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***Norman Wells Oilfield Expansion And
Pipeline Project
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**NORMAN WELLS OILFIELD EXPANSION AND
PIPELINE PROJECT**

Sector: Mining/Oil/Energy

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**NORMAN WELLS OILFIELD EXPANSION
AND
PIPELINE PROJECT**

Environmental Planning and Assessment
Division
Department of Renewable Resources
Government of the
Northwest Territories

EXECUTIVE SUMMARY

During the winters of 1977 and 1978, Esso Resource carried out a seismic and drilling program to properly delineate the extent of the Norman Wells Oilfield. They determined that 60% of the field was below the Mackenzie River and that 40 million cubic metres (250 million barrels) of oil were recoverable.

Esso has proposed a field-wide secondary recovery program which will increase production from 500 m³/d to 4000 m³/d. This will be accomplished by an oil field reservoir water-flood scheme which will increase recovery of oil in place from 17% to 42%. Facilities required include:

- a) six artificial islands
- b) 178 new oil production and water injection wells
- c) a pipeline gathering and distribution system
- d) support facilities like docks, roads, tank storage and quarry.

Inter provincial Pipeline Ltd. (I. P. L.) proposed to construct a small diameter pipeline 866 km from Norman Wells, N.W.T. to Zama Terminal in Alberta. The pipeline will be 323.9 mm (12.5 inches) in diameter and will have a capacity of 500 m³per day (**32,000 b/d**).

Major construction on the oilfield expansion will begin in the summer of 1983, with mobilization in the summer of 1982. Construction will be completed in 1984 with an anticipated startup of mid-1985. Pipeline construction will be carried out over two winters, beginning in November, 1983. The labour force in Norman Wells will average about 300, peaking at about 660 during the summer of 1984. IPL will require a workforce of 800 each winter. The total cost of the project is in excess of one billion dollars. More than 200 permanent jobs will be created in Norman Wells and 9 in Fort Simpson.

IPL and Esso Resources submitted a joint Environmental Impact Statement to the Department of Indian Affairs and Northern Development (DIAND) in April, 1980. DIAND referred the project to the Federal Assessment and Review Office. In January 1981, the EARP Panel published their report which included 61 recommendations.

IPL filed an application with the NEB for a certificate under Part III and an order under Part IV of the National Energy Board Act. The Certificate of Public Convenience and Necessity was issued to IPL on November 6, 1981.

On July 30, 1981 the Minister of Indian Affairs and Northern Development announced that conditional approval had been given to the Norman Wells Oil - field Expansion and Pipeline Project. The main authorizations are now being considered by the respective regulatory agencies, which include Land Resources Division and Water Resources Division of DIAND, the Water Board and the Department of Local Government, (who is responsible for Commissioner's Land.

The Department of Renewable Resources will be the only G. N.W.T. Department fully represented at the field level. Field staff will have an active role in on-the-ground monitoring over the entire length of the line.

The Environmental Planning and Assessment Division will be responsible for managing this Department's role in the Norman Wells project. The Division will review reports and plans, comment on operating conditions and carry out formal liaison with other agencies. E.P.A. will coordinate comments and concerns from other divisions, representing the Department on most inter-departmental and federal-territorial committees.

To facilitate headquarters' activities there will be several new term positions established. Several additional positions will be required for field surveillance and monitoring. They will be supervised by a Pipeline Coordinator, who will report to the Assistant Deputy Minister.

The Norman Wells Oilfield Expansion and Pipeline Project is the first of many mega projects in the N.W. T. It could be the forerunner for larger pipelines along the Mackenzie to transport oil and gas from the Beaufort Sea. Monitoring the results of our efforts on this project will be essential to improving our planning on future projects.

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INTRODUCTION

The Norman Wells Oilfield Expansion and Pipeline Project is the first "mega-project" (costs exceeding one billion dollars) in the Northwest Territories. The Department of Renewable Resources will play a role in establishing and implementing environmental standards and controls for this project.

This paper outlines the project history and the G.N.W.T.'s involvement in the review process. It identifies federal and territorial regulatory requirements of the proponents and pertinent G.N.W.T. legislation. The paper describes the Department of Renewable Resources' plan for project monitoring, discusses interdepartmental cooperation and federal-territorial liaison.

FIELD HISTORY

The Norman Wells discovery well was drilled by Imperial Oil in 1920. In 1921, enough equipment was transported in to refine fuel oil suitable for boat engines and heating purposes; however, the operation was too costly and the refinery was closed in 1925. In 1932, mines were opened on Great Bear Lake, and to supply them, Imperial Oil established a refinery capable of producing 80 m³/day (500 bbl/day). This was replaced in 1939 with a prefabricated refinery capable of producing 133 m³/day (830 bbl/day).

In 1942, Japanese troops invaded the Aleutian Islands off the coast of Alaska. In response, the United States constructed the Alaska Highway to establish a transportation corridor. In addition, there were fears of further invasions and the disruption of oil tanker movements along the west coast. To secure a reliable supply of oil for Alaska and to facilitate the construction and operation of the Alaska Highway, the CANOL project was initiated. At this time, the Norman Wells field was expanded to its present production level with the drilling of 56 new production wells. In 20 months, a 4 inch diameter pipeline and a road were built 960 km (595 mi.) from Norman Wells through MacMillan Pass to Whitehorse where a refinery was built. The project was plagued with problems and was discontinued in 1945.

After the war the CANOL line was dismantled and production at the Norman Wells Field settled back to peace-time production levels. Demand for oil grew as development in the Northwest Territories increased. In 1956, as a result of the building and running of the DEW Line, the refinery went into year-round operation. In 1969 the refinery was expanded to its present capacity of 500 m³/day (3240 bbl/day).

During the winters of 1977 and 1978, ESSO Resources carried out a seismic and drilling program to properly delineate the extent of the field. It determined that 60% of the field was below the Mackenzie River and that 40 million m³ (250 million barrels) of oil were recoverable.

PROJECT DESCRIPTION

A) Facilities

1) Norman Wells Oil field (See Figure 1)

ESSO has proposed a field-wide secondary recovery project which will increase production from 500 m³/d to 4000 m³/d. This will be accomplished by an oilfield reservoir water-flood scheme which will increase recovery of the oil-in-place from 17% to 42%. Facilities required include:

- i) six artificial islands;
- ii) 178 new oil production and water injection wells;
- iii) an oil gathering system;
- iv) a central processing plant (fieldgate); and
- v) support facilities like docks, roads, tank storage and quarry.

Since 60% of the reservoir is under the Mackenzie River, it will be necessary to construct artificial islands. Each island will have a working surface of 80 x 45 metres and will be constructed from 2,000,000 cubic metres of sand fill dredged from the river bottom. Each island will be protected by filtercloth, covered by three layers of limestone rock rip-rap of progressively increasing size.

It will be necessary to drill 178 new wells for increased oil production and water injection. Eighty-six of the wells will be drilled from the

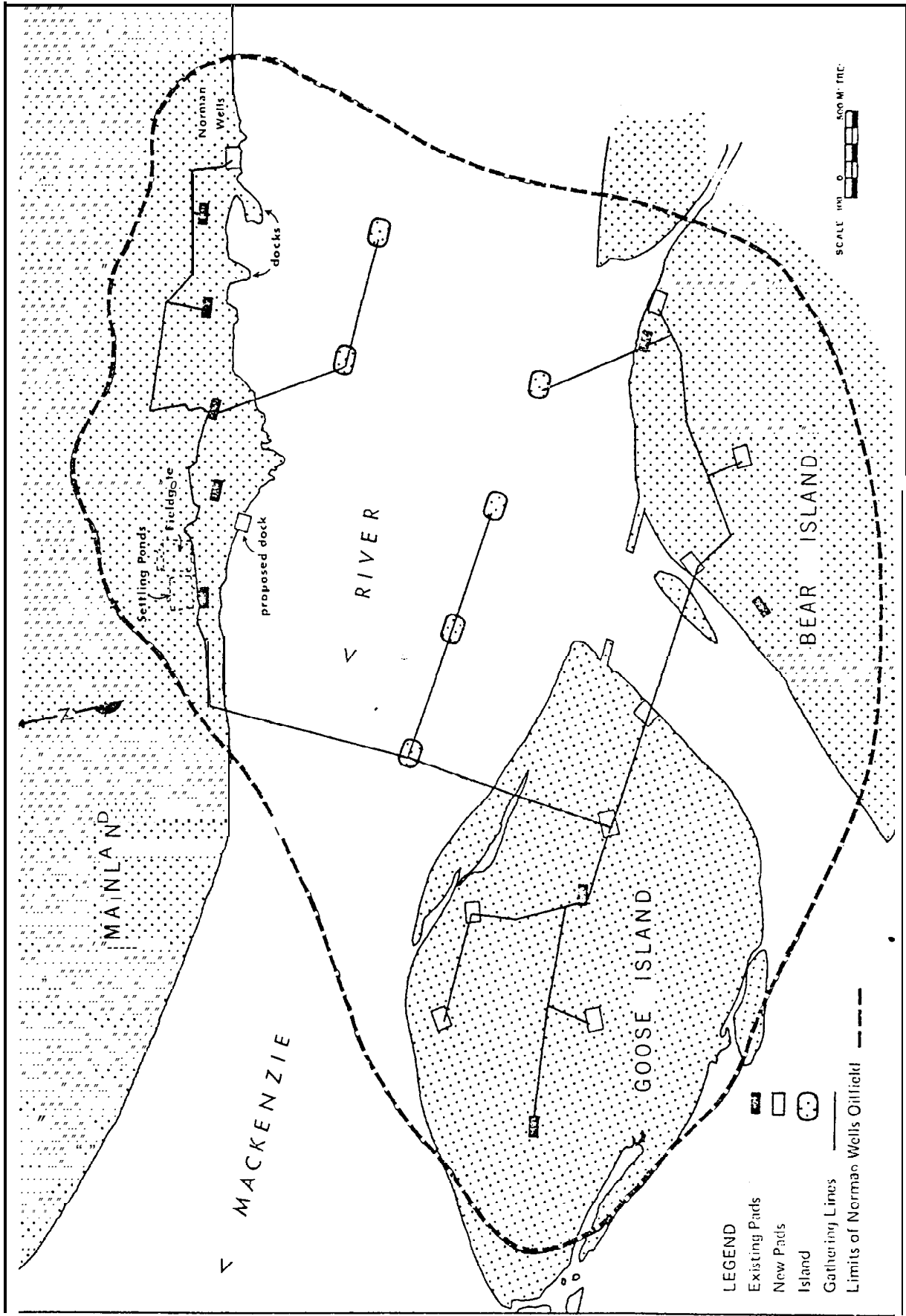


Fig. 1 Proposed Oilfield Expansion

artificial islands and the remaining 92 from the mainland, Bear Island and Goose Island. Six drilling rigs will be used. The resulting drilling-fluid-waste will be placed in a sump disposal area by the airstrip.

A pipeline gathering system will extend from the river islands and land-based pads to the fieldgate. Distribution lines will parallel gathering lines and will transport gas and treated water from the fieldgate to be used for gas lift and waterflood operations respectively. Three service pipelines and a power supply line will be required. The fieldgate will contain equipment for water disposal, gas processing, fresh water injection, and electric power generation.

2) Pipeline (See Figure 2)

Interprovincial Pipeline Ltd. (IPL) proposes to construct a small diameter pipeline 866 km from Norman Wells, N.W.T. to the Zama Terminal in Alberta. The pipeline will be 323.9mm (12.5 in) in diameter and will have a capacity of 5000 m³/day (32,000 bbl/day). It will be buried along its entire length. The pipeline will follow the east bank of the Mackenzie River to a crossing point upstream from Fort Simpson and from there, will continue south-east to Zama. Three pumping stations, located near Norman Wells, Wrigley and Fort Simpson, will be constructed.

B) Project Construction and Operation

On July 30, 1981, John Munro, Minister of Indian Affairs and Northern Development (DIAND) gave conditional government approval to the Norman Wells pipeline. The conditions for approval were a two-year delay before any oilfield construction commences and a two and a half year delay before pipeline construction may begin. The delays were to ensure that environmental, socio-economic, and cultural concerns were met.

To reduce the impact of the two-year delay on the companies and people of Norman Wells, it was decided that certain activities not directly related to oilfield expansion could proceed immediately. These included:

- i) construction of the industrial by-pass road around the community, including a bridge across Bosworth Creek;
- ii) quarry road construction, quarry development, and stockpiling;

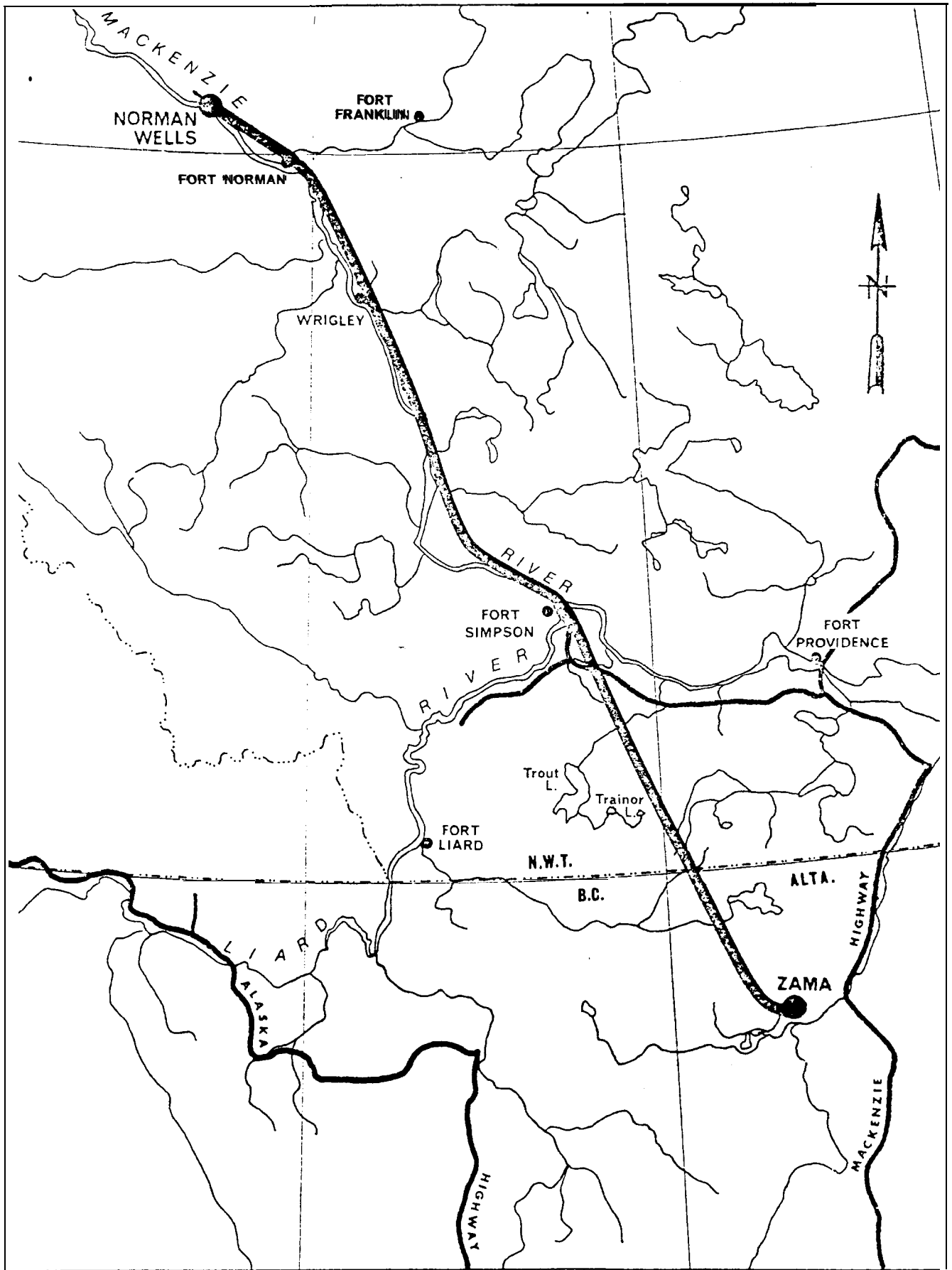


Fig. 2 Proposed Pipeline Route

- iii) relocation of houses from the lease area to townsite;
- iv) construction of storage pads for offices and warehouses on ESSO lease; **and**
- v) construction of on-site dock.

Major **oilfield** expansion will begin during the summer of 1983. Mobilization of construction equipment and camps will begin during the summer of 1982. Construction will be completed in 1984, with an anticipated startup of mid-1985. The **labour** force in Norman Wells will average 300 and will peak at about 660 during the summer of 1984. The total cost of the expansion is approximately 650 million dollars (1981 dollars).

Pipeline construction will be carried out over two winters, beginning in November, 1983. IPL will require a **workforce** of approximately 800 each winter. The construction cost of the pipeline is in excess of 400 million dollars.

When in **full** operation, the **oilfield** and refinery operation will require a permanent workforce of more than 200. The pipeline operation and maintenance will require 29 persons: 16 in Norman Wells, 9 in Fort Simpson and 4 in Zama.

PUBLIC REVIEW AND APPROVALS PROCESS

A) Environmental Assessment and Review Process (EARP)

A joint Environment Impact Statement was submitted by ESSO Resources and **Interprovincial** Pipeline Ltd. to the Department of Indian Affairs and Northern Development in April, 1980. The project was referred to the **Federal** Environmental Assessment and Review Office. By May, 1980 a panel was assembled to review and evaluate the project. Public meetings were held in 12 communities during August of 1980. By January 1981, the Panel had completed their evaluation and concluded that "... before the Norman Wells Oilfield Expansion and Pipeline Project can be built within acceptable limits of environmental and socio-economic impact, important deficiencies in the proponent's planning and in the preparedness of Government need to be rectified." The Panel further recommended that "... the project not be proceeded with **until** 1982 at the earliest, in order that these deficiencies can be dealt with."

In total, the Panel made 61 recommendations which can be found in Report #16 "Norman Wells Oilfield Development and Pipeline Project", Report of the Environmental Assessment Panel, F.E.A.R.O. A number of recommendations were of relevance to the Department of Renewable Resources (Appendix A).

B) National Energy Board (NEB)

Application was made to the National Energy Board on March 17, 1980. Public Hearings were held in Edmonton, Yellowknife and Ottawa between October 7, 1980 and November 12, 1980. As a result of the public hearings, the Certificate of Public Convenience and Necessity was issued on November 6, 1981 (Appendix B). Under the terms and conditions of the Certificate, IPL is required to submit to the Board, a number of environmental and socio-economic reports at various times during the life of the project. A copy of these reports will be forwarded to each of the interveners, who have 30 days in which to *comment*. Most of the environmental reports will be of interest to the Department of Renewable Resources and they will be carefully reviewed by all Divisions. (Appendix C).

C) N.W.T. Water Board

An application for a licence for the water crossings on the Great Bear and Mackenzie Rivers was submitted in April, 1980. Public hearings were held in Fort Norman on December 15, 1981 and in Fort Simpson on December 17, 1981. The Technical Advisory Committee is presently reviewing the transcripts and recommendations and is preparing a draft licence to the N.W.T. Water Board.

A separate application was filed for a licence to construct the artificial islands in the Mackenzie River. Public hearings were held in Norman Wells and Fort Good Hope on February 4th and 5th, 1981 and in Inuvik and Fort McPherson on June 24th and 25th, 1981. As a result of these meetings, a draft licence has been prepared and is being circulated for comments.

G.N.W.T.'s POSITION AND ROLE IN THE NORMAN WELLS PROJECT

A) Pipeline

On August 21, 1980, the Honorable George Braden presented to the EARP Panel the Government of the Northwest Territories' position on the Norman Wells Expansion Project. He stated that "... the Government of the Northwest Territories supports the Norman Wells field expansion and the

construction of a pipeline to carry the increased production to existing markets. We also believe the proponents to be sensitive developers and we fully understand the reasons for engaging in such a development." Mr. Braden emphasized that the resources should belong to the N.W.T. and that the Government should receive an equitable share of the revenue. Some of the concerns outlined by Mr. Braden included:

- i) a long term plan for the development of non-renewable resources;
- ii) a northern based authority which can control and regulate the development of non-renewable resources;
- iii) a share of federal royalties generated by the development of non-renewable resources in the north;
- iv) a guarantee that energy supplies will be available to northerners in the future; and
- v) resolution of the outstanding claims for aboriginal rights.

B) Socio-Economics

The Government of the Northwest Territories plays a lead role in socio-economic reviews. This mandate is conferred by the N.W.T. Act and is recognized by the Government of Canada.

The Norman Wells Project will have considerable impact on the people and communities in the Mackenzie Valley. In most communities this impact will be temporary, but in Norman Wells it will be permanent. The G.N.W.T. is endeavoring to reduce the impact and ensure the maximum benefits for residents of the area.

The socio-economic review is being coordinated by the Department of Economic Development and Tourism and will result in a Socio-Economic Agreement signed by the companies, the G.N.W.T. and Minister of Indian and Northern Affairs. The main issues of concern to the Department of Renewable Resources include abandonment, traditional resource protection, mitigation and compensation.

FINANCIAL RESOURCES TO ADDRESS PROJECT DEMANDS

On July 30, 1981 when John Munro announced the conditional approval of the pipeline project, he promised that 20 million dollars would be made available to ensure that training objectives, jobs and business opportunities would be real and meaningful. The funds have been allocated as follows:

- i) 3.0 million dollars to the G.N.W.T. to meet project-related forced growth needs of this government;
- ii) 9.0 million dollars for training programs to enable natives and other northerners to take advantage of employment opportunities;
- iii) 6.8 million dollars to assist the Dene and Metis of the N.W.T. to realize economic benefits from the project and to minimize adverse social impacts;
- iv) 1.0 million dollars to establish and operate a community advisory body; and
- v) 400,000 dollars to cover federal costs of administering the project regulations.

G.N.W.T. LEGISLATION AND REGULATORY MANDATE

There are ten ordinances which will have some effect on the construction and development of the project. The Area Development Ordinance and the Commissioner's Land Ordinance will authorize construction and will establish permanent land tenure on Commissioner's Land. Appendix D lists the Ordinances by the Department which administers them.

The Department of Renewable Resources directly administers the Environmental Protection Ordinance and the Wildlife Ordinance. The Department also partially administers the Petroleum Products Storage Ordinance and the Forest Protection Ordinance. Under the Forest Protection Ordinance, wildlife officers are ex-officio forest officers and, as such, can enforce this ordinance and its regulations. The Environmental Protection Ordinance could prove to be important legislation in the case of an oil or chemical spill.

REGULATORY REQUIREMENT APPLICATION AND APPROVALS

Federal Authorizations:

A) National Energy Board

Interprovincial Pipeline Ltd. filed an application with the N.E.B. for

a Certificate under Part III, and an Order under Part IV of the National Energy Board Act. The application was to construct and operate a buried oil pipeline from Norman Wells to Zama, Alberta. The Certificate of Public Convenience and Necessity was issued to IPL on November 6, 1981. It is subject to 25 terms and conditions which IPL must adhere to (Appendix D). Still required is a "leave-to-construct" order before any construction occurs and a "leave-to-open" order before the line can go into production.

B) Department of Indian Affairs and Northern Development (D.I.A.N.D.)

On July 30, 1981, the Honorable John Munro, Minister of Indian Affairs and Northern Development, issued conditional approval to the Norman Wells pipeline and expansion project. The project could then proceed through the regulatory framework. DIAND is conducting, through the Regional Environmental Review Committee (R.E.R.C.), an environmental overview of the project.

1) Oilfield Expansion (ESSO Resources):

- a) Water Lot Lease: Subject to the Territorial Lands Act, to authorize construction and provide permanent tenure for artificial islands and docks. Land Resources Division, DIAND is responsible for these leases.
- b) Water Licence: Subject to the Inland Waters Act, one licence is required for island construction, the fieldgate operation, construction of gathering and distribution lines, the drilling program and domestic water use. The Water Board held public hearings in Norman Wells, Fort Good Hope, Fort McPherson and Inuvik on the application for island construction. A draft licence has been prepared and is being circulated for comments.
- c) Water Authorization: Subject to the Inland Waters Act, water authorizations will be required for dock construction. Normal application procedures will be followed by the Water Resources Division.
- d) Easement: Subject to Territorial Lands Act, to be issued for construction and permanent tenure on gathering and distribution lines below the ordinary high watermark (OHWM). Land Resources Division is responsible for preparing this document.

2) Pipeline (IPL)

- a) Land Agreement (Easement): Will be issued by Land Resources after the environmental review has been completed. The right-of-way will be titled to the Crown and an easement will be registered against this title. Each draft will be reviewed by R.E.R.C.
- b) Land Use Permits: The pipeline will be divided into three or more spreads and one permit will be issued by Land Resources for each spread. Standard permit procedures will be followed. Land use permits are subject to the Territorial Land Use Regulations.
- c) Quarry Permits: Permits will be issued for each pit and are subject to the Territorial Quarry Regulations.
- d) Water Licence: A water licence will be issued for the Great Bear and Mackenzie River Crossing. The Water Board has held public hearings in Fort Simpson and Fort Norman. The Technical Advisory Committee is presently reviewing the applications.
- e) Water Authorizations: Will be issued by Water Resources for stream crossing and for construction and domestic use.
- f) Environmental Contract: Will contain the environmental terms and conditions which are applicable to the construction and operation of the pipeline. This will be signed before the Land Agreement or any permits are issued. Each draft will be circulated for comments. Land Resources Division is responsible for this document.
- g) Leases: Subject to the Territorial Lands Act, leases will be issued by Land Resources for all pump stations and any facilities outside the right-of-way.

C) Other Federal Authorization

Any work taking place in the Mackenzie or Great Bear Rivers require a permit from Transport Canada (M.O.T.) under the Navigable Waters Act.

Approvals are also required from COGLA (Canadian Oil and Gas Land Administration) under the Oil and Gas Production Conservation Act. Under the Fisheries Act, permits will be required from the Department of Fisheries and Oceans.

G.N.W.T. Authorizations:

1) Oilfield Expansion (ESSO Resources):

Several permits and leases have been issued by the Department of Local Government. The Department of Renewable Resources has reviewed and commented on many of these. Most of the oilfield expansion facilities are within ESSO'S lease area and require no further authorization except for Development Permits. The offsite camp is within the MOT Reserve, and a development permit has been issued for the camp. A few minor leases will also be issued for facilities such as the concrete batch plant and explosives storage. Most of the remaining developments are straightforward and require no further input (e.g. house relocation, Jackfish Road relocation).

The Norman Wells Development Area Regulations were passed under the Area Development Ordinance. They were drawn up to control the types and locations of development that occur within the Norman Wells Block Land Transfer. The application will be reviewed by the Hamlet Council but is not normally circulated for further comments. Development permits are required for all oilfield expansion development within ESSO's leased area. Other developments outside the leased area, like the Jackfish Road relocation, will also require development permits.

2) Pipeline (IPL)

- a) Land Use Permits: Subject to the Commissioner's Land Regulations, the Department of Local Government will issue two permits; one for the Norman Wells section and the other for the Fort Simpson section. Standard permit procedures will be followed, giving a response time of about 30 days.
- b) Development Permits: Will be required for each section of the line pursuant to the Norman Wells Development Area Regulations and the Mackenzie Highway Development Area Regulations. The Department of Local Government administers these regulations. Most of Renewable Resources concerns will be covered off under the land use permits, but specific conditions can be included in the development permits.
- c) Leases: There is at least one lease on Commissioner's Land and that is for a pumping station within the Fort Simpson Block Land Transfer. A pumping station at Norman Wells will be built on ESSO's lease. ESSO

may relinquish this land to the Government so it can be leased to IPL. The Department of Local Government will be preparing this lease.

- d) Land Agreement - Easement: Establishment will involve three steps:
- i) the right-of-way will be titled to the Commissioner;
 - ii) a Commissioner's Order establishing the easement; and
 - iii) the easement will be registered against title.

This will control activities on the line after construction and will be for a term of 25 years with the right of renewal for an additional 24 years. Each draft will be circulated for comments. The land agreement will contain several environmental conditions dealing with erosion, clean-up and abandonment. The Department of Local Government is presently preparing a draft.

- e) Environmental Agreement: Is separate from the land agreement and will be signed before the land agreement or permits are issued. This agreement will contain the environmental terms and conditions which will be applicable to that part of the pipeline on Commissioner's Land. The Department of Renewable Resources and Local Government will be the lead agencies involved in preparing the environmental conditions.
- f) Socio-Economic Agreement: The Department of Economic Development and Tourism will coordinate the preparation of the Socio-Economic Agreement. Renewable Resources and other departments will provide inputs on the issues which affect them.
- g) Highway Access Permits: IPL may wish to access those sections of the right-of-way directly north and south of the highway and will require permits from the Department of Public Works. Hunting pressures may increase in these areas if there is direct highway access.

PLANS OF THE DEPARTMENT OF RENEWABLE RESOURCES

The Department of Renewable Resources will be the only G.N.W.T. Department fully represented at the field level. Field staff will have an active role in on-the-ground monitoring and surveillance over the entire length of the line, and in Norman Wells, both during construction and after the line is in operation. The Departmental policy requires field staff to represent the interests of all divisions.

Environmental Planning and Assessment Division:

The Environmental Planning and Assessment Division (E.P.A.) will be responsible for managing the Department's monitoring role in the Norman Wells project. The Division will review reports and plans, comment on operating

conditions and carry out formal liaison with other agencies. E.P.A. will coordinate comments and concerns from the other divisions, and will represent the Department on most interdepartmental and federal-territorial committees.

To facilitate headquarters' activities there will be new, term positions established. These will include a Pipeline Coordinator, Monitoring Biologist and a Technician.

The Pipeline Coordinator, who will report to the Assistant Deputy Minister, Renewable Resources, will organize the Department's field monitoring and surveillance efforts. He will train and supervise officers assigned to the project. He will manage budgets allocated to field operations. He will liaise with other government departments, the public and the companies involved in the project. The Pipeline Coordinator will also liaise with Regional Superintendents in Inuvik and Fort Smith on field operations associated with the pipeline project.

The Monitoring Biologist will review the plans and reports of the proponents and prepare comprehensive evaluations. He will comment and respond on contingency planning, environmental terms and conditions, mapping, etc. This person will also review the effects of construction on wildlife resources under authority of the Wildlife Ordinance and will review resource user compensation claims. The Technician will provide assistance to the Technical Analyst and the Pipeline Coordinator.

Five additional positions will be required for field surveillance. They will be supervised by the Pipeline Coordinator. The field staff will consist of field officers who will be responsible for the surveillance of pipeline and oil field expansion construction. Field personnel will enforce G.N.W.T. legislation, as well as being appointed under the Fisheries Act and Migratory Birds Convention Act .

INTERDEPARTMENTAL AND FEDERAL-TERRITORIAL COOPERATION

A) Interdepartmental Cooperation

The G.N.W.T. controls and administers the lands around the communities of Norman Wells and Fort Simpson. The Lands Section of the Department of Local Government is responsible for these lands. The Lands Section has no trained land use staff in the field; therefore, the Lands Management Officer from Yellowknife is responsible for all surveillance and monitoring. With the cooperation of Local Government, our field officers could assist in the surveillance of the Norman Well

and Fort Simpson sections. This would require familiarity with the Commissioner's Land Ordinance and Area Development Ordinance.

Access off the Mackenzie Highway near Fort Simpson could put added hunting pressure on the area. A highway access permit would be required for any winter roads. Contact with D.P.W. should be maintained to ensure this Department is aware of any applications, including their locations. Such access may require increased surveillance in the area.

The Department of Economic Development and Tourism is responsible for the Socio-economic Agreement. E.P.A. will coordinate the Renewable Resources' inputs on the terms and conditions of the agreement.

B) Federal-Territorial Liaison

The Land Agreement and Environmental Contract will be handled through the Regional Environmental Review Committee. The Chief, E.P.A. is the Departmental representative on the Committee. Water Licences are handled through the Water Board. Environmental Services Division is represented on the Technical Advisory Committee of the Water Board. The Wildlife Service is also represented on the Land Use Advisory Committee.

When construction begins, inspectors from at least four Federal agencies and two Territorial departments will be monitoring the pipeline. Arrangements should be made to coordinate inspections to best utilize aircraft charters. There could also be some cooperation amongst agencies to make the best use of personnel in the field.

The Department of Indian Affairs and Northern Development has appointed a project Coordinator, to be based in Yellowknife. He will coordinate Federal and Territorial Governments' Departments' regulatory and program response to the project in a manner which accounts for the public interest in the project. He will not assume a regulatory role or the responsibility for the delivery of government programs. The Energy and Resource Secretariat will provide a similar role for the G.N.W.T. and will represent the main contact point.

The Project Coordinator may establish a management committee with one representative from:

- 1) G.N.W.T.

- 2) Dene Nation
- 3) Metis Association
- 4) Community Advisory Group
- 5) ESSO
- 6) IPL

The task of the Committee is to advise the Project Coordinator on matters relating to the functions of his job.

SUMMARY

The Department of Renewable Resources will play a key role in the Norman Wells Oilfield Expansion and Pipeline Project. The Environmental Planning and Assessment Division will coordinate departmental input. Headquarters staff will be responsible for coordinating comments on all required authorizations and approvals. Field staff will provide surveillance and enforce G.N.W.T. regulations and the terms and conditions of permits. As this is the first of many mega-projects in the N.W.T., monitoring the results of our efforts will be essential to improving our planning for future projects.

APPENDIX A

ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS

RECOMMENDATIONS

7.2 RECOMMENDATIONS

ENVIRONMENT AND ENGINEERING

Pipeline Alternatives

1. It is recommended that IPL investigate minor alternative **routings** to keep the pipeline further east from the settlements of Fort Norman and Wrigley.

Geotechnical Concerns, Pipeline Integrity and Permafrost

2. It is recommended that **pipeline** summer construction be permitted only in areas where it can be clearly demonstrated that there would be no greater impact than winter construction in the same area.
3. It is further recommended that before the project is authorized, IPL undertake and publish a more detailed thermal analysis of the **pipeline** to predict more accurately the **behaviour** of the pipe in a variety of terrain and temperature regimes. The analysis should cover the possibility of climatic change over the life of the project.
4. It is recommended that detailed and environmentally acceptable plans for the maintenance of the right-of-way and for the **repair** of pipeline failures be prepared prior to commissioning of the pipeline.
5. It is recommended that terms and conditions for the pipeline project spell out requirements for a revegetation and erosion control program using species, techniques and schedules shown to be adequate for the task.
6. It is recommended that in developing **oilspill** prevention and contingency plans, IPL make special provisions for the karst terrain near Bear Rock.

7. It is recommended that IPL design, plan, and construct the pipeline so as to **minimize** the need for extensive maintenance or unscheduled **repair** activities.

Water Crossings

8. It is recommended that river **crossings** be located so as to minimize overall environmental disruption.
9. It is recommended that the construction plans and schedules for intermediate sized crossings be **re-evaluated** by IPL in cooperation with the Department of Fisheries and Oceans to ensure that impacts on fish and other aquatic organisms are minimized.

Island Construction

10. It is recommended that Esso carry out a model study to fully evaluate local scour at the artificial islands in order to be certain of the structural safety of the pipelines and **integrity** of the islands. The study should include monitoring and remedial repair procedures. The **results** should be reviewed by government before the island construction is authorized.
11. It is further recommended that **studies** on alternatives to filter cloth protection be carried out to find a material that will ensure that no significant erosion of the islands will occur. Results should be **reviewed** by government before construction of the islands is authorized.

Fisheries and Wildlife

12. It is recommended that the Proponents consult with the Department of Fisheries and Oceans to address any outstanding fisheries concerns and demonstrate in their construction timing and techniques that they have used the available information and addressed the concerns.
13. It is recommended that further site specific studies be undertaken to determine final alignment for river crossings to prevent or minimize impacts on fish and the aquatic environment.
14. It is recommended that IPL undertake baseline studies on hunted and trapped species to provide information aimed at both the assessment of the impact of the pipeline construction and operation on wildlife, and the development of mitigation measures.
15. It is recommended that construction and drilling activity on the islands stop during the peak spring waterfowl migration period that normally lasts one to two weeks, and that helicopter access to the islands be restricted to only essential needs.
16. It is recommended that Esso develop a plan specifying the necessary equipment and procedures to keep large populations of waterfowl away from an oilspill site.

Forests and Wildfires

17. It is recommended that government and IPL fire control responsibilities be clarified prior to commencement of construction and operation of the pipeline. It is further recommended that the government fire control program be augmented to provide protection to the pipeline and, at the same time, that there be no decrease in protection services to other sectors, such as highways, settlements and traplines.

18. It is recommended that slash from the right-of-way clearing operation be piled and burned on the right-of-way during the winter.

Oilspills Prevention and Countermeasures

19. It is recommended that Esso undertake an accelerated research and technology development program on equipment and procedures to deal with oilspills into or under ice-covered and ice-infested river water. This program should be in place before expanded production begins at Norman Wells.
20. It is recommended that Esso investigate, design and install a more accurate oil-leak detection system at Norman Wells, one that would be consistent with the detection level of the IPL pipeline to Zama.
21. It is recommended that Esso and IPL develop, test, and evaluate contingency plans for the construction and operation of both the oilfield expansion and pipeline projects and that these plans be reviewed and approved by government prior to the start of construction.

Toxic Substances and Air Emissions

22. It is recommended that Esso prepare contingency plans with methods and procedures for handling, storage, transportation and disposal of all toxic and hazardous materials and that such plans be in place prior to the commencement of the project.
23. It is recommended that Esso commence a monitoring program for ground level concentrations of air emissions in the Norman Wells area and that this monitoring continue throughout the life of the project.

Water Use and Effluent Disposal

24. It is recommended that no drilling wastes other than mixtures of water and bentonite be allowed to enter the Mackenzie River and that land disposal and treatment sites be identified and developed.

Archaeology

25. It is recommended that the responsible Federal and GNWT agencies further review the details of IPL's proposed archaeological program, and monitor the potential impact of this project on the archaeological resources along the pipeline route.

Environmental Impact Management

26. It is recommended that, in consultation with the GNWT, the Department of Environment, DIAND or a contracted non-government agency carry out an evaluation of the impact management process in order to improve on impact evaluation and mitigation on the Norman Wells and future projects.
27. It is recommended that the GNWT and Federal Government work with the Proponents to establish an effective and ongoing public information program to respond to concerns of Mackenzie Valley residents.

ECONOMY AND SOCIETY

Effects on the Regional Economy

28. It is recommended that prior to project authorization the Proponents liaise with government and prepare an assessment of the predicted inflationary effects of the project.

29. It is recommended that planning and monitoring authorities in the GNWT work with the Proponents to conduct a study of the consequences of project-related wage differentials which might affect northerners already employed in the region and then prepare to deal with related employment problems.

30. It is recommended that the GNWT broaden its program of assistance to trappers who seek to become re-established in trapping after a period of wage employment on the project.

Employment and Business Opportunities

31. It is recommended that labour recruitment take place close to the work sites.
32. It is recommended that Esso and IPL specify in any agreements with union contractors that access to jobs, as a first priority, take into account the skills and interests of workers in the project area.
33. It is recommended that contracts for the project be tendered in portions of a size that northern businesses can compete equitably.
34. It is recommended that the Proponents make every effort to insure that some contracts are tendered to non-union, northern businesses.

Programs to Assist the Regional Economy

35. It is recommended that the GNWT and the Fort Smith Vocational and Higher Education Centre work together with the Proponents to assure that the results of project-related training efforts are maximized.

37. It is recommended that the GNWT and IPL make use of the existing or modified employment training plans such as Hire North, so that as many local workers are involved in the pipeline construction and operational activities as is practicable.
38. It is recommended that the GNWT and Federal Government work with the Proponents to provide effective public information on the job situation and business opportunities, in order to assist local employment and participation by local businesses.

Effects Upon Government Services

39. It is recommended that government departments seriously consider the following options in order to meet new project-related requirements:
- (i) second staff from one level of government to the other;
 - (ii) increase the public service temporarily in some cases and permanently in others;
 - (iii) purchase expertise in planning, managerial and technical skills where necessary, and;
 - (iv) redirect existing resources and programs into others which are related to the project.
40. It is recommended that, in connection with such government programs as mental health services, housing, school facilities, police services and alcohol programs, that project-related requirements not be allowed to displace existing government programs and responsibilities and that government agencies be provided with resources necessary to meet the demands from both the project and from existing programs.
41. It is recommended that realistic government financing be assured and in place so that adequate programs exist for planning and servicing the project and the needs of northern residents

Effects on Transportation and Communication Facilities

42. It is recommended that the Proponents, and the Federal and the GNWT Departments of Public Works prepare plans to insure that the normal truck and passenger vehicle traffic are not displaced and that the quality of the road and driving conditions are preserved and even enhanced, by highway upgrading in some cases and paving others.
43. It is recommended that the Federal and GNWT Departments of Public Works plan for the possibility of extension of the Mackenzie Highway to Norman Wells should the project increase demand.
44. It is recommended that the appropriate regulatory authority monitor the licensing conditions governing commercial air service to Mackenzie Valley communities so that there will not be a decrease in commercial air service to other northern residents because of project demands.
45. It is recommended that steps be taken to identify all project-related communication needs and to provide an adequate communications system so that there is no reduction of present services.

SOCIAL CONCERNS

The Dual Society

46. It is recommended that the Proponent provide an orientation program for all incoming southern workers to instill an understanding of northern working conditions and northern society and its value system.
47. It is recommended that detailed planning and location of main work camps and work sites for the pipeline be determined in consultation with nearby community leaders.
48. It is recommended that temporary camps be operated as self-contained units with full recreational facilities. Casual visitor access to camps

should be denied.

49. It is recommended that, at Norman Wells, project-related community facilities which are to be built by Esso be planned to have lasting benefit to the community. For instance, Esso should contribute to new recreational facilities to accommodate the influx of new residents to Norman Wells.
50. It is recommended that all aspects of project development which affect Fort Simpson and Hay River be planned and carried out in close cooperation with local authorities in those communities.
51. It is recommended that the Proponents provide orientation programs for new local workers, and that the Proponents or government provide literature and advice in management of personal finances and the wage economy; such literature to be used on a voluntary basis. It is further recommended that community advisors, government departments and the Proponents collaborate in planning and monitoring these orientation programs.

The Project and Northerners Living on the Land.

52. It is recommended that the Esso rotational work arrangement be encouraged with careful monitoring of results. Esso should keep the arrangement flexible, extend the system geographically as needed, and minimize transportation delays for rotating workers.

Social Benefits and Costs

53. It is recommended that Federal and GNWT agencies responsible for social and health matters prepare an adequate data base against which project

related impacts can be identified and measured, and that these agencies move promptly to minimize or remove anticipated problems by applying mitigative measures.

54. It is recommended that before the project begins, Federal and Territorial agencies predict the needs in social and health services by developing plans for staff increments, for improvement of existing programs and delivery, and for both preventive and mitigative action.
55. It is recommended that GNWT agencies and local community leaders review liquor distribution practices to determine if licensing hours, rationed buying, or other limiting conditions could be put in place as a measure to control liquor accessibility, and to determine if these or other measures are necessary and practicable.
56. It is recommended that the NWT public education alcohol awareness programs and other rehabilitative programs be adequately staffed and funded to meet project-related requirements.

The Need for Goals and Planning

57. It is recommended that a policy statement of socio-economic goals and objectives be prepared for the western NWT and that a comprehensive plan be prepared by the GNWT to serve as a framework for specific socio-economic and natural resource development programs associated with the project.

Government - Proponent Liaison

58. It is recommended that an on-going consultative program be established and maintained at the initiative of

the GNWT, and include such Federal agencies as may be required.

The Role of Community Advice

59. It is recommended that liaison between the communities in the project area and the Proponents should be formally organized and should begin immediately. This community consultation is necessary not only in pre-construction planning and the construction phases, but also in the first few years of the operation of the project. The GNWT should participate in this consultation as well.

NORTHWESTERN ALBERTA

60. It is recommended that the Department of Indian Affairs and Northern Development take the initiative in identifying the agencies to address terms and conditions raised by the Dene Tha Band, and in coordinating the responses to them.
61. Finally, it is recommended that because of outstanding environmental and socio-economic questions and the need for government preparation the Norman Wells Oilfield Expansion and Pipeline Project should not be commenced until 1982 at the earliest. The Panel believes that a start-up in 1982 could provide time for adequate safeguards and programs to be planned and installed.

CLOSING COMMENT

Before concluding, the Panel feels obliged to comment on the unresolved land settlement of the Mackenzie Valley in relation to the Norman Wells Pipeline project. As pointed out in this report the dominant position expressed at the

E.A.R.P. Recommendations which affect the Department of Renewable Resources include:

SECTION 1. ENVIRONMENT AND ENGINEERING

RECOMMENDATIONS 1, 2, 4, 5, 6, 7, 8

These recommendations require alterations to or refinement of engineering design so as to provide increased environmental protection. The changes required are primarily the responsibility of other government (Federal) departments but such changes do have ramifications on wildlife, renewable resource harvest and environmental protection. As such, GNWT's Department of Renewable Resources will be called upon to review and comment on environmental implications of these changes through ongoing involvement with the Land Use Advisory Committee and the Federal Territorial Lands Committee.

RECOMMENDATION 14: IT IS RECOMMENDED THAT IPL UNDERTAKE BASELINE STUDIES ON HUNTED AND TRAPPED SPECIES TO PROVIDE INFORMATION AIMED AT BOTH THE ASSESSMENT OF THE IMPACT OF THE PIPELINE CONSTRUCTION AND OPERATION ON WILDLIFE, AND THE DEVELOPMENT OF MITIGATION MEASURES.

This work has yet to be initiated by the proponent. Our department has not been required to assist I.P.L. with information or analysis to date.

This effort will require our assistance, review and verification. The mitigation guidelines produced will be implemented pending our review and approval through appropriate channels.

RECOMMENDATION 17: IT IS RECOMMENDED THAT GOVERNMENT AND I.P.L. FIRE CONTROL RESPONSIBILITIES BE CLARIFIED PRIOR TO COMMENCEMENT OF CONSTRUCTION AND OPERATION OF THE PIPELINE. IT IS FURTHER RECOMMENDED THAT THE GOVERNMENT FIRE CONTROL PROGRAM BE AUGMENTED TO PROVIDE PROTECTION TO THE PIPELINE AND, AT THE SAME TIME, THAT THERE BE NO DECREASE IN PROTECTION SERVICES TO OTHER SECTORS, SUCH AS HIGHWAYS, SETTLEMENTS AND TRAPLINES.

Fire control responsibilities presently lie with D.I.A.N.D. Our department of Renewable Resources is beginning a program of study aimed at determining fire and wildlife management priorities. The present program is not specific to the project area (right-of-way and facilities). Increased detail and input requirement on wildlife concerns specific to the pipeline and fires would require additional funding. We have budgeted for increased efforts in this area in our general submission.

If during the construction or operation of the pipeline, fire management responsibilities are transferred to GNWT, then manpower and funding for efforts related to pipeline protection must also be transferred.

RECOMMENDATION 22: IT IS RECOMMENDED THAT ESSO PREPARE CONTINGENCY PLANS WITH METHODS AND PROCEDURES FOR HANDLING, STORAGE, TRANSPORTATION AND DISPOSAL OF ALL TOXIC AND HAZARDOUS MATERIALS AND THAT SUCH PLANS BE IN PLACE PRIOR TO THE COMMENCEMENT OF THE PROJECT.

Department of Renewable Resources will review and comment on these contingency plans. We have budgeted for these requirements in our general funding request.

RECOMMENDATION 24: IT IS RECOMMENDED THAT NO DRILLING WASTES OTHER THAN MIXTURES OF WATER AND BENTONITE BE ALLOWED TO ENTER THE MACKENZIE RIVER AND THAT LAND DISPOSAL AND TREATMENT SITES BE IDENTIFIED AND DEVELOPED.

Renewable Resources will be a part of review and monitoring efforts. Costs covered by our general funding submission.

RECOMMENDATION 27: IT IS RECOMMENDED THAT THE GNWT AND THE FEDERAL GOVERNMENT WORK WITH THE PROPONENTS TO ESTABLISH AN EFFECTIVE AND ONGOING PUBLIC INFORMATION PROGRAM TO RESPOND TO CONCERNS OF MACKENZIE VALLEY RESIDENTS.

Renewable Resources has recognized the need to provide information on project effects on wildlife, hunting and trapping. Costs have been covered by our general funding submission.

RECOMMENDATION 30: IT IS RECOMMENDED THAT THE GNWT BROADEN ITS PROGRAM OF ASSISTANCE TO TRAPPERS WHO SEEK TO BECOME RE-ESTABLISHED IN TRAPPING AFTER A PERIOD OF WAGE EMPLOYMENT ON THE PROJECT.

Department of Renewable Resources recognizes the importance of this recommendation. No funds presently exist to accomplish this recommendation, however, the negotiation of the **Socio-Economic** Action Plan should address the need for such a program and identify means of achieving such a goal.

RECOMMENDATION 57: IT IS RECOMMENDED THAT A POLICY STATEMENT OF **SOCIO-ECONOMIC** GOALS AND OBJECTIVES BE PREPARED FOR THE WESTERN N.W.T. AND THAT A COMPREHENSIVE PLAN BE PREPARED BY THE GNWT TO SERVE **AS** A FRAMEWORK FOR SPECIFIC **SOCIO-ECONOMIC** AND NATURAL RESOURCE DEVELOPMENT PROGRAMS ASSOCIATED WITH THE PROJECT.

The Department of Renewable Resources has been identified as lead agency for GNWT in land use planning efforts. This recommendation is best addressed in the context of an overall land use planning effort for the Mackenzie Valley.

Renewable Resources has created a new division, Environmental Planning and Assessment, to address this issue. New funding has also been provided.

Results will await the coordination of **DIAND** once their planning program is established and running.

APPENDIX B
CERTIFICATE OF PUBLIC CONVENIENCE
AND NECESSITY

Interprovincial (NW) and all interested parties were heard;

AND WHEREAS the Board, having heard Interprovincial (NW) and all interested parties, and having taken into account all such matters as appear to it to be relevant, is satisfied that the pipeline facilities are and will be required by the present and future public convenience and necessity;

AND WHEREAS the Governor General in Council, by its Order in Council P.C. 1981-3011, dated the 29th day of October 1981, has approved the issuance of this Certificate;

NOW THEREFORE the Board, pursuant to section 44 of the Act and subject to the terms and conditions hereof, hereby issues this Certificate of Public Convenience and Necessity to Interprovincial Pipe Line (NW) Ltd. in respect of an oil pipeline approximately 866 kilometers in length from a point in the vicinity of Norman Wells, in the Northwest Territories, to a point in the vicinity of Zama, in the Province of Alberta, together with all appurtenances, facilities, and other works connected therewith and thereto belonging, all as more particularly described in the application, as amended, filed with the Board under File No. 1755-J1-42.

This certificate is subject to the following terms and conditions:

1. The pipeline facilities to be constructed pursuant to this certificate shall be the property of and shall be operated by Interprovincial (NW).
2. Interprovincial (NW) shall, unless otherwise authorized or ordered by the Board, cause the facilities in respect of which this certificate is issued to be designed, manufactured, located, constructed and installed in accordance with specifications, plans, drawings and procedures approved pursuant to the terms and conditions contained herein, and the requirements of the National Energy Board Oil Pipeline Regulations (SOR/78-746).
3. Prior to construction, in these terms and conditions defined as prior to any site preparation, clearing, access road construction, or borrow pit development, Interprovincial (NW) shall not, unless otherwise authorized by the Board, cause any disturbance to the terrain along the pipeline route other than that which is necessary to carry out the field studies and surveys referred to in these terms and conditions.
4. Interprovincial (NW) shall, unless otherwise authorized or ordered by the Board, implement or cause to be implemented all the policies, practices and procedures for the protection of the environment included in its environmental reports and as otherwise adduced in its evidence before the Board, and those detailed in the further submissions referred to in conditions 5 and 13 herein.
5. Interprovincial (NW) shall, within two months of the issuance of this certificate, or on such later date as may be set by the Board, submit for the approval of the Board a schedule for the filing of those environmental and socio-economic studies, programs, practices, plans and procedures it undertook to carry out or develop, including those required by these terms and conditions, and shall proceed to submit the material in accordance with the approved schedule, unless otherwise authorized by the Board.
6. Interprovincial (NW) shall, concurrently with the submission to the Board of the schedule referred to in condition 5, serve a copy of the said schedule upon every party of record in the hearing.
7. (1) Concurrently with the filing with the Board of each of the socio-economic submissions listed in the schedule referred to in condition 5 herein, Interprovincial (NW) shall serve notice on

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each of the parties of record in the hearing of the filing of the submission, and shall forthwith, on receipt of a request in writing from any of the said parties, serve a copy of the submission on that party. Interprovincial (NW) may apply to the Board for relief from the obligation of serving any of the said submissions on any or all parties, setting forth its reasons for making such application, but in such a case the notice required by this condition to be served on parties of record shall set out the reasons for the application.

(2) Parties upon whom a copy of any submission has been served pursuant to subcondition (1) may within 30 days of the receipt of the submission submit suggestions respecting the submission to Interprovincial (NW) and to the Board. Interprovincial (NW) shall, as soon as possible, submit to the Board and to the party from whom a suggestion was received, a response indicating which of that party's suggestions it is prepared to incorporate into the submission, and its reasons for not incorporating any other of that party's suggestions.

(3) Where applicable, Interprovincial (NW) shall file with the Board a revised submission incorporating those suggestions of parties of record which it has agreed to incorporate pursuant to subcondition (2).

(4) The Board may issue an order signifying its satisfaction with any submission or revised submission.

8. (1) Concurrently with the filing with the Board of each of the environmental submissions listed in the schedule referred to in condition 5 herein, Interprovincial (NW) shall serve notice on each of the parties of record in the hearing of the filing of the submission, and shall forthwith, on receipt of a request in writing from any of the said parties, serve a copy of the submission on that party. Interprovincial (NW) may apply to the Board for relief from the obligation of serving any of the said submissions on any or all parties, setting forth its reasons for making such application, but in such a case the notice required by this condition to be served on parties of record shall set out the reasons for the application.

(2) Parties upon whom a copy of any submission has been served in accordance with subcondition (1) may within 30 days of the receipt of the submission send suggestions respecting the submission to Interprovincial (NW), and to the Board.

(3) Interprovincial (NW) shall, in the preparation of the programs, specifications and manuals referred to in conditions 14 and 15 herein, incorporate the suggestions received from parties of record that it accepts, and where Interprovincial (NW) is unwilling to incorporate any such suggestions, it shall provide an explanation in writing to the party from whom the suggestion was received, and to the Board.

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- (4) Concurrently with the filing with the Board of each of the programs, specifications, and manuals required by conditions 14 and 15 herein, Interprovincial (NW) shall serve a copy of the program, specification, or manual on each of the parties from whom suggestions were received pursuant to subcondition (2). Interprovincial (NW) may apply to the Board for relief from the obligation of serving any of the said programs, specifications, or manuals on any or all parties, setting forth its reasons for making such application, but in such a case, Interprovincial (NW) shall serve a notice on each of the said parties setting forth the reasons for such application.
- (5) Parties upon whom a copy of any program, specification, or manual has been served in accordance with subcondition (4) may submit comments to the Board respecting such program, specification, or manual within a time and in a manner to be directed by the Board at the time of the filing of such program, specification, or manual, and Interprovincial (NW) may reply to such comments within a time and in a manner to be directed by the Board.
- (6) The Board may issue an order signifying its approval of any program, specification, or manual.
9. The plans, profiles and books of reference, to be filed pursuant to Section 29 of the Act, shall be based on field surveys of the entire route and shall indicate
- a) all permanent and temporary rights-of-way,
 - b) the locations of pumping station sites, and
 - c) the locations of any mining claims.
10. Interprovincial (NW) shall, prior to approval by the Board of plans, profiles and books of reference, submit to the Board
- a) copies of all signed easement agreements, and
 - b) terrain maps, satisfactory to the Board and similar to those filed as Exhibit 19A in the hearing, covering those parts of the pipeline route including related facilities and access roads for which such maps have not already been submitted.
11. Interprovincial (NW) shall, prior to construction, submit
- a) information satisfactory to the Board setting out the findings of field tests, experiments and analyses in support of the final design of the pipeline system, and
 - b) for the approval of the Board, the final design for each portion of the pipeline system.
12. Interprovincial (NW) shall, prior to construction, submit to the Board
- a) documents to demonstrate to the satisfaction of the Board that the Development Plan for the Norman Wells field has received the necessary regulatory approvals, and

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- b) information showing to the satisfaction of the Board that appropriate arrangements have been made for financing the pipeline.
13. Interprovincial (NW) shall, prior to construction, submit reports satisfactory to the Board providing
- a) an environmental assessment of the development, operation, abandonment and rehabilitation of all borrow pits including the impact on terrain, wildlife and aquatic resources resulting from borrow pit activities, associated road construction and transport of borrow and associated materials,
 - b) mitigative measures based on studies of fish resources wintering in the vicinity of water crossings scheduled for winter construction,
 - c) results of studies which identify species of raptors occupying nest sites within 3.2 km (2 miles) of field construction activities, which report shall contain site-specific mitigative measures,
 - d) the identification and assessment of areas sensitive to terrain degradation, and
 - e) results and supporting data from field investigations for the evaluation of
 - i) slopes which may become unstable,
 - ii) water crossings and the approaches thereto, and
 - iii) interfaces of frozen and unfrozen soil where special designs may be required.
14. Interprovincial (NW) shall, prior to construction, develop and submit programs satisfactory to the Board for
- a) the environmental education of inspection and construction staff, and
 - b) construction and environmental inspection, including organization and reporting structure, and staff qualifications, training, authority, responsibilities, and functions.
15. Interprovincial (NW) shall, prior to construction, submit for the approval of the Board
- a) construction contract specifications which shall include at least
 - i) the program for preserving the stability of slopes,
 - ii) the design and construction methods for water crossings,
 - iii) the appropriate timing and construction methods for the crossings of the Great Bear and Mackenzie Rivers, and
 - b) an environmental procedures manual which shall include at least

- i) monitoring procedures during construction,
 - ii) measures for mitigating terrain damage,
 - iii) revegetation programs,
 - iv) procedures for handling and storage of fuels, lubricants and toxic chemicals, and the contingency plans in the event of spills,
 - v) all other measures developed as a result of recommendations in the environmental reports submitted during the hearing and pursuant to condition 5 and 13 herein, and
 - vi) an identification of those matters listed in part (b) of this condition which will form part of the construction contract specifications.
16. Interprovincial (NW) shall, prior to construction, develop and submit plans and procedures satisfactory to the Board for project cost control.
17. Interprovincial (NW) shall submit for the approval of the Board
- a) three to six months prior to construction, a current construction schedule, and
 - b) during construction, any revisions to the construction schedule and, where necessary, corresponding changes to the applicable environmental mitigative measures.
18. Interprovincial (NW) shall, during the construction period, unless otherwise authorized by the Board, submit each month construction reports satisfactory to the Board which detail the progress and current status of the project.
19. Interprovincial (NW) shall, unless otherwise authorized by the Board, within three months after the completion of the first winter of construction, submit
- a) for the approval of the Board, a reclamation plan for the right-of-way, and
 - b) a reclamation plan satisfactory to the Board for access roads, borrow pits and construction sites..
20. Further to the requirements of Part VII of the Oil Pipeline Regulations (SOR/78-746), Interprovincial (NW) shall, prior to leave-to-open being granted, submit for the approval of the Board
- a) a maintenance manual which shall include a section dealing with the special problems of operating and maintaining this northern pipeline system,
 - b) an emergency procedures manual, and
 - c) contingency plans for hydrocarbon loss from the pipeline and related facilities including procedures for the detection of - and recovery of hydrocarbons from water bodies during periods of freeze-up and break-up.

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- 21. Interprovincial (NW) shall, prior to leave-to-open being granted, submit for the approval of the Board a complete procedure and schedule for monitoring
 - a) the condition of the right-of-sway with respect to thaw settlement, frost heave, and the adequacy of drainage and erosion control measures,
 - b) the radius of curvature of the pipe at sites of soil movement where critical pipe stresses may be exceeded,
 - c) the condition of the slopes along the right-of-way, and
 - d) the condition of river crossings.

- 22. Interprovincial (NW) shall, unless otherwise authorized by the Board, by 31 October of each year during the construction and operation of the pipeline, submit a report satisfactory to the Board describing the results of monitoring
 - a) the effects of pipeline construction and operation on the environment,
 - b) the condition of the right-of-way and the pipeline, and
 - c) the condition of river crossings and approaches, and slopes along the right-of-way.

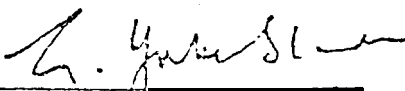
- 23. Interprovincial (NW) shall, within twelve months after start-up of operations, or on such later date as may be set by the Board, submit for the approval of the Board a report detailing the actions taken or to be taken to mitigate long-term environmental effects of construction and operation of the pipeline system and evaluating the adequacy of the environmental policies, practices and procedures used during construction and operation.

- 24. Interprovincial (NW) shall, unless otherwise authorized by the Board, within six months following the end of the first year of operation of the pipeline system, submit a report satisfactory to the Board on the actual socio-economic impact of the project, including the development of the Norman Wells field, during the construction period and the first year of operation.

- 25. Interprovincial (NW) shall, unless otherwise authorized by the Board, at the end of the first and third years of operation of the pipeline system, submit to the Board aerial photographs of the entire route taken at a time and at a scale satisfactory to the Board, and an analysis of ground conditions on the right-of-way as shown in the photographs.

Dated at the City of Ottawa, in the Province of Ontario, on the 6th day of November 1981.

NATIONAL ENERGY BOARD



 G. Yorke Slader
 Secretary

APPENDIX C

I PL

SCHEDULE FOR FILING ENVIRONMENTAL
AND SOCIO-ECONOMIC MATERIAL

INTERPROVINCIAL PIPE LINE (NW) LTD.

SCHEDULE FOR FILING

ENVIRONMENTAL AND SOCIOECONOMIC MATERIAL

WITH THE

NATIONAL ENERGY BOARD

IN ACCORDANCE WITH

THE CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY

NO. OC-35



Schedule for Filing Environmental and Socioeconomic Material

Requirement	Reference	Material Filing Date
B. ENVIRONMENTAL MATERIAL		
1. Provide reassessment of plans for minimizing terrain damage (literature review, fieldwork, etc.)	P78,7.3.2 T/C 13d	June 82
2. Thaw settlement, frost heave, etc.		
a. Evaluation of extent and incidence of frozen/unfrozen reaches (for more accurate design)	T/C 13e iii P42,5.2.3.2.2	Dec 82
b.i Subsurface investigation data base for quantifying high, medium and low ice contents	P46,5.2.3.3.2	Dec 82
ii Settlement magnitude prediction		Feb 83
c. Frost heave analysis (as proposed OK) Also identify rivers and streams where frost heave may be a problem and provide proper design	P48, 5. 2. 3. 4. 2	Feb 83
3. Sensitive slopes and river crossings		
a. Results and data from field investigations for evaluation of slopes which may become unstable and for water crossings and approaches	T/D 13e i,ii P51,5.2.3.5.2 P53, 5. 2. 3. 6. 2 P56,5.2.3.7.2	Dec 82
b. Results of river crossing studies to be submitted	P83, 7. 6. 3	June 82
c. Drainage and erosion -final design requires the program for preserving stability of slopes	T/C 15a	Jan 83
d. Shallow seismic program for Great Bear and Mackenzie Rivers	NWT Water Board Hearings Dec 81	Aug 82
4. Borrow locations and hauling routes, roads, etc.	T/C 13a	
a. Assessment of development, operation, abandonment and rehabilitation of pits and material movements	P81, 7. 5. 3	Jan 83
b. Identify areas where high ice content or poor grade material will be disposed of	P81,7.5.3	Feb 83
c. Environmental assessment including impact on terrain, wildlife and aquatic resources (fieldwork)	T/C 13a P81,7.5.3	Jan 83
d. Detailed rehabilitation plans		Jan 83

Schedule for Filing Environmental and Socioeconomic Material

Requirement	Reference	Material Filing Date*
<ol style="list-style-type: none"> 1. *Plans, Profiles and Books of Reference to be based on field survey and to show <ol style="list-style-type: none"> a. permanent & temporary rights-of-way b. location of pumping stations c. locations of any mining claims" 2. Terrain maps <ol style="list-style-type: none"> a. covering those parts of the pipeline route including related facilities and access roads for which such maps have not already been submitted. 	<p>T/C 9 P29,5.1.2</p> <p>T/C 10 P29,5.1.2 P76, 7. 2. 2</p>	<p>May 82</p> <p>Aug 82</p>
<p>A. <u>SOCIOECONOMIC MATERIAL</u></p>		
<ol style="list-style-type: none"> 1. Prepare and develop the key elements of each of the socioeconomic plans and programs which the applicant undertook to carry out <ol style="list-style-type: none"> a. Information and consultation action plan b. Northern business opportunities action plan c. Orientation action plan d. Construction manpower delivery action plan e. Operation and maintenance training and employment action plan f. Medical services action plan g. Employee housing action plan h. Security action plan i. Monitoring 2. Northern Alberta <ol style="list-style-type: none"> a. Update the socioeconomic impact assessment 3. Six months following end of 1st year of operation <ol style="list-style-type: none"> a. Submit report on actual socioeconomic impact of the project, including the Norman Wells field development 	<p>T/C 7 P126, 8. 4. 4</p> <p>P128,8.4.4</p> <p>T/C 24</p>	<p>May 82</p> <p>May 82</p> <p>Dec 86</p>

* Provided for reference only

** Material may be filed prior to the indicated dates

Schedule for Filing Environmental and Socioeconomic Material

Requirement	Reference	Material Filing Date
5. Aquatic Resources a. Mitigative measures for fish resources in the vicinity of water crossings b. File site specific studies applicant undertook to provide and a description of the proposed mitigative measures to be adopted i. Late winter survey ii. Facility sites iii. Major River Crossings	T/C 13b P92,7.11.3	June 82 April 82 April 82 June 82
6. Raptors a. Results of study to identify species occupying nests within 3.2 km of field construction activities and mitigative measures including endangered status of peregrine falcon (note confidentiality of data)	T/C 13c P93,7.12.2	April 82
7. Wildlife a. Additional studies to verify mitigative measures and site specific data to reduce impacts i. Waterfowl study ii. Facility site study iii. Proposed ungulate monitoring b. Revised construction timetable to include specific mitigative measures, if required for wildlife, fish, raptors	P88, 7. 10. 2 P74,7.1.2	April 82 April 82 Dec 82 April 82
8. Awareness programs procedures and inspection staff education a. Program for environmental education of inspection and construction staff i. Clearing and preconstruction ii. Construction b. Program for construction and environmental inspection including organization and reporting, etc. c. Provide an environmental procedures manual (environmental protection plan) i. Detailed outline of EPP ii. Environmental protection plan	T/C 14a P95, 7. 13. 3 T/C 14b P96, 7. 14. 3 T/C 15b P94, 7. 13. 3	Aug 82 Jan 83 Dec 82 April 82 March 83

Schedule for Filing Environmental and Socioeconomic Material

Requirement	Reference	Material Filing Date
9. Archaeology a. Mitigative measures as recommended by Consultant " "	P86,7.8.2	June 82
10. Contingency Plans " a. Regarding the handling and storage of fuels, lubes and toxic chemicals, forest fires and changes in construction scheduling	T/C 15b P99,7.16.3	Feb 83

APPENDIX D

Government of the Northwest Territories

Legislation

GNWT LEGISLATION

G.N.W.T. Legislation affecting the land activities of the Norman Wells Oilfield Expansion and Pipeline Project includes:

Department of Renewable Resources Ordinance.

- 1) Wildlife Ordinance: Will be applicable to the **entire** project area and will have ramifications regarding the surrounding areas. It provides for wildlife and habitat management.

Wildlife Regulations: Provides regulations for hunting, the use of firearms and harassment of wildlife. These controls can be handled through a special management area.

- 2) Environmental Protection Ordinance: Applies to the entire GNWT including municipalities. They require the installation of safeguards to prevent the discharge of contaminants and the availability of cleanup equipment. Requires repair of any damage caused by discharge, or the GNWT may clean up at polluter's expense. This ordinance applies to the entire project and could be used in the case of an oil spill.

- 3) Forest Protection Ordinance: This ordinance is applicable to the entire project area. It provides for the proper disposal of any flammable material (brush from clearing, garbage, etc.). Requires burning of all inflammable material along the right-of-way as weather permits. The clearing of any space around a site may be specified. The occupant or user of land is required to help extinguish a fire at his own expense.

Forest Protection Regulations: Applies to all camps and persons carrying on industrial activities. Includes fire safety in camp and the availability of fire fighting equipment.

- 4) Petroleum Products Storage Ordinance: Applies to the transport of fuel on any highway and to the handling and storage of fuel in bulk.

Department of Local Government.

- 1) Area Development Ordinance: Provides regulations for the orderly development of an area. Includes zoning, construction, public health, fire protection and discharge of firearms. Regulations include:

- a) Norman Wells Development Area Regulations: Provides a land use plan for the Norman Wells Block Land Transfer. These regulations will be updated this summer.

- b) Mackenzie Highway Development Area Regulations: Controls development within an area 4 miles on either side of the Mackenzie Highway.

- 2) Commissioner's Land Ordinance: Makes regulations regarding the disposal and use of Commissioner's Land. Any person using Commissioner's Land without authorization is guilty of trespassing.

Commissioner's Land Regulations: Controls the use of land within the Norman Wells and Fort Simpson Block Land Transfers. Includes the use and disposal of land, quarry activities and timber.

- 3) Planning Ordinance: Provides **legislation** for planning and zoning within municipal boundaries. This will apply to those lands within the Norman Wells Municipal Boundaries.

Department of Justice and Public Service:

- 1) Explosives Use Ordinance: No person shall explode or cause to be exploded, any explosives in the **N.W.T.** unless **he** has a permit.
- 2) Historical Resources Ordinance: Where any historical or prehistorical remains are threatened with destruction, the Commissioner may order the persons undertaking the activity to provide for adequate investigation, recording and salvage.
- 3) Mining Safety Ordinance: Applies to the safe operation of any mine, including the quarrying of rock and the excavation of sand and gravel. These are of particular application to ESSO'S Norman Wells Quarry Operation.

Mining Safety Rules: Includes regulations governing heights of faces in unconsolidated as well as consolidated material, and for making pit faces safe. There are some rules with regard to use of equipment and the safe use of explosives.

Department of Public Works

- 1) Public Highway Ordinance: Has particular application to the Mackenzie Highway Crossing at Fort Simpson. It will be necessary for IPL to obtain a highway access permit. It also may be necessary to close the highway.
- 2) Petroleum Products Storage Ordinance: Applicable to the transport of fuels on any highway.