

ALASKA
HD
319
.B75
N67

NORTHERN PIPELINE
SOCIO - ECONOMIC AND ENVIRONMENTAL
TERMS AND CONDITIONS FOR
SOUTHERN BRITISH COLUMBIA
INCLUDING
ENVIRONMENTAL GUIDELINES

The Northern Pipeline Agency

July , 1980

NORTHERN PIPELINE
SOCIO-ECONOMIC AND ENVIRONMENTAL
TERMS AND CONDITIONS FOR
SOUTHERN BRITISH COLUMBIA
INCLUDING
ENVIRONMENTAL GUIDELINES

The Northern Pipeline Agency

July, 1980

ALASKA
HD
319
.B75
N67

UNIVERSITY OF ALASKA ANCHORAGE LIBRARY

ADDITIONAL COPIES OF THIS DOCUMENT
MAY BE OBTAINED FROM THE FOLLOWING
ADDRESSES:

The Northern Pipeline Agency
P.O. Box 1605, Station B
Ottawa, Ontario
K1P 5A0

The Northern Pipeline Agency
4th Floor
400 - 4th Avenue Southwest
Calgary, Alberta
T2P OJ4

The Northern Pipeline Agency
P.O. Box 10139, Pacific Centre
Room 1175, IBM Tower
701 West Georgia Street
Vancouver, British Columbia
V7Y 1C6

T A B L E O F C O N T E N T S

INTRODUCTION (i)

TERMS AND CONDITIONS

Short Title	1
Interpretation	1
Application	3

GENERAL

Compliance with the Law	4
Assistance to Designated Officer	4
Access to Right-of-Way of Pipeline	4
Indemnification	5
Emergency Measures	5

PART I - SOCIO-ECONOMIC TERMS AND CONDITIONS

Undertakings	6
Plans	6
Plan Schedule	6
Information and Consultation	7
Pipeline Labour	9
Orientation of Employees	9
Opportunity Measures	9
Business Opportunities	10
Health	10
Security	11
Surveillance, Inspection and Monitoring	12
Compensation for Damage to Property	12
Protection of Native Traditional Harvesting and Cultural Areas	13

PART II - ENVIRONMENTAL TERMS AND CONDITIONS

General	14
Terrain, Landscape and Waterbodies	15
Drainage, Erosion Control, Rehabilitation and Revegetation	15
Water Quality	17
Air Quality	18
Noise	19

Wildlife	20
Fisheries	21
Special Interest Areas	23
Agricultural Land	24
Clearing	25
Fuel and Other Hazardous Material	26
Waste Management	27
Granular Materials, Borrow Pits and Quarries	28
Blasting	29
Water Crossings	30
Water Withdrawal, Water Discharge and Hydrostatic Testing	31
Roads and Other Facilities	32
Machinery, Transportation and Construction Equipment	33
Inspection and Monitoring	34
Environmental Plans and Procedures Manual	34
Submissions	35

ENVIRONMENTAL GUIDELINES

Terrain, Landscape and Waterbodies	37
Drainage, Erosion Control, Rehabilitation and Revegetation	39
Water Quality	41
Air Quality	42
Noise	43
Wildlife	43
Fisheries	44
Special Interest Areas	46
Agricultural Land	47
Clearing	47
Fuel and Other Hazardous Material	48
Waste Management	48
Granular Materials, Borrow Pits and Quarries	49
Blasting	50
Water Crossings	50
Water Withdrawal, Water Discharge and Hydrostatic Testing	51
Inspection and Monitoring	52
Emergency Measures	53
INDEX	55

INTRODUCTION

This document contains social, economic, and environmental terms and conditions which, under the provisions of the Northern Pipeline Act, have been attached by an Order in Council of July 3, 1980 to the Certificate of Public Convenience and Necessity granted to Foothills Pipe Lines (South B.C.) Ltd. for the construction and operation of the southern British Columbia section of the Alaska Highway Natural Gas Pipeline. These terms and conditions reflect several objects of the Act, including:

- (a) facilitating the efficient and expeditious planning and construction of the pipeline;
- (b) minimizing any adverse social and environmental impacts on the areas most directly affected by the pipeline; and
- (c) maximizing the social and economic benefits of this project for the people of the area.

The purpose of these terms and conditions is to give the company direction as to what standards of performance it must achieve in constructing and operating the pipeline. With one exception, they will replace the environmental and socio-economic undertakings made by Foothills before the National Energy Board hearings on the northern gas pipeline insofar as they apply to Foothills Pipe Lines (South B.C.) Ltd. Foothills Pipe Lines (South B.C.) Ltd. is required to implement the Foothills' undertaking to compensate for hunting and trapping losses due to pipeline activities.

The terms and conditions set out several environmental and socio-economic objectives which the company must attain in the construction and operation of the pipeline. Many of them are cast in general terms and will be interpreted by the Agency in the light of experience gained by the National Energy Board and the Province of British Columbia in regulating the construction and operation of gas pipelines in British Columbia. Successful construction of many pipelines in the Province over the years has resulted in a wealth of knowledge about the types of adverse impacts which can be anticipated and how best to avoid or mitigate them. Provincial standards are therefore employed in most instances.

(ii)

Two other points were recognized in the development of these terms and conditions:

- (a) that the minimization of adverse social or environmental impacts can best be achieved during planning and design of the pipeline, rather than after construction is under way; and
- (b) that the Agency, in assessing Foothills' compliance with the terms and conditions, must exercise professional judgement in determining the degree of minimization of adverse impacts that the company must achieve.

Under the terms and conditions the company is required to submit a series of plans for the approval of the designated officer indicating how it intends to proceed. These plans are available to the public in the offices of the Northern Pipeline Agency.

This document contains a section of environmental guidelines. The company is expected to bear these guidelines in mind when planning, designing, building, and operating the pipeline and the Agency will be guided by them in carrying out its regulatory function. In some cases the environmental concern will be the predominant factor in a decision; in such cases the Agency will normally expect the company to follow these guidelines. In other cases the environmental concern may be relatively minor in comparison with engineering, economic or social factors; in these cases the Agency will accept plans and actions appropriate to the particular situation. This section will guide both the Agency and the company in obtaining the best results practicable - a goal which cannot be obtained either by use of inflexible standards or by the absence of any standards.

This document was prepared as a result of discussions between representatives of the Province of British Columbia and officials of the Northern Pipeline Agency. Comments and advice were also received from Foothills Pipe Lines (South B.C.) Ltd., other government agencies, and from the public at a hearing held by the Northern Pipeline Agency at Cranbrook, B.C.

SOUTHERN BRITISH COLUMBIA
SOCIO-ECONOMIC AND ENVIRONMENTAL
TERMS AND CONDITIONS

"environmental impact" means any change in the existing physical or biological conditions of the environment resulting from the construction or operation of the pipeline;

"facility" means any fixed installation of a temporary or permanent nature installed by Foothills as a part of the pipeline or that is used by Foothills in the construction or operation of the pipeline;

"fish" means "fish" as defined in the Fisheries Act;

"Foothills" means Foothills Pipe Lines (South B.C.) Ltd.;

"fuel" means all liquid and gaseous hydrocarbons and petroleum products used in the construction and operation of the pipeline;

"fur-bearing animals" means "fur-bearing animals" as defined in the Wildlife Act (British Columbia);

"grazing reserve" means a grazing reserve established under the Land Act (British Columbia) for the purpose of grazing livestock;

"hazardous material" means any chemical, explosive, toxic material or other substance that, if spilled, misused or allowed to escape, may cause damage to the environment;

"Indian" means a person who, pursuant to the Indian Act, is registered as an Indian or is entitled to be registered as an Indian;

"inspection" means observation and measurement by Foothills to verify that

- (a) the construction and operation of the pipeline accord with the designs and specifications of the pipeline, and
- (b) these terms and conditions are complied with;

"monitoring" means data gathering, data analysis and interpretation and data presentation to determine magnitudes and characteristics of environmental change;

"operation" means any field activity by Foothills relating to the pipeline or any portion of the pipeline for which leave to open has been granted;

"Province" means the Province of British Columbia ;

"rare and endangered species" means those animal or plant species that occupy areas or exist in numbers so small that, in the opinion of the designated officer, their existence would likely be threatened by the construction or operation of the pipeline;

"waste" means discarded or abandoned liquid or solid matter including human waste, garbage, oil drums, petroleum products, ashes and equipment;

"waterbodies" means lakes and ponds and permanent and intermittent rivers and streams and their beds;

"wildlife" means

(a) all big game animals and fur-bearing animals that are native to the Province,

(b) migratory game birds as defined in the Migratory Birds Convention Act,

(c) all Galliformes native to the Province,

(d) all species of the orders Falconiformes and Strigiformes,
and

(e) rare and endangered species of birds, mammals, reptiles and amphibians.

(2) All other words and expressions have the same meaning as in the Act.

Application

3. These terms and conditions are added to the terms and conditions set out in Schedule III to the Act and shall apply to Foothills but, unless the context otherwise requires, shall only apply to the construction and operation of that portion of the pipeline that extends from a point on the Alberta - British Columbia boundary near Coleman in a south-westerly direction across British Columbia generally parallel to the existing pipeline facilities of Alberta Natural Gas Company Ltd. to a point on the International Boundary Line between Canada and the United States of America at or near Kingsgate in the Province.

GENERALCompliance with the Law

4. Foothills shall, in the construction and operation of the pipeline, comply with the laws of Canada and the laws of the Province.

5. (1) Subject to subsection (2), Foothills shall, when entering into any contract with a contractor for the construction or operation of the pipeline, require as a condition of such a contract that the contractor or any subcontractor of that contractor observe and comply with these terms and conditions.

(2) Where an application is made by Foothills to the designated officer to exempt Foothills from the requirement referred to in subsection (1) in respect of the observing of or compliance with any provision of Part I, the designated officer may exempt Foothills from that requirement in respect of that provision.

(3) Foothills shall be responsible for any breach of these terms and conditions by a contractor referred to in subsection (1) or any subcontractor of that contractor as if the breach had been committed by Foothills.

Assistance to Designated Officer

6. When requested by the designated officer, Foothills shall give him any reasonable assistance that he may require to carry out his duties in respect of the pipeline and shall furnish him with such information in respect of the construction or operation of the pipeline as he may request.

Access to Right-of-Way of Pipeline

7. Employees or agents of the government of the Province shall, for the purpose of carrying out their duties in respect of the pipeline, be allowed reasonable access to any part of the right-of-way of the pipeline or any other area where the pipeline is being or is to be constructed.

Indemnification

8. Foothills shall, at all times, save harmless and indemnify and keep Her Majesty indemnified against and be responsible for all claims, demands, actions, suits, costs or other legal proceedings made or brought against Her Majesty by reason of or arising out of

- (a) the construction or operation of the pipeline;
- (b) the escape, ignition or explosion, for any cause, of gas or related hydrocarbons from or in the pipeline on the lands of Her Majesty;
- (c) any act or omission on the part of Foothills, its contractors and their subcontractors and its or their officers, servants, agents or employees in respect of or in relation to the pipeline on the lands of Her Majesty, including the construction or operation of the pipeline; and
- (d) any act or omission on the part of any officer, servant, agent or employee of Her Majesty in respect of or in relation to the pipeline on the lands of Her Majesty, not including such acts or omissions as would in law constitute gross negligence.

9. Foothills shall, at all times, pay to Her Majesty the amount of any loss or damage that has been suffered or sustained by Her Majesty by reason of or arising out of the matters set out in section 8.

Emergency Measures

10. Foothills shall establish emergency procedures satisfactory to the designated officer to deal with any emergency arising from the construction or operation of the pipeline that may adversely affect the environment or persons who reside in the vicinity of the pipeline.

11. Foothills shall, to the satisfaction of the designated officer, designate and train persons working on the pipeline to carry out the emergency procedures referred to in section 10.

12. Where any emergency arises in the course of the construction or operation of the pipeline, Foothills shall forthwith advise the designated officer and the agency or ministry of the government of the Province specified by the designated officer of the emergency and the measures it has taken or intends to take to deal with it.

13. Where the emergency referred to in section 10 is a forest fire, Foothills shall make available to the Province personnel to assist in fighting the fire and any equipment or aircraft suitable for fire suppression owned or controlled by Foothills that is in the vicinity of the pipeline.

PART I

SOCIO-ECONOMIC TERMS AND CONDITIONS

Undertakings

14. Where Foothills gives an undertaking to any government, organization or community referred to in subsection 21(1) during consultations required by that section and the undertaking is accepted by that government, organization or community, Foothills shall, unless otherwise directed by the designated officer within thirty days of the giving of the undertaking, comply with that undertaking.

Plans

15. (1) Subject to subsection (2), where, pursuant to this Part, Foothills is required to submit a plan in respect of any matter to the designated officer for his approval, that plan, when approved, constitutes Foothills' plan for that matter and Foothills shall comply therewith.

(2) The designated officer may, on giving Foothills reasonable notice in writing, modify or vary any provision set out in a plan referred to in subsection (1) and Foothills shall comply with the plan as so modified or varied.

Plan Schedule

16. (1) Foothills shall, within thirty days of the coming into force of this Part or at such later date as may be fixed by the designated officer, submit to the designated officer for his approval a plan schedule that sets out the date on which each plan referred to in subsection 15(1) is to be submitted to the designated officer.

(2) The plan schedule referred to in subsection (1), when approved by the designated officer, constitutes Foothills' plan schedule and Foothills shall comply therewith.

(3) The designated officer may, at the request of Foothills, modify or vary the plan schedule referred to in subsection (2).

Information and Consultation

17. (1) Foothills shall provide information in respect of the planning and construction of the pipeline to

- (a) the Government of Canada;
- (b) the government of the Province;
- (c) communities situated in the vicinity of the pipeline;
- (d) Indian, Metis and non-status Indian organizations in the Province; and
- (e) any special interest group requesting such information except a special interest group that does not have, in the opinion of Foothills or the designated officer, a bona fide need for the information.

(2) The information referred to in subsection (1) shall be provided in a form and manner satisfactory to the designated officer and shall include information in respect of

- (a) the route alignment and construction schedules of the pipeline;
- (b) the anticipated impact of the pipeline on the communities situated in the vicinity of the pipeline;
- (c) the potential opportunities resulting from the construction of the pipeline for the residents in the vicinity of the pipeline;
- (d) the proposed use of any land or waterbody;
- (e) any significant adverse environmental impact resulting from the construction of the pipeline;
- (f) the opportunities referred to in sections 29 and 30;
- (g) the opportunity for businesses in the Province to participate in the supply of goods and services for the pipeline; and
- (h) any other matter specified by the designated officer.

18. Foothills shall facilitate public access to the information referred to in section 17 and shall ensure that those communities situated in the vicinity of the pipeline have access to the information.

19. Foothills shall consult with the government of the Province, communities situated in the vicinity of the pipeline, Indian, Metis and non-status Indian organizations in the Province and any special interest group in the Province, on the request of that group, to ascertain their requirement for information.

20. Where a public meeting, workshop or seminar is convened in a community situated in the vicinity of the pipeline for the purpose of disseminating information in respect of the pipeline, Foothills shall, when directed by the designated officer, make available informed persons to assist in the dissemination of such information.

21. (1) Where Foothills receives a direction from the designated officer to consult with the government of the Province, an Indian, Metis or non-status Indian organization in the Province or with any community situated in the vicinity of the pipeline in respect of any matter in connection with the construction or operation of the pipeline, Foothills shall, within thirty days of receiving such direction, consult with that government, organization or community.

(2) Foothills shall report to the designated officer the significant results of any consultation pursuant to subsection (1).

22. Where Foothills, at any time, consults with any contractor or labour organization in respect of any matter critical to construction progress, Foothills shall report the significant results of such consultation to the designated officer.

23. Foothills shall identify and make available a person to assist Foothills in

- (a) disseminating the information referred to in section 17;
- (b) arranging consultations with communities situated in the vicinity of the pipeline; and
- (c) performing any liaison function with such communities.

24. Foothills shall submit to the designated officer for his approval a plan, to be known as the information plan, that sets out the manner in which Foothills intends to carry out the provisions of sections 17 to 19 and sections 22 and 23.

Pipeline Labour

25. Foothills shall, in the preparation and implementation of the detailed manpower plan referred to in paragraph 9(a) of Schedule III to the Act, consult with the government of the Province and labour organizations in the Province in respect of the plan and the recruitment and training of employees to be used in the construction and operation of the pipeline.

26. Foothills shall, in consultation with the Government of Canada and the government of the Province, take such measures as are satisfactory to the designated officer to discourage the migration of persons seeking work on the pipeline into any area in the vicinity of the pipeline.

Orientation of Employees

27. Foothills shall, in respect of those persons who commence work on the construction of the pipeline, carry out an orientation program that includes environmental information to assist such persons to become familiar with their working conditions and to become aware of the potential to damage the environment.

28. Foothills shall, following consultation with the government of the Province, submit to the designated officer for his approval a plan, to be known as the orientation plan, that sets out the manner in which Foothills intends to carry out the orientation program referred to in section 27.

Opportunity Measures

29. Foothills shall

- (a) ensure that Indian, Metis and non-status Indian people of the Province have access to training and employment opportunities in respect of the construction or operation of the pipeline;
- (b) ensure that women of the Province have access to employment opportunities in respect of the construction or operation of the pipeline; and

(c) provide appropriate support measures in relation to training, recruitment and employment practices to meet any special needs of women and of the Indian, Metis and non-status Indian people of the Province to enable them to take maximum advantage of the opportunities referred to in paragraphs (a) and (b).

30. Foothills shall ensure that Indian, Metis and non-status Indian people of the Province have a fair and competitive opportunity to participate in the supply of goods and services for the pipeline.

31. Foothills shall, following consultation with Indian, Metis and non-status Indian organizations in the Province, and, when directed by the designated officer, any women's organizations in the Province, submit to the designated officer for his approval a plan, to be known as the opportunity measures plan that sets out the manner in which Foothills intends to carry out the provisions of sections 29 and 30.

Business Opportunities

32. Foothills shall provide businesses in the Province with a fair and competitive opportunity to supply goods and services for the pipeline.

33. Foothills shall cooperate with the government of the Province in that government's program in assisting businesses in the Province that are seeking to supply goods and services for the pipeline.

34. Foothills shall, following consultation with the government of the Province, submit to the designated officer for his approval a plan, to be known as the business opportunities plan, that sets out the manner in which Foothills intends to carry out the provisions of sections 32 and 33.

Health

35. Foothills shall, in consultation with the government of the Province, ensure that proper facilities are provided and arrangements are made for adequate care and treatment of any ill or injured person employed in the construction or operation of the pipeline.

Security

36. Foothills, in consultation with the Government of Canada, the government of the Province and the Royal Canadian Mounted Police, shall

- (a) maintain security on the pipeline; and
- (b) cooperate with and give assistance to the Royal Canadian Mounted Police and the Sheriffs' Services of the Province to enable them to carry out their duties.

37. For the purpose of promoting effective law enforcement in the vicinity of the pipeline, Foothills, in consultation with the Royal Canadian Mounted Police and the government of the Province, shall

- (a) provide the Royal Canadian Mounted Police and the Sheriffs' Services of the Province with immediate access to the pipeline and to persons employed in the construction or operation of the pipeline; and
- (b) provide sufficient information to enable the Royal Canadian Mounted Police to establish
 - (i) the nature and extent of the policing required on the pipeline,
 - (ii) a working arrangement between Foothills' security personnel and the Royal Canadian Mounted Police, and
 - (iii) a system of reporting on policing matters.

38. Foothills shall not permit the possession by any person employed in the construction of the pipeline of a firearm or game hunting device

- (a) on any portion of the pipeline right-of-way where construction activity has commenced, or
- (b) at any time in a campsite established by Foothills or on any property, vehicle or aircraft of Foothills

unless authorized, in writing, by the designated officer.

Surveillance, Inspection and Monitoring

39. Foothills shall ensure the maintenance and availability, for examination at any time by the Agency, of such of its records pertaining to its activities in the Province as may be required by the Agency to determine compliance with this Part.

40. Foothills shall report to the Agency, at such times as may be required by the designated officer, on the measures that have been taken by Foothills in complying with this Part.

41. (1) Foothills, when directed by the designated officer, shall undertake special studies of the socio-economic impact of the pipeline.

(2) Every special study referred to in subsection (1) shall be forwarded to the Agency on its completion.

42. Foothills shall

(a) establish procedures and allocate resources for the purpose of assessing the effectiveness of its compliance with this Part; and

(b) on the request of the designated officer, assess the effectiveness of its compliance with this Part and report the assessment to the Agency.

Compensation for Damage to Property

43. Foothills shall be liable for any damage to property directly or indirectly caused by Foothills, a contractor of Foothills or a subcontractor of that contractor in connection with or resulting from their activities in the construction or operation of the pipeline.

44. Where, in the course of construction or operation of the pipeline, any damage is either directly or indirectly caused by Foothills, a contractor of Foothills or a subcontractor of that contractor to any property, other than the property of Foothills, a contractor of Foothills or a subcontractor of that contractor, Foothills shall

(a) immediately take action to prevent further damage;

- (b) immediately inform the owner of the property of the nature of the damage; and
- (c) arrange, as soon as possible, for
 - (i) compensation,
 - (ii) the repair of the damage, or
 - (iii) the replacement of the damaged property.

45. Foothills shall submit to the designated officer, in a manner determined by him, information in respect of any unresolved matter referred to in paragraph 44(c).

46. Where

- (a) Foothills and a claimant against Foothills fail to agree as to liability or compensation for damage for which the claimant alleges Foothills is responsible, and
- (b) the claimant referred to in paragraph (a) agrees with Foothills
 - (i) to enter into an arbitration submission governed by the provisions of the Arbitration Act (British Columbia), and
 - (ii) that a decision of the arbitrator is binding and conclusive,

Foothills shall enter into such arbitration submission and shall pay all costs of and incidental to any arbitration proceedings pursuant thereto except where the arbitrator determines that the claim is frivolous.

Protection of Native Traditional Harvesting and Cultural Areas

47. (1) Foothills shall, following consultation with the government of the Province and Indian, Metis and non-status Indian organizations in the Province, submit to the designated officer, in a manner and form satisfactory to him, an inventory that sets out the hunting, trapping and fishing areas used by Indian, Metis or non-status Indian people in the vicinity of the pipeline and any area of cultural importance to Indian, Metis or non-status Indian people in the vicinity of the pipeline and a resource use analysis of such hunting, trapping and fishing areas.

(2) The resource use analysis referred to in subsection (1) shall consist of information on the seasonal use of hunting, trapping and fishing areas.

48. In locating the pipeline or any portion thereof, Foothills shall, following consultation with the government of the Province, and Indian, Metis and non-status Indian organizations in the Province, locate the pipeline in a manner that minimizes, to the satisfaction of the designated officer, interference with the hunting, trapping and fishing areas and areas of cultural importance set out in the inventory referred to in section 47.

49. In proposing the construction schedule in respect of the pipeline or any portion thereof, Foothills shall, following consultation with the government of the Province and Indian, Metis and non-status Indian organizations in the Province, propose a schedule that minimizes, to the satisfaction of the designated officer,

- (a) any conflict with the seasonal use of hunting, trapping and fishing areas, and
- (b) the disturbance of areas of cultural importance set out in the inventory referred to in section 47.

50. Foothills shall, if directed by the designated officer, submit to him for his approval a plan, to be known as the traditional resource protection plan, that sets out the manner in which Foothills intends to carry out the provisions of sections 48 and 49.

PART II

ENVIRONMENTAL TERMS AND CONDITIONS

General

51. Foothills shall

- (a) plan and construct the pipeline efficiently and expeditiously; and
- (b) minimize to the extent possible any adverse environmental impact.

52. Where, in this Part, Foothills is required to make plans, take measures and implement procedures in respect of the environment, Foothills shall

- (a) incorporate in such plans, measures and procedures those environmental practices ordinarily followed in constructing and operating pipelines in the Province; and
- (b) comply with those standards established under the laws of the Province that are applicable to any pipeline constructed and operated under the laws of the Province except where such standards are inconsistent with the Act, any terms and conditions made thereunder or any other law of Canada.

Terrain, Landscape and Waterbodies

53. Foothills shall, in the planning and construction of the pipeline, minimize to the satisfaction of the designated officer any adverse environmental impact on land through which the pipeline passes and on waterbodies or groundwater in the vicinity of the pipeline.

54. Where Foothills proposes a location of the pipeline or a portion thereof to the designated officer for approval, it shall, in a manner satisfactory to the designated officer, take into account the effect, if any, of the construction or operation of the pipeline on the existing or potential uses of any land or waterbody through which the pipeline is proposed to pass.

Drainage, Erosion Control, Rehabilitation and Revegetation

55. Foothills shall, in the planning and construction of the pipeline, take such measures as are satisfactory to the designated officer to

- (a) minimize disturbance on erosion-sensitive terrain; and
- (b) minimize construction on erosion-sensitive terrain during periods in which erosion is most likely to be initiated.

56. Foothills shall design and implement erosion control measures satisfactory to the designated officer to protect the pipeline, minimize interference with any other use of land or water and to protect the environment of any area through which the pipeline passes.

57. Foothills shall, in the construction and operation of the pipeline, minimize to the satisfaction of the designated officer the development of subsurface channels along the pipeline and

- (a) any change in the natural drainage patterns, and
- (b) any increase in the sediment loading in waterbodies of those areas through which the pipeline passes.

58. Foothills shall implement such measures as are satisfactory to the designated officer to rehabilitate land, other than agricultural land, disturbed by the construction or operation of the pipeline.

59. Foothills shall take measures to revegetate land, other than agricultural land, to the satisfaction of the designated officer, disturbed by the construction or operation of the pipeline in a manner that complements any other measure Foothills takes to control drainage and erosion.

60. Where land is to be rehabilitated pursuant to section 58 or revegetated pursuant to section 59, Foothills shall rehabilitate or revegetate, as the case may be, the land in a manner consistent with present land use practices employed in that portion of the Province through which the pipeline passes and shall give priority to the following objectives:

- (a) the control of erosion and its impact,
- (b) the protection of important wildlife habitat, and
- (c) the restoration of the aesthetic value of the land

and such priority shall be given in the order set out in paragraphs (a) to (c).

61. Where Foothills has backfilled any part of the pipeline under construction, Foothills shall, unless otherwise authorized by the designated officer, commence as soon as practicable but, in any event, within one year of the backfilling, the erosion control measures referred to in section 56, the rehabilitation measures referred to in section 58 and the revegetation measures referred to in section 59.

62. Foothills shall,

- (a) where a revegetation measure referred to in section 59 is taken that involves the seeding of land, use only seed mixes acceptable to the government of the Province;
- (b) take such measures as are satisfactory to the designated officer to ensure that noxious weeds are not brought into the area through which the pipeline passes on construction equipment used by Foothills; and
- (c) take measures satisfactory to the designated officer to eradicate infestations of noxious weeds caused by the construction of the pipeline.

63. Foothills shall, from time to time, inspect in a manner satisfactory to the designated officer the implementation of the erosion control measures referred to in section 56, the rehabilitation measures referred to in section 58, the revegetation measures referred to in section 59 and the measures relating to noxious weeds referred to in paragraphs 62(b) and (c).

64. (1) Foothills shall, in carrying out the inspection pursuant to section 63, evaluate the effectiveness of the measures referred to in that section and, when requested by the designated officer, report to the designated officer in a manner satisfactory to him the results and evaluation of such inspection.

(2) Where, in the opinion of the designated officer, the measures referred to in section 63 are ineffective, Foothills shall implement such remedial measures as are satisfactory to the designated officer.

Water Quality

65. Foothills shall take such measures as are satisfactory to the designated officer to ensure that significant quantities of deleterious substances, as defined in the Fisheries Act, sediment, silt or wood chips resulting from the construction of the pipeline are not left in an area where they are likely to enter into any waterbody.

66. (1) Foothills shall take such measures as are satisfactory to the designated officer to minimize the entry into any waterbody of any aqueous runoff or discharge resulting from the construction of the pipeline.

(2) Where there is any aqueous run-off or discharge referred to in subsection (1) and that runoff or discharge enters a waterbody, Foothills shall take such measures as are satisfactory to the designated officer to protect the quality of the water in the waterbody.

67. Where the construction or operation of the pipeline takes place within a waterbody, Foothills shall take such measures as are satisfactory to the designated officer to protect the quality of the water in that waterbody.

Air Quality

68. Where Foothills submits to the designated officer for his approval proposals for the design and location of a compressor station for the pipeline, Foothills shall include in the submission a description of the measures Foothills intends to implement

- (a) to control air pollution and to disperse and, where possible, reduce any ice fog resulting from the operation of the pipeline; and
- (b) to preserve the aesthetic value of the landscape in the vicinity of the pipeline.

69. Foothills shall, in the operation of a compressor station, take such measures as are satisfactory to the designated officer to minimize any adverse effects of air pollution and ice fog resulting from the operation of the pipeline on

- (a) the health or recreation of any person;
- (b) transportation; or
- (c) wildlife and wildlife habitat.

70. (1) Foothills shall, at each compressor station selected by the designated officer,

- (a) sample and analyze air quality in the vicinity of that compressor station,
- (b) sample and analyze gaseous emissions from the compressor station,
- (c) measure precipitation, wind speed and direction and air mass stability in the vicinity of the compressor station, and

(d) record the quantity and type of fuel consumed by that compressor station

by a method and at such times as are approved by the designated officer.

(2) Foothills shall report to the designated officer, when requested by him, the results of the sampling and analysis and measurements referred to in paragraphs 1(a) to (c) and the record of the quantity and type of fuel consumed referred to in paragraph 1(d).

Noise

71. Foothills shall incorporate noise abatement devices in the design of any compressor station it installs for the pipeline.

72. Foothills shall, in the construction and operation of the pipeline, take such noise abatement measures as are satisfactory to the designated officer to minimize the disturbance by noise of

- (a) persons residing in the vicinity of the pipeline;
- (b) wildlife referred to in paragraph 74(a) in the areas of land and waterbodies during the periods of time described in the information referred to in section 74 in respect of such wildlife; and
- (c) livestock in the vicinity of the pipeline.

73. (1) Foothills shall, when requested by the designated officer and in a manner satisfactory to him, record noise levels caused by the operation of pipeline facilities and equipment and shall report, within a reasonable period of time, the noise levels so recorded to the designated officer.

(2) Where, in the opinion of the designated officer, any noise level reported to him pursuant to subsection (1) disturbs or is likely to disturb persons, wildlife or livestock referred to in section 72, Foothills shall take such remedial measures to lower that noise level as are satisfactory to the designated officer.

Wildlife

74. Foothills shall, when requested by the designated officer and following consultation with the government of the Province, submit to him for his approval information in respect of those areas of land and waterbodies in which, and the periods of time in respect of those areas and waterbodies during which, the construction or operation of the pipeline may

- (a) threaten the continued existence of significant wildlife populations; or
- (b) result in significant adverse effects on significant wildlife populations.

75. Foothills shall, in a manner satisfactory to the designated officer, prepare construction schedules for the pipeline and propose the location of the pipeline in such a manner that when the construction of the pipeline is being carried out the adverse impact on wildlife in any areas and during any periods of time in respect of those areas described in the information referred to in section 74 is minimized.

76. Foothills shall take such measures as are satisfactory to the designated officer

- (a) to prevent big game animals from being obstructed or entrapped by the construction of the pipeline; and
- (b) to ensure that the construction or operation of the pipeline does not unreasonably interfere with guiding and trapping in the vicinity of the pipeline.

77. (1) Foothills shall, from time to time during the construction of the pipeline, inspect those areas described in the information referred to in section 74 in which the continued existence of significant wildlife populations may be threatened.

(2) Foothills shall, in carrying out an inspection referred to in subsection (1), evaluate the effectiveness of its measures to mitigate any adverse impact on wildlife and shall, when requested by the designated officer, report to him the results of the evaluation.

78. Where, in the opinion of the designated officer,

- (a) the proposed location of the pipeline or the construction schedule of the pipeline referred to in section 75 is such that it does not minimize the adverse environmental impact on wildlife, or
- (b) the measures taken pursuant to paragraph 76(a) are ineffective,

Foothills shall take such remedial measures as are satisfactory to the designated officer.

Fisheries

79. (1) Foothills shall, when requested by the designated officer and following consultation with the government of the Province, submit to him for his approval information in respect of those areas of fish habitat in which, and the periods of time in respect of those areas during which, the construction or operation of the pipeline may threaten the continued existence of significant fish populations.

(2) The areas referred to in subsection (1) shall include fish spawning grounds, significant overwintering areas and migration routes in waterbodies through which the pipeline passes.

(3) The periods of time referred to in subsection (1) shall include those periods for the spawning, incubation, emergence, rearing and migration of fish.

80. Foothills shall, in a manner satisfactory to the designated officer, prepare construction schedules for the pipeline to ensure that when the construction of the pipeline is being carried out any adverse impact on the fish in any fish habitat and during any periods of time in respect of that habitat described in the information referred to in subsection 79(1) is minimized.

81. Where the pipeline or any facility is

- (a) scheduled to be constructed at a time, or
- (b) located at a place

that may be disruptive to fish and fish habitat, Foothills shall take such measures as are satisfactory to the designated officer to avoid or minimize, to the satisfaction of the designated officer, any adverse environmental effects on fish and fish habitat.

82. Foothills shall implement construction and operation practices to protect, to the satisfaction of the designated officer, fish and fish habitat against any adverse effect of any siltation, excavation of granular materials, changes in water temperature and chemistry or reduction in dissolved oxygen in the water in any waterbody through which the pipeline passes.

83. Foothills shall not, during the construction of the pipeline, unless permitted by the designated officer, obstruct fish migration by any blockage, diversion or prolonged acceleration of water flow.

84. Foothills shall take measures satisfactory to the designated officer to ensure that any culvert placed in a waterbody frequented by fish does not prevent the passage, during any period set out in the information referred to in subsection 79(1), of fish frequenting such waterbody.

85. Foothills shall take measures satisfactory to the designated officer to ensure that the construction and operation of the pipeline does not unreasonably interfere with any domestic, commercial or sport fishing or adversely affect any fishing area in any area through which the pipeline passes.

86. (1) Foothills shall, in a manner satisfactory to the designated officer, inspect fish movements and fish habitat utilization during construction of the pipeline.

(2) Foothills shall, in carrying out the inspection referred to in subsection (1), evaluate the effectiveness of

- (a) the construction schedule referred to in section 80,
- (b) the measures referred to in sections 81, 84 and 85, and
- (c) the practices referred to in section 82,

and shall, when requested by the designated officer, report to the designated officer in a manner satisfactory to him the results of the evaluation and of the inspection referred to in subsection (1).

87. Where, in the opinion of the designated officer, the measures referred to in section 81 or 84 are ineffective, Foothills shall take such remedial measures as are satisfactory to the designated officer.

Special Interest Areas

88. (1) Foothills shall, in consultation with the government of the Province, identify each area of natural or cultural significance in the vicinity of the proposed route of the pipeline and shall propose a location of the pipeline that, insofar as possible, does not pass through that area.

(2) Where the location referred to in subsection (1) of the pipeline is in an area identified under that subsection and the location of the pipeline has been approved by the designated officer, Foothills shall take such measures as are satisfactory to the designated officer to protect the natural and cultural values of that area.

89. Foothills shall obtain the approval of the designated officer before commencing construction of the pipeline within 30 m of a monument, archaeological site or burial ground.

90. Foothills shall establish and conduct an archaeological program satisfactory to the designated officer to

- (a) identify and protect or excavate, salvage and investigate historical and archaeological sites, and
- (b) analyze historical, archaeological and associated palaeoecological materials

on land used for or disturbed by the construction of the pipeline.

91. Foothills shall provide, when requested by the designated officer, evidence satisfactory to the designated officer that any archaeological and related materials, field notes, plans and maps, photographs, analyses and other relevant documents collected during the archaeological program referred to in section 90 are retained at a place and under such arrangements as are approved by the government of the Province.

92. Foothills shall report immediately to the designated officer any discovery of a historical or archaeological site and shall not disturb the site without his prior approval.

93. (1) In constructing the pipeline, Foothills shall avoid, where practicable, disturbance of geodetic or legal survey monuments.

(2) Where a geodetic monument is disturbed in the course of construction of the pipeline, Foothills shall report such disturbance forthwith to the designated officer.

(3) Where a geodetic monument is disturbed, Foothills shall, at its expense and in accordance with the instructions of the Dominion Geodesist, cause the monument to be restored or re-established.

Agricultural Land

94. Foothills shall, when constructing the pipeline on land comprising part of an agricultural land reserve or grazing reserve, take into account the provisions set out in the document entitled "Terms and Conditions for Linear Development in Agricultural Land Reserves and Grazing Reserves" issued by the Ministry of Agriculture of the government of the Province.

95. Where topsoil on agricultural land is disturbed or removed during construction of the pipeline, Foothills shall take such measures as are satisfactory to the landowner or tenant, as soon as possible after the disturbance or removal, to stabilize the surface or replace such topsoil of such agricultural land and, to the extent possible, to return it to its previous level of fertility.

96. Where, as a consequence of the construction of the pipeline a fence or gate is damaged or destroyed by Foothills, Foothills shall, in consultation with the owner of the land on which the fence or gate is situated or the tenant thereof, repair or replace that fence or gate.

97. Where Foothills requires access to the pipeline for the purpose of maintenance through land that is fenced, Foothills shall, in consultation with the landowner or tenant, construct and maintain a gate in the fence for such access.

98. Where Foothills has stabilized the surface of agricultural land and to the extent possible returned it to its previous level of fertility pursuant to section 95, Foothills shall

- (a) inspect to the satisfaction of the landowner or tenant agricultural land that may have been or may be affected by the pipeline;
- (b) report forthwith to the designated officer any evidence of any adverse environmental impact on agricultural land; and
- (c) take such remedial measures as directed by the designated officer in respect of any agricultural land discovered by the inspection to be adversely affected by the pipeline.

Clearing

99. Foothills shall minimize to the satisfaction of the designated officer any adverse environmental impact of vegetation clearing operations by Foothills, including such impact on erosion-sensitive terrain.

100. Foothills shall, in respect of the construction of the pipeline,

- (a) clear vegetation from only those areas essential for the construction;
- (b) cut, stack and dispose of any merchantable timber cleared by Foothills in such manner as is satisfactory to the designated officer;
- (c) leave a buffer strip of undisturbed vegetation satisfactory to the designated officer
 - (i) between any area cleared by Foothills of vegetation and an adjacent waterbody, and
 - (ii) between any area cleared of vegetation and an adjacent road;
- (d) promptly remove any debris entering or likely to enter any waterbody as a result of the clearing of vegetation by Foothills; and
- (e) take such measures as are satisfactory to the designated officer to minimize windthrow in buffer strips.

101. (1) Foothills shall, when clearing any area for construction, take measures to minimize to the satisfaction of the designated officer the operation of any machinery along or across any permanent or intermittent river or stream channel.

(2) Foothills shall not skid any logs along or across any unfrozen permanent river or stream channel or along any unfrozen intermittent stream channel.

102. Foothills shall dispose of any debris resulting from the clearing of vegetation by Foothills in such manner as is satisfactory to the designated officer.

103. Foothills shall not pile any debris resulting from the construction of the pipeline in a manner that creates a continuous barrier to big game animal movements.

Fuel and Other Hazardous Material

104. Foothills shall

- (a) establish procedures satisfactory to the designated officer to minimize the possibility of an accident occurring during the storage, handling and use of fuel or any other hazardous material;
- (b) locate, in a manner satisfactory to the designated officer, storage and handling sites for fuel and hazardous material to minimize any contamination of any waterbody described in the information referred to in section 74, any fish habitat described in the information referred to in subsection 79(1) or any important fish harvesting area; and
- (c) establish procedures satisfactory to the designated officer to contain and clean up any fuel or other hazardous material spilled, misused or allowed to escape.

105. (1) Where Foothills uses a fuel storage area containing any above-ground tank exceeding 4600 l in capacity, Foothills shall surround that area by a dyke of reinforced concrete or a dyke of earth lined with plastic or other impervious material.

(2) Foothills shall, in constructing a dyke referred to in subsection (1), comply with any requirements established by the designated officer for the design and location of the dyke and of the area that it surrounds.

106. (1) Foothills shall establish such procedures as are satisfactory to the designated officer to detect any loss of fuel or other hazardous material at any storage and handling facility.

(2) Where any loss of fuel or other hazardous material referred to in subsection (1) occurs, Foothills shall investigate the cause of such loss and take such measures as are satisfactory to the designated officer to prevent further loss.

107. Foothills shall not

- (a) use, transport or dispose of any radioactive materials, or
 - (b) use herbicides or pesticides except for domestic use,
- unless such use, transportation or disposition, as the case may be, is approved by the designated officer.

Waste Management

108. (1) Foothills shall ensure that liquid or solid wastes produced as a consequence of the construction, operation or abandonment of the pipeline are collected and, where required by the designated officer, treated in a manner satisfactory to the designated officer.

(2) Foothills shall dispose of the liquid and solid wastes referred to in subsection (1) in a manner satisfactory to the designated officer.

109. Foothills shall not use borrow pits as liquid or solid waste disposal sites unless such use is approved by the designated officer.

110. Foothills shall establish procedures satisfactory to the designated officer for the handling and disposal of any wastes containing a hazardous material.

111. Foothills shall establish procedures satisfactory to the designated officer to prevent access by carnivorous mammals and bears to waste disposal sites, incinerator sites or other waste storage or treatment sites and to minimize the attractiveness of such sites to such mammals and bears.

112. (1) Foothills shall

- (a) monitor the operation of its liquid waste treatment facilities and the quantity and composition of effluent discharges therefrom, and
- (b) evaluate the effectiveness of its solid waste management procedures

at such times as directed by the designated officer.

(2) Foothills shall, within a reasonable time, report the results of the monitoring referred to in subsection (1) to the designated officer.

(3) Foothills shall take any remedial measures with respect to solid waste management and liquid waste treatment as directed by the designated officer.

Granular Materials, Borrow Pits and Quarries

113. Where Foothills uses a borrow pit or quarry, Foothills shall minimize to the satisfaction of the designated officer

- (a) the disturbance of the environment in the vicinity of the borrow pit or quarry;
- (b) the amount of land used for the borrow pit or quarry; and
- (c) the amount of materials extracted from the borrow pit or quarry.

114. Foothills shall, where possible, use existing roads, trails or cutlines for access to borrow pits or quarries.

115. Foothills shall not extract granular materials from the bed of a waterbody unless that part of the bed of the waterbody from which such materials are to be extracted is dry.

116. Foothills shall leave buffer strips of undisturbed vegetation between any borrow pit or quarry that it opens and any adjacent road.

117. (1) Foothills shall not, without the approval of the designated officer, use a borrow pit or quarry within or adjacent to a waterbody, swamp, marsh, bog or fen.

(2) Where the use of a borrow pit or quarry referred to in subsection (1) has been approved by the designated officer, Foothills shall take such measures as are satisfactory to the designated officer to protect fish and fish habitat in that waterbody, swamp, marsh, bog or fen, as the case may be.

118. (1) When directed by the designated officer, Foothills shall close and rehabilitate, in a manner satisfactory to the designated officer, any borrow pit or quarry that it uses.

(2) Where Foothills is required to rehabilitate a borrow pit or quarry pursuant to subsection (1), it shall, to the satisfaction of the designated officer,

- (a) stabilize the ground surface; and
- (b) re-establish vegetation similar to that in existence before the excavation of the borrow pit.

119. Where Foothills uses any granular materials, such granular materials shall be used in a manner satisfactory to the designated officer and compatible with any other use of such materials in that portion of the Province through which the pipeline passes.

Blasting

120. Foothills shall establish blasting procedures satisfactory to the designated officer to minimize

- (a) any adverse effects on bird, fish or mammal populations,
and
- (b) any interference with fishing, hunting or trapping

in the area through which the pipeline passes.

121. Foothills shall minimize blasting in or adjacent to any waterbody, swamp or marsh.

122. Where Foothills intends to blast, it shall advise persons living in the vicinity of its intention and of the time of the intended blasting.

Water Crossings

123. Foothills shall, when submitting construction procedures and schedules to the designated officer for his approval and when constructing the pipeline, take into account any particular environmental characteristic of any water crossing by the pipeline.

124. Where Foothills submits a site-specific design for a water crossing to the designated officer for approval, Foothills shall include in the submission the information in respect of the hydrological and geotechnical conditions at that crossing that was used by Foothills in preparing the design.

125. (1) Foothills shall

- (a) inspect every pipeline water crossing for evidence of deterioration in bank stability and stream bed condition, and
- (b) when directed by the designated officer, monitor the consequences of any pipeline water crossing

in a manner satisfactory to the designated officer.

(2) Foothills shall report, within a reasonable period of time, to the designated officer the results of the inspection referred to in paragraph (1)(a) and, when required by the designated officer, the results of the monitoring referred to in paragraph (1)(b).

126. Where the designated officer is of the opinion that remedial measures are necessary at a pipeline water crossing, Foothills shall take such remedial measures as are satisfactory to the designated officer.

127. Where an impervious seam is cut in the bed of a waterbody during a trench excavation at a water crossing, Foothills shall take such measures as are satisfactory to the designated officer to restore water movements above the seam to their original pattern.

128. When constructing the pipeline across a stream, Foothills shall trench, lay pipe and backfill as expeditiously as possible.

129. Foothills shall, unless otherwise directed by the designated officer, on completion of any pipeline construction across a stream, restore the bed of the stream to its original shape by using the original materials of the stream bed or other material of equivalent stability.

Water Withdrawal, Water Discharge and Hydrostatic Testing

130. Foothills shall take such measures as are satisfactory to the designated officer to ensure to the satisfaction of the designated officer that water withdrawals and discharges will not have an unreasonably adverse effect on

- (a) the level or rate of flow of water in the waterbody or well from which the water withdrawal is made or into which the discharge is made;
- (b) the existing use of the waterbody from which the water withdrawal is made or into which the discharge is made;
- (c) the transportation on or access to the waterbody from which the water withdrawal is made or into which the discharge is made;
- (d) the trapping or fishing by persons residing in the vicinity of the pipeline;
- (e) the fish populations in or dependent on the waterbody from which the water withdrawal is made or into which the discharge is made; and
- (f) any waterfowl or mammal populations using any waterbody or its margins from which the water withdrawal is made or into which the discharge is made.

131. (1) Subject to subsection (2), Foothills shall ensure that, during any withdrawal of water from a waterbody for hydrostatic testing, the rate of flow or depth of water in that waterbody does not fall below such minimum as is specified by the designated officer.

(2) Foothills may withdraw water referred to in subsection (1) where the rate of flow and depth of water in the waterbody is below the minimum specified pursuant to that subsection if such withdrawal is approved by the designated officer.

132. Foothills shall, when carrying out hydrostatic testing of the pipeline, carry out such tests in a manner that will minimize the use of water.

133. Foothills shall appoint a qualified person to supervise the withdrawal and discharge of water for the construction or testing of the pipeline.

134. Where Foothills withdraws water for the construction or testing of the pipeline, it shall install screens satisfactory to the designated officer on all water intakes.

135. Foothills shall, in a manner satisfactory to the designated officer, furnish him with the details in respect of each water withdrawal or discharge used for constructing or testing the pipeline.

136. Foothills shall take such measures as are satisfactory to the designated officer

- (a) to avoid spilling any test fluid other than a spill caused by the failure of a pipe when being tested; and
- (b) to contain and remedy the effect of any test fluid that has been spilled.

137. Foothills shall conduct all hydrostatic tests of the pipeline in the presence of the designated officer or his authorized representative.

138. Foothills shall, prior to discharging any hydrostatic test fluid, ensure that the fluid meets such standards of composition as are satisfactory to the designated officer.

Roads and Other Facilities

139. Where Foothills is required to submit to the designated officer for approval the design and location of any access road or pipeline facility other than a road or facility on the pipeline

right-of-way and the procedures to be used in the construction, operation or abandonment of that road or facility, Foothills shall take into account the local and regional environment including the following:

- (a) hydrological characteristics;
- (b) terrain conditions;
- (c) ground thermal regime;
- (d) wildlife and fish populations;
- (e) land and water use for purposes other than for the pipeline;
- (f) archaeological sites; and
- (g) aesthetic value of the landscape and waterbodies.

140. Foothills shall maintain any right-of-way travelling surface so that cross drainage is both efficient and effective without causing accelerated erosion or ponding.

141. Where Foothills submits to the designated officer for approval a proposed crossing of a waterbody by an access road, Foothills shall propose the installation of bridges or culverts where, in the opinion of the designated officer, they are required to protect fish and fish habitat.

142. Foothills shall, where required by the designated officer, render any access road built or rehabilitated by it, other than a road to be used by Foothills in the maintenance of the pipeline, impassable and take such measures as are satisfactory to the designated officer to control erosion of such road.

143. Foothills shall not construct or use a bridge that consists of logs on top of which earth has been placed.

Machinery, Transportation and Construction Equipment

144. Foothills shall take such measures as are satisfactory to the designated officer to minimize the use by Foothills of vehicles and transportation and construction equipment in any area other than on public and access roads and the pipeline right-of-way.

145. Where Foothills operates machinery, transportation or construction equipment within any waterbody, such operation shall take place in respect of that waterbody during such time and in such manner as is satisfactory to the designated officer.

146. Foothills shall equip and maintain all machinery and transportation and construction equipment with factory standard emission and noise control devices.

Inspection and Monitoring

147. (1) Foothills shall, in a manner satisfactory to the designated officer, inspect the pipeline and the land and water disturbed by the pipeline, evaluate the results of the inspection and, when directed by the designated officer, monitor the environmental impact of the pipeline.

(2) When requested by the designated officer, Foothills shall, within a reasonable period of time, report the results of the inspection, evaluation and monitoring referred to in subsection (1) to the designated officer.

148. Where the designated officer is of the opinion that the construction or operation of the pipeline has caused or is likely to cause a significant adverse environmental impact, Foothills shall take such measures as are satisfactory to the designated officer to mitigate or remedy the environmental impact and to prevent its recurrence.

Environmental Plans and Procedures Manual

149. (1) Foothills shall prepare and submit to the designated officer an Environmental Plans and Procedures Manual, constituted in Parts, that sets out the procedures and measures Foothills intends to take to

- (a) comply with this Part;
- (b) carry out any environmental requirements imposed by law; and
- (c) prevent, mitigate or remedy any adverse environmental impact that may result from the construction or operation of the pipeline.

(2) Each Part of the Environmental Plans and Procedures Manual referred to in subsection (1) shall be submitted to the designated

officer for his approval in accordance with the schedule referred to in subsection (3).

(3) Foothills shall, by such date as may be fixed by the designated officer, submit to the designated officer a Parts schedule for his approval that sets out the procedures and measures to be dealt with in each Part referred to in subsection (1) and the date that each Part is to be submitted to the designated officer.

(4) The Parts schedule referred to in subsection (3), when approved by the designated officer, constitutes Foothills' Parts schedule and Foothills shall comply therewith therewith.

(5) Where the designated officer approves a procedure or measure set out in a Part submitted by Foothills pursuant to subsection (2), Foothills shall thereupon carry out such procedure or measure.

Submissions

150. (1) Foothills shall submit to the designated officer, in accordance with a schedule approved by him,

(a) the environmental information used by it in preparing the Parts referred to in subsection 149(1); and

(b) construction scheduling and engineering design information necessary for a review and evaluation of the Parts referred to in subsection 149(1).

(2) Foothills shall, when requested by the designated officer, submit to him any studies, reports, analyses or other material on which the information submitted pursuant to section 74 or subsection 79(1) was based.

(3) Where Foothills conducts studies or gathers data or information when considering the effect, if any, of the construction or operation of the pipeline on the existing or potential use of any land or waterbody through which the pipeline passes for the purpose of taking into account such effect pursuant to section 54, such studies, data or information shall be submitted by Foothills to the designated officer when requested by him.

151. When requested by the designated officer and in a manner satisfactory to him, Foothills shall submit to him any procedures or measures proposed by Foothills as alternatives to the procedures or measures referred to in subsection 149(1).

152. Where, subsequent to the approval by the designated officer of any procedure or measure referred to in subsection 149(1), Foothills obtains additional information of environmental significance relating to that procedure or measure, Foothills shall forthwith report such information to the designated officer.

ENVIRONMENTAL GUIDELINES

ENVIRONMENTAL GUIDELINES FOR THE CONSTRUCTION OF
THE NORTHERN PIPELINE IN BRITISH COLUMBIA

Terrain, Landscape and Waterbodies

1. In designing, proposing routes and alignments for, and in constructing the pipeline, Foothills should take measures to protect the aesthetic values of landscapes and waterbodies especially in wilderness and recreational areas. In particular Foothills should construct the pipeline so that the state of the surrounding area is insofar as possible the same after construction as before.

2. Foothills should plan, schedule and implement maintenance and repair activities so as to minimize adverse impacts on landscapes and waterbodies and, in particular, on the integrity of terrain sensitive to disturbance.

3. Foothills should afford swamps, marshes, bogs and fens the same level of protection as waterbodies, taking into account their hydrological importance and their importance as wildlife habitat.

4. In complying with term and condition 53 Foothills should take measures to protect waterbodies and their surroundings from disturbance. In particular Foothills should:

- (a) design and carry out works which encroach upon waterbodies, such as pipeline crossings, road crossings and water intakes, so as to minimize changes in water quality, flow or level, and morphology of the channel or bank;
- (b) carry out construction on and near river banks, in valleys, and on valley walls so as to minimize disturbance of the ground surface and maintain as much of the natural vegetation as possible. Where such disturbances do occur promptly stabilize the ground surface and prevent entry of silt-laden runoff into waterbodies.

5. Foothills should leave buffer strips of undisturbed vegetation as follows:

(a) Between a waterbody and:	Minimum Width (Metres)
new road (except where crossing)	100
new borrow pit	100

pipeline right-of-way (except where crossing)	100
construction camp	300
stockpile site	300

(b) Between a public road and:

new borrow pit	100
compressor station	100
stockpile site	100

and should avoid disturbance within such buffer strips except when taking measures to prevent windthrow.

6. When planning and constructing the pipeline, Foothills should maintain separation distances as follows:

Between a waterbody and:	Minimum Separation (Metres)
sewage lagoon	100
fuel storage site	300
solid waste disposal site	300
cleared area	100
burning site	100
spoil pile	100
oil change area	100

7. In complying with term and condition 53 Foothills shall assess the sensitivity of terrain to be traversed by alternative routes and alignments of the pipeline and the extent to which its disturbance might adversely affect waterbodies and wildlife habitat.

8. In complying with term and condition 54 Foothills should take into account:

- (a) the cumulative environmental impacts of the construction, operation and abandonment of the pipeline; and
- (b) possible interactions between environmental impacts of the pipeline and those of other developments expected to occur in the near future in the region.

9. In complying with term and condition 55 Foothills should take special drainage and erosion control measures between kilometre posts 21.2 and 48.6, and between 103.0 and 111.0 where a high potential for erosion exists and between 111.0 and 114.1 where an extreme potential for erosion exists.

10. In complying with term and condition 55 Foothills should take special drainage and erosion control measures at the following soil sensitive stream crossings:

<u>STREAM</u>	<u>Sites in 1975 ANG Impact assessment</u>
Loop 2 - Michel Creek	4,
- tributaries to Leach Creek	5, 12, 15
- Leach Creek	16, 18, 19, 20 21, 22, 23
- access roads on east slope of the Flathead Ridge	
- McEvoy Creek and tributary	24, 25
- tributaries to the Flathead River	26, 27, 28, 29 30, 31
Loop 3 - Tepee Creek	45, 49
- tributaries to Tepee Creek	46, 47, 48
- Beattie Creek	52

Drainage, Erosion Control, Rehabilitation and Revegetation

11. Foothills should construct embankments and stabilize side-slopes which encroach on waterbodies by methods and by using materials satisfactory to the designated officer.

12. Foothills should locate sediment traps and other devices to ensure that sediments, particularly silt particles, in water flowing from the right-of-way or from facilities, do not adversely affect the surrounding terrain or waterbodies. In particular, Foothills should control erosion on the banks of rivers and streams, valley slopes, cut-slopes and in cuts along the right-of-way.

13. Foothills should maintain or remove as appropriate drainage and erosion control devices at all sites that are no longer in use.

Such sites include temporary roads, borrow sites, spoil disposal sites, stockpile sites, and work pads.

14. Foothills should identify unstable and potentially unstable slopes and develop and implement a program satisfactory to the designated officer for the inspection and, where required by the designated officer, monitoring of slope stability during construction and operation.

15. Foothills should install impervious plugs in trenches on slopes during construction to prevent transport of sediment to water-bodies.

16. Foothills should construct water bars and berms to maintain the existing stream channels and to prevent water from eroding channels along the new pipeline right-of-way.

17. Foothills should take measures to ensure that the pipeline causes neither the ponding of water, the channelization of overland flow nor erosion arising from either of the preceding phenomena.

18. Foothills should provide surface drainage across the pipeline right-of-way, including any backfill mound, and across roads, airstrips, or other facilities.

19. Where revegetation is not possible or would be ineffective in stabilizing the surface, Foothills should leave disturbed areas in a stabilized condition by measures which may include placement of mat binders, soil binders, rock or gravel blankets or other structures.

20. In complying with term and condition 59, Foothills should give priority to areas that are most susceptible to erosion.

21. In scheduling revegetation, Foothills should give priority to erosion-sensitive areas. Where revegetation activities might disturb wildlife, Foothills should take measures to minimize such disturbance.

22. Within the limits imposed by term and condition 61 Foothills should implement revegetation procedures at times conducive to the establishment of vegetation.

23. Foothills should loosen any soil compacted by construction when such loosening would promote revegetation.

24. Within the provisions of term and condition 62(a) Foothills should identify plant species mixtures which are suitable for each site to be revegetated.

25. In complying with term and condition 62(c) Foothills should survey the right-of-way prior to construction for occurrences of Knapweed and undertake spot treatments to eradicate infestations of Knapweed.

26. In complying with term and condition 63 Foothills should examine the impact of new drainage structures on stream banks and beds and water levels and velocities.

27. In complying with term and condition 63 Foothills should conduct periodic inspections of all new culverts and take appropriate action to clear blocked culverts.

Water Quality

28. Foothills should consult with officials of the Northern Pipeline Agency and the government of the Province of British Columbia to develop and implement measures to minimize increases in suspended sediment concentrations caused by the construction of the pipeline in waterbodies frequented by fish. Where possible, Foothills should adhere to the following standards:

- (a) the average concentration in any stream is not to exceed 80 mg/l or more than 2 times the natural level, whichever is greater, for any period longer than 48 hours;
- (b) when the natural level is less than 25 mg/l then the average concentration is not to exceed 25 mg/l for any 30-day period;
- (c) when the natural level is greater than 25 mg/l then the average concentration should not exceed the natural concentration by more than 20% for any 30-day period.

29. In complying with term and condition 66(2) Foothills should monitor suspended sediment concentrations in waterbodies containing

fish habitat described in the information referred to in term and condition 79(1) and in which water quality is likely to be affected by the construction of the pipeline. In determining the frequency and location of monitoring Foothills should:

- (a) take into account the nature and period of the anticipated impact on water quality;
- (b) locate control sites in unaffected parts of the same waterbody, or in similar nearby waterbodies.

A satisfactory measure of turbidity may be used for comparing sediment concentrations in affected waterbodies to natural levels.

30. Where the construction or operation of the pipeline causes effluent to be released into a waterbody, or otherwise results in changes in a waterbody, Foothills should maintain the following standards of water quality in such waterbodies, except where natural, pre-disturbance standards are lower:

- (a) maximum reduction of dissolved oxygen not to exceed 20% of natural concentration; minimum concentration of dissolved oxygen in waterbody not to be less than 6 mg/l;
- (b) water temperatures in waters frequented by fish not to be altered by more than 2°C from those which would have occurred had the pipeline not been constructed; and
- (c) chemical content to meet British Columbia Pollution Control Objectives.

31. Foothills should adopt analytical procedures in accordance with the Laboratory Manual for the Chemical Analysis of Waters, Wastewaters, Sediment and Biological Materials, Province of B.C.

32. Foothills should collect all water quality data in a form so that they can be incorporated directly into the provincial water quality data bank (EQUIS).

Air Quality

33. Foothills should control emissions to ambient air from pipeline facilities so that concentrations of pollutants do not exceed

"maximum desirable levels" defined in the Pollution Control Objectives of British Columbia.

34. Foothills should ensure that emissions to ambient air from solid waste incinerators do not exceed "maximum desirable levels" defined in the Pollution Control Objectives of British Columbia.

Noise

35. Foothills should comply with term and condition 71 so that fenceline noise levels at compressor stations are no more than 65 dBa under normal operating conditions.

36. Within 1 km of areas described in the information referred to in term and condition 74(a) or in areas in the vicinity of the pipeline used extensively by local people, Foothills should take additional measures to control noise emitted by compressor stations and adopt operating practices to reduce noise.

37. Foothills should, in so far as is practicable, schedule intermittent noise producing events, such as those created by compressor station blow downs and by aircraft, so that they do not disrupt wildlife during periods described in the information referred to in term and condition 74(a).

38. Foothills should monitor fenceline levels at compressor stations during normal operating conditions within six months of the compressor station commencing operation and eighteen months after operation commences.

Wildlife

39. In assembling the information referred to in term and condition 74, Foothills should undertake detailed quantitative surveys. In designing such surveys Foothills should take into account the typical range of each species and the possible intersection of such ranges by new parts of the pipeline. Winter surveys should include quantified track counts as well as sighted animal enumerations.

40. Foothills should include in areas and periods for ungulates described in the information referred to in term and condition 74(b):

- (a) winter ranges in the areas between kilometre posts 0.0 - 3.6, 15.3 - 32.0, 89.6 - 99.2, 104.0 - 109.0 and 151.5 - 155.0 during the period December 1 to March 31.
- (b) rutting areas between kilometre posts 33.0 - 36.0 and 46.6 - 48.6 during the period August 15 to October 15, and
- (c) mineral licks located upstream of the Michel Creek crossing between kilometre posts 20 and 21 and along the right-of-way in the Tepee Creek drainage between kilometre posts 110 and 112 during the period April 15 to July 15.

Construction in these areas during these periods should occur only after consultation with the B.C. Fish and Wildlife Branch.

41. Foothills should minimize the obstruction of existing wild-life migration trails.

42. In developing measures to prevent big game animals from being obstructed or entrapped, Foothills should break linear obstructions such as open trenches, pipe and debris obstacles at 300 m. intervals.

Fisheries

43. Foothills should include as fish habitat described in the information referred to in term and condition 79(1);

Loop 1 - Summit Creek

Loop 2 - Leach Creek
 - tributaries to Leach Creek
 - McEvoy Creek and tributary
 - tributaries to the Flathead River
 - Michel Creek
 - Carbon Creek

Loop 3 - Gold Creek
 - Tepee Creek
 - tributaries to Tepee Creek
 - Katsla Creek
 - Beattie Creek

Loop 4 - Moyie River
 - Hawkins Creek
 - Elmer Creek

44. For the streams outlined in guideline 43, Foothills should consult with the Regional Fisheries Biologist in determining times for construction of water crossings.

45. Where construction in waters upstream of areas referred to in term and condition 79(1) will cause sediment and other materials deleterious to fish to be carried into them, Foothills should consult with the Regional Fisheries Biologist in determining times for construction. Foothills should include in such upstream waters:

Loop 2 - tributaries to Leach Creek
- tributaries to the Flathead River

Loop 3 - tributary to Koochanusa Lake
- tributary to Plumbob Creek

Loop 4 - Manson Creek
- tributary to Moyie River
- Elmira Creek

46. Foothills should inform the regional office of the Water Management Branch, Province of B.C. five working days prior to the commencement of construction within the wetted perimeter of a waterbody.

47. Foothills should construct new channels which provide suitable habitat for fish where loss of, or severe damage to, existing channels containing water frequented by fish is unavoidable.

48. Foothills should develop and implement monitoring programs to facilitate the protection of fish and aquatic habitat. The programs should include the collection of baseline data prior to construction and should be designed to:

- (a) measure concentrations of dissolved oxygen, particularly in winter months, in water that might undergo a significant adverse environmental impact during construction,
- (b) observe and record low water levels and flows to facilitate maintenance of adequate quantities of water for fish, and

- (c) measure velocities at culverts and diversion structures to ensure fish passage.

Special Interest Areas

49. Foothills should consult with the Kootenay Regional Parks Manager in developing and implementing measures to mitigate visual or other adverse impacts of construction on:

- (a) Crows Nest Provincial Park
- (b) Ryan Provincial Park
- (c) Yahk Provincial Park
- (d) Plumbob Creek Recreational Reserve
- (e) Moyie River area, and
- (f) any proposed recreational area.

50. Foothills should confine land disturbance resulting from construction to areas south of the existing right-of-way in the vicinity of the proposed recreational reserve on the east side of Lake Kooacanusa.

51. Foothills should flag the following heritage sites which are identified in the ANG Environmental Procedures Manual and ensure that they are not disturbed by off-right-of-way activity; ANG 1, ANG 2, ANG 22, ANG 23, ANG 24 and ANG 25.

52. Foothills should excavate sites ANG 3 and ANG 4 to the satisfaction of the Provincial Archaeologist prior to construction.

53. Foothills should inspect all excavations in areas of archaeological potential during construction for sites of archaeological significance.

54. Foothills should arrange for emergency archaeological excavation of sites endangered by construction of the pipeline wherever such sites warrant attention and can be excavated without interfering with Foothills' construction schedule.

55. When for practical reasons, the sites referred to in guideline 54 cannot be investigated, Foothills should map and suitably flag these as areas to be avoided during construction.

Agricultural Land

56. Foothills should keep closed, except during passage of men and equipment, any gate constructed in compliance with term and condition 97.

57. Foothills should undertake measures to ensure that wild-life, landowners and livestock are able to cross open trenches. Such measures should include, but not necessarily be limited to:

- (a) restricting the length of open trenches;
- (b) limiting the period trenches are left open; and
- (c) constructing temporary bridges or backfilled areas.

Clearing

58. On sensitive terrain, Foothills should use hand clearing techniques.

59. In areas where grading is not necessary, Foothills should use blade-shoe or appropriate blading techniques for clearing in order to minimize disturbance of the ground surface.

60. Foothills should minimize the period between the initiation of disturbance by clearing and the implementation of erosion control measures.

61. Except where required for the movement of men and equipment, Foothills should not clear vegetation from river and stream banks, valley walls or sensitive slopes until just prior to construction.

62. Foothills should burn or otherwise dispose of all trees, snags, brush and other non-salvageable woody materials resulting from clearing. On winter trails and survey lines, trees may be lopped and scattered.

63. Foothills should conduct burning in small compact piles during approved periods.

64. In areas identified in guideline 40 as ungulate winter ranges, Foothills should clear the minimum possible area and use existing access roads.

Fuel and Other Hazardous Material

65. Foothills should store hazardous material separately from other materials in clearly marked containers.

66. Foothills should maintain a record of the location of spill control equipment.

67. Foothills should inspect and maintain spill control equipment on a regular basis.

68. Foothills should install automatic shut-off nozzles on all hoses and other equipment used to transfer hazardous material.

69. Foothills should label equipment to be used for handling highly dangerous material such as radioactive wastes and complex organic chemicals. Such equipment should be decontaminated prior to removal from storage sites.

70. Foothills should use hazardous material in a manner so as to minimize the creation of hazardous waste residues.

71. Foothills should station equipment necessary to contain, collect and dispose of hazardous material spills at all hazardous material storage sites.

Waste Management

72. Foothills should dispose of liquid wastes in accordance with provincial effluent objectives.

73. Foothills should locate and operate solid waste disposal sites in a manner that has minimal effect on natural drainage, ground-water and water quality.

74. Foothills should segregate wastes containing hazardous material from other wastes, handle them separately and dispose of them in a satisfactory manner.

75. Foothills should ensure that pipeline personnel refrain from feeding or baiting wildlife.

76. Foothills should ensure that pipeline personnel do not discard food or lunch bags on access roads and on the right-of-way.

77. Foothills should report scavenging of garbage by dangerous wildlife such as bears to the nearest provincial Fish and Wildlife Office.

Granular Materials, Borrow Pits and Quarries

78. Foothills should obtain and comply with conditions attached to a lease or license of occupation or Gravel Removal Order where necessary for the extraction of sand or gravel on Provincial Crown land.

79. Foothills should select upland borrow sources in preference to floodplain sources wherever possible.

80. Foothills should locate borrow pits so as to avoid fox, wolf, or bear denning areas.

81. Where permission is granted pursuant to term and condition 117 to open a borrow pit on a floodplain, Foothills should construct dykes and other works to minimize the possibility that the stream or river might change its course through the pit. Where practicable a 100 metre buffer zone should be left between the channel zone and the pit.

82. In operating borrow pits Foothills should:

- (a) stockpile materials stripped or removed to expose granular materials so as to permit their re-use in rehabilitation;
- (b) conduct pit operations to achieve optimum and efficient use of the available materials without exploiting the higher grade materials unnecessarily; and

- (c) take measures to minimize groundwater interference.

83. Foothills should take measures to control noise arising from borrow pit operations in order to avoid adverse impact on animals or birds during periods described in the information referred to in term and condition 72(b).

Blasting

84. If blasting near waterbodies containing fish or aquatic animals is necessary, Foothills should take measures to protect such fish or aquatic animals. These measures may include scheduling to avoid periods of time in respect of those areas of fish habitat described in the information referred to in subsection 79(1); maintaining a distance of 300 metres from areas in which concentrations of fish eggs are present, restricted areas where fish are spawning or overwintering or areas where fish are migrating in dense schools; temporarily blocking fish access to blast areas; using blast deflectors or absorbers; using minimum size charges necessary and instituting appropriate suspended sediment controls.

Water Crossings

85. Foothills should:

- (a) design water crossings to withstand floods of the recurrence intervals recommended by the designated officer;
- (b) take into account in designing the pipeline;
 - (i) water levels that might rise because of ice jamming, storm surges, channel migration or other meteorological or hydrological phenomena; and
 - (ii) scour; and
- (c) submit all supporting data and computations that have been used to estimate flood levels, velocities and scour depths used in the design of water crossings.

86. Where river training structures are to be installed, Foothills should locate these so as to minimize environmental disturbance.

87. (1) Foothills should design, construct and operate stream crossings, approaches and water diversion channels to minimize any increase in erosion and siltation. Where necessary, settling basins or other sediment traps should be constructed on approaches to crossings to control entry of suspended sediments to waterbodies.

(2) To control erosion at particularly sensitive crossings, special designs may be necessary.

88. During construction in floodplains, Foothills should avoid the concentration of runoff and the creation of channels along the pipeline.

89. In complying with term and condition 125 Foothills should observe and report changes in scour depth, stream bed morphology, and sediment type.

Water Withdrawal, Water Discharge and Hydrostatic Testing

90. Foothills should, in any stream which is listed as fish habitat pursuant to term and condition 79(1) or a waterbody listed pursuant to term and condition 74(a) and in which groundwater contributes significantly to winter flow, both in and under the bed, take measures satisfactory to the designated officer to maintain adequate winter groundwater and channel flow in such stream.

91. Foothills should consult with the Kootenay Regional Water Manager in fluming the flow in streams having downstream water licences over the excavation during construction of the pipeline to minimize disruption of the stream flow and sediment pickup and should remove the flumes immediately after construction.

92. (a) Locate water intakes not less than 300 metres from important fish habitat that has well-defined boundaries;
- (b) Design intakes to conform with the specifications outlined in Water Intake Fish Protection Facilities, available from Fisheries and Oceans Canada, Pacific Region; and
- (c) In complying with term and condition 134 Foothills should design for a maximum water velocity of 3 cm/sec. at the screen.
-

93. Foothills' water withdrawal plans should include measures to stabilize both the stream bed and approaches to the water source so that accelerated erosion will not occur during equipment installation, use, and abandonment.

94. Foothills should ascertain the names of major users, and notify holders of water licenses, for any waterbody which may be affected by water withdrawals or discharges.

95. Foothills should contact the regional office of the Water Management Branch, Province of B.C. before undertaking any construction activity in the Moyie River or its tributaries to ensure that the water withdrawal rights of downstream users at Kingsgate are safeguarded.

96. Before returning hydrostatic test liquids to natural waterbodies, Foothills should test these liquids to ensure that B.C. Pollution Control Objectives are met. Test liquids should not be discharged at rates which will increase the flow regime by more than 10% of the receiving water flow at the time of discharge.

Inspection and Monitoring

97. During construction and operation of the pipeline, Foothills should inspect and monitor the various aspects of the environment as well as the pipeline to facilitate evaluation of the causes of observed environmental changes.

98. Foothills' environmental inspector should be familiar with the problems of Knapweed infestation.

99. Foothills should include in its inspection and monitoring program;

- (a) slope stability;
- (b) erosion control;
- (c) water quality;
- (d) water withdrawal, water discharge, and hydrostatic testing;
- (e) river and stream crossings;
- (f) drainage structures;
- (g) revegetation;
- (h) wildlife and wildlife habitat;
- (i) fish and aquatic habitat;

- (j) noise levels;
- (k) air quality;
- (l) handling and loss of fuel and hazardous material; and
- (m) special interest areas.

Emergency Measures

100. Foothills should establish strategies and procedures relating but not limited to the following:

- (a) containment and clean up of spills of fuel and toxic and other hazardous material assuming the worst case situation with respect to the sensitivity of the site, weather conditions, quantity of material involved, and the direction of spill flow; and
- (b) unusual and substantial fish migrations and wildlife movement that could be placed at risk by pipeline related activities;
- (c) pipe failures, pipeline system malfunctions or potential malfunctions arising from such occurrences as earthquakes, slope failures, washouts, floods or forest fires, to ensure that repair or other emergency measures make due allowance for sensitive components of the environment; and
- (d) major unplanned discharges of water during hydrostatic testing.

101. Foothills should identify potential disposal sites for hazardous material and wastes containing hazardous material arising from construction of the pipeline and document their surface and subsurface conditions. Foothills should develop detailed site-specific procedures for use of these sites, including the burning, burying and recycling of wastes containing hazardous material.

102. Foothills should describe fire prevention and suppression methods including:

- (a) employment education and training;
- (b) operation and maintenance of equipment;

- (c) conducting of all pipeline activities associated with burning to minimize fire hazard, with special attention given to preventive measures in summer;
- (d) restriction of personnel and curtailment of activities during periods of high risk;
- (e) protection of land under company permits;
- (f) fire detection and reporting procedures that take into account existing practices; and
- (g) placement of necessary equipment and the availability of properly trained teams for fire fighting at construction sites, camps, stockpile areas and all land adjacent to the pipeline right-of-way and availability of on-site personnel of both Foothills and its contractors to fight fires, if required.

I N D E X

(Bold figures refer to Guidelines)

- Access Roads, 114, 139, 141, 142, **10, 64, 76**
 Aesthetic value of the landscape, 60(c), 68(b), 139(g), 1
 Agricultural Land, 58, 59, 94-98, **56-57**
 definition, 2(1)
 Air Quality, 68-70, **33-34**
 Animals (See Wildlife)
 Application of terms and conditions, 3
 Arbitration, 46
 Archaeological program, 90, 91
 Archaeological sites, 89, 90, 92, 139(f), **52, 53, 54, 55**
- Backfilling, 61, 128, **57(c)**
 Big game animals, 76(a), 103, **42**
 definition, 2(1)
 (See also Wildlife)
 Birds, 120(a), 130(f), **83**
 (See also Wildlife)
 Blasting, 120-122, **84**
 Borrow pits, 109, 113, 114, 116, 117, 118, 13, **79, 80, 81, 82, 83**
 definition, 2(1)
 Bridges, 141, 143, **57(c)**
 British Columbia (See Province)
 British Columbia Pollution Control Objectives, **30(c), 33, 34, 96**
 Buffer strips, 100(c), 116, **5, 81**
 Burial grounds, 89
 Burning of debris, **62, 63**
 Business Opportunities, 17(2)(g), 32-34
- Canada
 Government of, 17(1)(a), 26, 36
 laws of, 4, 52(b)
 Clearing, 99-103, **58-64**
 Compensation for Damage to Property, 43-46
 Compressor stations, 68, 69, 70, 71, **35, 36, 37, 38**
 Construction
 definition, 2(1)
 (See also Scheduling of construction)
 Construction machinery, 101(1), 145, 146
 aircraft, 13, 38(b), **37**
 equipment, 13, 144, 145
 vehicles, 38(b), 144
 Consultation by Foothills, 14, 19, 21, 22, 23(b), 47(1), 48, 49
 Contractors, 5, 8(c), 22, 43, 44
 subcontractors, 5, 8(c), 43, 44
 Cultural areas, 47, 48, 49(b), 88
 Culverts, 84, 141, 27, **48(c)**

- Damage to property
 - compensation for, 43, 44, 45, 46
 - Debris
 - clearing of, 100(d), 103
 - disposal of, 102, 62
 - Designated officer
 - assistance to, 6
 - authorized representative of, 137
 - definition, 2(2)
 - Dissolved oxygen in waterbodies, 82, 30(a), 48(a)
 - Drainage, 57, 140, 9, 10, 13, 18, 26, 73

 - Emergency Measures, 10-13, 100-102
 - Employment (See Pipeline Labour)
 - Environmental impacts
 - definition, 2(1)
 - cumulative, 8
 - Environmental Plans and Procedures Manual, 149
 - Erosion, 55, 56, 59, 60(a), 61, 99, 140, 142, 9, 10, 12, 13, 17, 20, 21, 60, 87

 - Facility, 73(1), 81, 139, 18, 33
 - definition, 2(1)
 - Fences and gates, 96, 97, 56
 - Fire
 - forest fire prevention and suppression, 13, 100(c), 102
 - Firearms, 38
 - Fisheries, 79-87, 104(b), 117(2), 120(a), 130(e), 139(d), 141, 150(2), 28, 29, 43-48, 84, 90
 - Fishing, 47, 48, 49(a), 85, 120(b), 130(d)
 - Foothills
 - application, 3
 - undertakings, 14
 - Fuel, 100(a)
 - consumption, 70(d)
 - definition, 2(1)
 - storage, 104, 105, 106
 - Fur-bearing animals
 - definition, 2(1)
 - (See also Wildlife)

 - Game hunting device, 38
 - Geotechnical considerations
 - at water crossings, 124
 - Granular materials, 82, 113(c), 115, 119, 78, 82
 - Grazing, 94
 - definition, 2(1)
 - Groundwater, 53, 73, 82, 90
 - Guiding, 76
-

- Hazardous material, 104, 106, 110, 65, 68, 70, 71, 74, 100(a), 101
 definition, 2(1)
- Health
 of employees, 35
- Herbicides and pesticides, 107(b)
- Her Majesty
 indemnification against, 8, 9
- Historical sites, 90(a), 92
- Hunting, 47, 48, 49(a), 120(b)
- Hydrostatic testing, 131, 132, 136, 137, 138, 96, 100(d)
- Ice fog, 68(a), 69
- Indemnification, 8-9
- Indian, 17(1)(d), 19, 21(1), 29, 30, 31, 47(1), 48, 49
 definition, 2(1)
- Information in respect of the pipeline, 6, 17, 18, 19, 20, 23(a), 24
- Inspection
 definition, 2(1)
 environmental, 63, 64(1), 77, 86, 98(a), 125, 147, 14, 26, 27, 53, 67, 89,
 97, 98, 99
 socio-economic, 39, 40, 42, 43
- Inventory of traditional harvesting and cultural areas, 47(1), 48, 49
- Knapweed, 25, 98
- Land use, 17(2)(d), 54, 56, 60, 139(e), 150(3), 8
- Liability (See Compensation for Damage to Property)
- Livestock, 72(c), 73(2), 57
- Mammals, 111, 120(a), 130(f)
 (See also Wildlife)
- Manpower (See Pipeline Labour)
- Manpower plan, 25
- Merchantable timber
 clearing of, 100(b)
- Metis, 17(1)(d), 19, 21(1), 29, 30, 31, 47(1), 48, 49
- Migration of workers, 26
- Monitoring
 definition, 2(1)
 environmental, 112, 125, 147, 14, 29, 38, 48, 97, 98, 99
 socio-economic, 39, 40, 41, 42
- Monuments, 89
 geodetic, 93
- Noise, 71-73, 146, 35-38, 83
- Non-status Indian, 17(1)(d), 19, 21(1), 29, 30, 31, 47(1), 48, 49

Northern Pipeline Act (Act), 2(1), 3, 52(b)
 Northern Pipeline Agency (Agency), 39, 40, 41(2), 42(b)
 Noxious weeds, 62(b)(c), 63, 64, 25, 98

Operation

definition, 2(1)
 Opportunities for residents, 17(2)(c)
 Opportunity Measures, 17(2)(f), 29-31
 Orientation of Employees, 27-28

Palaeoecological materials, 90(b)

Parks (See Special Interest Areas)

Parts schedule, 149(2)(3)(4)

Pipeline

access to, 37(a), 97
 application, 3
 proposed location, (1)(a), 48, 54, 75, 78(a), 88(1), 1
 (See also Right-of-way of pipeline)

Pipeline Labour, 25-26

(See also Opportunity Measures)

Plans, 15

business opportunities, 34
 information, 24
 manpower, 25
 opportunity measures, 31
 orientation, 28
 traditional resource protection, 50
 (See also Environmental Plans and Procedures Manual)

Plan Schedule

socio-economic, 16

Property damage, 43, 44, 45, 46

Province

definition, 2(1)
 government of, 7, 12, 17(1)(b), 19, 21(1), 25, 26, 33, 34, 36, 37, 47(1),
 48, 49, 62(a), 74, 79(1), 88(1), 91, 94
 laws of, 4, 52(b)

Provincial standards, 52

Quarries, 113, 114, 116, 117, 118

Radioactive materials, 107(a), 69

Rare and endangered species

definition, 2(1)
 (See also Wildlife)

Recreation, 69(a)

areas, 1, 49, 50

- Recruitment (See Pipeline Labour)
 - Rehabilitation
 - of land, 58, 60, 61, 63, 64
 - of borrow pits and quarries, 118, 82(a)
 - Remedial measures, 64(2), 73(2), 78, 87, 98(c), 112(3), 126, 148
 - Resource use analysis of hunting, trapping and fishing areas, 47
 - Revegetation, 59, 60, 61, 62(a), 63, 64, 19, 23, 24
 - scheduling of, 21, 22
 - Right-way of pipeline
 - access to, 7
 - firearms on, 38(b)
 - Rivers, 101, 12
 - (See also Waterbodies)
 - Roads, 116, 140, 13, 18
 - (See also Access Roads)
 - Route alignment (See Pipeline)
 - Royal Canadian Mounted Police, 36, 37
-
- Scheduling of construction, 17(2)(a), 49, 75, 80, 81(a), 86(2)(a), 123, 150(1)(b), 37, 54, 84
 - Security, 36-38
 - Sediment, 57(b), 65, 82, 4(b), 12, 15, 28, 29, 45, 84, 87, 89, 91
 - Seeding, 62(a), 24
 - Sheriffs' services, 36(b), 37(a)
 - Siltation, 57(b), 65, 82, 4(b), 12, 15, 28, 29, 45, 84, 87, 91
 - Special Interest Areas, 88-93, 49-55
 - Special interest groups, 17(1)(e), 19
 - Streams, 101, 128, 129, 10, 12, 16
 - (See also Waterbodies)
 - Studies of socio-economic impact, 41
 - Submissions
 - engineering, 150(1)(b)
 - environmental, 68, 74, 79(1), 123, 124, 139, 141, 150-152
 - socio-economic, 45, 47(1), 48, 49
 - (See also Plans and Environmental Plans and Procedures Manual)
 - Supply of goods and services, 30, 32, 33
 - Surveillance
 - socio-economic, 39-42
-
- Terms and conditions
 - application, 3
 - compliance with, 5, 39, 40, 42, 149(1)(a)
 - environmental, 51-152
 - general, 4-13
 - socio-economic, 14-50
 - Topsoil, 95

Training

- emergency, 11
- opportunity measures, 29
- pipeline construction, 25

Transportation, 69(b), 130(c)

Trapping, 47, 48, 49(a), 76(b), 120(b), 130(d)

Ungulates, 40, 64

(See also Wildlife)

Vegetation, 4(b)

- clearing of, 99, 100, 101, 102, 103, 22, 61
- (See also Revegetation)

Waste Management, 108-112, 72-77, 101

definition of, 2(1)

Waterbodies, Protection of, 53, 54, 65, 66, 67, 100(d), 104(b), 130, 131, 138, 145, 147(1), 1, 2, 3, 4, 5(a), 6, 7, 11, 12, 15, 28, 29, 30, 96

Water Crossings, 123-129, 4(a), 10, 44, 85-89

Water Quality, 65-67, 4, 28-32, 73

Water withdrawal and discharge, 130, 131, 133, 134, 135, 4(a), 90, 91, 93, 94, 95

Weather conditions, 100(a)

at compressor stations, 70

Weeds, 62(b)(c), 63, 64, 25, 98

Wildlife, 69(c), 73(2), 74-78, 139(d), 150(2), 21, 36, 37, 39-42, 57, 80

being a problem at waste storage sites, 111, 77

blasting effects on, 120(a)

definition, 2(1)

Wildlife habitat, 60(b), 69(c), 3, 7

Windthrow, 100(e), 5

Women, 29(b)(c)

women's organizations, 31

UNIVERSITY OF ALASKA, ANCHORAGE LIBRARY