

YUKON TERRITORY WATER BOARD

Pursuant to the Yukon Waters Act and Regulations, the Yukon Territory Water Board hereby grants a Type A Water Use Licence for a quartz mining undertaking to:

LICENCE NUMBER: QZ95-003

LICENCE TYPE: A

UNDERTAKING: QUARTZ MINING

WATER SOURCE: Rose Creek, a tributary to the Pelly River near Faro, Yukon. Water Management Area: 02 Yukon

QUANTITY OF WATER: 42,900 m³ per day

EFFECTIVE DATE: The date upon which the signature of the Minister of Indian and Northern Affairs Canada is affixed

EXPIRY DATE: December 31, 2003


This Licence shall be deemed to be an amendment of water use licence licence number IN89-001, as amended by amendments one through seven inclusive, and all rights and obligations conferred by water use licence licence number IN89-001, as amended by amendments one through seven inclusive, are continued in full force and effect, save as such rights and obligations are amended by this amending licence.

This Licence shall be subject to the restrictions and conditions contained herein and to the restrictions and conditions contained in the Yukon Waters Act and the Regulations made thereunder. Where there is a discrepancy between the application and the terms of this Licence, the terms of this Licence shall prevail.

Dated this 27 day of

YUKON TERRITORY WATER BOARD

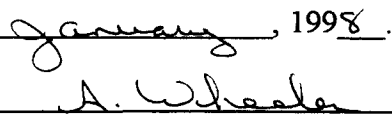
November, 1997



Witness


Ron Johnson, Chairperson

Dated this 30th day of

Approved by:


A. Wheeler
Witness


Jane Stewart
Minister of Indian and Northern
Affairs Canada

PART A - GENERAL CONDITIONS

Definitions:

1. (a) "Act" means Yukon Waters Act and any amendments thereto.
- (b) "Regulations" means the Regulations made under the Act.
- (c) "Board" means the Yukon Territory Water Board.
- (d) "Inspector" means any person designated as an Inspector under the Act.

Representations, Warranties and Undertakings

2. The Board has relied on the representations, warranties and undertakings provided by the applicant in the material filed as application QZ95-003. Such representations, warranties and undertakings, where referenced in this licence, are considered by the Board to be a part of the licence, but shall be subject to the terms and conditions of this licence.

Fees

3. The Licensee shall pay the water use fees prescribed in the Regulations, annually in advance, on first day of January in each year of the term of this licence.

Deleterious Substances

4. Subject to the provisions of this licence, deleterious substances shall be used, transported, stored and disposed of in such a manner that they are not deposited in, or allowed to be deposited in, any waters.

Other Laws

5. No term of this licence limits the application of any other Federal or Territorial Law

Security

6. The Licensee shall provide security in the amount of five hundred thousand (\$500,000) dollars. The form of the security shall be in accordance with the Regulations.
7. The Licensee shall ensure that all monies held by, and any income receivable to, the Trusteed Environmental Fund that was attached as Schedule E to water use licence IN89-001 shall immediately be paid into the Trust Reclamation Security Fund that was established by the Reclamation Security Agreement that was agreed to by the Licensee and the Government of Canada on November 8, 1994.

Non-Compliance

8. In the event that the Licensee fails to comply with any provision or condition of this licence, the Board may, with the approval of the Minister, and subject to the Act, cancel the licence.

Waste Discharge Standards

9. This licence is issued to the Licensee, subject to the conditions contained herein, with respect to the use or return of water, or the depositing or permitting the deposit of waste of any type in any waters or in any place under any conditions where such waste or any other waste that results from the deposit of such waste may enter any waters. However, it is also a condition of granting of this licence to the Licensee that, whenever future Regulations are made by the Governor in Council under the Yukon Waters Act, or any other statute imposing conditions relating to the quantity and types of waste that may be deposited that are more stringent than any conditions included in this licence, this licence shall be deemed, upon prescription of such Regulations, to be automatically amended to conform with such Regulations.

Correspondence

10. Where any direction, notice, order, or report under this licence is required to be in writing, it shall be given:

- (a) To the Licensee if left at or sent by registered mail or faxed to the following address:

Anvil Range Mining Corporation
Postal Bag 1000
Faro, Yukon Y0B 1K0 fax: (867) 633 3216

and shall be deemed to have been given to the Licensee on the day it was left or faxed or seven (7) days after the day it was mailed, as the case may be.

- (b) to the Board, if left at or sent by registered mail or faxed to the following address:

Yukon Territory Water Board
106 - 419 Range Road
Whitehorse, Yukon Y1A 3V1, fax (867) 668 3628

and shall be deemed to have been given to the Board on the day it was left or faxed or seven (7) days after the day it was mailed, as the case may be.

- (c) The Board or the Licensee may, by notice in writing, change its address for delivery.

Reports

11. Unless otherwise specified in this licence, all reports shall be submitted in an unbound form which is reproducible by standard photocopier and shall be accompanied by five (5) paper copies and by one copy on computer diskette.
12. Water quality monitoring reports shall be submitted in printed form and on computer diskette, in an IBM compatible spreadsheet format.

Annual Reports

13. The Licensee shall submit annual reports to the Board. The initial report shall be from the effective date of this licence to December 31, 1998 and shall be submitted to the Board on or before March 1, 1999. Subsequent reports shall be from January 1 to December 31 of each calendar year and shall be submitted to the Board on or before March 1 of the year next following the year reported.
14. The Licensee shall, by March 1, 1998, submit an annual report to the Board for the period January 1, 1997 to December 31, 1997 and that report shall comply with the requirements of water use licence IN89-001.
15. The annual report shall include all information required by the Regulations, a summary and an interpretation of any trends or variations in the data, and
 - (a) both tabular and graphical summaries of all data generated under the requirements of this licence, including an analysis and interpretation by a qualified individual or firm and a discussion of any variances from base line conditions or from previous years;
 - (b) a water balance for the entire operation including the tailings facility, the Rose Creek diversion canal, the main pit, Zone II pit and freshwater use by source.
 - (c) a detailed record of any major maintenance work carried out on the tailings facility, diversion channels, water supply reservoir or any other aspect of works on the property which may have an impact on water;
 - (d) any other details on water use or waste disposal requested by the Board.

Spills and Unauthorized Discharges

16. The Licensee shall immediately contact the 24-hour Yukon Spill Report number (867) 667-7244, should a spill or an unauthorized discharge occur. A detailed written report on any such event, including dates, quantities, parameters, causes and other relevant details and explanations, shall be submitted to the Board not later than fifteen (15) days after its occurrence.

Term of Licence

17. The term of this licence is for the period from the effective date to December 31, 2003.

PART B - OPERATING CONDITIONS

Water Supply

18. Subject to the terms and conditions of this licence, the Licensee may withdraw water from Rose Creek downstream of the freshwater reservoir and upstream of sampling station X14 in a quantity not to exceed 42,900 cubic metres per day.
19. The Licensee shall commence the water recycle program described in the Kilborn Report 350928 as soon as practicable but no later than when the water in the pit reaches 3859 feet, mine datum. The recycle of process water from the main pit shall be optimized so that fresh water use is kept to a minimum.
20. Water withdrawn by the Licensee shall in no case reduce flows in the Rose Creek Diversion below 4.5 cubic metres per minute. Measurement of this parameter shall be either by calculation at sampling station X14 or by physical measurement at sample station X3.

Waste Discharge

21. Without restricting the generality of the definition of "waste" in the Act, "waste discharge" in this licence includes the tailings pond effluent, tailings pond seepage, tailings pond groundwater seepage, and contaminated surface drainage prior to entering the receiving waters including the Faro Creek diversion waters.
22. No waste discharge shall exhibit constituents or characteristics exceeding the following limits:
- | | |
|------------------|-----------------------------------|
| Suspended Solids | - not greater than 15 mg/l |
| pH | - not less than 6.5 pH units |
| Colour | - not greater than 20 Pt-Co units |
| Turbidity | - not greater than 15 NTU |
23. No waste discharge shall contain floating solids.
24. No visible or floating oils or grease shall be present in any waste discharge.

25. No waste discharge shall be toxic to fish.
26. The concentrations of substances which shall not be exceeded in any waste discharge are listed below:

Maximum Concentration for any grab sample - in mg/L

Ammonia	(as N)	total	1.30
Antimony	(Sb)	total	0.10
Arsenic	(As)	total	0.05
Barium	(Ba)	total	1.00
Cadmium	(Cd)	total	0.02
Copper	(Cu)	total	0.20
Cyanide	(as CN)	total	0.05
Lead	(Pb)	total	0.20
Mercury	(Hg)	total	0.005
Molybdenum	(Mo)	total	0.50
Nickel	(Ni)	total	0.50
Selenium	(Se)	total	0.05
Silver	(Ag)	total	0.10
Zinc	(Zn)	total	0.50

27. The effluent standards listed in this licence shall be met at all points of entry to all receiving waters including, but not limited to, sampling stations X5 and X13.

Tailings Disposal System

28. The Licensee may deposit mill tailings generated from processing deposits of the Faro, Vangorda or Grum mines behind the Intermediate Dam or within the mined out Faro open pit in accordance with the operational aspects of the Tailings Deposition Plan described in Kilborn Engineering report 350928.
29. In the event of a spill or unauthorized discharge, the Licensee may deposit tailings generated from processing deposits of the Faro, Vangorda or Grum mines into the unused capacity of the old tailings storage area.
30. After mill tailings deposition into the Faro Pit begins, and where necessary to prevent or mitigate any unauthorized discharge, the Licensee may deposit mill tailings authorized by this licence behind the Intermediate Dam.

31. Except as otherwise provided in this licence, the Licensee shall not deposit any tailings in any place or in any manner.
32. The Licensee shall channel the waters of Rose Creek around the tailings facility and shall ensure that the diversion canal has the hydraulic capacity to carry a 1:500 year flood flow.
33. The Licensee shall maintain the overflow structure on the Rose Creek diversion dam to ensure that flows that would cause overtopping of the diversion dykes are safely diverted through the tailing impoundments.
34. The Licensee shall ensure that the spillways on the intermediate dam and the cross valley dam have the hydraulic capacity to carry a 1:500 year flood flow of Rose Creek.
35. The Licensee shall, within five years of continuous cessation of operations, implement an approved tailings pond permanent abandonment plan.

Waste Rock

36. The Licensee shall dispose of all waste rock in accordance with the Faro Mine Abandonment Plan (Curragh Resources Inc., 1988).
37. The Licensee shall monitor all waste rock dumps in accordance with Schedule C of this licence.
38. In order to ensure the physical stability of waste rock dumps, the Licensee shall construct the dumps in accordance with sound engineering practice. The Licensee shall implement any appropriate stabilization measures that might be recommended as a result of inspections that are required by this licence.

North Fork Groundwater Contingency Program

39. In the event that water in Rose Creek downstream of Zone II (particularly at monitoring stations R10 or X2) contains sustained concentrations of substances in excess of that shown by monitoring at R8 and at levels that are likely to cause a significant adverse environmental impact, the Licensee shall implement the contingency plan outlined in section 7 of the report: Groundwater Investigation, North Fork of Rose Creek, Faro, Yukon Territory, Report Number A114101, Steffen, Robertson and Kirsten, December 1994.

PART C - MODIFICATION AND CONSTRUCTION

40. The Licensee shall file with the Board the final design and construction plans and specifications for any modifications to the existing water supply and associated facilities, the tailings dykes and related structures and other waste treatment or handling facilities prior to the proposed start of any construction or work .
41. The Licensee shall file a detailed construction schedule with the Board at least ten (10) days prior to commencing any construction work involving the existing water supply and associated facilities, the tailings dykes and related structures and other waste treatment or handling facilities.
42. The Licensee shall construct each structure and carry out work in accordance with the plans and specifications that have been submitted to the Board.
43. All design alterations shall be submitted to the Board prior to any alterations being made.
44. The Licensee shall provide as-constructed plans and drawings of the works referred to in this Part of this licence within sixty (60) days after completion of construction. These shall be submitted on transparencies reproducible with the use of a standard printer.
45. The Licensee shall design all dams and diversion canal slopes to withstand the 1:475 earthquake.

Faro Pit Dam

46. At least ninety (90) days prior to construction, the Licensee shall submit to the board detailed designs and site investigations for the Faro Pit Dam and associated water conveyance structures.
47. The Licensee shall construct the Faro Pit Dam and associated conveyance structures in accordance with the design that is submitted, except that, should the Board notify the Licensee that a public hearing will be held to discuss the designs, and should the notice include a direction not to release any effluent until such time as a public hearing has been convened and the Board has concluded its deliberations, then the Licensee shall not release any effluent.

Maintenance

48. During the term of this licence, including any period of temporary cessation of tailings discharge, the Licensee shall maintain in good order all works on the property and, in particular, the tailings disposal facilities, diversion canals, freshwater supply reservoir, waste rock dumps and all associated works.

PART D - REPORTS, SAMPLING AND ANALYSIS

49. The Licensee shall compile all data relating to the surveillance network program into a monthly report. The report shall be submitted to the Board within thirty (30) days of the end of each month for which the report is compiled.

Monitoring

50. The Licensee shall comply with the Surveillance Network Program attached as Schedule A hereto and shall comply with all provisions for sampling, sample preservation, reporting and analysis specified in this licence.
51. In addition to the requirements of the Surveillance Network Program, the Licensee shall obtain flow measurements at site X4 only when there is outflow surface discharge from the Cross Valley pond. When there is no outflow, then the Licensee shall monitor water levels in the Cross Valley pond and the intermediate pond weekly. These water levels will be reported monthly.
52. Where ICP scans are required in Schedule A, Part iii of this licence, then those scans shall include, at a minimum, all metal parameters listed in Section 26 of this licence. ICP scans at internal monitoring sites are required when available.
53. Unless otherwise specified in the quality assurance/quality control program, all analysis shall be conducted in accordance with the current edition of "Standard Methods for the Examination of Water and Waste Water", prepared and published jointly by the American Water Works Association and the Water Pollution Control Federation.
54. The Licensee shall comply with a quality assurance/quality control program. The objective of the quality assurance/quality control program shall be to validate data and provide quality assurance.
55. The Licensee may construct a foot bridge across Rose creek in the vicinity of location X14 for the purpose of obtaining high water flow measurements. The bridge shall not have footings or pilings in the creek, but may be a span across the creek.
56. The Licensee shall comply with the program of biological monitoring attached as Schedule B to this licence.
57. The Licensee shall carry out the physical monitoring program attached as Schedule C to this licence.
58. The Licensee shall collect and conduct four (4) bioassays each year from sampling points X5, and X13 in accordance with "Standard Procedures for Testing the Acute Lethality of Liquid Effluent, Report No. EPS 1-WP-80-1, November 1980".

59. In the event that sampling at the groundwater monitoring stations indicates that groundwater contamination is or may be occurring in the North Fork of Rose Creek, the Licensee shall immediately increase the sampling frequency at sample stations R8, R9 and R10 to weekly.

Faro Pit Discharge Contingency Plan

60. The Licensee shall, by June 30, 1998, submit to the Board a contingency plan regarding discharge from the Faro Pit. The plan shall identify how excess water will be conveyed, treated and discharged and shall identify triggers that will initiate implementation of the plan.
61. Should any of the triggers that are identified in the Faro Pit Discharge Contingency Plan occur, then the Licensee shall implement the plan.

PART E - REHABILITATION AND ABANDONMENT

62. The Licensee shall notify the Board of its intention to permanently cease operation on the property, not less than five (5) years before such cessation of operations.
 63. Decommissioning of the Down Valley Tailings Facility shall comply with Option 5 of the Down Valley Tailings Impoundment Decommissioning Plan (otherwise known as SRK Report 60635), providing that the following requirements have first been met:
 - (a) The Licensee shall, by December 31, 2001, complete a Tailings Reprocessing Feasibility Study. This study shall include a financial feasibility component.
 - (b) The Licensee shall submit to the Board a financing plan pertaining to option 5.
 - (c) The feasibility study and financing plan referred to in this part shall be subjected to public review.
 64. In the event that permanent abandonment occurs, or may reasonably be expected to occur, prior to the requirements of Section 63 having been completed, the Licensee shall ensure that abandonment of the tailings facilities takes place in accordance with Option 4 of the Down Valley Tailings Impoundment Decommissioning Plan (also known as SRK Report 60635).
 65. Construction design standards for tailings decommissioning shall be established to meet the requirements of probable maximum flood ("PMF") and Maximum Credible Earthquake ("MCE").
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66. Upon permanent cessation of mining and milling operations the Licensee shall:
- (a) abandon the property in such a way as to ensure the long term physical stability of all water courses and tailings deposits with minimal post operational maintenance; and
 - (b) abandon the operation in such a manner that the long term water quality of Rose Creek downstream of the tailings facility shall comply with the Canadian Water Quality Guidelines prepared by the Task Force on Water Quality Guidelines of the Canadian Council of Resource and Environment Ministers, March 1987 (table 3.1, Guidelines for Freshwater Aquatic Life).
67. In addition to any other requirements of this licence, the Licensee shall, upon permanent cessation of mining and milling operations, fulfill all of the following obligations:
- (a) remove the pumphouse and cover its foundation;
 - (b) remove the pumphouse dam;
 - (c) leave the North Fork of Rose Creek in a stable condition;
 - (d) remove the Faro Creek diversion structure and route Faro Creek into open pit No. 1;
 - (e) ensure that waste rock dumps constructed of durable rock have slope crests with a set back distance equivalent to a slope of two horizontal to one vertical;
 - (f) ensure that waste rock dumps constructed of weak or friable rock and overburden have slope crests with a set back distance equivalent to three horizontal to one vertical;
 - (g) abandon sulphide-rich waste rock in a manner such that oxidation and leaching are unlikely to occur;
 - (h) establish the out flow from open pit No. 1 such that exposure of mineralized rock in the pit is minimized;
 - (i) implement the "Curragh Resources Inc. other Facilities Abandonment Plan, June 1989".
 - (j) breach the North Fork Haul Road rock drain;
68. In addition to the measures required by this licence, the Licensee shall, upon permanent cessation of operations at the Faro mine site, implement the measures described in the "Faro Mine Abandonment Plan (Curragh Resources Inc., 1988)" according to the schedule contained therein, to the extent that this plan does not conflict with the tailings deposition plan contained in Kilborn Report 350928, or the abandonment strategy for the North Fork Causeway proposed in Curragh report WH9108, or to the extent that said plan is not superseded by subsequently filed plans which are appended to this licence.
69. Effluent from the wastewater treatment plant described in "Faro Mine Abandonment Plan (Curragh Resources Inc., 1988)" must meet the effluent standards listed in Section 26 of this licence.
70. On or before the effective date of this licence, the Licensee shall submit to the Board an Integrated Comprehensive Abandonment Plan ("ICAP") for the Faro mine site and shall implement the plan in accordance with the schedules proposed in the plan.

71. The Licensee shall carry out the program of abandonment related studies and investigations appended as Schedule D to this licence.
72. The program of abandonment related studies and investigations required by this part of this licence shall be supervised by a duly qualified person.
73. The Licensee shall provide to the Board a progress report, including detailed and complete supporting documentation, on the program of studies required by Schedule D. The progress report shall be included in each annual report and shall include investigations pertaining to interim treatment of tailings within the original and second impoundments.
74. In addition to the studies and investigations referred to in Schedule D, the Licensee shall:
 - (a) intensify high and low flow sampling of representative seeps and annually submit data on seep quality and variability of quantity (project 1 - seep surveys); and
 - (b) conduct humidity cell tests on sulphide waste rock samples (project 3 - waste rock characterization); and
 - (c) collect low flow water quality and water quantity data in the Faro Creek Diversion (project 5 - Loss of Flow in Faro Creek Diversion).
75. If the Licensee proposes to implement a sulphate reduction treatment system, the Licensee must first undertake and complete a sulphate reduction research program and must submit the results of this program to the board as part of any application to amend this licence to incorporate a sulphate reduction treatment system into this licence.
76. The Licensee shall maintain in good order all works on the property and, in particular, the tailings disposal facilities, diversion canals, and waste rock dumps, during the period after permanent cessation of operations on the property.

Temporary Closure

77. Upon notice to the Board by the Licensee of the intention to temporarily close the Faro mine site, the Licensee shall implement the measures described in "Conceptual Plans for Stabilization of Rose Creek Tailings Facilities, Rose Creek Diversion, and North Wall Interceptor in the Event of Temporary Closure (Report 60605), Steffan, Robertson and Kirsten, 1988)".
78. On or before the effective date of this licence, the Licensee shall submit to the Board an updated plan for the temporary abandonment of the Main Pit and the Faro Creek Diversion and related works and shall implement that plan during any subsequent temporary closure.

SCHEDULE A - PART I - SURVEILLANCE NETWORK PROGRAM

Water samples shall be taken according to Part III of Schedule A during normal operations including periods when minewater is being pumped from the Faro Pits and according to Part II of Schedule A during periods of temporary cessation of operations.

<u>#</u>	<u>SAMPLING STATION</u>
X1	Point of discharge over the second impoundment
X2	North Fork of Rose Creek at road bridge
X3	Rose Creek at freshwater Pumphouse
X4	Intermediate dam decant, prior to water treatment
X4a	Intermediate dam decant, below water treatment
X5	Cross Valley dam decant
X10	Rose Creek diversion canal below weirs
X11	Seepage from north toe of the Cross Valley dam
X12	Seepage from south toe of the Cross Valley dam
X13	Combined seepage flows downstream from the culvert and upstream of the confluence with the decant
X14	Rose Creek after mixing downstream of the diversion canal confluence
X16a	Groundwater monitor well-K1 at depth of 5m
X16b	Groundwater monitor well-K1 at depth of 30m
X17a	Groundwater monitor well-K2 at depth of 5m
X17b	Groundwater monitor well-K2 at depth of 20m
X18a	Groundwater monitor well-K3 at depth of 10m
X18b	Groundwater monitor well-K3 at depth of 20m
X19a	Groundwater monitor well-K4 at depth of 12m
X19b	Groundwater monitor well-K4 at depth of 27m
X20	Groundwater monitor well-K5
X21a	Groundwater monitor well-K6 at depth of 10m
X21b	Groundwater monitor well-K6 at depth of 27m
X22b	Main Pit water
X22c	Main Pit at point of discharge.
X23	Old Faro Creek channel near the toe of the south west rock dumps.
X24a	Groundwater monitor well Intermediate Dam, North Abutment-shallow sample
X24b	Groundwater monitor well Intermediate Dam, North Abutment-deep sample
X25a	Groundwater monitor well Intermediate Dam, South Abutment-shallow sample
X25b	Groundwater monitor well Intermediate Dam, South Abutment-deep sample
X26	Zone II pit water
BH-1, BH-2 & BH-4	Boreholes southeast of Zone II pit, west of the North Fork of Rose Creek
R4	Rose Creek just above Anvil Creek
R5	Anvil Creek just below the confluence of Rose Creek
R6	Anvil Creek immediately upstream of Rose Creek
R7	North Fork of Rose Creek upstream of the confluence with the Faro Creek diversion- background sample
R8	North Fork of Rose Creek, 100 metres downstream of confluence with Faro Creek diversion
R9	North Fork of Rose Creek, adjacent to BH-1 & BH-2
R10	North Fork of Rose Creek, at least 100 metres upstream from maximum elevation of water impounded behind North Fork rock drain and 100 metres downstream of R9

Schedule A, Part II, Surveillance Network Program During Temporary Cessation of Operations

Station	pH	Temp. deg C	(NFR) Suspended Solids mg/L	Flow m ³ /sec	Ammonia total mg/L	Copper total mg/L	Lead total mg/L	Zinc total mg/L	Cyanide total mg/L	Manganese total mg/L	Sodium mg/L	Sulphate total mg/L
X2	M	M	M	M	M	M	M	M	M	M	M	M
X4	M	M	M	M	M	M	M	M	M	M	M	M
X5	M	M	M	M	M	M	M	M	M	M	M	M
X11	M	M	M	M	M	M	M	M	M	M	M	M
X12	M	M	M	M	M	M	M	M	M	M	M	M
X13	M	M	M	M	M	M	M	M	M	M	M	M
X16	2A	2A	2A	-	2A	2A	2A	2A	-	2A	2A	2A
X17	2A	2A	2A	-	2A	2A	2A	2A	-	2A	2A	2A
X18	2A	2A	2A	-	2A	2A	2A	2A	-	2A	2A	2A
X20	2A	2A	2A	-	2A	2A	2A	2A	-	2A	2A	2A
X21	2A	2A	2A	-	2A	2A	2A	2A	-	2A	2A	2A
X23	M	M	M	M	M	M	M	M	-	M	-	M
X24	2A	2A	2A	-	2A	2A	2A	2A	-	2A	2A	2A
X25	2A	2A	2A	-	2A	2A	2A	2A	-	2A	2A	2A

Legend: "M" - Monthly Sampling, "2A" - Sampling in months of May and September

Schedule A, Part III, Surveillance Network Program - Normal Operations, Page 1 of 2 pages

Station	pH	Temp. deg C	(NFR) Suspended Solids mg/L	Flow m ³ /sec	Ammonia total mg/L	Cyanide total mg/L	Sulphate total mg/L	Conductivity (umhos/cm)	Alkalinity/ Acidity mg/L	Metals ICP total mg/L	Hardness total mg/L	Lab
X1	MF	MF	MF	MF	MF	-	-	MF	MF	MF	MF	I
X2	M	M	M	-	M	M	M	M	M	M	M	I
X3	MP	MP	MP	-	MP	MP	MP	MP	MP	MP	MP	I
X4	M	M	M	M*	M	M	M	M	M	M	M	I
X4a	W	-	-	-	-	-	-	-	-	-	-	I
X5	W	W	W	W	W	W	W	W	W	W	W	B
X10	2M	2M	2M	M*	2M	2M	2M	2M	2M	2M	2M	I
X11	2A	2A	2A	M*	2A	2A	2A	2A	2A	2A	2A	I
X12	2A	2A	2A	M*	2A	2A	2A	2A	2A	2A	2A	I
X13	M	M	M	M	M	M	M	M	M	M	2A	B
X14	M	M	M	M+	M	M	M	M	M	M	M	B
X16	2A	2A	2A	2AL	2A	-	2A	2A	2A	2A(d)	-	I
X17	2A	2A	2A	2AL	2A	-	2A	2A	2A	2A(d)	-	I
X18	2A	2A	2A	2AL	2A	-	2A	2A	2A	2A(d)	-	I
X19	2A	2A	2A	2AL	2A	-	2A	2A	2A	2A(d)	-	I
X20	2A	2A	2A	2AL	2A	-	2A	2A	2A	2A(d)	-	I
X21	2A	2A	2A	2AL	2A	-	2A	2A	2A	2A(d)	-	I
X22B	M	M	M	ML*	M	M	M	M	M	M	M	I
X22C	M	M	M	M	M	M	M	M	M	M	M	I
X23	M	M	M	M*	M	M	M	M	M	M	M	I
X24	2A	2A	2A	2AL	2A	-	2A	2A	2A	2A(d)	-	I
X25	2A	2A	2A	2AL	2A	-	2A	2A	2A	2A(d)	-	I
X26	MP	MP	MP	M/WL	MP	MP	MP	MP	MP	MP(d)	-	I

Schedule A, Part III, Surveillance Network Program - Normal Operations, Page 2 of 2 pages

Station	pH	Temp deg C	(NFR) Suspended Solids mg/L	Flow m ³ /sec	Ammonia total mg/L	Cyanide total mg/L	Suphate total mg/L	Conductivity (umhos/cm)	Alkalinity/ Acidity total mg/L	Metals ICP total mg/L	Hardness total mg/L	Lab
R4	4A	4A	4A	3A*	4A	4A	4A	4A	4A	4A	4A	B
R5	4A	4A	4A	3A*	4A	4A	4A	4A	4A	4A	4A	B
R6	4A	4A	4A	3A*	4A	4A	4A	4A	4A	4A	4A	B
R7	M	M	M	M	M	-	M	M	M	M	M	B
R8	M	-	-	-	-	-	-	M	-	M	-	B
R9	M	-	-	-	-	-	-	M	-	M	-	B
R10	M	-	-	-	-	-	-	M	-	M	-	B
BH-1	Q	Q	-	QL	Q	Q	Q	-	Q	Q	-	I
BH-2	Q	Q	-	QL	Q	Q	Q	-	Q	Q	-	I
BH-4	Q	Q	-	QL	Q	Q	Q	-	Q	Q	-	I

SCHEDULE A PART IV

EXPLANATION OF SURVEILLANCE NETWORK SYMBOLS

Symbol	Explanation
W	Weekly (once per week)
WP	Weekly (once per week) while pumping
M	monthly (once per month)
MP	monthly when pumping
2M	bi-monthly (every second month)
MF	monthly when flowing
M/W	Monthly when pumping, otherwise weekly
Q	quarterly
2A	semi-annually (twice per year)
3A	three times per year
4A	quarterly, at least two of which are under low flow conditions
L	measurement of water level instead of flow
*	during ice free season only
+	calculated flow permitted
I	internal company laboratory or external lab
B	both external, independent approved laboratory and internal lab if internal lab being used.
(d)	substitute dissolved metals

SCHEDULE B - BIOLOGICAL MONITORING PROGRAM

1. **Sampling Points:**
 - (a) R1: Above the confluence of the North Fork and South Fork of Rose Creek
 - (b) R2: In the mixing zone downstream of the intersection of the Rose Creek diversion canal.
 - (c) R3: Rose Creek about one-half way to Anvil Creek
 - (d) R4: Rose Creek just above Anvil Creek
 - (e) R5: Anvil Creek just below the confluence of Rose Creek.
 - (f) R6: Anvil Creek immediately upstream of Rose Creek.
 - (g) R7: North Fork of Rose Creek upstream of the confluence with the Faro Creek diversion.
2. The Licensee shall collect three replicate samples every second year from each station using an artificial substrate sampler for approximately five (5) weeks.
3.
 - (a) Water samples shall be collected and analyzed for total hardness, alkalinity, sulphate, suspended solids, ammonia and for the following total and dissolved metals: copper, iron, lead, and zinc.
 - (b) In addition to the analysis required by 3(a), samples taken at sites R2, R3, and R4 shall be analyzed for total cyanide.
4. Samples shall be collected by an independent consultant.
5. Sample identification, enumeration and data interpretation shall be done by independent qualified personnel.

SCHEDULE C - PHYSICAL MONITORING PROGRAM

1. (a) The Rose Creek diversion canal shall be monitored visually and through the instrumentation installed. Gathered data shall be analysed to determine:
 - (i) Thermal regime and degradation of the permafrost;
 - (ii) Stability of the excavated canal wall;
 - (iii) Settlement and stability of the canal dyke;
 - (iv) Areas and rates of seepage from the diversion canal;
 - (v) Performance of the waste piles adjacent to the canal;
 - (vi) Other areas of concern.

- (b) If the analysis referred to in 1(a) above demonstrates that design objectives for geotechnical performance and project safety have not been met, the Licensee shall propose remedial measures to the Board and implement those measures unless, within sixty days of receiving the proposed remedial measures, the Board notifies the Licensee that a public hearing shall be held to amend the licence so as to incorporate the remedial measures into the licence, and the notice includes a direction that the Licensee shall not implement the remedial measures until the public hearing has been held and the Board has concluded deliberations. However, the Board may, in the notification to the Licensee, direct the Licensee to implement the remedial measures on an interim basis.

- (c) The network of monitoring instrumentation as detailed in Figure 1 of the Golder Associates Performance Instrumentation Report (812-2041) shall be monitored according to the following:

INTERVAL	YEARLY (SEPT.)	EVERY SECOND YEAR
Survey monuments		X
Inclinometers Thermistor	X	
Thermistor: Dyke/Spoil Piles	X	
Thermistor: Backslope		X
Piezometers: Dyke	X	
Piezometers: Backslope		X
NOTE: Instrumentation of deformed dyke segments are to be monitored as per geotechnical consultant's recommendations put forth in annual inspection reports or as submitted from time to time through the year.		

- (d) Monitoring of vertical and horizontal movement hubs shall be performed by qualified surveyors.
- (e) Glaciation within diversion canal shall be monitored during the winter season as follows:
 - (i) Monthly inspections of ice build-up;
 - (ii) All corrective or preventative action shall be documented.
- (f) Any erosion activity within the diversion canal shall be studied and documented and preventative measures taken to stabilize the activity.
- (g) Several selected cross sections and profiles shall be surveyed every second year to measure the amount of sedimentation build-up within the diversion canal between the point of original diversion and site X10.

2. The Intermediate and Cross Valley dams shall be monitored through the instrumentation installed as per Golder Associates Performance Instrumentation Report date February 1982 (812-2041). The monitoring schedule shall be as follows:

INTERVAL	ANNUALLY	SEMI ANNUALLY	MONTHLY
Crack Mapping	X		
Thermistor Strings	X		
Pneumatic Piezometers		X	
Standpipe Piezometers		X	
Seepage Weirs			X
Water Level			X
NOTE: Special instrumentation installed for crest performance evaluations to be read as per geotechnical consultants recommendations put forth in annual reports or as submitted from time to time through the year.			

3. The Fresh Water Supply Dam shall be monitored using the instrumentation installed as follows:

INTERVAL	ANNUALLY	SEMI-ANNUALLY	MONTHLY
Mapping of Cracks	X		
Piezometers		X	
Thermistors		X	
Water Level			X

NOTE: Instrumentation installed for crest performance evaluation to be read as per geotechnical consultant's recommendations put forth in annual inspections reports or as submitted from time to time through the year.

4. The causeway section and performance of rock drains and culverts should be examined annually and records of upstream water levels versus North Fork flows made annually in February and June.
5. The Licensee shall have all rock waste dumps inspected, beginning in 1997 or in the year that this licence takes effect, and repeating every two years thereafter, by a qualified geotechnical engineer registered to practice in Yukon. All inactive dumps shall be visually inspected at least once a year and any evidence of instability shall be immediately investigated by a qualified geotechnical engineer. If the first inspection under this section of this licence occurs in 1998, then the Licensee may conduct the second inspection either in 1999 or in 2000, and the third inspection shall take place two years after the second inspection.
6. The Licensee shall have the North Fork Rock Drain inspected, beginning in 1997 or in the year in which this licence takes effect, and repeating every two years thereafter, by a qualified geotechnical engineer licenced to practice in Yukon. A photographic record of the impoundment behind the rock drain shall be maintained and cross referenced to measured flows at station R7; this record shall be made available to the engineer carrying out the above noted inspection. If the first inspection under this section of this licence occurs in 1998, then the Licensee may conduct the second inspection either in 1999 or in 2000, and the third inspection shall take place two years after the second inspection.
7. An inspection of the fresh water reservoir shall be carried out each year by a qualified geotechnical engineer licenced to practice in Yukon.

SCHEDULE D- RESEARCH AND MONITORING, DECOMMISSIONING PLAN

Seep Surveys

1. Seep survey shall be continued on a once per annum basis. Sampling shall be carried out in spring during the freshet. Monitoring shall include flow rates, temperature, field and laboratory pH, conductivity, sulphate, alkalinity, hardness and an ICP scan of total and dissolved metals. Sites shall include:
2. Seep surveys shall take place at the following sites, as described in report 60648 by Steffen Robertson and Kirsten, dated August 1992

Faro Creek (FC5), site 25
Old Faro Creek channel (FCO), site 29
Faro Creek Diversion, (FDU and FDL)
Upper Pit Wall area (A30)
Next Creek, site W8
Zone 2 Area (SP). sites 5 and 6
Toes of waste dumps, site W2, W3, W5, W10, W11
North Wall Interceptor
Guardhouse Creek
Lower North Fork Rose Creek (NFL)

3. (a) Collection of seep survey data shall recommence in the year that this licence comes into effect and a brief report on the findings shall be included in that annual report and each annual report thereafter.
- (b) An assessment of all seep survey data shall be made as part of the ICAP and incorporated into the water quality model therein.
- (c) Every three years after 1996, a re-assessment of the seep survey data shall be made and reported as part of the review of hydrology and water quality modelling required in points 6 and 7 of this Schedule.
- (d) Monthly water quality observations at sites X23, X26, R7, R8, R9, R10, X22b or X22c required elsewhere in this licence shall be incorporated in this assessment.
- (e) As part of the ICAP and each tri-annual review after 1996, the Licensee shall review the relevance of the seep survey results and present to the Board its recommendations and proposals for revisions, continuation and or discontinuation of this work or any part thereof.

Waste Rock Characterization

4. The Licensee shall collect a suite of rock types characteristic of the various significant material types in the Faro waste rock dumps and carry out a kinetic test program intended to characterize the rate, process and products of oxidation and leaching of waste rock at the Faro site. The Licensee shall prepare and implement a plan for a test program. The results of this work shall be presented in the ICAP.

Groundwater Studies

5. In addition to any sampling required elsewhere in this license, the following sites shall be tested and the results integrated with the assessments required in Part D, Section 3:
 - (a) Boreholes west of the North Fork of Rose Creek, Sites BH1, BH2, BH3, BH4 and additional wells that may be installed from time to time.
 - (b) Boreholes immediately south of the Sulphide Waste dump, Sites 1A, 1B, 2A, 2B, 3A
 - (c) Shallow groundwater investigation areas, Sites WE1 through 19, WS1 through 18 and WW1 through 14
6. These wells are to be sampled at least quarterly unless more frequent sampling is required elsewhere in this licence. The results shall be presented in each annual report.

Assessment of Compacted Phyllite as a Dump Cover

7. The additional in-situ falling head test shall be conducted on the compacted phyllite cover placed over the sulphide dumps and the results submitted in the next annual report after the test is completed.

Assessment of Water Quality in the Faro Pit

8. A temperature profile and water quality survey at varying depths will be conducted once per annum beginning in 1995. These surveys will continue until one year after the pit reaches the siphon operating level. The results shall be presented in each annual report.

Development of a Water Quality Model

9. A quantitative water quality model shall be presented in the ICAP. The water quality model shall be updated every three years after 1996.

Hydrology

10. A compilation and review of hydrologic data gathered at the site and in the region shall be included in the ICAP. This information shall be reviewed and reported every three years after 1996 as part of the revised water quality modelling required by this Schedule.