Surface Water Quality Results

pH - SW1



A value of zero implies no detection

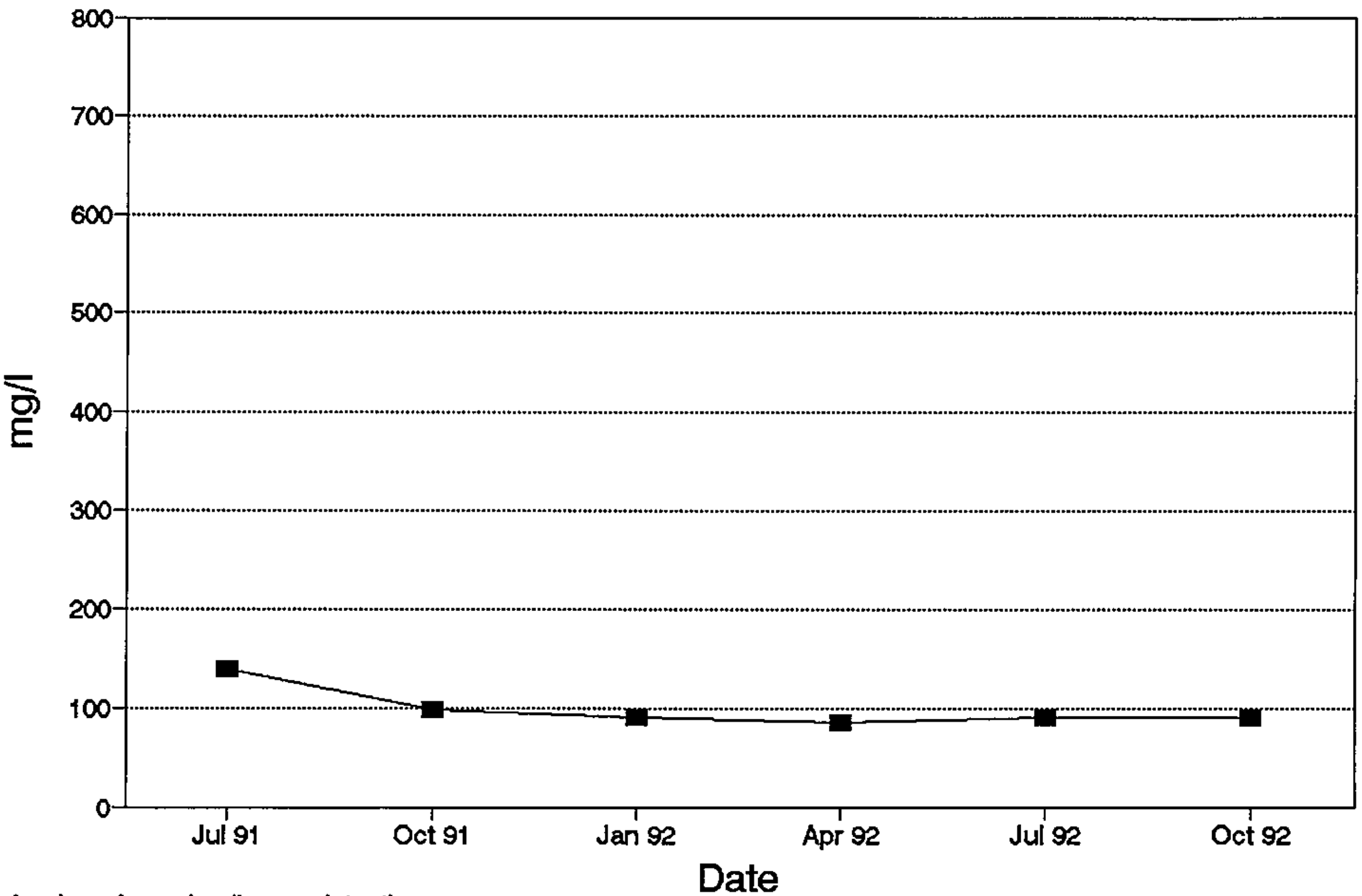
Surface Water Quality Results
pH - SW2



A value of zero implies no detection

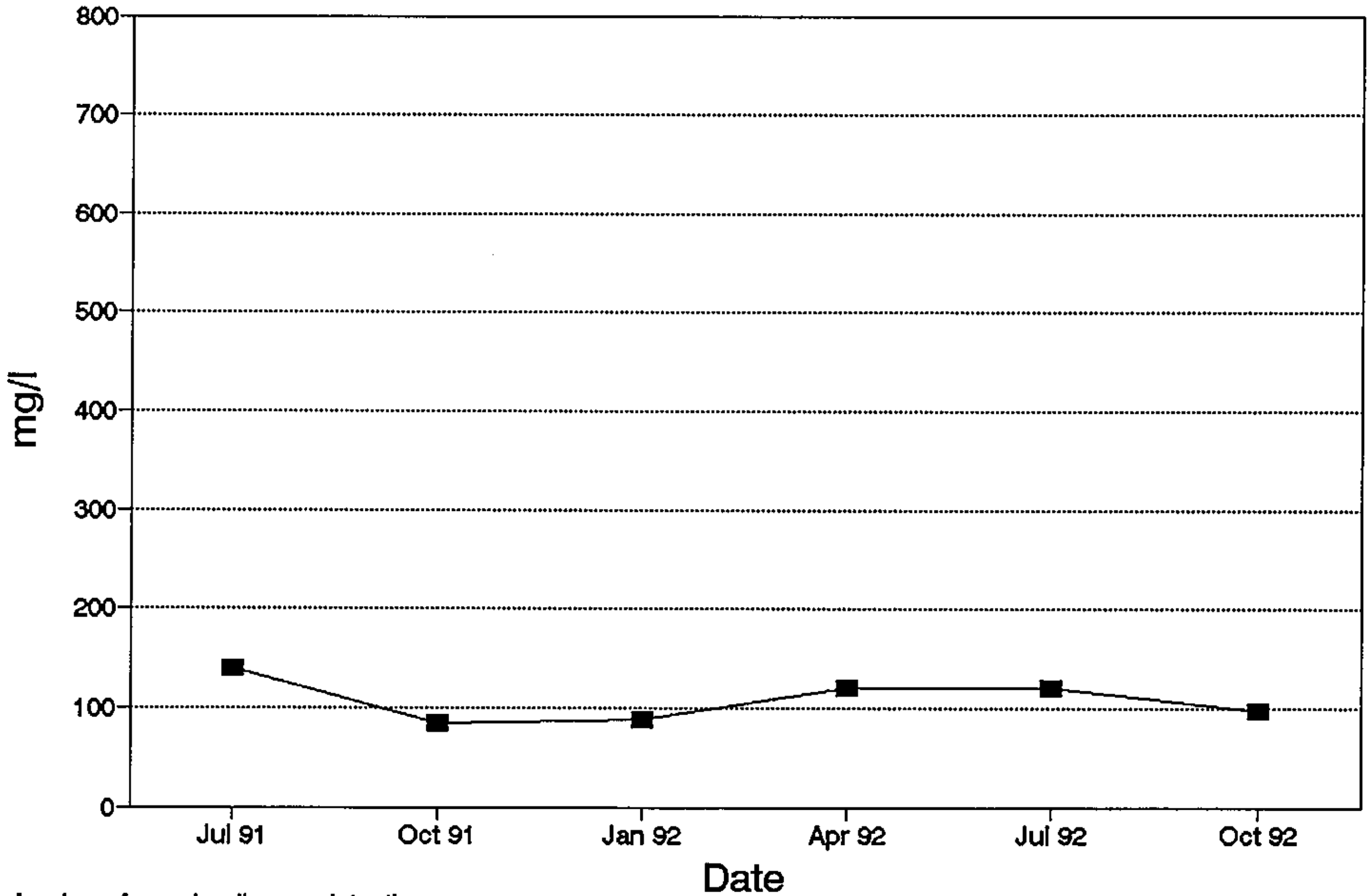
Surface Water Quality Graphs
Total Dissolved Solids

Surface Water Quality Results
TDS - SW1



A value of zero implies no detection

Surface Water Quality Results
TDS - SW2

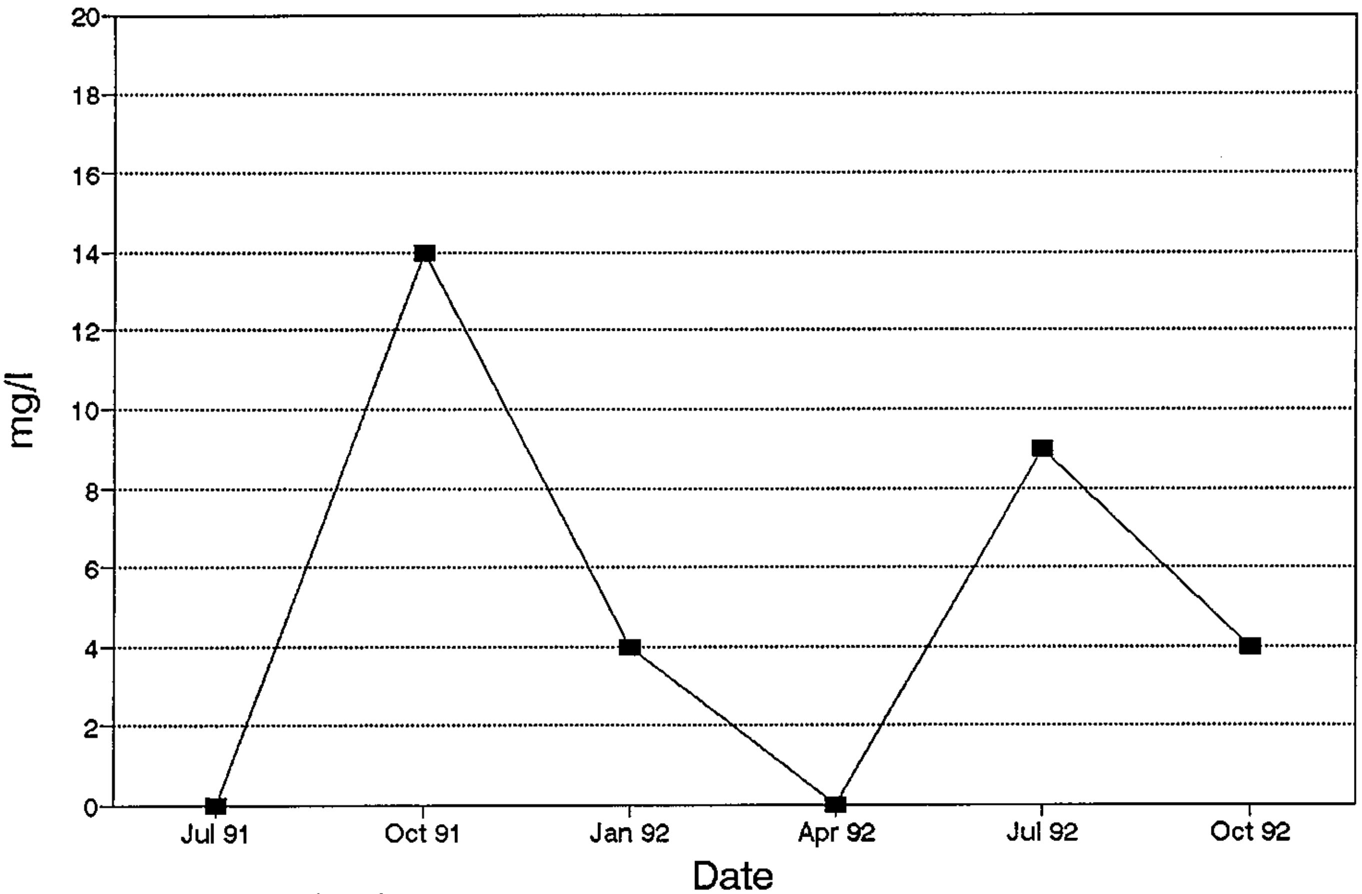


A value of zero implies no detection

Surface Water Quality Graphs
Total Suspended Solids

Surface Water Quality Results

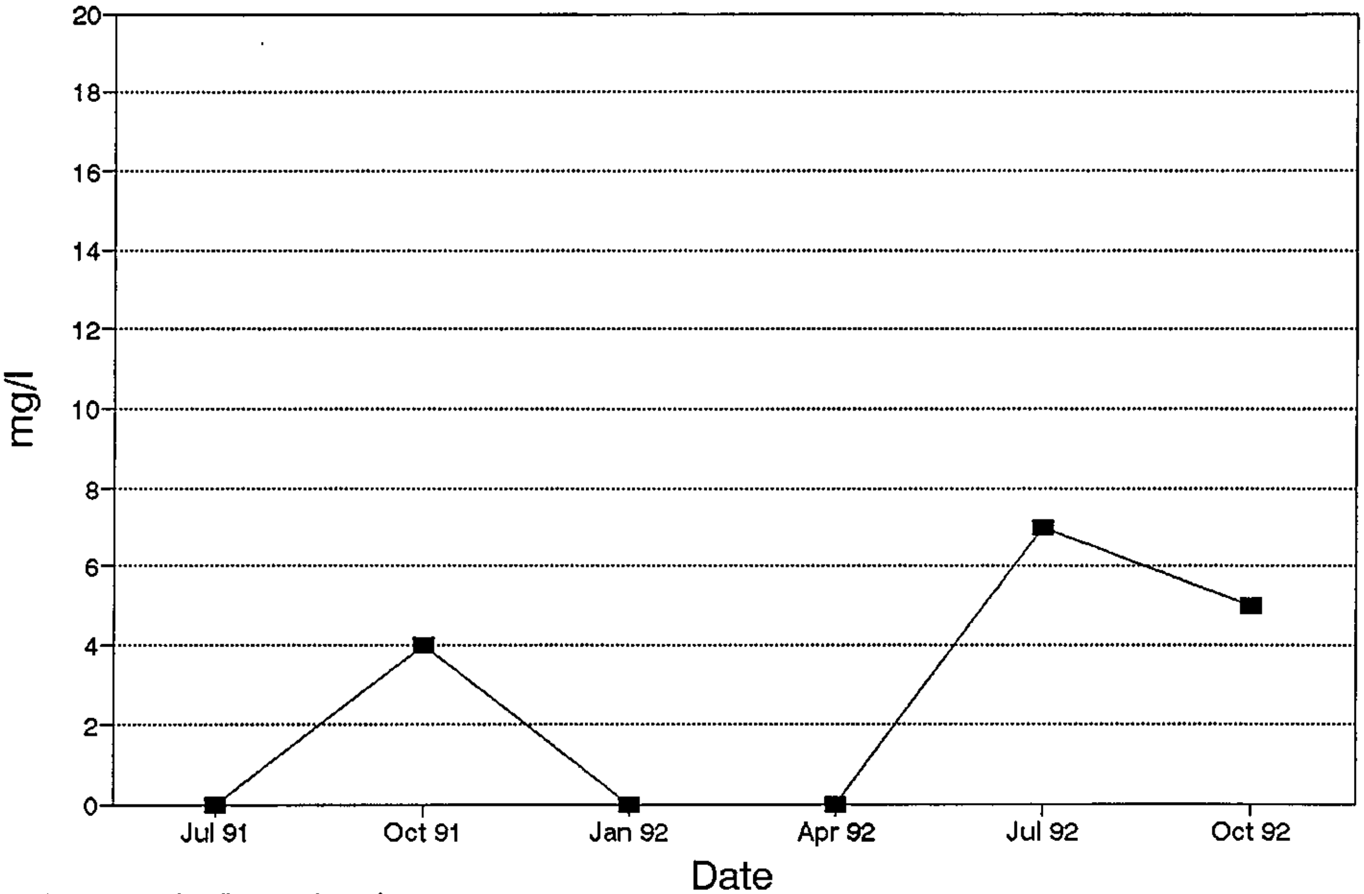
TSS - SW1



A value of zero implies no detection

Surface Water Quality Results

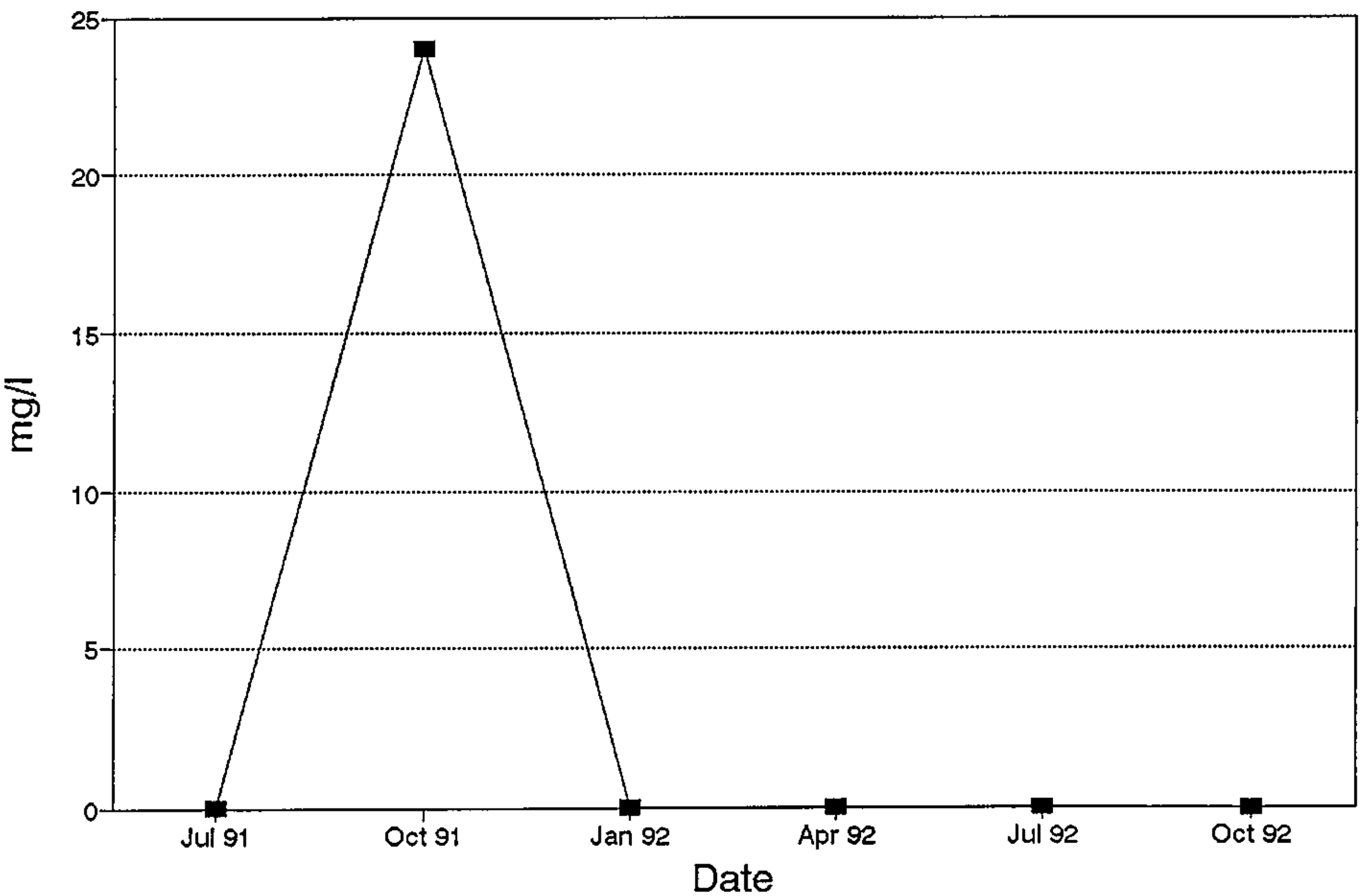
TSS - SW2



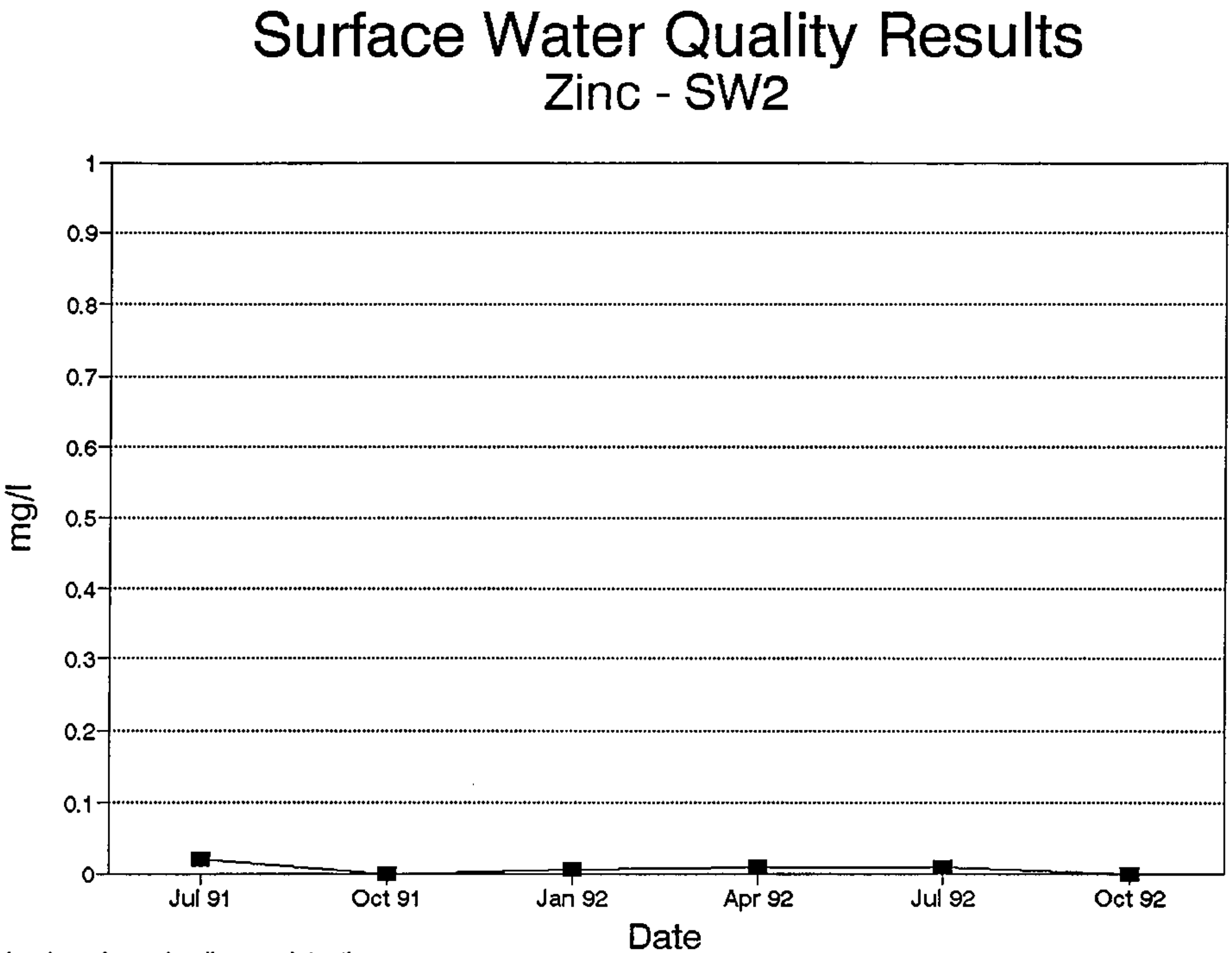
A value of zero implies no detection

Surface Water Quality Graphs
Zinc

Surface Water Quality Results
Zinc - SW1



A value of zero implies no detection



A value of zero implies no detection

Appendix J

Quarterly Flambeau River Surface Water Quality Correspondence and Laboratory Results

Engineers
Architects
Planners
Scientists

Foth & Van Dyke

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

February 24, 1992

Lawrence J. Lynch
Hydrogeologist
Mine Reclamation Unit
Bureau of Solid & Hazardous Waste Mgmt.
State of Wisconsin
Dept. of Natural Resources
P.O. Box 7921
Madison, WI 53707

Dear Mr. Lynch:

RE: **Flambeau Project**
Environmental Monitoring
Flambeau River Water Quality Results (January, 1992 Sampling Event)

Attached please find copies of the laboratory results sheets for analyses performed on water quality samples collected from the Flambeau River on January 9, 1992, on behalf of the Flambeau Mining Company.

Per your instructions, the results are being forwarded to you in this manner to satisfy WDNR reporting requirements because Turn-Around Documents (TAD's) are not presently available. Once TAD's are made available by WDNR, this data will be resubmitted to you in the TAD format.

If there are any questions regarding this submittal, please contact Jim Hutchison or myself.

Very truly yours,

Russell T. Janeshek
Associate

James B. Hutchison, P.E.
Project Manager

RTJ/JBH:lmk

ATTACHMENT

cc: Gerald W. Sevick, Foth & Van Dyke
Gordon Reinke, WI Dept. of Natural Resources
Lawrence Mercando, Flambeau Mining Company
Henry Handzel, DeWitt, Porter, et al
John Kaiser, Rusk County Board
Robert Plantz, Town of Grant
Al Christianson, City Administrator, City of Ladysmith
Clarence Glotfelty, Zoning Administrator, Rusk County
FMC-River Water Quality File
File/91F6

[A3S10]91F6.51

NORTHERN LAKE SERVICE, INC. WISCONSIN CERTIFICATION NO. 721026460
Analytical Laboratory and Environmental Services
400 North Lake Avenue
Crandon, WI 54520

Reported: 02/14/92 ANALYTICAL REPORT

Foth & Van Dyke
P.O. Box 19012
2737 S. Ridge Road
Green Bay, WI 54307

Attn: Scott Janssen

Project Title: 91F6
Description: Flambeau Mining SW
Northern Lake Project Number: 1862

Sample: 20166 Client ID: SW-1
Chain of Custody Form: 1266 Item: 1
Description: SW-1

Collected	Received
01/09/92	01/09/92

Parameter	Result
Aluminum, tot. as Al	0.70 mg/l
Arsenic, tot. as As	< 2 ug/l
Beryllium, tot. as Be by furnace AAS	< 0.2 ug/l
Cadmium, tot. as Cd by furnace AAS	< 0.2 ug/l
Chromium, Hex. as Cr+6	0.009 mg/l
Chromium, tot. as Cr by furnace AAS	2 ug/l
Hardness, tot. as CaCO3	50 mg/l
Lead, tot. as Pb by furnace AAS	< 1 ug/l
Mercury, tot. as Hg	< 0.2 ug/l
Nickel, tot. as Ni	< 0.05 mg/l
Oxygen, dissolved	12 mg/l
pH, lab	6.4 s.u.
Selenium, tot. as Se	< 2 ug/l
Silver, tot. as Ag by furnace AAS	< 0.5 ug/l
Solids, tot. dis. (TDS)	90 mg/l
Solids, tot. susp. (TSS)	4 mg/l
Zinc, tot. as Zn by furnace AAS	analytical interference
Lab filtration	yes
Metals digestion-water	yes
Zinc, tot. as Zn low level	0.008 mg/l
Copper, tot. as Cu low level	3 ug/l

Tom Herman
Technical Director

NORTHERN LAKE SERVICE, INC. WISCONSIN CERTIFICATION NO. 721026460
Analytical Laboratory and Environmental Services
400 North Lake Avenue
Crandon, WI 54520

Reported: 02/14/92 ANALYTICAL REPORT

Foth & Van Dyke
P.O. Box 19012
2737 S. Ridge Road
Green Bay, WI 54307

Attn: Scott Janssen

Project Title: 91F6
Description: Flambeau Mining SW
Northern Lake Project Number: 1862

Sample: 20167 Client ID: SW-2
Chain of Custody Form: 1266 Item: 2
Description: SW-2

Collected	Received
01/09/92	01/09/92

Parameter	Result
Aluminum, tot. as Al	0.42 mg/l
Arsenic, tot. as As	< 2 ug/l
Beryllium, tot. as Be by furnace AAS	< 0.2 ug/l
Cadmium, tot. as Cd by furnace AAS	< 0.2 ug/l
Chromium, Hex. as Cr+6	0.007 mg/l
Chromium, tot. as Cr by furnace AAS	2 ug/l
Hardness, tot. as CaCO3	50 mg/l
Lead, tot. as Pb by furnace AAS	1 ug/l
Mercury, tot. as Hg	< 0.2 ug/l
Nickel, tot. as Ni	< 0.05 mg/l
Oxygen, dissolved	12 mg/l
pH, lab	6.5 s.u.
Selenium, tot. as Se	< 2 ug/l
Silver, tot. as Ag by furnace AAS	< 0.5 ug/l
Solids, tot. dis. (TDS)	87 mg/l
Solids, tot. susp. (TSS)	< 1 mg/l
Zinc, tot. as Zn by furnace AAS	analytical interference
Lab filtration	yes
Metals digestion-water	yes
Zinc, tot. as Zn low level	0.004 mg/l
Copper, tot. as Cu low level	4 ug/l

Tom Herman
Technical Director

June 10, 1992

Foth & Van Dyke

Engineers
Architects
Planners
Scientists

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

Mr. Lawrence J. Lynch
Hydrogeologist
Mine Reclamation Unit
Bureau of Solid & Hazardous Waste Management
State of Wisconsin
Department of Natural Resources
P.O. Box 7921
Madison, WI 53707

Dear Mr. Lynch:

RE: Flambeau Project
Environmental Monitoring
Flambeau River Water Quality Results (April, 1992, Sampling Event)

Attached are copies of the laboratory results sheets for analyses performed on water quality samples collected from the Flambeau River on April 9, 1992, on behalf of the Flambeau Mining Company.

Per your instructions, the results are being forwarded to you in this manner to satisfy WDNR reporting requirements because Turn-Around Documents (TADs) are not presently available. Once TADs are made available by WDNR, these data will be resubmitted to you in the TAD format.

If there are any questions regarding this submittal, please contact Jim Hutchison or me.

Sincerely,

Foth & Van Dyke

Russell T. Janeshek
Associate

James B. Hutchison, P.E.
Project Manager

RTJ:JBH:rrf

Attachments

cc: Gerald W. Sevick, Foth & Van Dyke
Gordon Reinke, WI Dept. of Natural Resources
Lawrence Mercando, Flambeau Mining Company
Henry Handzel, DeWitt, Porter et al
John Kaiser, Rusk County Board
Robert Plantz, Town of Grant
Al Christianson, City Administrator, City of Ladysmith
Clarence Glotfelty, Zoning Administrator, Rusk County
FMC-River Water Quality File

[A3S10]91F6.F51

NORTHERN LAKE SERVICE, INC. WISCONSIN CERTIFICATION NO. 721026460
Analytical Laboratory and Environmental Services
400 North Lake Avenue
Crandon, WI 54520

Reported: 05/27/92 ANALYTICAL REPORT Page: 1

Foth & Van Dyke
P.O. Box 19012
2737 S. Ridge Road
Green Bay, WI 54307

Attn: Russ Janeshek

Project Title: 91F6
Description: Flambeau Mining
Northern Lake Project Number: 2508

Sample: 22627 Client ID: SW-1
Chain of Custody Form: 1647 Item: 1
Description: SW-1

Collected	Received
04/09/92	04/09/92

Parameter	Result
Aluminum, tot. as Al	0.75 mg/l
Arsenic, tot. as As	< 2 ug/l
Beryllium, tot. as Be	< 0.001 mg/l
Cadmium, tot. as Cd by furnace AAS	< 0.2 ug/l
Chromium, Hex. as Cr+6	0.012 mg/l
Chromium, tot. as Cr by furnace AAS	< 1 ug/l
Hardness, tot. as CaCO3	34 mg/l
Lead, tot. as Pb by furnace AAS	< 1 ug/l
Mercury, tot. as Hg	< 0.2 ug/l
Nickel, tot. as Ni	< 0.02 mg/l
Oxygen, dissolved	11.2 mg/l
pH, lab	6.3 s.u.
Selenium, tot. as Se	< 2 ug/l
Silver, tot. as Ag by furnace AAS	< 0.5 ug/l
Solids, tot. dis. (TDS)	86 mg/l
Solids, tot. susp. (TSS)	< 1 mg/l
Zinc, tot. as Zn	0.011 mg/l
Metals digestion-water	yes
Copper, tot. as Cu low level	5 ug/l

Updated report 5/27/92.

Ron Krueger
Laboratory Director

NORTHERN LAKE SERVICE, INC. WISCONSIN CERTIFICATION NO. 721026460
Analytical Laboratory and Environmental Services
400 North Lake Avenue
Crandon, WI 54520

Reported: 05/27/92 ANALYTICAL REPORT

Foth & Van Dyke
P.O. Box 19012
2737 S. Ridge Road
Green Bay, WI 54307

Attn: Russ Janeshek

Project Title: 91F6
Description: Flambeau Mining
Northern Lake Project Number: 2508

Sample: 22628 Client ID: SW-2
Chain of Custody Form: 1647 Item: 2
Description: SW-2
Collected Received
04/09/92 04/09/92

Parameter	Result
Aluminum, tot. as Al	0.72 mg/l
Arsenic, tot. as As	< 2 ug/l
Beryllium, tot. as Be	< 0.001 mg/l
Cadmium, tot. as Cd by furnace AAS	< 0.2 ug/l
Chromium, Hex. as Cr+6	0.010 mg/l
Chromium, tot. as Cr by furnace AAS	< 1 ug/l
Hardness, tot. as CaCO3	34 mg/l
Lead, tot. as Pb by furnace AAS	< 1 ug/l
Mercury, tot. as Hg	< 0.2 ug/l
Nickel, tot. as Ni	< 0.02 mg/l
Oxygen, dissolved	11.5 mg/l
pH, lab	6.1 s.u.
Selenium, tot. as Se	< 2 ug/l
Silver, tot. as Ag by furnace AAS	< 0.5 ug/l
Solids, tot. dis. (TDS)	120 mg/l
Solids, tot. susp. (TSS)	< 1 mg/l
Zinc, tot. as Zn	0.009 mg/l
Metals digestion-water	yes
Copper, tot. as Cu low level	< 2 ug/l

Ron Krueger
Laboratory Director

Updated report 5/27/92.

NORTHERN LAKE SERVICE, INC.

400 NORTH LAKE AVE.
CRANDON, WI 54520
715/478-2777 Fax: 715/478-3060

Wisconsin Lab Cert. No. 721026460

1647

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

CLIENT Foth & Van Dyke Associates	PROJECT TITLE Flambeau Mining
ADDRESS 2737 So. Ridge Road	PROJECT # 91F6 PO#
CITY,STATE,ZIP Green Bay, WI 54304	CONTACT Russ Janeshek PHONE 414/497-2500

LINE #	NLS LAB #	SAMPLE I.D	COLLECTION TIME	COLLECTION DATE	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE PNP	PN				COLLECTION REMARKS
1	22627	SW-1	1010	4/9/92	SW	GRAB	1	1				
2	22628	SW-2	0845	↓	↓	↓	1	1				
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

SAMPLE TYPES
SW = surface water
WW = wastewater
GW = groundwater
DW = drinking water
AIR = air
TIS = tissue
PROD = product
SOIL = soil
SED = sediment
describe others

CONTAINER TYPES
P = plastic
G = glass
V = glass vial
B = plastic bag
describe others

PRESERVATIVES & PREPARATION
NP = nothing added
S = sulfuric acid
N = nitric acid
H = hydrochloric acid
OH = sodium hydroxide
Z = zinc acetate
HA = hydrochloric & ascorbic acid
F = field filtered
describe others

COLLECTED BY (signatures) Scott Jansen | SEALED BY (signature) | SEAL # | DATE/TIME

RELINQUISHED BY (signature) Scott Jansen | RECEIVED BY (signature) | DATE/TIME 4/9/92 1410

RELINQUISHED BY (signature) | RECEIVED BY (signature) | DATE/TIME

DISPATCHED BY (signature) | DATE/TIME | METHOD OF TRANSPORT

RECEIVED AT NLS BY (signature) D. Cottrell | DATE/TIME 4/9/92 14:10 | CONDITION | TEMP. 0°

SEAL INTACT? ____yes ____no | SEAL #

REMARKS & OTHER INFORMATION

THIS IS AN IMPORTANT DOCUMENT. To meet regulatory requirements, this form must be completed in detail and included in the shipper containing the samples described.

/chain.doc-revised 6/91

RETURN THIS PAGE WITH SAMPLES. CLIENT MAY KEEP PINK COPY.

NORTHERN LAKE SERVICE, INC.

400 NORTH LAKE AVENUE
CRANDON, WI 54520 (715)478-2777

INSTRUCTIONS TO NORTHERN LAKE SERVICE LAB

These instructions are ordered by Scott Janssen (client signature) and apply to samples described on COLLECTION AND CUSTODY RECORD number 1647.

Unless otherwise indicated, total values will be determined. Write "dis" after any parameter or which dissolved determinations are to be made, E for extractable, and L for low level.

Samples on line numbers: 1 : 2 to be analyzed for the parameters checked below:

- [ ] Alkalinity, total
- [ ] Alkalinity, bicarb.
- [x] Aluminum ICP
- [ ] Antimony
- [x] Arsenic GF
- [ ] Barium
- [x] Beryllium ICP
- [ ] B.O.D.-5
- [ ] Boron
- [x] Cadmium GF
- [ ] Calcium
- [ ] C.O.D.
- [ ] Chloride
- [x] Chromium GF
- [x] Chromium, hexavalent
- [ ] Cobalt
- [ ] Coliform, fecal
- [ ] Color
- [ ] Conductivity
- [x] Copper LL
- [x] Oxygen, diss. (Lab)

- [ ] Cyanide, total
- [ ] Amenable
- [ ] Fluoride
- [x] Hardness
- [ ] Iron
- [x] Lead GF
- [ ] Magnesium
- [ ] Manganese
- [x] Mercury CV
- [ ] Molybdenum
- [x] Nickel ICP
- [ ] Nitrogen, total
- [ ] Ammonia
- [ ] Nitrate
- [ ] Nitrite
- [ ] Nitrate + Nitrite
- [ ] Total Kjeldahl
- [ ] Total Organic
- [ ] Oil & Grease
- [x] pH (lab)
- [x] digestion for metals

- [ ] Phenols
- [ ] Phosphorus, total
- [ ] Tot. reactive
- [ ] Dis. reactive
- [ ] Potassium
- [x] Selenium GF
- [x] Silver GF
- [ ] Sodium
- [ ] Solids, total
- [x] Tot. dissolved
- [x] Tot. suspended
- [ ] Sulfate
- [ ] Sulfide
- [ ] Surfactants (MBAS)
- [ ] Thallium
- [ ] Tin
- [ ] T.O.C.
- [ ] Turbidity
- [ ] Vanadium
- [x] Zinc
- [ ] ______

- [ ] Acids/Bases/Neutrals by GC/MS
- [ ] BTEX
- [ ] Pesticides-Organochlorine
- [ ] Pesticides-Organophosphate
- [ ] PCBs
- [ ] Phenols by GC
- [ ] Phenoxy Acid Herbicides
- [ ] PNAs
- [ ] TPH-Diesel
- [ ] TPH-Gasoline
- [ ] TCLP-metals
- [ ] TCLP-VOCs
- [ ] TCLP-pesticides/herbicides
- [ ] TCLP-BNAs
- [ ] VOCs by EPA 601 + 602
- [ ] VOCs-by EPA 8010 + 8020
- [ ] VOCs-by EPA 8021
- [ ] VOCs-by EPA 502.2 (SDWA)
- [ ] Municipal Sludge, WI List
- [ ] ______

Samples on line numbers: ______ to be analyzed for the parameters checked below:

- [ ] Alkalinity, total
- [ ] Alkalinity, bicarb.
- [ ] Aluminum
- [ ] Antimony
- [ ] Arsenic
- [ ] Barium
- [ ] Beryllium
- [ ] B.O.D.-5
- [ ] Boron
- [ ] Cadmium
- [ ] Calcium
- [ ] C.O.D.
- [ ] Chloride
- [ ] Chromium
- [ ] Chromium, hexavalent
- [ ] Cobalt
- [ ] Coliform, fecal
- [ ] Color
- [ ] Conductivity
- [ ] Copper
- [ ] ______

- [ ] Cyanide, total
- [ ] Amenable
- [ ] Fluoride
- [ ] Hardness
- [ ] Iron
- [ ] Lead
- [ ] Magnesium
- [ ] Manganese
- [ ] Mercury
- [ ] Molybdenum
- [ ] Nickel
- [ ] Nitrogen, total
- [ ] Ammonia
- [ ] Nitrate
- [ ] Nitrite
- [ ] Nitrate + Nitrite
- [ ] Total Kjeldahl
- [ ] Total Organic
- [ ] Oil & Grease
- [ ] pH
- [ ] ______

- [ ] Phenols
- [ ] Phosphorus, total
- [ ] Tot. reactive
- [ ] Dis. reactive
- [ ] Potassium
- [ ] Selenium
- [ ] Silver
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- [ ] Solids, total
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- [ ] Phenols by GC
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- [ ] PNAs
- [ ] TPH-Diesel
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- [ ] VOCs-by EPA 8010 + 8020
- [ ] VOCs-by EPA 8021
- [ ] VOCs-by EPA 502.2 (SDWA)
- [ ] Municipal Sludge, WI List
- [ ] ______

SPECIAL INSTRUCTIONS TO LAB: ______

nsmcol2.doc revised 8/91

Engineers
Architects
Planners
Scientists

Foth & Van Dyke

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

September 10, 1992

Mr. Lawrence J. Lynch
Hydrogeologist
Mine Reclamation Unit
Bureau of Solid and Hazardous Waste Management
State of Wisconsin
Department of Natural Resources
P. O. Box 7921
Madison, WI 53707

Dear Mr. Lynch:

RE: Flambeau Mining Company
Environmental Monitoring
Flambeau River Water Quality Results (July 1992)

Attached are copies of the laboratory results sheets for analyses performed on samples collected from the Flambeau River on July 16, 1992 on behalf of Flambeau Mining Company.

The results are being forwarded to you in this manner to satisfy WDNR reporting requirements because TurnAround Documents (TADs) are not currently available.

If there are any questions regarding this submittal, please contact either of the undersigned.

Sincerely,

Foth & Van Dyke

Russell T. Janeshek
Associate

Jim Hutchison, P.E.
Project Manager

RTJ,JH/lb

Enclosure

cc: Gerald W. Sevick, P.E., Foth & Van Dyke (w/o encl.)
Gordon Reinke, Wisconsin DNR (w/o encl.)
Lawrence Mercando, Flambeau Mining Company (w/o encl.)
Henry Handzel, DeWitt, Porter, *et al.* (w/o encl.)
John Kaiser, Rusk County (w/o encl.)
Robert Plantz, Town of Grant (w/o encl.)
Al Christianson, City of Ladysmith (w/o encl.)
Clarence Glotfelty, Rusk County (w/o encl.)
Theresa Harding, Wisconsin DNR (Park Falls) (w/o encl.)
Ted Smith, Wisconsin DNR (Spooner) (w/o encl.)
File (FMC Surface Water Quality) (w/o encl.)

[32-10]91F6.F51

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue
Crandon, WI 54520

WISCONSIN CERTIFICATION NO. 721026460

Reported: 08/19/92

ANALYTICAL REPORT

Foth & Van Dyke
P.O. Box 19012
2737 S. Ridge Road
Green Bay, WI 54307

Attn: Russ Janeshek

Project Title: 91F6
Description: Flambeau Mining Co
Northern Lake Project Number: 3352

Sample: 25831 Client ID: SW-1
Chain of Custody Form: 1536 Item: 1
Description: SW-1

Collected	Received
07/16/92	07/16/92

Parameter	Result
Aluminum, tot. as Al	0.14 mg/l
Arsenic, tot. as As	< 2 ug/l
Beryllium, tot. as Be	< 0.001 mg/l
Cadmium, tot. as Cd by furnace AAS	0.6 ug/l
Chromium, Hex. as Cr+6	0.018 mg/l
Chromium, tot. as Cr by furnace AAS	< 1 ug/l
Copper, tot. as Cu low level	2 ug/l
Hardness, tot. as CaCO3	23 mg/l
Lead, tot. as Pb by furnace AAS	< 1 ug/l
Mercury, tot. as Hg	< 0.2 ug/l
Metals digestion-water	yes
Nickel, tot. as Ni	< 0.02 mg/l
Oxygen, dissolved	7.4 mg/l
Selenium, tot. as Se	< 2 ug/l
Silver, tot. as Ag by furnace AAS	< 0.5 ug/l
Solids, tot. dis. (TDS)	90 mg/l
Solids, tot. susp. (TSS)	9 mg/l
Zinc, tot. as Zn	0.006 mg/l
pH, lab	7.5 s.u.

Ron Krueger
Laboratory Director

revised - units consistent with past data.

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue
Crandon, WI 54520

WISCONSIN CERTIFICATION NO. 721026460

Reported: 08/19/92

ANALYTICAL REPORT

Foth & Van Dyke
P.O. Box 19012
2737 S. Ridge Road
Green Bay, WI 54307

Attn: Russ Janeshek

Project Title: 91F6
Description: Flambeau Mining Co
Northern Lake Project Number: 3352

Sample: 25832 Client ID: SW-2
Chain of Custody Form: 1536 Item: 2
Description: SW-2

Collected	Received
07/16/92	07/16/92

Parameter	Result
Aluminum, tot. as Al	0.14 mg/l
Arsenic, tot. as As	< 2 ug/l
Beryllium, tot. as Be	< 0.001 mg/l
Cadmium, tot. as Cd by furnace AAS	< 0.2 ug/l
Chromium, Hex. as Cr+6	0.013 mg/l
Chromium, tot. as Cr by furnace AAS	1 ug/l
Copper, tot. as Cu low level	< 2 ug/l
Hardness, tot. as CaCO3	28 mg/l
Lead, tot. as Pb by furnace AAS	3 ug/l
Mercury, tot. as Hg	< 0.2 ug/l
Metals digestion-water	yes
Nickel, tot. as Ni	< 0.02 mg/l
Oxygen, dissolved	7.6 mg/l
Selenium, tot. as Se	< 2 ug/l
Silver, tot. as Ag by furnace AAS	< 0.5 ug/l
Solids, tot. dis. (TDS)	120 mg/l
Solids, tot. susp. (TSS)	7 mg/l
Zinc, tot. as Zn	0.008 mg/l
pH, lab	7.3 s.u.

Ron Krueger
Laboratory Director

/revised - units consistent with past data.

NORTHERN LAKE SERVICE, INC.
400 NORTH LAKE AVENUE
CRANDON, WI 54520 (715)478-2777

INSTRUCTIONS TO NORTHERN LAKE SERVICE LAB

These instructions are ordered by Scott Janssen' FOTH : VAN DYKE (client signature) and apply to samples described on COLLECTION AND CUSTODY RECORD number 1536.

Unless otherwise indicated, total values will be determined. Write "dis" after any parameter or which dissolved determinations are to be made, E for extractable, and L for low level.

Samples on line numbers: 1, 2 to be analyzed for the parameters checked below:

- [ ] Alkalinity, total
- [ ] Alkalinity, bicarb.
- [x] Aluminum
- [ ] Antimony
- [x] Arsenic - F
- [ ] Barium
- [x] Beryllium - LL
- [ ] B.O.D.-5
- [ ] Boron
- [x] Cadmium - F
- [ ] Calcium
- [ ] C.O.D.
- [ ] Chloride
- [x] Chromium - F
- [x] Chromium, hexavalent
- [ ] Cobalt
- [ ] Coliform, fecal
- [ ] Color
- [ ] Conductivity
- [ ] Copper - LL
- [ ] ______
- [ ] Cyanide, total
- [ ] Amenable
- [ ] Fluoride
- [x] Hardness
- [ ] Iron
- [x] Lead - F
- [ ] Magnesium
- [ ] Manganese
- [x] Mercury
- [ ] Molybdenum
- [x] Nickel
- [ ] Nitrogen, total
- [ ] Ammonia
- [ ] Nitrate
- [ ] Nitrite
- [ ] Nitrate + Nitrite
- [ ] Total Kjeldahl
- [ ] Total Organic
- [ ] Oil & Grease
- [x] pH lab.
- [x] Oxygen, diss.lab
- [ ] Phenols
- [ ] Phosphorus, total
- [ ] Tot. reactive
- [ ] Dis. reactive
- [ ] Potassium
- [x] Selenium - F
- [x] Silver - F
- [ ] Sodium
- [ ] Solids, total
- [x] Tot. dissolved
- [x] Tot. suspended
- [ ] Sulfate
- [ ] Sulfide
- [ ] Surfactants (MBAS)
- [ ] Thallium
- [ ] Tin
- [ ] T.O.C.
- [ ] Turbidity
- [ ] Vanadium
- [x] Zinc
- [x] digest metals
- [ ] Acids/Bases/Neutrals by GC/MS
- [ ] BTEX
- [ ] Pesticides-Organochlorine
- [ ] Pesticides-Organophosphate
- [ ] PCBs
- [ ] Phenols by GC
- [ ] Phenoxy Acid Herbicides
- [ ] PNAs
- [ ] TPH-Diesel
- [ ] TPH-Gasoline
- [ ] TCLP-metals
- [ ] TCLP-VOCs
- [ ] TCLP-pesticides/herbicides
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- [ ] VOCs-by EPA 8021
- [ ] VOCs-by EPA 502.2 (SDWA)
- [ ] Municipal Sludge, WI List
- [ ] ______

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- [ ] Color
- [ ] Conductivity
- [ ] Copper
- [ ] ______
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- [ ] Amenable
- [ ] Fluoride
- [ ] Hardness
- [ ] Iron
- [ ] Lead
- [ ] Magnesium
- [ ] Manganese
- [ ] Mercury
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- [ ] Nickel
- [ ] Nitrogen, total
- [ ] Ammonia
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- [ ] Nitrite
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- [ ] Total Organic
- [ ] Oil & Grease
- [ ] pH
- [ ] ______
- [ ] Phenols
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- [ ] Potassium
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- [ ] Silver
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- [ ] PNAs
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- [ ] TCLP-pesticides/herbicides
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- [ ] VOCs by EPA 601 + 602
- [ ] VOCs-by EPA 8010 + 8020
- [ ] VOCs-by EPA 8021
- [ ] VOCs-by EPA 502.2 (SDWA)
- [ ] Municipal Sludge, WI List
- [ ] ______

SPECIAL INSTRUCTIONS TO LAB: ______

nemcoi2.doc-revised 6/91

NORTHERN LAKE SERVICE, INC.

1536

400 NORTH LAKE AVE.
CRANDON, WI 54520
715/478-2777 Fax: 715/478-3060
Wisconsin Lab Cert. No. 721026460

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

CLIENT	Foth & Van Dyke Associates	PROJECT TITLE	Flambeau Mining Co. SW
ADDRESS	2737 S. Ridge Road	PROJECT #	91F6 PO#
CITY,STATE,ZIP	Green Bay WI 54304	CONTACT / PHONE	Russ Janeshek 414/497-2500

LINE #	NLS LAB #	SAMPLE I.D	COLLECTION TIME DATE	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE PNP	PN			COLLECTION REMARKS
1	25831	SW-1	7/16/92 · 0900	SW	Grab	1	1			
2	25832	SW-2	↓ 0930	SW	Grab	1	1			
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

SAMPLE TYPES
SW = surface water
WW = wastewater
GW = groundwater
DW = drinking water
AIR = air
TIS = tissue
PROD = product
SOIL = soil
SED = sediment
describe others

CONTAINER TYPES
P = plastic
G = glass
V = glass vial
B = plastic bag
describe others

PRESERVATIVES & PREPARATION
NP = nothing added
S = sulfuric acid
N = nitric acid
H = hydrochloric acid
OH = sodium hydroxide
Z = zinc acetate
HA = hydrochloric & ascorbic acid
F = field filtered
describe others

COLLECTED BY (signatures) Scott Jansen	SEALED BY (signature) Scott Jansen	SEAL #	DATE/TIME 7/16/92 1522
RELINQUISHED BY (signature) Scott Jansen	RECEIVED BY (signature)	DATE/TIME	
RELINQUISHED BY (signature)	RECEIVED BY (signature)	DATE/TIME	
DISPATCHED BY (signature) Scott Jansen	DATE/TIME 7/16/92 1522	METHOD OF TRANSPORT	

RECEIVED AT NLS BY (signature) Mary Vahl	DATE/TIME 7-16-92 15:22	CONDITION	TEMP.
SEAL INTACT? ____ yes ____ no		SEAL #	
REMARKS & OTHER INFORMATION			

J13

THIS IS AN IMPORTANT DOCUMENT. To meet regulatory requirements, this form must be completed in detail and included in the shipper containing the samples described.

/chain.doc-revised 6/91

NORTHERN LAKE SERVICE, INC.

1536

400 NORTH LAKE AVE.
CRANDON, WI 54520
715/478-2777 Fax: 715/478-3060

Wisconsin Lab Cert. No. 721026460

SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD

CLIENT Foth & Van Dyke Associates	PROJECT TITLE Flambeau Mining Co. SW
ADDRESS 2737 S. Ridge Road	PROJECT # 91F6 PO#
CITY,STATE,ZIP Green Bay WI 54304	CONTACT Russ Janeshek PHONE 414/497-2500

LINE #	NLS LAB #	SAMPLE I.D	COLLECTION TIME	COLLECTION DATE	SAMPLE TYPE	GRAB/ COMP.	CONTAINER/PRESERVATIVE PNP	PN				COLLECTION REMARKS
1		SW-1	7/16/92	0900	SW	Grab	1	1				
2		SW-2	↓	0930	SW	Grab	1	1				
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

SAMPLE TYPES

SW = surface water
WW = wastewater
GW = groundwater
DW = drinking water
AIR = air
TIS = tissue
PROD = product
SOIL = soil
SED = sediment
describe others

CONTAINER TYPES

P = plastic
G = glass
V = glass vial
B = plastic bag
describe others

PRESERVATIVES & PREPARATION

NP = nothing added
S = sulfuric acid
N = nitric acid
H = hydrochloric acid
OH = sodium hydroxide
Z = zinc acetate
HA = hydrochloric & ascorbic acid
F = field filtered
describe others

COLLECTED BY (signatures) Scott Jansen
SEALED BY (signature) Scott Jansen
SEAL #
DATE/TIME 7/16/92, 1522

RELINQUISHED BY (signature) Scott Jansen
RECEIVED BY (signature)
DATE/TIME

RELINQUISHED BY (signature)
RECEIVED BY (signature)
DATE/TIME

DISPATCHED BY (signature) Scott Jansen
DATE/TIME 7/16/92 1522
METHOD OF TRANSPORT

RECEIVED AT NLS BY (signature) Mary Vahl
DATE/TIME 7-16-92 15:22
CONDITION
TEMP.

SEAL INTACT? ____yes ____no
SEAL #

REMARKS & OTHER INFORMATION

J14

THIS IS AN IMPORTANT DOCUMENT. To meet regulatory requirements, this form must be completed in detail and included in the shipper containing the samples described.

/chain.doc-revised 6/91

NORTHERN LAKE SERVICE, INC.

400 NORTH LAKE AVENUE
CRANDON, WI 54520 (715)478-2777

INSTRUCTIONS TO NORTHERN LAKE SERVICE LAB

These instructions are ordered by Scott Janssen FOTH : VAN DYKE and apply to samples
(client signature)
described on COLLECTION AND CUSTODY RECORD number 1536.

Unless otherwise indicated, total values will be determined. Write "dis" after any parameter or which dissolved determinations are to be made, E for extractable, and L for low level.

Samples on line numbers: 1, 2 to be analyzed for the parameters checked below:

- [ ] Alkalinity, total
- [ ] Alkalinity, bicarb.
- [x] Aluminum
- [ ] Antimony
- [x] Arsenic -F
- [ ] Barium
- [x] Beryllium -LL
- [ ] B.O.D.-5
- [ ] Boron
- [x] Cadmium -F
- [ ] Calcium
- [ ] C.O.D.
- [ ] Chloride
- [x] Chromium -F
- [x] Chromium, hexavalent
- [ ] Cobalt
- [ ] Coliform, fecal
- [ ] Color
- [ ] Conductivity
- [ ] Copper -LL
- [ ] ____
- [ ] Cyanide, total
- [ ] Amenable
- [ ] Fluoride
- [x] Hardness
- [ ] Iron
- [x] Lead -F
- [ ] Magnesium
- [ ] Manganese
- [x] Mercury
- [ ] Molybdenum
- [x] Nickel
- [ ] Nitrogen, total
- [ ] Ammonia
- [ ] Nitrate
- [ ] Nitrite
- [ ] Nitrate + Nitrite
- [ ] Total Kjeldahl
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- [ ] Oil & Grease
- [x] pH lab.
- [x] Oxygen, diss.lab
- [ ] Phenols
- [ ] Phosphorus, total
- [ ] Tot. reactive
- [ ] Dis. reactive
- [ ] Potassium
- [x] Selenium -F
- [x] Silver -F
- [ ] Sodium
- [ ] Solids, total
- [x] Tot. dissolved
- [x] Tot. suspended
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- [ ] Sulfide
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- [ ] Thallium
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- [ ] VOCs-by EPA 8021
- [ ] VOCs-by EPA 502.2 (SDWA)
- [ ] Municipal Sludge, WI List
- [ ] ____

Samples on line numbers: ____ to be analyzed for the parameters checked below:

- [ ] Alkalinity, total
- [ ] Alkalinity, bicarb.
- [ ] Aluminum
- [ ] Antimony
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- [ ] Barium
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- [ ] B.O.D.-5
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- [ ] Chloride
- [ ] Chromium
- [ ] Chromium, hexavalent
- [ ] Cobalt
- [ ] Coliform, fecal
- [ ] Color
- [ ] Conductivity
- [ ] Copper
- [ ] ____
- [ ] Cyanide, total
- [ ] Amenable
- [ ] Fluoride
- [ ] Hardness
- [ ] Iron
- [ ] Lead
- [ ] Magnesium
- [ ] Manganese
- [ ] Mercury
- [ ] Molybdenum
- [ ] Nickel
- [ ] Nitrogen, total
- [ ] Ammonia
- [ ] Nitrate
- [ ] Nitrite
- [ ] Nitrate + Nitrite
- [ ] Total Kjeldahl
- [ ] Total Organic
- [ ] Oil & Grease
- [ ] pH
- [ ] ____
- [ ] Phenols
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- [ ] Dis. reactive
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- [ ] Sulfide
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- [ ] T.O.C.
- [ ] Turbidity
- [ ] Vanadium
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- [ ] ____
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- [ ] BTEX
- [ ] Pesticides-Organochlorine
- [ ] Pesticides-Organophosphate
- [ ] PCBs
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- [ ] Municipal Sludge, WI List
- [ ] ____

SPECIAL INSTRUCTIONS TO LAB: ____

Foth & Van Dyke

December 1, 1992

2737 S. Ridge Road
P. O. Box 19012
Green Bay, WI 54307-9012
414/497-2500
FAX: 414/497-8516

Mr. Lawrence J. Lynch
Hydrogeologist
Mine Reclamation Unit
Bureau of Solid and Hazardous Waste Management
State of Wisconsin
Department of Natural Resources
P. O. Box 7921
Madison, WI 53707

Dear Mr. Lynch:

RE: Flambeau Mining Company
Environmental Monitoring
Flambeau River Water Quality Results (October 1992)

Attached are copies of the laboratory results sheets for analyses performed on samples collected from the Flambeau River on October 7, 1992 on behalf of Flambeau Mining Company.

The results are being forwarded to you in this manner to satisfy WDNR reporting requirements because TurnAround Documents (TADs) are not currently available.

If there are any questions regarding this submittal, please contact either of the undersigned.

Sincerely,

Foth & Van Dyke

Russell T. Janeshek
Associate

Jim Hutchison, P.E.
Project Manager

RTJ,JBH/jcp

Enclosure

cc: Gerald W. Sevick, P.E., Foth & Van Dyke (w/encl.)
Gordon Reinke, Wisconsin DNR (w/encl.)
Lawrence Mercando, Flambeau Mining Company (w/encl.)
Jana Murphy, Flambeau Mining Company (w/encl.)
Henry Handzel, DeWitt, Porter, *et al.* (w/encl.)
John Kaiser, Rusk County (w/encl.)
Robert Plantz, Town of Grant (w/encl.)
Al Christianson, City of Ladysmith (w/encl.)
Clarence Glotfelty, Rusk County (w/encl.)
Theresa Harding, Wisconsin DNR (Park Falls) (w/encl.)
Ted Smith, Wisconsin DNR (Spooner) (w/encl.)
File (FMC Surface Water Quality) (w/encl.)

[32-22]91F6.F51

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph:(715)478-2777 Fax:(715)478-3060

WIS. CERT. LAB NO. 721026460

ANALYTICAL REPORT

Client: Foth & Van Dyke Associates
2737 S. Ridge Road
PO Box 19012
Green Bay, WI 54307

Attn: Russ Janeshek

NLS Project 4153 Client Project: Flambeau

Client Sample ID: SW-1 NLS Sample Number: 29018
Ref. Line 1 of COC 3162 Description: SW-1
Collected: 10/07/92 Received: 10/07/92 Reported: 11/09/92

Parameter	Result	Date
Aluminum, tot. as Al	0.42 mg/l	10/26/92 10:30
Arsenic, tot. as As	< 2 ug/l	10/30/92 07:45
Beryllium, tot. as Be	< 0.001 mg/l	10/14/92 18:00
Cadmium, tot. as Cd by furnace AAS	< 0.2 ug/l	10/14/92 15:00
Chromium, Hex. as Cr+6	<0.020 mg/l	10/07/92 17:00
Additional Comments: Analysis required dilution due to sample matrix and interference.		
Chromium, tot. as Cr by furnace AAS	< 1 ug/l	10/19/92 14:15
Copper, tot. as Cu low level	4 ug/l	11/05/92 15:45
Hardness, tot. as CaCO3	52 mg/l	10/09/92 08:00
Lead, tot. as Pb by furnace AAS	< 1 ug/l	10/12/92 09:30
Mercury, tot. as Hg	< 0.2 ug/l	10/28/92 08:30
Nickel, tot. as Ni	< 0.02 mg/l	11/04/92 11:00
Oxygen, dissolved	9.9 mg/l	10/13/92 14:00
pH, lab	7.4 s.u.	10/08/92 14:45
Selenium, tot. as Se	< 2 ug/l	10/29/92 08:15
Silver, tot. as Ag by furnace AAS	< 0.5 ug/l	11/03/92 20:00
Solids, tot. dis. (TDS)	90 mg/l	10/12/92 11:42
Solids, tot. susp. (TSS)	4 mg/l	10/09/92 00:00
Zinc, tot. as Zn	< 0.003 mg/l	10/19/92 18:15
Metals digestion-water	yes	10/09/92 09:30

Ron Krueger
Laboratory Director

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
400 North Lake Avenue - Crandon, WI 54520
Ph:(715)478-2777 Fax:(715)478-3060

WIS. CERT. LAB NO. 721026460

ANALYTICAL REPORT

Client: Foth & Van Dyke Associates
2737 S. Ridge Road
PO Box 19012
Green Bay, WI 54307

Attn: Russ Janeshek

NLS Project 4153 Client Project: Flambeau

Client Sample ID: SW-2 NLS Sample Number: 29019
Ref. Line 2 of COC 3162 Description: SW-2
Collected: 10/07/92 Received: 10/07/92 Reported: 11/09/92

Parameter	Result	Date
Aluminum, tot. as Al	0.54 mg/l	10/26/92 10:30
Arsenic, tot. as As	< 2 ug/l	10/30/92 07:45
Beryllium, tot. as Be	< 0.001 mg/l	10/14/92 18:00
Cadmium, tot. as Cd by furnace AAS	< 0.2 ug/l	10/14/92 15:00
Chromium, Hex. as Cr+6	<0.020 mg/l	10/07/92 17:00
Additional Comments: Sample required dilution due to sample matrix and interference.		
Chromium, tot. as Cr by furnace AAS	< 1 ug/l	10/19/92 14:15
Copper, tot. as Cu low level	4 ug/l	11/05/92 15:45
Hardness, tot. as CaCO3	68 mg/l	10/09/92 08:00
Lead, tot. as Pb by furnace AAS	< 1 ug/l	10/12/92 09:30
Mercury, tot. as Hg	< 0.2 ug/l	10/28/92 08:30
Nickel, tot. as Ni	< 0.02 mg/l	11/04/92 11:00
Oxygen, dissolved	10 mg/l	10/13/92 14:00
pH, lab	7.4 s.u.	10/08/92 14:45
Selenium, tot. as Se	< 2 ug/l	10/29/92 08:15
Silver, tot. as Ag by furnace AAS	< 0.5 ug/l	11/03/92 20:00
Solids, tot. dis. (TDS)	96 mg/l	10/12/92 11:42
Solids, tot. susp. (TSS)	5 mg/l	10/09/92 00:00
Zinc, tot. as Zn	< 0.003 mg/l	10/19/92 18:15
Metals digestion-water	yes	10/09/92 09:30

Ron Krueger
Laboratory Director

Appendix K

Habitat Characterization Report

Foth & Van Dyke
Memorandum

January 25, 1993

TO: Jana Murphy, Flambeau

CC: Larry Mercando, Flambeau
Jerry Sevick, Foth & Van Dyke
Jim Hutchison, Foth & Van Dyke

FR: Bill West, Foth & Van Dyke

RE: Report on Habitat Characterization, Flambeau River, Ladysmith, Wisconsin

On August 11, 1992 Bill West of Foth & Van Dyke conducted a habitat characterization of the Flambeau River in an area adjacent to the Flambeau Mine site. The purpose of the characterization was to provide an assessment of habitat in the Flambeau River above and below the mining site prior to initiation of the construction of Outfalls 001 and 002. The features of the habitat characterization study are detailed in the project's Updated Monitoring Plan dated July 1991. As required in the Updated Monitoring Plan, this report addresses the habitat characteristics of the Flambeau River along its east bank from a point 100 yards above discharge Outfall 002 to a point 1000 yards downstream of discharge Outfall 001.

Methodology

On August 11, 1992 substrate complexes along the Flambeau River were noted and categorized. Documentation of the habitat occurred from 7:45 a.m. to 1:00 p.m. with no noticeable river fluctuations which usually occur due to normal dam management occurring during this time frame. The river during the study period was less than bank stage with some exposed substrate in areas where the shoreline is gently sloping.

The river was entered in the area of the confluence with Meadowbrook Creek. Habitat characterization proceeded from the point of Meadowbrook Creek upstream to a point 100 yards above the location of discharge Outfall 002. Upon completion of the upper river segment, river habitats from Meadowbrook Creek to a point 1000 yards below the location of discharge Outfall 001 were evaluated. This downstream location is approximately equivalent to a location known as the pipeline crossing. During the study, the physical character of the bottom habitats (e.g. location of river sediment bars, percent of area that is sand or finer particle size, unusual biological growth) was noted.

Habitats were documented and classified in the following categories: rock/cobble, rock/cobble/gravel, cobble/gravel, gravel/silt, silt/organic matter. It was noted that specific substrates listed do in fact exist within more than one substrate classification. For instance, gravel and silt exist in all categories though they make up a small portion of the category of rock/cobble when comparing it to other categories. Categories are listed in order of size of the substrate - rock/cobble being the largest, silt/organic matter being the smallest.

The following definitions are used to categorize the substrate categories.

These categories generally follow that which was reported in Final Report Flambeau Project Spring 1992 Fish and Odonata Study (July 1992) referencing Cummins and Lauff (1969: the Influence of Substrate Particle Size on Microdistribution of Stream Macrobenthos. Hydrobiologia 34: 145-81).

- Rock/cobble - substrate of stone predominantly sized from four to eight inches (greater than 64 mm).
- Rock/cobble/gravel - substrate of stone predominantly sized four to eight inches with noticeable gravel (greater than 64 mm).
- Cobble/gravel - substrate of stone predominantly sized less than four inches down to gravel (about 80 mm to 2 mm).
- Gravel/silt - substrate predominantly gravel or smaller, noticeably gritty under foot but when disturbed, obvious displacement of silt with plume downstream (about 2 mm to 75 mm).
- Silt/organic matter - some gravel present but when walking, more apt to sink into the bottom due to silt, silt plume always noticeable downstream of any disturbance (less than 75 mm).

Results

In Areas 1 through 4, the river bank abuts a low lying grassy meadow. The bank itself is undercut and arises abruptly about 3 to 4 feet in height. The east bank adjacent to Areas 5 through 9 is gently sloping, characterized by rock, cobble and gravel to the shore, with woody vegetation along the shore. Area 10 and the first half of Area 11 is in the delta of Meadowbrook Creek. The area of the delta is a grassy plain resembling the shore and near shore substrate of Areas 1 through 4. The last half of Area 11 is highly sloped along the shore as well as in the near shore area of the stream bank. This area is characterized by rock/cobble. Figure 1 illustrates the study area. Figure 2 shows the defined areas along with substrate complexes and identified plant group locations. Figures 3 through 6 graphically illustrate the substrate classifications described below. Based on completed field work the entire study area has been divided into 11 areas of variable length based on substrate categorization and bank conditions. A discussion of each area is presented below.

Area 1 - 100 yards upstream of Outfall 002 to Outfall 002

Substrate in the area is characterized by rock/cobble/gravel. The river is a little wider than upstream reaches especially at the point of initiation. This area is quite shallow - water is only 2.5 - 3.5 feet deep up to 60 feet offshore. Shallow run areas are complete with several pockets of Vallisneria. The bank appears fairly stable from the standpoint of erodibility (bank not as abrupt as is the case downstream in Area 2). Also, main flow of the river seems to be flowing by this side (as opposed to flowing into or undercutting) or perhaps slightly to the opposite side than toward this shore. At Outfall 002, this condition seems to change and this shore becomes more of the channel side.

Area 2 - Outfall 002 to a point about 50 yards downstream of Stream B

In Area 2, the whole bank appears highly susceptible to erosion. Near shore substrate throughout the area (0-5 feet from the bank) consists of silt/organic matter. The area from 5 feet to 20 feet off shore is characterized by cobble/gravel then rock/cobble/gravel beyond 20 feet. Pockets of Vallisneria common from 5 to 20 feet out.

Area 3 - 50 yards downstream of Stream B to 150 yards downstream of Stream B

With the exception of silt/organic matter 0-5 feet offshore, this area is characterized by rock/cobble/gravel.

Area 4 - 150 yards downstream of Stream B to 150 yards downstream of Outfall 001.

Near shore (0-5 feet) characterized by silt/organic matter - highly erodible bank. Offshore substrate (5-10 feet) commonly covered with gravel/silt giving way to cobble/gravel beyond 10 feet.

Area 5 - 150 yards downstream of Outfall 001 to about 200 yards downstream of Outfall 001.

Area 5 marks the end of the erodible bank. This begins an area of rock/cobble up to and on shore. On-shore topography slopes sharply upward but the bank area seems more protected perhaps due to the presence of larger rock near shore and along the bank. Also noted is that the grassy bank common in Areas 1 through 4 above gives way to rocky more gradual sloping wooded bank.

Area 6 - 200 yards downstream of Outfall 001 to continue for 85 yards

Area characterized by rock/cobble/gravel complex.

Area 7 - 170 yards in length from the end of Area 6

Entire area characterized by rock/cobble complex - near and off shore areas.

Area 8 - 130 yards in length from the end of Area 7

The bank along this stretch is inset so that the river channel does not really lap the shore unless high water conditions occur. Because of this, near shore substrate is characterized by gravel/silt (to 10 feet off shore). Beyond the 10 feet the substrate is characterized by rock/cobble/gravel until the end of the area. At the end of Area 8 the bank gently extends horizontally to the river channel. At this point, the substrate changes to rock/cobble forming a shallow bar leading into the next area.

Area 9 - From Area 8 downstream to Meadowbrook Creek

The area is about 50 meters in length and very similar to Area 8. Bank is inset from the river channel though the inset is much more pronounced than in Area 8. Entire substrate in the inset downstream to Stream C is characterized by silt/organic matter. Inset does not appear to be affected by normal or even medium high flows as it is quite sheltered. Area appears to be a good place for sediment deposition both from river action, and continuous overhanging vegetation. There appears to be little opportunity for the river to scour this area.

Area 10 - Stream C to a point about 100 yards downstream of Meadowbrook Creek

From Stream C to Meadowbrook Creek the substrate is characterized by a rock/cobble/gravel complex. Near shore (0-5 feet) area is made up of gravel/silt. The bank between Stream C and Meadowbrook is a low grassy plain which is easily flooded during high water or when upstream dams open to release water. This plain forms a point of land which juts out into the river channel and ends in a long gravel bar which extends well past the mouth of Meadowbrook Creek. This bar effectively shields the discharge of Meadowbrook Creek from the full impact of the Flambeau River and prevents mixing. The result is an area of silt deposition immediately at the mouth of Meadowbrook Creek.

A second low grassy plain exits at the downstream side of Meadowbrook Creek. This peninsula of land extends about 30 meters downstream from Meadowbrook Creek. There is a small bay inside of the peninsula perhaps 10 x 30 meters. Substrate in the bay is silt/organic matter and this is the area where Elodea was found to exist. The peninsula would be easily flooded during high water which may be responsible for the deposition of silt in this area. Also, the on-shore area is a large grassy bottom land which could be part of the Meadowbrook delta. Past photos suggest that Meadowbrook Creek may have met the Flambeau River in this bay or at other points along this grassy flood plain. Downstream of this bay is a long arching bank (about 80 meters in length). Near shore substrate is characterized by silt/organic matter while off shore substrate is of the rock/cobble/gravel complex.

Area 11 - From Area 10 to Pipeline Crossing

Substrate in this area is entirely of the rock/cobble/gravel complex. Gravel/silt areas along shore are absent. The area appears to be well washed. The bank is gently sloping with a rock shore. Potential for erosion is low in comparison to Areas 1 through 4.

Plant life throughout the study area was sparse with only three genera being observed. These included Vallisneria, Potamogeton, and Elodea. Vallisneria was more common than other species. It occurred in pockets of shallow run adjacent to the mine site (between outfalls 001 and 002). Vallisneria was more common in substrates of the gravel/silt complex. Potamogeton was observed in a 10 x 15 foot area immediately downstream of the proposed outfall 002. The location was about 15 feet offshore. A second patch of Potamogeton was also located about 50 to 60 feet downstream of the point where Meadowbrook Creek meets the Flambeau River. Elodea was observed in a sheltered pocket of still water just downstream of Meadowbrook Creek. The peninsula of land which shelters the Elodea may well be flooded during high water. The pocket appears to have a foot or more of sediment/silt/organic matter in which the Elodea is growing.

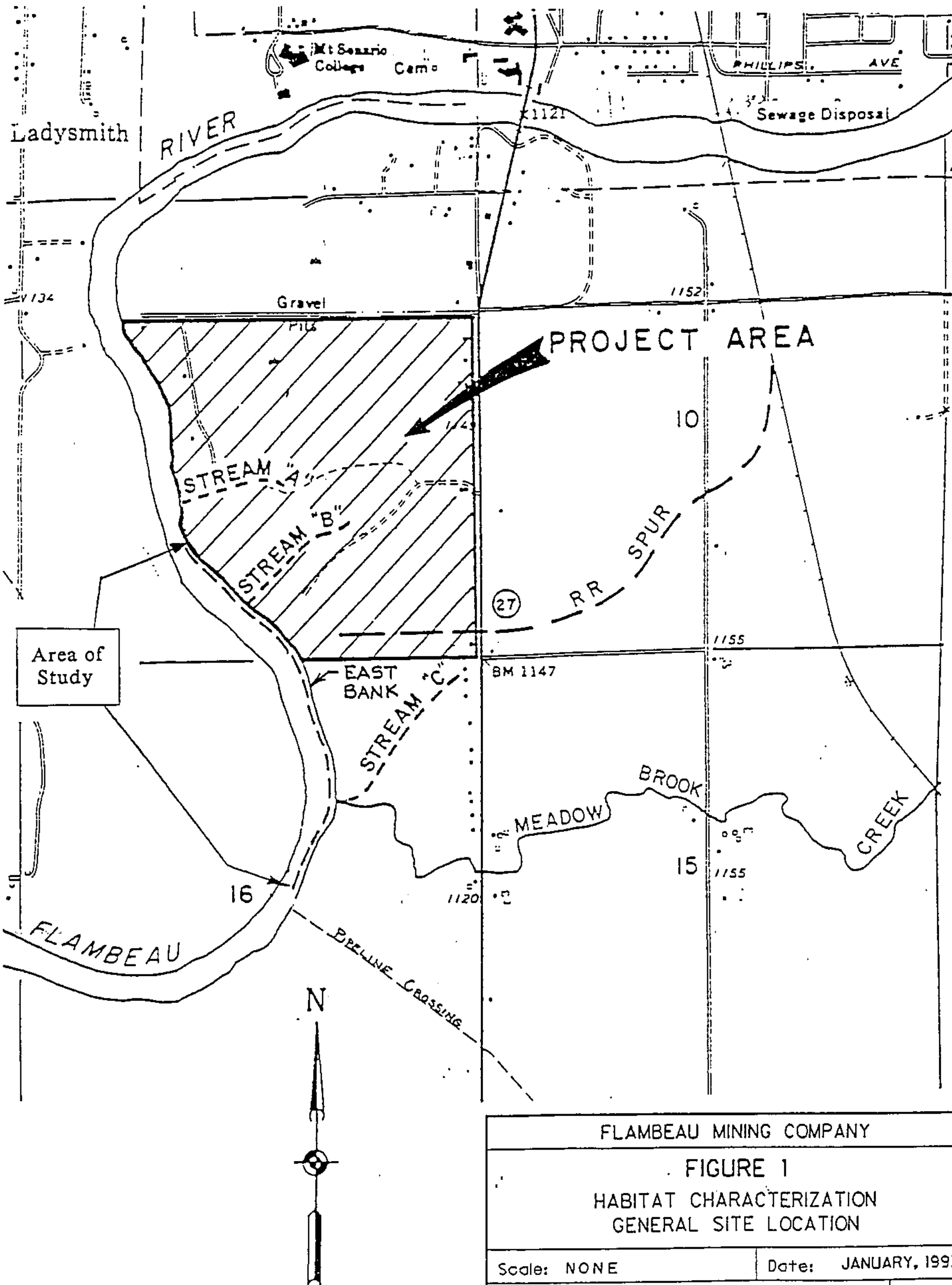
Discussion

In general, the entire length of the study area shown in Figure 1 contains deposits of rock, gravel, and cobble. Certain areas along the east bank of the river are inset from the main river channel and these areas tend to collect sediment characterized as silt and organic matter. The area immediately adjacent to the mine is characterized as being a low grassy floodplain. The river bank in this area is highly erodible nearly devoid of rock. The substrate (river bottom) adjacent to the mine is typically a silt/organic matter complex for a horizontal distance of up to five feet off shore. Substrate beyond five feet gives way to gravel and rock complexes.

The presence of near shore sediment and organic matter adjacent to the mine site is significant from the standpoint of documenting any increase in sediment due to activities of the mine. Erosion of the east bank caused by natural surface water movement will continue to cause additional sediment deposition adjacent to and below the mine site. Caution should be used when differentiating the cause of deposition of sediment. It should be noted that naturally occuring erosion caused by Stream B has ceased due to mining operations which redirected water from Stream B through various pathways to rip rapped lined outfalls 001 and 002.

A key feature which may change the rate of erosion and deposition of sediments in the area adjacent to the mine is the placement of the two outfall structures. Based on current design and installation, the outfall structures will be positioned as riprap. Depending on the nature of river flow (variability due to high and low flow conditions), the riprap could act as a wing-wall to water flow. Sediment deposition could be accentuated behind the wing-wall. There is also the likelihood that the wing-walls will retard the erosion of the east bank during periods of low to medium river flow. Depending on the positioning of the riprap and stream dynamics, erosion may even be retarded during periods of medium to high flow.

WMW:kvb



FLAMBEAU MINING COMPANY

FIGURE 1

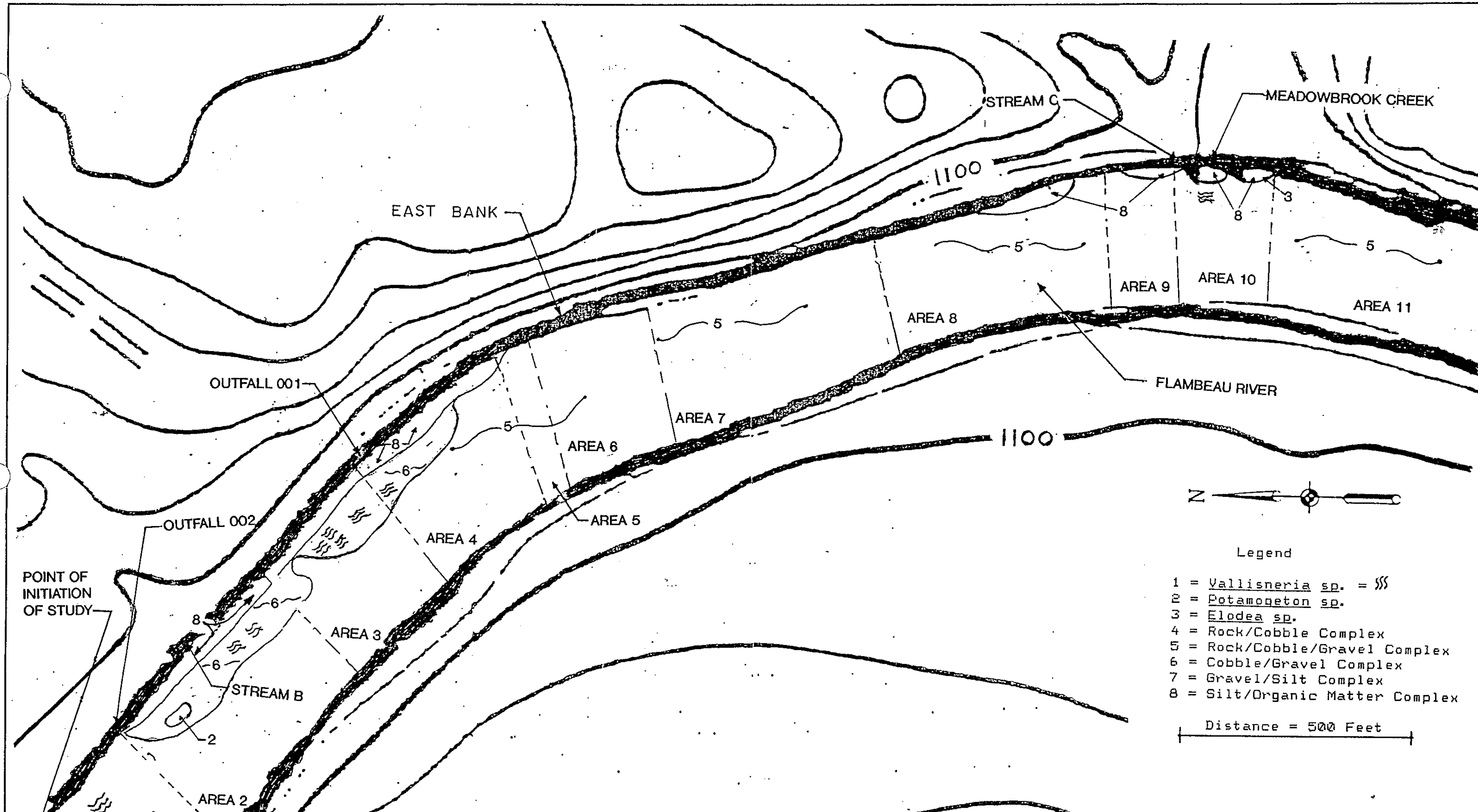
HABITAT CHARACTERIZATION
GENERAL SITE LOCATION

Scale: NONE	Date: JANUARY, 1993
Prepared By: Foth & Van Dyke	By: BBV

K5a

3f04fig.dgn

9IF6



FLAMBEAU MINING COMPANY

FIGURE 2

HABITAT CHARACTERIZATION STUDY AREA
FLAMBEAU RIVER, LADYSMITH, WI

Scale: AS SHOWN	Date: JANUARY, 1993	
Prepared By: Foth & Van Dyke		By: BBV

3f04flo.dgn 91F6

Figure 3 August 11, 1992
Example of rock/cobble/gravel complex.

Figure 4 August 11, 1992
Example of cobble/gravel mix.

Figure 5 August 11, 1992
Example of cobble/gravel (top) and gravel/silt (bottom).

Figure 6 August 11, 1992
Example of silt/organic matter common in near shore of Areas 1 through 4.

[32-11/A3S10]91F6

Appendix L

WDNR Correspondence - Air Monitoring

Flambeau Mining Company
4095 Highway 27
Ladysmith, Wisconsin 54848
(715) 532-7620

November 13, 1992

Kennecott

Mr. Jim Ross
Northwest District Headquarters
Wisconsin Department of Natural Resources
Hwy 70
Spooner, WI 54801

Dear Mr. Ross:

RE: Flambeau Mining Company - Air Monitoring

Flambeau Mining Company (Flambeau) located in Ladysmith, Wisconsin is constructing a copper mine just south of Ladysmith, Wisconsin. Per Part 4 of the Mining Permit, Monitoring Plan Approval, Flambeau is monitoring the total suspended particulate matter (TSP) ambient air concentration at multiple locations around the site. Since the mine is in the preproduction phase, the TSP monitors are operated once every three days.

The TSP filters are shipped to Superior Laboratory where they are weighed and the ambient air concentrations are determined. As reported by Superior Laboratory in a lab report received on November 12, 1992, the TSP concentration for October 21, 1992 at the southeast monitoring site (ID#55-107-0003) was found to be 187 ug/m^3. Copies of the lab results for this monitoring site and the other three project monitoring sites are attached. Flambeau has investigated the occurrence of the exceedance at the southeast monitoring site and is reporting it to the Department as required in Part 4, Section 4.e. of the Mining Permit.

For approximately two weeks prior to October 21, 1992, State Trunk Highway (STH) 27 was undergoing extensive construction. Highway 27 is located along the east side of the mine site. The construction area started approximately 400 feet south of the sampler which recorded the exceedance and ran approximately 2000 feet north of the sampler. The monitor is located approximately 200 feet west of the highway. During construction, the highway was widened, new turning lanes were installed, and a railroad crossing was built. This resulted in heavy construction traffic. The road was shut down to other traffic during a portion of the construction period.

On October 21, the contractor used high-pressure air to clean the highway in the construction area in order to restripe it. As the enclosed weather data shows, the wind was blowing from the east and the south, southeast (the 90-180 degree sectors) over 80 percent of the time on October 21. This resulted in large amounts of dirt being blown over the mine site and the southeast sampler. The site operator noted this occurrence on the particulate sample data sheet recorded for this sampling episode. A copy of this data sheet is enclosed.

The project is still in the construction phase and thus the only activities occurring at the site are construction related. A copy of the contractor activity log describing site activities on October 21 is also enclosed. A review of the log indicates that no on-site activities were occurring that could have created sufficient suspended materials to cause exceedance. Given this fact, wind direction and documented highway work, we are confident that the exceedance was due to the construction activities along STH 27.

The October 21 filter from the southeast site is currently being analyzed for metals. Once the results are received from the lab, they will be forwarded to you. If you have any questions regarding this letter or desire to discuss it's contents, please contact Jana Murphy of Flambeau at (715) 532-7620.

Sincerely,

Jana E. Murphy

Jana Murphy
Supervisor of Environmental Affairs

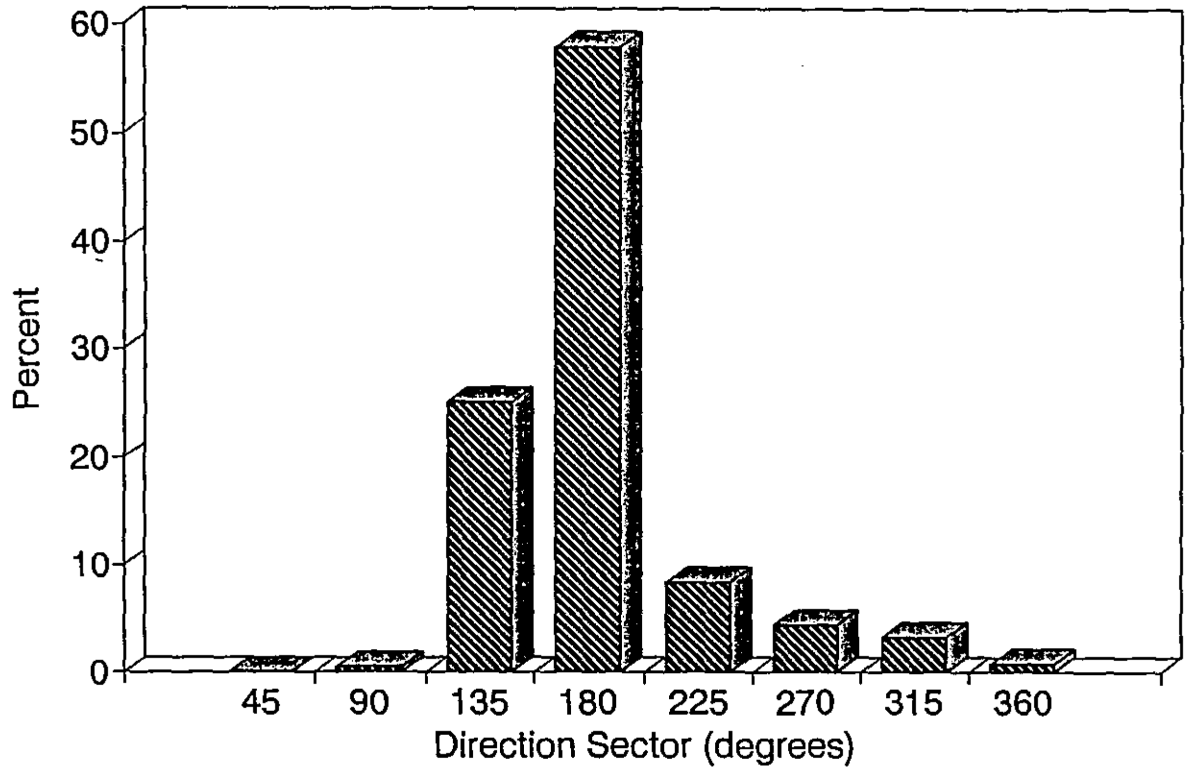
cg
attachments
cc: Lawerence E. Mercando, Flambeau (w/att)
Henry J. Handzel, DeWitt, Porter *et al* (w/att)
Bernice Dukerschein, Rusk County (w/att)
Clarence Glotfelty, Rusk County (w/att)
Robert Plantz, Town of Grant (w/att)
Al Christianson, City of Ladysmith (w/att)
Larry Lynch, WDNR (w/att)
Theresa Harding, WDNR (w/att)
Jim Hutchison, Foth & Van Dyke (w/att)
Julian Chazin, WDNR (w/att)

FLAMBEAU MINING COMPANY
METEOROLOGICAL DATA
FOR OCTOBER 21, 1992

ATE	HOUR	WIND SPEED (MPH)	WS PEAK (MPH)	WIND DIR.	WD STD. DEV.	Percent of time wind blowing from each sector 0/45	45/ 90	90/ 135	135/ 180	180/ 225	225/ 270	270/ 315	315/ 360	RAIN (IN)
0 21	0	1.519	2.802	288.1	50.34	0	.014	.057	.003	.091	.135	.539	.159	0
0 21	100	1.9	6.111	168.8	54.59	0	.018	.227	.325	.304	0	.124	0	0
0 21	200	2.043	3.234	221.8	38.88	0	0	.045	.128	.274	.519	.034	0	0
0 21	300	2.234	4.385	218.1	34.02	0	0	0	.125	.49	.318	.067	0	0
0 21	400	1.601	4.529	150.1	47.97	0	.073	.316	.322	.209	.08	0	0	0
0 21	500	3.034	4.96	145.7	15.29	0	0	.193	.805	.002	0	0	0	0
0 21	600	4.278	6.975	130.3	10.61	0	0	.681	.319	0	0	0	0	0
0 21	700	3.803	7.41	125.8	12.5	0	.001	.796	.203	0	0	0	0	0
0 21	800	4.902	7.98	139.5	13.13	0	0	.361	.639	0	0	0	0	0
0 21	900	6.461	11.43	155.7	10.77	0	0	.032	.952	.016	0	0	0	0
0 21	1000	8.14	15.03	156.1	14.97	0	0	.071	.863	.066	0	0	0	0
0 21	1100	9.82	18.63	160.8	15.19	0	0	.047	.851	.101	0	0	0	0
0 21	1200	9.12	16.47	159.8	21.28	0	.002	.126	.694	.177	0	0	0	0
0 21	1300	11.14	17.91	162.8	17.92	0	0	.069	.756	.176	0	0	0	0
0 21	1400	10.12	17.91	145.5	18.64	0	0	.304	.666	.029	0	0	0	0
0 21	1500	11.42	18.77	147.7	15.4	0	0	.211	.779	.009	0	0	0	0
0 21	1600	10.14	19.06	143.2	15.09	0	0	.289	.704	.006	0	0	0	0
0 21	1700	8.61	16.18	139.5	12.95	0	0	.357	.642	.001	0	0	0	0
0 21	1800	6.433	11.72	139.8	14.11	0	0	.391	.609	0	0	0	0	0
0 21	1900	6.477	13.31	136.3	13.68	0	0	.456	.542	0	0	0	0	0
0 21	2000	8.16	15.03	138	11.52	0	0	.397	.602	0	0	0	0	0
0 21	2100	8.03	15.46	152.9	12.7	0	0	.092	.899	.009	0	0	0	0
0 21	2200	6.365	12.15	145.9	15.6	0	0	.252	.731	.017	0	0	0	0
0 21	2300	6.369	13.16	146.7	16.8	0	.001	.242	.733	.024	0	0	0	0

Weather Data for October 21, 1992

Flambeau Mining Company



TSP FIELD DATA SHEET
Flambeau Mining Company

Operator Jack Christman

Filter No. 5932656

Sampler I.D. ______

Date 10-21-92

Site Location Southeast

		Counter Reading
Time Off	2400	893.08
Time On	000	869.46
Total Elapsed Time	24	23.62

Recorder Response (I) = ______

bs = ____ From most recent calibration

ms = ____ From most recent calibration

SQa = ____ = (I-bs)/ms

Qstd = ____ = SQa x (Pa/Pstd) x (Tstd/Ta)

Total Volume = ____ = Qstd x Min.

Remarks ______

Average Wind		Visibility		Sky		Humidity		Temp. °F		Barometric Pressure
Direction	SE-15	Clear	✓	Clear		Dry		Below 20		30.35 inHg
Calm		Hazy		Scattered	✓	Moderate	✓	20 - 40	✓	
Light				Overcast		Humid		40 - 60		
Gusty	✓					Rain		60 - 80		
						Snow		Above 80		

Cleaning Hwy with air, after R R Construction

Operator Signature Jack Christman Date 10-21-92

91F6

Flambeau Mining Company
Contractor Activity Log

10-21-92

B&B Elect.	Started trench for 2" signal from manhole through ditch area Put on recept in pkg lot Roughed in 5" for Hwy. at 1500 RV trans Meyer poured slab in A&T Discussed 3- 350 mcm feeder location
Case	Desand heavy slurry in panel #11 Esc. on panel #5 Hit large boulder had to chisel
Cooper	Stake culverts N. side runoff pond X-sec. part of Type II Inspecting diaphragm wall Inspecting material for crusher site, haul road thru Type II Separating loess from waste & borrow
C.R. Meyer	Form pump, equip bad pump Clean up Unload tank 250 MDA 04 Rerod @ pump house Drill hole in tank for lifting
Durand	Electrical & plumbing rough in Sheetrock, Steel trim fascia CMU walls Prep for roof sheeting
Hoffman	Put sumps in (#1-#2) runoff pond
Parker	Fueled pumps & cut signs Delivered pipe, moved pump Soil erosion, water samples Tore down signs
STS	Observed placement of overliner material in Type II stockpile area by Hoffman constr. with 1-D4 and D6 cat with low pressure tracks
Thompson	Fueled pump, spread hay, cleaned shop Painted, Fueled pumps, Changed oil in generators
Volkman	Build south tack off of 1st switch heading west & raise E. line track from Meadowbrook to SR-27 plus plow ballast with reg

Department of Natural Resources

AEROMETRIC INFORMATION RETRIEVAL SYSTEM
DAILY DATA FORM
Form 4500-119 5-88

Network Name FLAMBEAU MINING CO.

Name of Person Completing Form MARK DRAKE - SUPERIOR TESTING

Date Completed

Telephone Number (include area code) 715-392-3605

Tran Type 1	State 2	3	County 4	5	6	Site 7	8	9	10
2	5	5	1	0	7	0	0	0	1

Parameter 11	12	13	14	15	POC 16	INT 17	Units 18	19	20	Method 21	22	23	Year 24	25
1	1	1	0	1	1	7	0	0	1	0	9	1	9	2

Month 26	27	Day 28	29	Start Hour 30	31	SF 32	DP 33	Sample Value 34	35	36	37	VF 38	Actio 80
1	0	0	6	0	0	3	0	0	0	2	7		I
1	0	0	9	0	0	3	0	0	0	0	8		I
1	0	1	2	0	0	3	0	0	0	1	7		I
1	0	1	5	0	0	3	0	0	0	0	8		I
1	0	1	8	0	0	3	0	0	0	0	9		I
1	0	2	1	0	0	3	0	0	0	2	2		I
1	0	2	4	0	0	3	0	0	0	2	6		I
1	0	2	7	0	0	3	0	0	0	3	3		I

NOTES: POC = Parameter Occurrence Code
INT = Sampling Interval Code
SF = Sampling Frequency
DP = Decimal Point Locator
VF = Validity Flag

RECEIVED NOV 12 1992

Department of Natural Resources

AEROMETRIC INFORMATION RETRIEVAL SYSTEM
DAILY DATA FORM
Form 4500-119 5-88

Network Name	Name of Person Completing Form
FLAMBEAU MINING CO	MARK DRAKE - SUPERIOR TESTING
Date Completed	**Telephone Number (include area code)**
	715-392-3605

Tran Type 1	State 2	3	County 4	5	6	Site 7	8	9	10
2	5	5	1	0	7	0	0	0	3

Parameter 11	12	13	14	15	POC 16	INT 17	Units 18	19	20	Method 21	22	23	Year 24	25
1	1	1	0	1	1	7	0	0	1	0	9	1	9	2

Month 26	27	Day 28	29	Start Hour 30	31	SF 32	DP 33	Sample Value 34	35	36	37	VF 38	Actio 80
1	0	0	3	0	0	3	0	0	0	3	7		I
1	0	0	6	0	0	3	0	0	0	4	0		I
1	0	0	9	0	0	3	0	0	0	0	8		I
1	0	1	2	0	0	3	0	0	0	6	0		I
1	0	1	5	0	0	3	0	0	0	4	1		I
1	0	1	8	0	0	3	0	0	0	1	1		I
1	0	2	1	0	0	3	0	0	1	8	7		I
1	0	2	4	0	0	3	0	0	0	4	0		I
1	0	2	7	0	0	3	0	0	0	8	5		I

NOTES: POC = Parameter Occurrence Code
INT = Sampling Interval Code
SF = Sampling Frequency
DP = Decimal Point Locator
VF = Validity Flag

RECEIVED NOV 1 2 1992

Department of Natural Resources

AEROMETRIC INFORMATION RETRIEVAL SYSTEM
DAILY DATA FORM
Form 4500-119 5-88

Network Name FLAMBEAU MINING CO

Name of Person Completing Form MARK DRAKE - SUPERIOR TESTING

Date Completed

Telephone Number (include area code) 715-392-3605

Tran Type 1	State 2	3	County 4	5	6	Site 7	8	9	10
2	5	5	1	0	7	0	0	0	4

Parameter 11	12	13	14	15	POC 16	INT 17	Units 18	19	20	Method 21	22	23	Year 24	25
1	1	1	0	1	1	7	0	0	1	0	9	1	9	2

Month 26	27	Day 28	29	Start Hour 30	31	SF 32	DP 33	Sample Value 34	35	36	37	VF 38	Action 80
1	0	0	3	0	0	3	0	0	0	4	1		I
1	0	0	6	0	0	3	0	0	0	3	4		I
1	0	0	9	0	0	3	0	0	0	0	8		I
1	0	1	2	0	0	3	0	0	0	4	7		I
1	0	1	5	0	0	3	0	0	0	4	8		I
1	0	1	8	0	0	3	0	0	0	1	6		I
1	0	2	1	0	0	3	0	0	0	3	2		I
1	0	2	4	0	0	3	0	0	0	3	0		I
1	0	2	7	0	0	3	0	0	0	4	0		I

NOTES: POC = Parameter Occurrence Code
INT = Sampling Interval Code
SF = Sampling Frequency
DP = Decimal Point Locator
VF = Validity Flag

RECEIVED NOV 1 2 1992

Department of Natural Resources

AEROMETRIC INFORMATION RETRIEVAL SYSTEM
DAILY DATA FORM
Form 4500-119 5-88

Network Name: FLAMBEAU MINING CO.

Name of Person Completing Form: MARK DRAKE - SUPERIOR TESTING

Date Completed:

Telephone Number (include area code): 715-392-3605

Tran Type 1	State 2	3	County 4	5	6	Site 7	8	9	10
2	5	5	1	0	7	0	0	0	5

Parameter 11	12	13	14	15	POC 16	INT 17	Units 18	19	20	Method 21	22	23	Year 24	25
1	1	1	0	1	1	7	0	0	1	0	9	1	9	2

Month 26	27	Day 28	29	Start Hour 30	31	SF 32	DP 33	Sample Value 34	35	36	37	VF 38	Action 80
1	0	0	3	0	0	3	0	0	0	2	4		I
1	0	0	6	0	0	3	0	0	0	3	2		I
1	0	0	9	0	0	3	0	0	0	0	7		I
1	0	1	2	0	0	3	0	0	0	1	7		I
1	0	1	5	0	0	3	0	0	0	0	8		I
1	0	1	8	0	0	3	0	0	0	0	8		I
1	0	2	1	0	0	3	0	0	0	2	3		I
1	0	2	4	0	0	3	0	0	0	2	0		I
1	0	2	7	0	0	3	0	0	0	2	2		I

NOTES: POC = Parameter Occurrence Code
INT = Sampling Interval Code
SF = Sampling Frequency
DP = Decimal Point Locator
VF = Validity Flag

RECEIVED NOV 12 1992

WISCONSIN DEPT. OF NATURAL RESOURCES

RECEIVED NOV 18 1992

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Northwest District Headquarters

P.O. Box 309
STH 70 West & First Street
Spooner, Wisconsin 54801
TELEPHONE 715-635-2101
TELEFAX 715-635-4105

November 17, 1992

File Ref: 4530-3

Ms. Jana Murphy
Supervisor of Environmental Affairs
Flambeau Mining Company
N4095 Highway 27
Ladysmith, Wisconsin 54848

Re: Letter of Inquiry - Exceedance of Ambient Air Quality Standard

Dear Ms. Murphy:

On October 21, 1992, a possible exceedance of the Total Suspended Particulate (TSP) National Ambient Air Quality Standard was exceeded at industrial monitoring site 55-107-0003. This monitor is located approximately 200 feet west of STH 27, on the Flambeau Mine site in Ladysmith.

Site	Location	Date	TSP Value
55-107-0003	Flambeau Mine N4095 Hwy 27 Ladysmith, WI	October 21, 1992	187ug/m^3

The DNR is investigating the exceedance to determine the causes leading to its occurrence. As part of this investigation, you are requested to review your contractor operating records of October 21, 1992 and submit the following information within 15 days of the receipt of this letter.

1. A list of contractor activities which took place on October 21, 1992 on or near STH 27 in the vicinity of the Flambeau Mine Site, Ladysmith, Wisconsin, including hours of operation (specific time of day), equipment and material used.

2. A list of contractor names and addresses corresponding to the above activities.

3. Report any malfunctions of control equipment or any other operational situations that may have caused an unusual amount of particulate emissions.

You may refute any connection to the above exceedance, although we do ask that you

provide substantiating documentation to such a claim, or acknowledge culpability ar
provide mitigating information to explain why the exceedance may have taken place.

If you have any questions, please call me at 715/623-4064.

Sincerely,

Bob Sloan

Bob Sloan
Air Management Specialist

RLS
cc: Julian Chazin, AM/7

c:FLAMLTR.INQ

Printed on Recycled Paper

TOTAL P.03

Flambeau Mining Company
N4095 Highway 27
Ladysmith, Wisconsin 54848
(715) 532-7620

Kennecott

December 8, 1992

Mr. Bob Sloan
Air Management Specialist
Northwest District Headquarters
Department of Natural Resources
P.O. Box 309
Spooner, WI 54801

RE: Flambeau Mining Company - Air Monitoring

Dear Mr. Sloan:

Flambeau Mining Company (Flambeau) is responding to your November 17, 1992 letter of inquiry regarding the possible exceedance of the Total Suspended Particulate (TSP) National Ambient Air Quality Standard at industrial site 55-107-0003 on October 21, 1992. The information in this letter is additional information to that which was presented with the notice of exceedance in a letter dated November 13, 1992.

Flambeau was requested to review contractor operating records of October 21, 1992 and submit additional information to the Department. The following is a listing of the Department's requests followed by the response from Flambeau:

Request: "A list of contractor activities which took place on October 21, 1992 on or near STH 27 in the vicinity of the Flambeau Mine Site, Ladysmith, Wisconsin, including hours of operation (specific time of day), equipment and material used."

Response: Contractor activities in the vicinity of STH 27 on 10/21/92 were as follows:

1) Installation of rail spur trackage east of STH 27.

2) Placement of ballast and trackage on rail spur west of STH 27.

3) Erasing of existing road marking paint on STH 27.

4) Application of new road marking paint on STH 27 and on the project access road.

Flambeau believes that the cause of the TSP exceedance was the sandblasting of the existing epoxy paint from STH 27's asphalt pavement. This procedure was performed by a truck-mounted, custom built machine which was operated from 8:00 a.m. to 1:00 p.m. on October 21, 1992. Flambeau emphatically stresses that this process is by no means unique to the Flambeau Mine project.

Request: "A list of contractor names and addresses corresponding to the above activities."

Response: The contractors involved in the activities were as follows:

Rail Spur Construction
Volkman Railroad Builders Inc
14625 West Kaul Ave
Menomonee Falls, WI 53051

Road Marking
Century Fence Company
P.O. Box 466
Waukesha, WI 53187-0466

Request: "Report any malfunctions of control equipment or any other operational situations that may have caused an unusual amount of particulate emissions."

Response: There was no malfunction of control equipment as this process does not typically have control equipment associated with it. There was not an unusual amount of particulate emissions due to the fact that such emissions are typical for this process.

If you should have any questions regarding the above information please contact me at (715) 532-7620 Ext. 717.

Sincerely
Flambeau Mining Company

Jana E. Murphy

Jana E. Murphy
Supervisor of Environmental Affairs

cc: Jim Ross, WDNR
Julian Chazin, WDNR
Larry Lynch, WDNR
Lawrence E. Mercando, Flambeau
Theresa Harding, WDNR
Jim Hutchison, Foth & Van Dyke
Christa Andrew, Foth & Van Dyke
Clarence Glotfelty, Rusk County

Flambeau Mining Company
N4095 Highway 27
Ladysmith, Wisconsin 54848
(715) 532-7620

December 21, 1992

Kennecott

Mr. Jim Ross
Northwest District Headquarters
Wisconsin Department of Natural Resources
STH 70 West of First Street
Spooner, WI 54801

RE: Flambeau Mining Company - Air Monitoring

Dear Mr. Ross:

Flambeau Mining Company (Flambeau) located in Ladysmith, Wisconsin is developing a copper mine just south of Ladysmith, Wisconsin. Per Part 4 of the Mining Permit, Monitoring Plan Approval, Flambeau is monitoring the total suspended particulate matter (TSP) ambient air concentration at multiple locations around the site. Since the mine is in the preproduction phase, the TSP monitors are operated once every three days.

The TSP filters are shipped to Superior Laboratory where they are weighed and the ambient air concentrations are determined. As reported by Superior Laboratory in a lab report received on December 18, 1992, the TSP concentration for December 2, 1992, at the southeast monitoring site (ID# 55-107-003) was found to be 155 ug/m^3. Copies of the lab results for this monitoring site and the other three project monitoring sites are attached. Flambeau has investigated the occurrence of the exceedance at the southeast monitoring site and is reporting it to the Department as required in Part 4, Section 4.e of the Mining Permit.

On December 2, 1992 pursuant to Flambeau's Erosion Control Plan the berms of the south east portion of the Type II stockpile area were being stabilized with a straw mulch. Flambeau's contractor, Parker Construction (Ladysmith, Wisconsin), was applying the straw mulch with a Patz Bale Chopper during the hours of 7:00 AM to 3:00 PM. The Patz Bale Chopper is typically used by farmers to provide bedding to livestock housed in open pens. The Patz Bale Chopper is not provided with control equipment for particulate emissions. Therefore, the particulate emissions produced were not unusual. As the enclosed weather data shows, the wind was blowing from the north and the north, northwest (the 270-360 degree sectors) over 90 percent of the time on December 2. This resulted in chopped straw being blown over the southeast sampler which is located approximately 300' southeast of the December 2 mulching activities. The site operator noted this occurrence on the particulate sample data sheet recorded for this sampling episode. A copy of this data sheet is enclosed.

The project is still in the construction phase and thus the only activities occurring at the site are construction related. A copy of the contractor activity log describing site activities on December 2 is also enclosed. A review of the log indicates that the only on-site activity that could have created sufficient suspended materials to cause exceedance was the mulching of the Type II stockpile area's berms. The occurrence of the exceedance was an isolated incident.

The December 2 filter from the southeast site is currently being analyzed for metals. Once the results are received from the lab, they will be forwarded to you. If you have any questions regarding this letter or desire to discuss its contents, please contact me at (715) 532-7620 ext. 717.

Sincerely,

Jana E. Murphy

Jana E. Murphy
Supervisor of Environmental Affairs

cg

attachments
cc/att: Lawerence E. Mercando, Flambeau
Henry J. Handzel, DeWitt, Porter *et al*
Bernice Dukerschein, Rusk County
Clarence Glotfelty, Rusk County
Robert Plantz, Town of Grant
Al Christianson, City of Ladysmith
Julian Chazin, WDNR
Larry Lynch, WDNR
Theresa Harding, WDNR
Jim Hutchison, Foth & Van Dyke

SUPERIOR TESTING LABORATORIES
410 BANKS AVE.
SUPERIOR, WI. 54880
715—392-3605

RECEIVED DEC 18 1992

INSTRUMENT #0188-2015
FLAMBEAU MINING CO.
SOUTHEAST 55-107-0003
LADYSMITH, WI.

Last Cal. 11-24-92
Slope .882
Intercept -.0702 cu.ft.

Inst. vs
Qr as CFM

Sample Date	T.S.P. ug/cuM	Filter Number	Sample Time HR	Flow AVG CFM	Tot. Air Vol. cuM	Exposed Wt. g	Tare Wt. g	Net Wt. g	Calc. Date Initials	Received Date Initials
12-02-92	155.2	5932216	24.00	46.7	1996.5	4.8622	4.5524	.3098	12-10-92	12-05-92

Site operator notes that, "Crew working with bale chopper within 300' NW of monitor."

Sincerely,

Mark D. Drake
Laboratory Director

SUPERIOR TESTING LABORATORIES

410 BANKS AVE.
SUPERIOR, WI. 54880

715—392-3605

INSTRUMENT #0188-2014
FLAMBEAU MINING CO.
RUSK CO. HOSPITAL 55-107-0001 Last Cal. 11/24/92
LADYSMITH, WI. Slope 1.002 Inst. vs
Intercept -.1082 cu.ft. Or as CFM

Sample Date	T.S.P. ug/cuM	Filter Number	Sample Time HR	Flow AVG CFM	Tot. Air Vol. cuM	Exposed Wt. g	Tare Wt. g	Net Wt. g	Calc. Date Initials	Received Date Initials
12-02-92	7.4	5932212	23.89	45.8	1949.4	4.5183	4.5038	.0145	12-10-92	12-05-92

Sincerely,

Mark D. Drake
Laboratory Director

SUPERIOR TESTING LABORATORIES

410 BANKS AVE.

SUPERIOR, WI. 54880

715—392-3605

INSTRUMENT #0188-2017
FLAMBEAU MINING CO.
NORTHEAST 55-107-0004
LADYSMITH, WI.

Last Cal. 11-24-92
Slope .945
Intercept .0574 cu.ft.

Inst. vs
Qr as CFM

Sample Date	T.S.P. ug/cuM	Filter Number	Sample Time HR	Flow AVG CFM	Tot. Air Vol. cuM	Exposed Wt. g	Tare Wt. g	Net Wt. g	Calc. Date Initials	Received Date Initials
12-02-92	5.6	5932214	23.89	51.8	2207.8	4.5557	4.5434	.0123	12-10-92	12-05-92

Sincerely,

Mark D. Drake
Laboratory Director

SUPERIOR TESTING LABORATORIES

410 BANKS AVE.
SUPERIOR, WI. 54880

715—392-3605

INSTRUMENT #0188-2016
FLAMBEAU MINING CO.
NORTHWEST 55-107-0005
LADYSMITH, WI.

Last Cal. 11-24-92
Slope .936
Intercept -.0309 cu.ft.

Inst. vs Qr as CFM

Sample Date	T.S.P. ug/cuM	Filter Number	Sample Time HR	Flow AVG CFM	Tot. Air Vol. cuM	Exposed Wt. g	Tare Wt. g	Net Wt. g	Calc. Date Initials	Received Date Initials
12-02-92	3.7	5932213	23.89	47.8	2035.9	4.5780	4.5705	.0075	12-10-92	12-05-92

Sincerely,

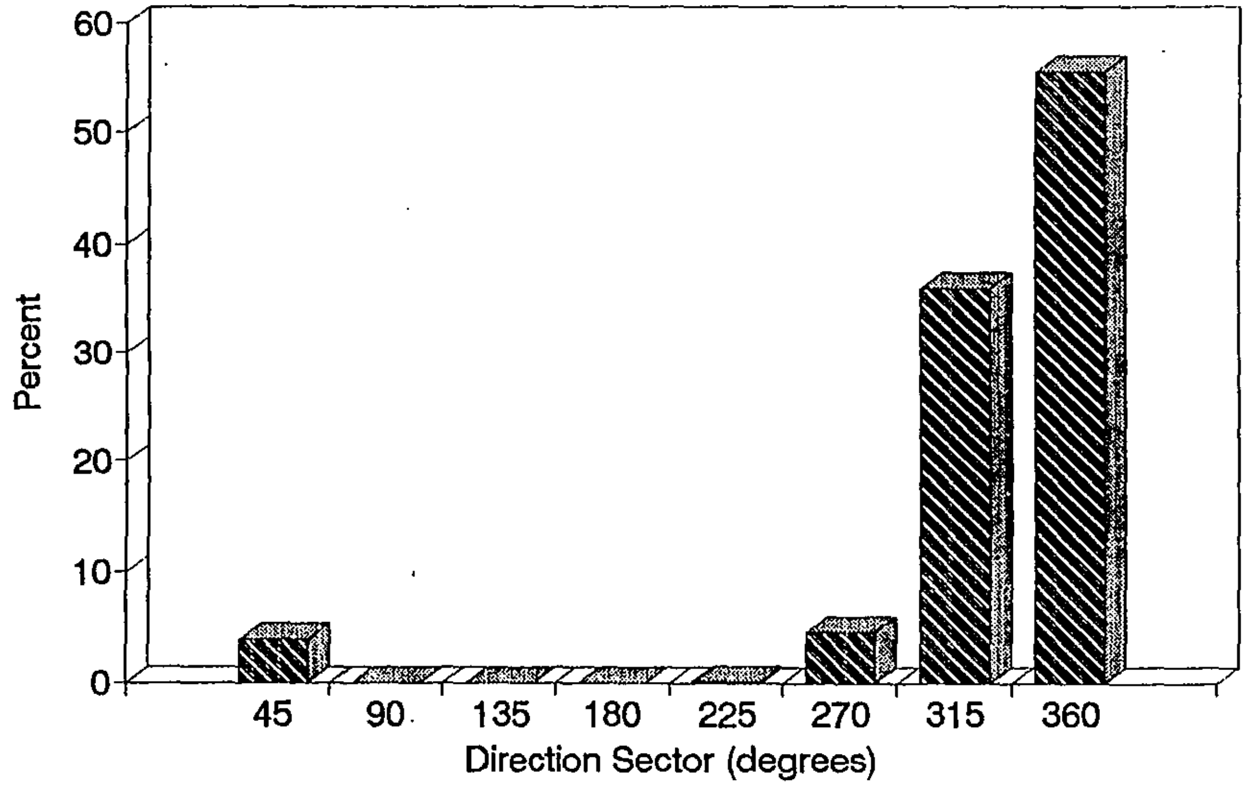
Mark D. Drake
Laboratory Director

DEC. 2, 1992 WEATHER REPORT
FLAMBEAU MINING COMPANY

DATE	HOUR	WIND SPEED (MPH)	WS PEAK (MPH)	WIND DIR	WD STD. DEV.	Percent of time wind blowing from each sector 0/45	45/ 90	90/ 135	135/ 180	180/ 225	225/ 270	270/ 315	315/ 360	RAIN (IN)
12 2	0	5.224	8.56	260.4	9.97	0	0	0	0	0	0.829	0.171	0	0
12 2	100	6.368	10.43	283.1	14.1	0	0	0	0	0	0.177	0.803	0.02	0
12 2	200	9.93	23.09	317.1	16.12	0.01	0	0	0	0	0	0.479	0.509	0
12 2	300	14.27	30.71	334.3	14.41	0.056	0	0	0	0	0	0.08	0.863	0
12 2	400	14.11	27.55	340.3	13.65	0.091	0	0	0	0	0	0.031	0.877	0
12 2	500	14.03	30.43	338.3	12.88	0.056	0	0	0	0.001	0	0.032	0.911	0
12 2	600	15.75	31.87	340.2	15.54	0.117	0	0	0	0.002	0	0.047	0.834	0
12 2	700	14.36	30.43	336.9	15.46	0.084	0	0	0	0.002	0	0.067	0.847	0
12 2	800	14.12	27.12	337.7	15.6	0.089	0	0	0	0.001	0	0.071	0.838	0
12 2	900	10.79	24.1	341.4	15.57	0.147	0	0	0	0.001	0	0.042	0.809	0
12 2	1000	11.77	24.24	343.8	14.9	0.158	0	0	0	0.003	0	0.015	0.824	0
12 2	1100	10.77	20.07	328	14.13	0.019	0	0	0	0	0	0.17	0.811	0
12 2	1200	11.2	22.37	318.7	15.18	0.008	0	0	0	0	0.002	0.411	0.579	0
12 2	1300	12.93	22.23	326	16.08	0.031	0	0	0	0	0	0.246	0.722	0
12 2	1400	12.86	23.52	325.8	16.61	0.024	0	0	0	0.001	0	0.247	0.727	0
12 2	1500	10.88	23.66	325.3	13.7	0.015	0	0	0	0	0	0.221	0.764	0
12 2	1600	8.14	19.64	311.7	15.61	0.004	0	0	0	0	0.004	0.58	0.412	0
12 2	1700	8.52	17.77	300.1	15.27	0	0	0	0	0	0.019	0.804	0.176	0
12 2	1800	10.21	18.92	308.7	15.26	0.003	0	0	0	0	0.005	0.669	0.323	0
12 2	1900	6.915	19.49	310.6	15.39	0.004	0	0	0	0	0.006	0.623	0.366	0
12 2	2000	6.214	14.46	302.7	13.76	0	0	0	0	0	0.006	0.811	0.183	0
12 2	2100	9.07	19.49	312.3	17.03	0.004	0	0	0	0	0.004	0.581	0.411	0
12 2	2200	7.34	16.61	312.4	14.79	0.002	0	0	0	0	0.004	0.594	0.4	0
12 2	2300	5.754	10.86	297	14.73	0	0	0	0	0	0.023	0.863	0.114	0
						3.84	0.00	0.00	0.00	0.05	4.50	36.09	55.52	

Weather Data for December 2, 1992

Flambeau Mining Company



L22

PARTICULATE SAMPLE DATA SHEET
Flambeau Mining Company
HI-VOLUME SAMPLER DATA RECORD

Lab: Superior Testing Laboratory
410 Banks Ave.
Superior, WI. 54880
715-392-3605

DATE RECEIVED ____________

RECEIVED BY ____________

Filter Number : 5932 216 :

Project Number : ____________

FINAL Weight (grams) : ____________

INITIAL Weight (grams) : 4.5524 :

Particulate Weight Pwt, grams) : ____________

TSP Concentration
(ug/std cubic meter) : ____________

Date Weighed : Initial: 10-6-92 Final: ____________

Person Weighing : Initial: MD Final: ____________

Audited : Yes ___ No: x

Audited by : Initial: ____________ Final: ____________

Audit Date : Initial ____________ Final: ____________

Audit Remarks: ____________

Field:

Date of Sampling : 12-2-92

Site I. D. or Sampler Number : Southeast

AIRS Site Code : 55 107 0003

Flow (CFM) Initial ______ Final ______ Avg. ______

Running Time Meter Initial 1221.43 Final 1245.43

Total Sampler Time 24.00 HRS

Standard Volume (cu. M) : ____________

Site Operator [signature]

Comments: Crew working with bale Chopper within 300' NW of monitor

Please return the filter and both copies of this form to Superior Testing.

Flambeau Mining Company

CONTRACTOR DAILY LOG
DECEMBER 2, 1992

B&B Elect.	Hanging P-1 fixtures Inst temp pane Finished cleanup Started running tray towards potable water pump Got well pump running water Pulled wire from WTP to ped. at runoff pond
Case	Start installing Dy-We-Dag Bars between anchor Wall and diaphragm wall
C.R. Meyer	Clean-up Structural steel for deep sump Continue on hangers (P&G) Connect portable water
Duand Builders	Elec lab, clean building Misc. hardware finals HVAC finals, duct work Paint CMU's Spray s/r Door hardware Elec rough in
Parker	Fueled pumps & laid pipe for RR scales Moved furniture & painted covers Chopped hay & hauled hay Inventory parts, hauled straw & moved furniture
Thompson Exc.	Painted Moved furniture Spread hay Work on RR spur

Flambeau Mining Company
N4095 Highway 27
Ladysmith, Wisconsin 54848
(715) 532-7620

January 13, 1993

Kennecott

Mr. Jim Ross
Northwest District Headquarters
Wisconsin Department of Natural Resources
5th West & First Street
Spooner, WI 54801

RE: Flambeau Mining Company - Air Monitoring

Dear Mr. Ross:

Flambeau Mining Company had reported two exceedances at the southeast monitoring site (ID# 55-107-003) which occurred on October 21, 1992 and December 2, 1992. As per Condition 4.e), Part 4, of the Mining Permit, Flambeau had provided exceedance investigations to the Department. In these exceedance investigations, Flambeau had stated that upon receipt of metal analyses results, they would be forwarded to the Department.

Please find enclosed results from metals analysis performed on the TSP filter samples collected at the southeast monitoring site (ID#55-107-003) on October 21, 1992 and December 2, 1992.

If you have any questions, please contact me at (715) 532-6690 Ext. 717.

Sincerely,
Flambeau Mining Company

Jana E. Murphy

Jana E. Murphy
Supervisor of Environmental Affairs

Attachments

cc: Lawrence Mercando, Flambeau (w/att)
Henry Handzel, DeWitt, Porter, et al. (w/att)
Bernice Durkerschein, Rusk County (w/att)
Clarence Glotfelty, Rusk County (w/att)
Robert Plantz, Town of Grant (w/att)
Al Christianson, City of Ladysmith (w/att)
Larry Lynch, WDNR (w/att)
Ken Markart, WDNR (w/att)
Julian Chazin, WDNR (w/att)
Jim Hutchison, Foth & Van Dyke (w/att)
Krista Andrew, Foth & Van Dyke (w/att)

Corporate Office: 10 East South Temple • P.O. Box 11248 • Salt Lake City, Utah 84147 • (801) 322-7000

ORTEK
ENVIRONMENTAL LABORATORY
414-498-2222
FAX: 414-498-4067
2496 West Mason Street P.O. Box 12435 Green Bay, WI. 54307-2435

- SAMPLE ANALYSIS REPORT -

TO: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 54307-9012

ATTN: RUSS JANESHEK

Batch ID : 9211063
Our Lab # : 130893
Your Sample ID: 5932656
Sample Matrix : FILTER

Report Date: 11/16/92

COLLECTION INFORMATION

Date/Time/By: 10/21/92 CA
Location : FLAMBEAU/FILTER 5932656

Lab#	Test		Result	Units	Analysis Date
130893	Mercury	<	1.5 x 10-6	UG/M3	11/13/92
	Arsenic	<	2.1 x 10-5	UG/M3	11/13/92
	Cadmium		2.7 x 10-6	UG/M3	11/13/92
	Chromium		5.2 x 10-5	UG/M3	11/13/92
	Berylium	<	4.1 x 10-6	UG/M3	11/13/92
	Nickel	<	1.6 x 10-4	UG/M3	11/13/92

Signed: Earl G. [illegible] Date: 12-7-92

Signed: [illegible] Date: 12-7-92

Revision 12/02/92 JCF

ORTEK
ENVIRONMENTAL LABORATORY

414-498-2222
FAX: 414-498-4067
2496 West Mason Street · P.O. Box 12435 · Green Bay, WI 54307-2435

- SAMPLE ANALYSIS REPORT -

To: FOTH & VAN DYKE
2737 S RIDGE ROAD
P O BOX 19012
GREEN BAY WI 54307

Attn: RUSS JANESHEK

Batch ID : 9212164
Our lab # : 132035
Your sample ID: FILTER#5932216
Sample Matrix : FILTER

Report Date: 01/05/93

COLLECTION INFORMATION

Date/Time/By: 12/02/92 JC
Location : 551070003SE/FLAMBEAU

Lab#	Test	Result	Units	Analysis Date
132035	Arsenic	8.5 x 10-4	UG/M3	12/31/92
	Beryllium	< 1.5 x 10-4	UG/M3	01/04/93
	Cadmium	1.7 x 10-4	UG/M3	12/31/92
	Chromium	6.8 x 10-3	UG/M3	12/31/92
	Mercury	< 4.9 x 10-5	UG/M3	01/04/93
	Nickel	< 5.6 x 10-3	UG/M3	01/04/93

Results expressed in exponential notation

Signed [signature] Date 1/5/93

Signed ______________ Date ______________