

ALBERTA ENERGY AND UTILITIES BOARD

Calgary Alberta

**PETRO-CANADA OIL AND GAS
STEAM-ASSISTED GRAVITY DRAINAGE PROJECT
MACKAY RIVER PROJECT
ATHABASCA OIL SANDS AREA**

**Decision 2000-50
Applications No. 1032550**

1 APPLICATION

Petro-Canada Oil and Gas (Petro-Canada) applied to the Alberta Energy and Utilities Board (EUB/Board), pursuant to Section 10 of the Oil Sands Conservation Act, to construct and operate a steam-assisted gravity drainage (SAGD) scheme for the production of crude bitumen from the McMurray Formation in a twelve-section area (see attached figure) in the Athabasca Oils Sands Area (Application No. 1032550). The application included an environmental impact assessment (EIA); Petro-Canada also provided applications under the Environmental Protection and Enhancement Act (EPEA) and the Water Resources Act.

2 DECISION

The Board, subject to the authorization of the Lieutenant Governor in Council, approves Application No. 1032550, with conditions attached as summarized:

- Petro-Canada shall situate the central plant and waste management facilities in locations mutually acceptable to the Board and to Alberta Environment (AENV).
- Petro-Canada shall monitor ground-level ozone and volatile organic compounds for a six-month interval or until such time as the Regional Sustainable Development Strategy (RSDS) establishes a regional monitoring system for ozone, whichever is later.
- Petro-Canada shall establish a network of groundwater monitoring wells to verify the expected localized drawdown effects in the Birch Channel aquifer. Further monitoring must be installed east of the water supply well to verify drawdown effects towards the MacKay River.
- Petro-Canada shall monitor surface water quality within its project area, including appropriate tributaries of the MacKay River, at a frequency to be developed in consultation with the Board and AENV. The monitoring programs must be developed and implemented for each phase of the project.
- Petro-Canada shall continue to be an active participant in multistakeholder initiatives such as the NO_x-SO₂ Management Working Group (NSMWG), Wood Buffalo Environmental Association (WBEA), Cumulative Environmental Effects Association (CEMA), and RSDS and shall comply with regulatory outcomes of those initiatives.

These conditions form an essential part of this decision; failure to comply will lead to

enforcement action by the Board. (See Appendix for a summary of some of the commitments Petro-Canada had undertaken on its own initiative.)

3 HEARING

The application was considered at a public hearing on May 17 and 18, 2000, in Fort McMurray, Alberta, before Board Members B. F. Bietz, Ph.D., P.Biol., T. M. McGee, and R. G. Lock, P.Eng.

The following table lists the participants in the hearing and abbreviations used in this report.

THOSE WHO APPEARED AT THE HEARING

Principals and Representatives
(Abbreviations Used in Report)

Witnesses

Petro-Canada Oil and Gas (Petro-Canada)
S. R. Miller
T. Studer
P. Bulkowski
D. K. Yaskiw

S. M. MacKenzie, P.Eng.
G. W. Sinclair, P. Eng.
D. Kohlman
J. Hunt
T. R. Eccles, P.Biol.,
of AXYS Environmental Consulting
M. R. Trudell, Ph.D., P. Biol.,
of Komex International Ltd.
W. M. Veldman, P.Eng.,
of Hydroconsult
D. M. Leahey, Ph.D.,
of Jacques Whitford Environment Limited

Fort MacKay First Nation (Fort MacKay)
J. R. W. Rath

Syncrude Canada (Syncrude)
J. B. Wolsey

Oil Sands Environmental Coalition (OSEC)
K. E. Buss

G. MacCrimmon
R. Kleinbub
A. D. MacLean

Wood Buffalo First Nation (Wood Buffalo)
A. C. Rice

J. Malcolm
E. Herman
H. Scanie

THOSE WHO APPEARED AT THE HEARING (continued)

Principals and Representatives (Abbreviations Used in Report)

Witnesses

Departments of Alberta Environment (AENV) and Alberta Health and Wellness	K. K. Singh, P.Eng. A. Mackenzie M. Klebek N. St. Jean R. M. Chabaylo R. Barrett
H. Veale R. Didrikson	

Alberta Energy and Utilities Board staff
W. Y. Kennedy, Board Counsel
K. W. Sadler, P.Eng.
P. Hunt
A. Louie

3.1 Other Abbreviations

Alberta Ambient Air Quality Guidelines (AAAQG)
Alberta Landscape Cumulative Effects Simulator (ALCES)
Clean Air Strategic Alliance (CASA)
Cumulative Environmental Management Association (CEMA)
Environmental Impact Assessment (EIA)
Environmental Protection and Enhancement Act (EPEA)
NO_x-SO₂ Management Working Group (NSMWG)
Potential Acid Input (PAI)
Regional Infrastructure Working Group (RIWG)
Regional Langrangian Acid Deposition (RELAD)
Regional Municipality of Wood Buffalo (RMWB)
Regional Sustainable Development Strategy (RSDS)
Steam-Assisted Gravity Drainage (SAGD)
Total Effects Computer Modelling Research Program (TECMRP)
Wood Buffalo Environmental Association (WBEA)

4 ISSUES

The Board believes that the issues raised during the hearing are

- the need for the project,
- environmental issues, and
- socioeconomic issues (including public consultation).

5 THE NEED FOR THE PROJECT

5.1 Views of the Applicant

Petro-Canada indicated that there were significant economically exploitable bitumen resources underlying its leases; however, it maintained that because of the depth and high viscosity of the bitumen, primary production was not possible. As a result, the company proposed to make use of the steam-assisted gravity drainage (SAGD) process. Petro-Canada believed that, based on its experience with the nearby Dover project, which has similar reservoir quality and depth to the MacKay River project, the SAGD process was the best technology available to optimize recovery of the bitumen in place. In the SAGD process, access to the bitumen formation is gained by drilling horizontal well pairs from the surface. Steam is injected through the upper injector well where it heats the bitumen, mobilizing the viscous bitumen. Mobilized bitumen drains by gravity to the lower production well.

Petro-Canada stated that the projected recovery of the MacKay River project would be in excess of 37 million cubic metres (m³), with peak production at 3500 m³ of bitumen per day. It expected the project life to be 25 years.

The proposed project would be located approximately 20 kilometres (km) west and 60 km north of Fort McMurray (see attached figure). The project design would incorporate multiple well pairs drilled from pads, which would access the McMurray Formation. Petro-Canada's proposal called for the initial development of 24 well pairs from 4 pad locations over the first two years of the project. During the life of the project, approximately 120 well pairs would be drilled from 24 pad locations.

Other proposed aboveground facilities would consist of a central plant and pipelines that supply steam to the injection wells and return the produced fluids to the central facility. Petro-Canada indicated that it would eventually require and apply for a pipeline to provide natural gas as fuel for the steam generators. It also expected that it would eventually apply for a diluent pipeline in order to assist shipping of the produced bitumen, as well as a pipeline to ship the extracted bitumen to market.

Petro-Canada estimated a capital expenditure of \$175 million to build and start the project up. It stated that the project would have significant economic benefit to local communities, as Petro-Canada's expenditures would generate additional employment and economic activity in the area. Petro-Canada stated that the annual operating costs would be about \$30 million and estimated that the project would generate about \$11.5 million per year in increased labour and business income to the Regional Municipality of Wood Buffalo (RMWB). Municipal taxes would be about \$400 thousand per year and the total provincial revenues, in terms of royalties and taxes, would be about \$7.7 million per year.

5.2 Views of the Interveners

The interveners did not question the need for the project. Fort MacKay First Nation (Fort MacKay) stated that it had aboriginal title to the land and minerals in the project area and that it strongly supported the project. Syncrude stated that it had no issues or concerns regarding the project. AENV specified that it did not object to the project, provided that the Board determined

that it was in the public interest and that it complied with all AENV's requirements.

5.3 Views of the Board

Provided the environmental and social issues associated with the project can be addressed, the Board believes that the proposed project is in the public interest and that it represents orderly and efficient development of energy resources in this area. Given Petro-Canada's involvement in the adjacent Dover project, the Board is satisfied that the SAGD technology can successfully be applied to the lease. The Board further notes that the project will result in an increase in provincial royalties and provincial and municipal taxes and will provide additional regional employment.

6 ENVIRONMENTAL ISSUES

6.1 Air Emissions

6.1.1 Views of the Applicant

Petro-Canada acknowledged that the proposed MacKay River project would be a source of emissions of oxides of nitrogen (NO_x), sulphur dioxide (SO₂), particulate matter, and volatile organic compounds (VOC). However, it stated that it had incorporated several design features into the project to reduce air emissions. These included the use of low-NO_x burners and vapour recovery systems to control fugitive air emissions. Petro-Canada observed that the findings of the EIA for the project, submitted as part of its application, indicated that ground-level concentrations of air emissions would be at least one order of magnitude less than the relevant Alberta Ambient Air Quality Guidelines (AAAQG). Based on the criteria for protection of human health within the AAAQG, it predicted no adverse impacts to human health either directly as a result of the proposed project or in combination with other regional emissions.

Petro-Canada noted that as a precursor of ground-level ozone, regional sources of NO_x and VOC emissions could be of concern. Petro-Canada concluded, however, that the NO_x emissions of the project would result in the depletion rather than the generation of ground-level ozone. Consequently, ozone-sensitive receptors would not be adversely affected.

At the hearing, Petro-Canada did acknowledge the evidence of the Oil Sands Environmental Coalition (OSEC) that regional meteorological conditions, in the presence of ozone precursors, could potentially contribute to ground-level ozone formation in the airshed. However, Petro-Canada argued that even if this were to occur, ozone formation would not be considered significant from a single-project standpoint. Petro-Canada did agree to monitor ground-level ozone and VOCs for a six-month interval or until such time as RSDS established a regional monitoring system for ozone.

With respect to acidic emissions, due to the minor levels generated from the MacKay River project, Petro-Canada predicted no adverse effects to the environment. It introduced studies by AENV and the Clean Air Strategic Alliance (CASA) that indicated that acid deposition in the oil sands region was well below critical levels. The company noted that the results from Regional Langrangian Acid Deposition (RELAD) modelling indicated that acid deposition in the MacKay

River project area was below the potential acid input (PAI) critical load. Petro-Canada stated that it did not expect changes to this situation as a result of the proposed project. Petro-Canada also challenged the information submitted by OSEC on regional acid deposition values on the basis that RELAD dispersion modelling had not been used by OSEC. Petro-Canada stated that it understood that the current provincial policy contained a protocol for calculating acid deposition at a regional level using RELAD modelling.

Petro-Canada committed to continue its participation in regional initiatives and work with stakeholders to monitor and resolve future issues that might arise from acid deposition, ozone formation, and changes to regional air quality.

Petro-Canada maintained that the MacKay River project was an example of best practice in the industry for energy efficiency. It stated that the project design had benefited from a life-cycle value assessment, in which OSEC had participated. As a result, 130 kilotonnes/year of greenhouse gas emissions were eliminated from the project design. Petro-Canada also stated that through its corporate participation in the Voluntary Challenge Registry, it believed that it had demonstrated its commitment to a greenhouse gas management plan.

Petro-Canada stated that it had committed to annual improvements of 1 per cent energy efficiency for its proposed project. Petro-Canada stated that it and OSEC had developed a memorandum of understanding outlining areas of mutual agreement, areas of continuing concerns related to the MacKay River project, and the preparation of a Final Review Report to be submitted to the EUB. Among areas of agreement were Petro-Canada's signing of a NO_x and oxides of sulphur (SO_x) memorandum of understanding and its commitment to purchase \$100 000 of "green energy." Purchases would continue in each subsequent year of the project according to negotiations.

6.1.2 Views of the Interveners

OSEC submitted a report that suggested that cumulative NO_x emissions from oil sands development may be cumulatively contributing to regional ozone concentrations. OSEC also presented information to the Board challenging Petro-Canada's findings that the PAI of the study area was well below the target load value. OSEC stated that portions of the Petro-Canada study area were within the PAI target load of 0.25 keq H⁺/ha/y.¹ Consequently OSEC was not prepared to support the MacKay River project. OSEC asked the Board to defer its decision until sufficient work of NSMWG had been completed to better determine the extent and intensity of acid loads from existing oil sands projects. Alternatively, OSEC requested that, should the Board approve the project, it require Petro-Canada to meet any emission reduction requirements recommended by NSMWG.

With regard to carbon dioxide (CO₂) emissions, OSEC noted that Petro-Canada had not met its request for a greenhouse gas management plan that would address absolute limits to those emissions.

¹ 1 keq is equivalent in measure to 1 kilomole of hydrogen ions; ha/y is hectares per year.

AENV stated that it accepted Petro-Canada's view that no adverse environmental effects to air quality would result either directly from the proposed project or in combination with other regional emissions. AENV indicated that it did intend to include a number of conditions in its future licensing for the management of air quality.

6.1.3 Views of the Board

In a number of recent decisions for oil sands development projects, the Board has required that the applicant continue to participate actively in regional air quality research programs. The Board has and continues to be highly supportive of the various regional initiatives, such as NSMWG, WBEA, CEMA, and RSDS, working to resolve issues of regional air quality. The Board notes Petro-Canada's past participation in regional air quality initiatives and expects that, along with other industrial operators, it will continue to support the WBEA, the CEMA working groups, and the RSDS in developing appropriate management systems and guidelines.

With regard to the specific air quality issues, the Board finds that some of the evidence provided by Petro-Canada regarding PAI is inconsistent with AENV's framework for the assessment of acid deposition.² The Board notes that the acid deposition assessment methodologies, including RELAD, used for the preparation of the CASA Target Load Subgroup report were suited for large airshed assessments (e.g., on the scale of western Canada). The information in the CASA report was based on a 1° latitude by 1° longitude evaluation of emissions inventories and deposition. The scale of that evaluation precludes evaluation of potential impacts of specific emission sources in local areas. The Board notes that cumulative assessments of acid deposition prepared for recent Shell, Suncor, and Syncrude oil sands applications considered potential impacts in the local region and used computer models suited to that purpose.

Notwithstanding the fact that Petro-Canada did not undertake such an evaluation, the Board agrees that the incremental NO_x and SO_x emissions for the project are relatively small and notes that the Petro-Canada project was included in cumulative effects assessments mentioned above. The Board has previously accepted those findings; therefore, it is comfortable in concluding that Petro-Canada's project emissions should not cause adverse impacts from either acid deposition or regional ozone formation. The Board understands that regional management systems for NO_x-SO_x will soon be implemented by CEMA and that management protocols for acid deposition are being implemented. The Board will expect Petro-Canada to meet its commitments regarding ground-level ozone and VOCs.

The Board recognizes the important role of industry operators in the region in supporting NSMWG and other multistakeholder initiatives to resolve regional air quality issues and establish management systems. It expects Petro-Canada to be an active participant and comply with regulatory outcomes of those initiatives. The Board notes that while it expects NSMWG and RSDS to establish regional guidelines for air quality, there is also a need for equitable mechanisms for allocating industrial emissions and reductions.

² CASA and AENV, 1999, *Application of Critical, Target, and Monitoring Loads for the Evaluation and Monitoring of Acid Deposition*.

The Board is also encouraged by Petro-Canada's corporate position in the Voluntary Challenge Registry and the greenhouse gas reductions proposed for its MacKay River project. Petro-Canada's commitment to purchase "green power" is a proactive step in the integration of alternate energy sources. The Board also commends Petro-Canada for its commitment to annually increase energy efficiency of the MacKay River project by 1 per cent. The Board recommends that applicants proposing energy developments of this duration and scale should adopt a management plan for greenhouse gas emissions within the first year of their operations.

6.2 Water Resources

6.2.1 Views of the Applicant

Petro-Canada stated that due to existing geological conditions and proposed engineering design features and operating practices of the project, no significant impacts would occur to either groundwater or surface water supplies.

Petro-Canada noted that recycled produced water, rather than surface water, would be used for the primary water supply. A secondary supply of water (1400 m³/day) would be pumped from the Birch Channel aquifer for steam make-up and utility water. Petro-Canada determined that the Birch Channel aquifer would naturally recharge or replenish in the order of 5000 m³/day of water. It predicted drawdown of the groundwater table, but stated that the largest effects would be localized within a few hundred metres of the water supply wells. It maintained that the water table would begin reversing to its original position upon project retirement. In order to verify the expected drawdown effects, Petro-Canada committed to establish a network of groundwater monitoring wells. Further monitoring would be installed east of the water supply well to verify drawdown effects towards the MacKay River.

Because the Birch Channel discharges into the MacKay River, Petro-Canada also estimated the potential for flow and water level reductions in the MacKay River due to water table drawdown. The company believed that these, relative to the natural range of water level and discharge fluctuations, would be insignificant. Such changes would not result in detrimental effects to fish, other aquatic organisms, or water quality. Petro-Canada committed to monitor surface water quality within its project area at a frequency subject to ongoing evaluation. Appropriate surface water monitoring programs would be developed for each phase of the project. Petro-Canada also agreed to ensure that appropriate tributaries of the MacKay River would be monitored for water quality either by the Regional Aquatic Management Program (RAMP) or Petro-Canada.

Petro-Canada noted the high percentage of water reuse and recycling proposed at its project as a result of the water treatment system. Ninety per cent of all water would be recycled and no effluent would be discharged to surface water bodies. Petro-Canada noted that its hydrogeological tests showed limited capacity for the deep well disposal of fluids. Therefore, it would only carry out deep well injection to the Wabiskaw C Formation under emergency conditions. Petro-Canada further maintained that the low fluid volumes intended to be injected would not affect either groundwater or surface water resources.

Petro-Canada noted that in selecting siting criteria for the plant, it had considered environmental constraints, proximity to the bitumen reservoir, utilization of existing road access, and

topographic conditions. It identified the preferred central plant location as the northwest quarter of Section 5-93-12W4M, an area of 24 hectares. Petro-Canada stated that in siting the central plant facilities at this location, it had also addressed the environmental protection of groundwater and surface water.

Petro-Canada stated that it shared AENV's objective of ensuring that the Birch Channel aquifer was protected from the possible release of contaminants. Petro-Canada committed to relocate the permanent lime sludge disposal locations beyond the Birch Channel. For any waste disposal facilities proposed for the project, Petro-Canada stated that it would file separate applications to the EUB under *Guide 58: Oilfield Waste Management Requirements for the Upstream Petroleum Industry*. Petro-Canada also undertook to submit an initial waste management plan for its MacKay River project following the hearing.

Petro-Canada stated that additional geotechnical work would be necessary to better define the location and extent of impermeable geologic materials (aquitards) above the Birch Channel and to evaluate in detail the siting of the central plant. It said it would obtain this information subsequent to the hearing and would provide it to AENV and the Board. Petro-Canada confirmed that it would continue its discussions with AENV and the Board to ensure that plant siting issues were thoroughly addressed.

6.2.2 Views of the Interveners

OSEC expressed concerns about the effects of the proposed project on groundwater and local wetlands. OSEC was also concerned that inadequacies in the waste handling systems would contribute to the contamination of surface and groundwater. These included possible effects due to water table drawdown and potential leakage of contaminants from waste storage facilities.

Wood Buffalo First Nation (Wood Buffalo) stated that insufficient information was available to assess underground water systems, potential contamination, and effects to the MacKay River and natural springs. As a result, Wood Buffalo believed that the MacKay River project could be detrimental to its members.

AENV stated that the proposed site for the MacKay River project surface facilities posed greater environmental risks to groundwater than other similar in situ projects, since the proposed facilities would overlie the regionally important Birch Channel aquifer. AENV noted that the Birch Channel aquifer is a buried glacial valley, 2 km wide and 100 m deep, filled with sand and gravel and extending for approximately 20 km. AENV noted that the information presented by Petro-Canada suggested that there may not be a sufficient barrier of aquitards overlying the aquifer. AENV also noted that siting of waste management facilities, such as a landfill for lime sludge as originally proposed in Petro-Canada's application, would not meet the requirements specified in EUB *Guide 58* for the protection of groundwater.

AENV stated that groundwater monitoring would be required for the central plant, waste management facilities, and selected well pads due to geological conditions. AENV was also prepared to require that Petro-Canada conduct additional geotechnical investigations and re-examine the location options for the central plant and waste management facilities. AENV stated that it accepted that Petro-Canada's use of groundwater and emergency use of Wabiskaw C

disposal wells would not significantly impact surface or groundwater.

6.2.3 Views of the Board

The Board believes that Petro-Canada has adequately addressed the issues of impacts to surface water and groundwater. The Board notes that the applicant identified several pollution control and monitoring and design features that the Board believes will successfully reduce impacts to water resources. The Board also notes Petro-Canada's commitments to comply with applicable guidelines and regulations for petroleum production sites as they relate to environmental management.

However, the Board does not believe that Petro-Canada provided sufficient information during the hearing to adequately address the longer-term issues of waste management and surface facility location, particularly relative to their possible effects upon groundwater resources. However, since the close of the hearing Petro-Canada has submitted an integrated waste management plan to the EUB. The Board also notes that further regulatory review will be required prior to the issuance of any approvals for project water withdrawals, water wells, injection wells, or waste disposal facilities. As a result, the Board believes that any outstanding issues, particularly with regard to facility siting, can be adequately addressed through these processes.

6.3 Vegetation and Wildlife

6.3.1 Views of the Applicant

Petro-Canada stated that it believed that the effects of its project on vegetation due to clearing, altered wetlands, chemical leaks, and spills within the project footprint would be localized and insignificant. The company noted that the footprint of surface disturbance for the project would be limited to 152 ha. Placed within the regional study area, surface disturbance of the MacKay River project would contribute less than 0.1 per cent change in vegetation cover. Petro-Canada concluded there was also limited potential for disturbance to rare plants or plants of traditional importance to aboriginal communities.

Petro-Canada stated that it was committed to sequential reclamation of disturbed areas over the life of the project. It also intended to join the Reclamation Advisory Committee, which sets reclamation standards for the oil sands region. Petro-Canada acknowledged the requirement to complete a detailed conservation and reclamation plan for the project, which would be subject to AENV approval. It noted that both AENV and local stakeholders would be consulted regarding end land-use decisions.

With regard to impacts to wildlife, Petro-Canada stated that localized displacement of some wildlife species might occur near the project footprint as a result of vegetation clearing and reduced habitat effectiveness. It predicted increased risk of mortality to moose and bear in association with increased access, hunting pressures, and regional recreational users. Petro-Canada stated that it planned to mitigate these effects by avoiding siting facilities in or near suitable habitat, by reclaiming to maximize habitat values, and by implementing an access management plan.

Petro-Canada submitted evidence that no key areas for woodland caribou were located within the project area and that the MacKay River project was not likely have an impact on populations of this species. To address identified stakeholder concerns with the Canadian toad, which is listed as a red list species from the 1996 Status of Alberta Wildlife Report, the applicant proposed groundwater monitoring of a position intermediate between the central plant site and the closest fen breeding site of the toads.

6.3.2 Views of the Interveners

Both OSEC and Wood Buffalo expressed concerns about possible local effects of the project upon woodland caribou and the Canadian toad. OSEC stated that changes to habitat as a result of linear surface disturbances and water level changes to wetlands might negatively affect these species. Other concerns were identified related to wildlife movement and mortality.

AENV stated that it was prepared to accept Petro-Canada's findings that there would be no significant effects on wildlife. However, in its submission to the Board, AENV stated that it might require Petro-Canada to conduct additional mammalian baseline studies prior to the project proceeding. Due to the presence of the Canadian toad in the project study area, AENV recommended the monitoring of water levels within fen wetland habitats east of the central plant by Petro-Canada and further delineation of possible Canadian toad overwintering sites.

6.3.3 Views of the Board

Having considered the evidence, the Board believes that predicted impacts on vegetation and wildlife from this project are manageable and that the proposed mitigative measures are adequate. The Board notes the regulatory requirement of EPEA for applicants to conduct predisturbance environmental site assessments, including of soils, vegetation, wildlife, and other resources. Since the disturbance due to the MacKay River project will occur in different production phases over a 25-year span, complete site assessment data have not yet been collected by the applicant. Petro-Canada is obligated to provide this information for future development through AENV's Conservation and Reclamation approval process. The Board notes that the life span of this project provides the opportunity to monitor and validate the findings of the EIA and to adaptively manage environmental impacts.

6.4 Land Use and Cumulative Effects

6.4.1 Views of the Applicant

Petro-Canada stated that, from a land-use planning perspective, it believed that the MacKay River project represented orderly development of oil sands resources. It pointed out that the project was compatible with prescribed land uses within the Stony-Birch Resource Management Area of the Fort McMurray-Athabasca Oil Sands Subregional Integrated Resource Plan. This was demonstrated by the proposed location of the MacKay River project between the existing Syncrude and Dover developments. Petro-Canada noted that its operations would also be integrated with Northland Forest Products' plans for timber harvest.

Petro-Canada commented on the concerns of Fort MacKay regarding the effects of the project and the resulting reclamation on traditional practices of hunting, food and medicinal plant gathering, and spiritual and cultural activities. These, the company noted, would be mitigated by several commitments made by Petro-Canada in its April 2000 Environmental Mitigation Agreement with Fort MacKay.

Petro-Canada noted that an agreement it had negotiated with OSEC also had a bearing upon land-use issues, including the particular concerns of OSEC pertaining to boreal forest fragmentation. An outcome of that agreement was Petro-Canada's commitment to make boreal forest fragmentation a priority land-use issue for work by CEMA. This would involve a proposal for CEMA to use the Alberta Landscape Cumulative Effects Simulator (ALCES) model in evaluating potential impacts of industrial developments upon the landscape. Petro-Canada pointed out that it also agreed to joint funding of the CEMA work, consistent with the establishment of multistakeholder funding formulas by CEMA members.

Petro-Canada committed to contribute work in the CEMA/RSDS initiatives to establish best practices and concepts with respect to SAGD development in the boreal forest. It stated that it was prepared to ask CEMA stakeholders to protect specific ecologically sensitive and unfragmented forested areas in the region and, if determined necessary, suspend or postpone development of those areas. Petro-Canada stated that its efforts to develop best practices within CEMA/RSDS would also aim to reduce duplication of seismic lines, roads, and power facilities and promote the establishment of maximum allowable linear disturbances and access control measures.

6.4.2 Views of the Interveners

OSEC expressed a broad concern related to boreal forest fragmentation and the implications of widespread in situ development on wildlife and vegetation. OSEC provided a detailed review of the extent of industrial development within the boreal forest ecozone in Alberta and suggested that the proposed project represented one more incremental reduction in a habitat type under significant pressure from a number of forms of development.

OSEC stated that it had intervened against the Petro-Canada application on the basis of its concerns with environmental issues and cumulative effects. OSEC requested the Board not to approve the MacKay River project since there was insufficient information to assess the environmental significance of widespread in situ oil sands development upon the boreal forest ecosystem. Specifically OSEC recommended that the Board

- impose a 12-month delay on further oil and gas dispositions in the boreal forest, during which time the Board would establish a framework for the protection of ecologically significant areas;
- direct Petro-Canada not to develop resources within candidate protected areas as identified by the World Wildlife Fund, specifically Stony Mountain;
- work cooperatively within RSDS/CEMA to develop interim policies and guidelines for use in regulatory review of in situ oil sands applications;

- work with the RSDS/CEMA initiative to recommend locations for “reserve areas” and establish linear disturbance limits, access controls, and best practices/procedures for in situ oil sands developments to minimize net disturbances;
- direct Petro-Canada to participate in the RSDS/CEMA work as described above; and
- use Section 22 of the Energy Resources Conservation Act to implement a strategic regional assessment of the potential impacts of in situ developments upon the boreal forest.

AENV’s panel gave evidence that environmental impacts, including cumulative effects, had been thoroughly addressed in its review of the Petro-Canada application. In addressing the issue of regional land management, AENV identified a number of current resource management policies and programs, including the Alberta Forest Legacy, Detailed Forest Management Plans, Special Places 2000, the Canadian Biodiversity Strategy, Alberta Wetland Policy, Reclamation Advisory Committee, and the Total Effects Computer Modelling Research Program (TECMRP). The latter initiative, AENV noted, includes the use of the ALCES computer model for predicting cumulative environmental effects.

AENV provided a progress update of the RSDS, stating that work plans to establish interim environmental guidelines and objectives were expected from technical working groups of RSDS/CEMA by summer 2000. Rollout of the initial environmental objectives of RSDS would occur in 2001. AENV believed that RSDS implementation was on track and proceeding to meet its objectives and would be of significant value in addressing regional cumulative effects. Specific to OSEC’s recommendations for an ecosystem-based policy framework applicable to the boreal forest, AENV encouraged Petro-Canada and OSEC to bring the issue to RSDS/CEMA for consideration and to focus resources upon long-term management solutions.

6.4.3 Views of the Board

The Board notes that all parties to the hearing appeared to agree that it was important to ensure that future regional energy development did not result in unacceptable cumulative effects to the land base and the associated ecosystems. The Board also continues to attach very high importance to the management of the cumulative environmental effects within the oil sands region. For this reason, the Board has been a strong supporter of the RSDS process. The Board notes that AENV was able to confirm that the setting of regional environmental management objectives was being addressed by RSDS stakeholders. Furthermore, this work was expected to be completed at the agreed-upon schedule, with a target date of summer 2001 for delivery of the initial objectives. As a result, the Board does not believe that the recommendation of OSEC to immediately delay further in situ development pending the outcomes of a broad-based planning system is needed at this time.

The Board notes the invitation by AENV to OSEC to have the issue of boreal forest fragmentation brought forward into the CEMA/RSDS process and the commitment of Petro-Canada to champion this issue in that forum. In particular, the Board notes Petro-Canada’s commitments to recommend to CEMA/RSDS

- the protection of ecologically sensitive and unfragmented forested areas in the oil sands region,

- the consideration of options for land management that would maintain boreal forest integrity, and
- the development of industry best practices to coordinate regional development, infrastructure, and the management of access.

The Board believes that this should allow the issue to be discussed thoroughly and to be given the appropriate weight in the Integrated Resource Management planning process.

The Board is not convinced, given the time frames established by the RSDS/CEMA process, that irreversible environmental impacts will occur before these cumulative effects issues can be addressed. This includes the OSEC recommendations concerning establishment of reserves, linear disturbance thresholds, and access management plans. That said, the Board is concerned that the pace of RSDS implementation could still be exceeded by the rapid rate of oil sands development without strong and active participation in RSDS, particularly by industry. The Board acknowledges the key role that AENV and industry continue to play in providing high levels of technical expertise and resources necessary for RSDS to achieve its goals. The Board has placed significant emphasis on the success of these processes for ensuring that both existing and future oil sands development remains in the public interest. Significant delays in the process or the failure of the process to begin to establish environmental objectives and guidelines for management of cumulative effects within the oil sands region in a timely manner could eventually force the Board to revisit its previous decisions.

With respect to OSEC's recommendation that the Board initiate a process for the withdrawal of industrial development from ecologically protected areas, the Board looks to affected industry operators and those regulatory agencies with responsibility for the sale of mineral rights and the management of Crown lands to reach acceptable solutions through processes such as Special Places 2000. The Board therefore does not believe that it is appropriate in this decision for it to consider the OSEC request to direct that Petro-Canada not develop resources within the World Wildlife Fund candidate protected areas, specifically Stony Mountain. Should an application be made to the Board for development within the Stony Mountain area, the Board would then consider the issues related to that application.

During the hearing, the Board heard evidence about the use of the ALCES model as an emerging technique to assess cumulative effects to regional landscapes. The Board is interested in this development and will contact members of the TECMRP to gauge the value of EUB participation or, at a minimum, review findings and conclusions of the work.

7 SOCIOECONOMIC ISSUES

7.1 Views of the Applicant

Petro-Canada stated that it had commenced an extensive public consultation process two and a half years ago, and as a result, its project design had improved significantly. Through the consultation process, Petro-Canada stated that it had become more cognizant of the environmental issues, the concerns of the local communities, and traditional land use. Issues were identified, discussed, and in many instances dealt with by negotiation, agreements, a catalog of commitments, and participation in regional initiatives, such as the Regional Infrastructure Working Group (RIWG), RSDS, and CEMA. Petro-Canada noted that it would continue to discuss outstanding issues with all stakeholders and the consultation process would continue to be meaningful.

Petro-Canada confirmed that it had reach agreements with the Athabasca Tribal Council and Athabasca Regional Developers with respect to environmental issues, employment and training, human infrastructure, including health and wellness, and physical infrastructure. Petro-Canada stated that it had also signed an agreement regarding funding and support for the Industrial Relations Corporation of Fort MacKay to deal with community, socioeconomic, and environmental issues. Together, aboriginal trappers, the community of Fort MacKay, and the petroleum industry had developed guidelines for consultation and compensation. Petro-Canada had also negotiated and finalized an environmental operations protocol with the Athabasca Chipewyan First Nation. Petro-Canada acknowledged the commitment of the communities most affected by this project in working with Petro-Canada to identify issues, including education, funding, training, and job opportunities, and to work towards resolution.

Petro-Canada stated that its consultation with Wood Buffalo First Nation (Wood Buffalo) had been consistent and ongoing and that it had provided funding for Wood Buffalo to conduct an independent review of Petro-Canada's EIA. Petro-Canada indicated that consultation with all stakeholders would continue to be meaningful and confirmed its commitment to participate in regional initiatives such as RIWG, RSDS, and CEMA.

7.2 Views of the Interveners

Fort MacKay and Fort MacKay Metis indicated that, as the communities most affected by the project, they had demonstrated a commitment to work with Petro-Canada by identifying issues and working towards resolution of those concerns. Fort MacKay stated that its group had the unextinguished aboriginal title to the land and minerals in the project area. It entered a strong objection to the intervention submitted by Wood Buffalo, arguing that Wood Buffalo was not a legitimate statutorily recognized government and, therefore, should not be accorded such status at the hearing. Fort MacKay stated that Wood Buffalo did not represent anyone that has rights in the project area and did not need to be consulted other than as concerned members of the public.

OSEC did not question Petro-Canada's consultation process and acknowledged its process of active and collaborative stakeholder consultation. OSEC confirmed that the process had significantly narrowed the scope of OSEC's intervention and the number of outstanding issues.

Wood Buffalo acknowledged that Petro-Canada had consulted with it and that funding was provided to conduct an independent assessment of the EIA. Wood Buffalo also noted Petro-Canada's proposed educational and employment initiatives in relation to the MacKay River project, including Petro-Canada's proposal to accept grade 12 or equivalence (grade 10 with a 4th class powering engineering ticket) in order to assist its members in accessing employment. Notwithstanding this, however, Wood Buffalo believed that Petro-Canada's attempts to consult regarding employment, education, and job training for aboriginal people had been few and meaningless.

Wood Buffalo stated its belief that the MacKay River project would be on its traditional lands. Wood Buffalo referred to the Cree Burn Lake Historical Site, located beyond the Petro-Canada lease, as one example of occupation and traditional land use by ancestors of Wood Buffalo and other First Nations of the region. It stated that the MacKay River, which crosses the Petro-Canada lease, had been a corridor travel route to the Cree Burn Site. Therefore, Wood Buffalo had requested a consultation agreement with Petro-Canada to address the concerns of its members, but no agreement had been negotiated at the time of the hearing. Wood Buffalo indicated that the project was generally supportable provided that there was sufficient environmental testing and mitigation. However, in response to questions at the hearing, Wood Buffalo also stated that it could not support the project. In order for full support, meaningful consultation would be required to address its concerns, but it did not foresee this happening.

AENV submitted that Wood Buffalo had not established its constitutional aboriginal right as a First Nation and the Board did not have the jurisdiction to make a ruling on this matter.

7.3 Views of the Board

The Board considers the public consultation program conducted by Petro-Canada to be satisfactory and notes that the communities most directly impacted support the project. The Board believes that collaborative multistakeholder groups provide an effective mechanism in public/industry consultation, particularly in addressing environmental and socioeconomic issues, including traditional land use, education, training, and employment opportunities.

The Board recognizes the efforts of OSEC and Petro-Canada to consult on project issues and notes that this has resulted in the resolution of several issues prior to the hearing, thereby reducing the number of outstanding issues. The Board believes that Petro-Canada's and OSEC's continued participation in regional initiatives such as RSDS and CEMA will provide quality information and address concerns in a coordinated manner.

The Board has examined the evidence concerning the effects on aboriginal land use and the program undertaken by Petro-Canada to consult with these individuals and communities. The Board is satisfied that Petro-Canada's consultation program with both Fort MacKay and Wood Buffalo led to effective and meaningful communication between the parties. Based on current regulatory requirements and practices, the Board is satisfied that Petro-Canada established a progressive approach in assessing the nature of aboriginal land use and evaluating the possible effects of its project. In the Board's opinion, the program conducted by Petro-Canada established relationships that should continue to produce positive results by promoting a shared understanding of both technical and social issues that are important to these stakeholders.

Having regard for this, the Board believes that Petro-Canada has taken reasonable steps to minimize and mitigate the effects on aboriginal land use.

It is clear to the Board that Wood Buffalo is an evolving organization. Currently, it represents a number of aboriginal interests over a large geographic area. The Board is satisfied that many of the individuals represented by Wood Buffalo are entitled to recognized aboriginal rights and privileges; however, membership in Wood Buffalo neither alters those existing rights nor grants further rights. Given the diversity of the group's membership, the Board expects the rights and privileges enjoyed by individuals within the group to have a similar degree of diversity.

Given the current status of Wood Buffalo, the Board expects that Petro-Canada will continue to work with individuals who may be affected by the project and encourages members of Wood Buffalo to participate through local communities and associations and through regional initiatives to identify and resolve issues.

DATED at Calgary, Alberta, on July 14, 2000.

ALBERTA ENERGY AND UTILITIES BOARD

(Original signed by)

B. F. Bietz, Ph.D., P.Biol.
Board Member

(Original signed by)

T. M. McGee
Board Member

(Original signed by)

R. G. Lock, P.Eng.
Board Member

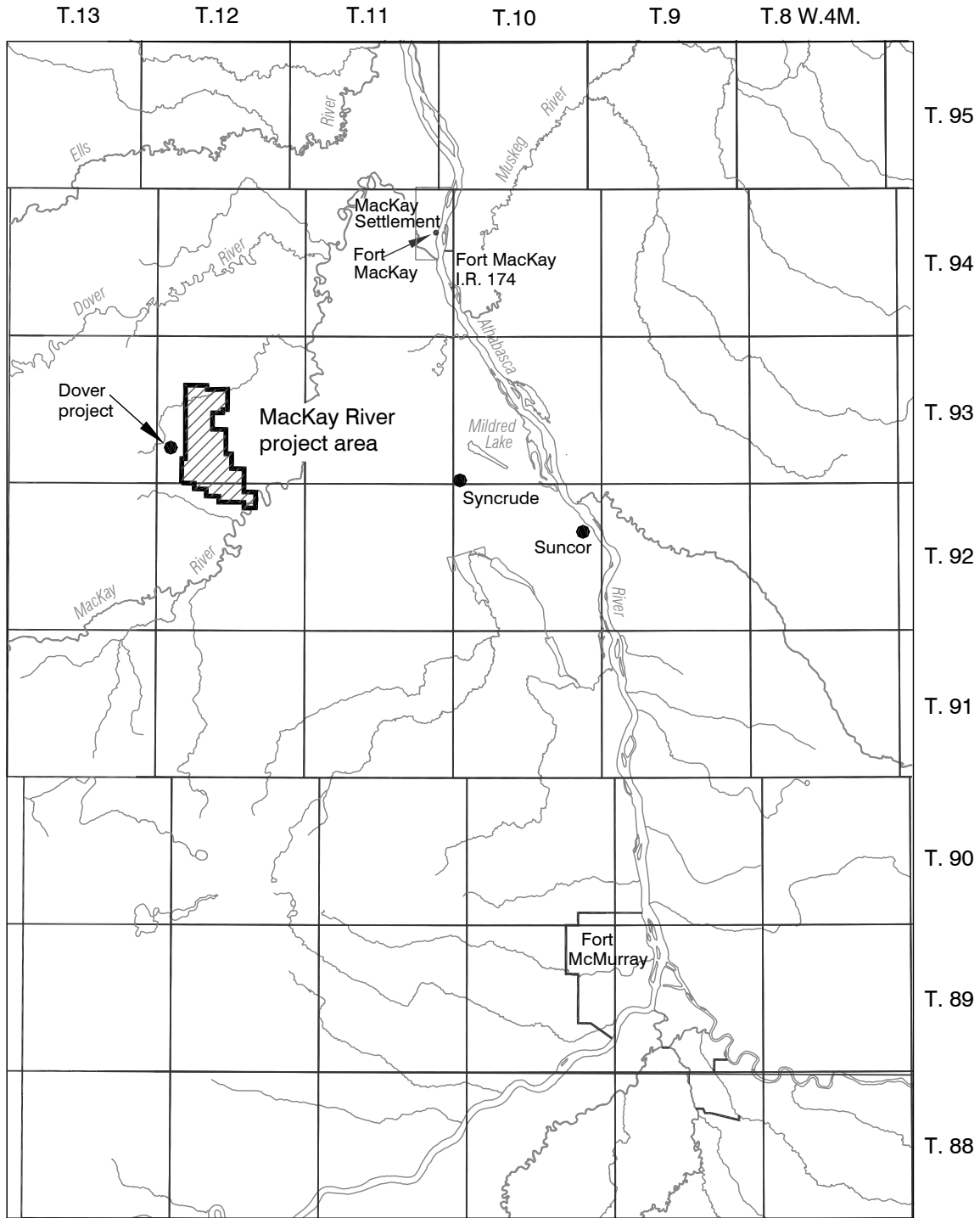
APPENDIX

The Board notes that throughout this hearing, as described in the decision, Petro-Canada has undertaken to conduct certain activities in connection with its operations that are not strictly required by the Board's regulations or guidelines. These undertakings are described as commitments and a few are summarized below. It is the Board's view that when a company makes such commitments, it has satisfied itself that the activity will benefit both the project and the public, and the Board takes these commitments into account when arriving at its decision. The Board expects the applicant, having made the commitments, to fully carry out all the undertakings or advise the Board if, for whatever reason, it cannot fulfill the commitments. At that time, the Board would assess whether the circumstances of the failed commitments are sufficient to trigger a review of the original approval. Members of the public also have the right to ask the Board to review an approval if certain commitments made by an applicant remain unfulfilled.

Commitments

Petro-Canada has committed to

- 1) make annual improvements of 1 per cent in energy efficiency for the duration of the project; within the first year of production from this project, Petro-Canada agreed to purchase \$100 000 of "green energy" and to continue purchases in each subsequent year of the project according to negotiated terms;
- 2) honour the commitments made to OSEC, including the following:
 - use tanks on well pads to contain all drilling fluids and to recycle drilling muds and liquids as much as possible;
 - seek alternatives to pump off if a situation arises where excess drilling liquids require disposal;
 - maintain a minimum of ten days of excess storage capacity in its lime sludge pond in order to minimize the possibility of using the Wabiskaw Formation for deep well disposal;
 - advance the issue of boreal forest fragmentation through CEMA;
 - support ALCES modelling as a top priority with CEMA and approve immediate expenditure to support this work; and
 - facilitate a meeting between its executive staff and OSEC to discuss other protected areas and greenhouse gases.



Mackay River Project Area

Application No. 1032550
 Petro-Canada Oil and Gas

Decision 2000-50