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Environmental Impact Assessment – A Planning Tool For Port Development Projects

The Canadian Experience

Contribution to the
International Seminar on Environmental Impact Assessment
Port of Baltimore
Baltimore, Maryland
November 14-19, 1988

by

Guy Riverin, Manager - Panel Operations
Federal Environmental Assessment Review Office
Ottawa, Canada

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FOREWORD

In Canada, environmental impact assessment (EIA) and its closely associated public review process together constitute a recognized tool for ensuring that environmental as well as socio-economic cost-benefits are optimized. This instrument, the federal Environmental Assessment and Review Process (EARP) permits the integration of all relevant engineering, ecological, social and economic considerations in project decision making and has therefore become a major tool of Canadian development planning and resource management.

EARP is a self-assessment process comprised of an initial assessment phase and a public review phase. The initial assessment is the first step in the process and encompasses everything a department of government does to determine what potential adverse environmental effects a proposal may have, if any. Some form of public consultation is carried on at this stage of EARP. The second step is the public review by an independent panel. This phase of EARP applies to major undertakings of the government such as the cases illustrated in this paper. To date approximately one out of every 1,000 projects conceived by the federal government has been the object of a formal public review by an independent panel. This paper deals with two port development projects that have undergone a full public review.

EARP's main purpose is to assist proponents, such as the country's federal Port Authorities, to plan and design environmentally sound activities. To achieve this purpose, EARP identifies, predicts, interprets and communicates comprehensive information about the various potential impacts of a project on human health and well-being. Resulting information is reviewed with the communities concerned generally by means of public discussion at panel hearings. The end result of a public review under EARP is to provide the Minister of the Environment and the minister responsible for the proposal with advice on the environmental acceptability of the proposal including recommendations on mitigating measures to alleviate environmental impacts. The final decision on proceeding with the proposal is that of the ministers. To date in Canada, two major port expansion projects have been assessed and publicly reviewed under EARP: the bulk coal-loading deepwater terminal at Roberts Bank, British Columbia, whose panel reported in March 1979; and the Port of Quebec expansion proposal, whose review was concluded in September 1984 (see Bibliography). The federal government also participated in two provincial reviews of competing proposals to create a Liquified Natural Gas Terminal either at Melford Point in Nova Scotia or at Gros Cacouna in Quebec. The Port of Montreal recently announced its proposed development strategy from now until 2010. Part of this strategy, e.g. expansion on 150 hectares of land will be subjected to a public review under EARP.

The terms of reference for both the major Port development assessments and reviews dealt with in this paper went far beyond the limited concerns related to the dumping at sea of dredge spoil -- as sanctioned internationally

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by the London Dumping Convention (LDC) -- in that they also scrutinized all other potential impacts in the broader areas of biophysical ecosystems and socio-economic cost-benefits.

In this paper I will attempt to illustrate how the Vancouver Port Authority and Quebec Port Authority used EARP as a planning tool in order to mitigate the environmental impacts of their proposals while optimizing the socio-economic and environmental benefits. I will demonstrate that because the process was applied early enough, the Port Authorities were able to modify their proposals to take into account public concerns and therefore make them more acceptable to all concerned while meeting their respective needs for expansion.

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1. INTRODUCTION

Over the last 20 years societies have become more aware of environmental issues and consequently more concerned about the environment they live in. Opinion polls over that period of time have consistently revealed that the environment is among the top priorities that people want their governments to address. These preoccupations resulted, among other things, in the advent of "green" parties in Europe in the early 70s, the formation of major environmental interest groups, the creation by governments of departments or ministries responsible for the environment, and the establishment of mechanisms to assess environmental impacts of major development projects. Two such mechanisms are the National Environmental Policy Act (NEPA) in the United States and the Environmental Assessment and Review Process (EARP) in Canada.

In the 80s, concerns over the depletion of resources, such as deforestation, acidification of lakes, loss of arable lands to deserts and urbanization, and climate changes due to atmospheric pollution throughout the world, prompted the United Nations to form the World Commission on Environment and Development under the chairmanship of the current Prime Minister of Norway, Gro Brundtland. In its report entitled "Our Common Future" released in 1987, the Commission concluded that environmental and economic planning cannot proceed in separate spheres. According to the report, long-term economic growth depends on a healthy environment. The report of the Commission developed the concept of sustainable development, which implies that development must include conservation strategies so that today's resource utilization does not damage the prospects of their use by future generations.

Furthermore, since the Amoco Cadiz, Three Mile Island, Seveso, Bhopal, Chernobyl and Sandoz catastrophes our environment and quality of life have become accepted world-wide as an essential human resource, which must be studied, respected and protected as a prerequisite to social and economic welfare and development.

World public opinion is increasingly focussed on other, non-pollutant types of environmental problems. Everywhere, but particularly in the more prosperous developed countries, public aspirations and expectations go beyond the mere curtailment (or absence) of pollution to encompass positive enhancement of the environment and improvement of the quality-of-life. An example of this trend is the quickly spreading policy of Port Authorities to develop waterfront recreational areas, parks, bicycle paths and walkways, shrubbery and tree "curtain zones", beaches and fountains.

The fact that the International Maritime Organization (IMO) and the International Association of Ports and Harbors (IAPH) are holding a joint seminar in the form of an International Workshop on the subject of

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"Environmental Impact Assessment of Port Projects" further illustrates the growing recognition that environmental aspects and concerns must be taken into account by the world's port planners and operators. The former's concern will be to assess and minimize those ecological impacts usually associated with the construction phases, including dredging in tidal areas, while the latter is mainly concerned with the prevention of polluting discharges, the disposal of contaminated dredge spoil and the reduction of dust, smoke and noise pollution.

As participants at this Seminar are well aware, the disposal of spoil due to construction and operation has become a critical problem, particularly since the signing of the London Dumping Convention. Several ports are penalized since a very large proportion of the contamination of their dredge spoil originates in upstream pollution of rivers and canals leading to these estuarine ports.

In the Canadian context, our much larger rivers, lakes and seas combined with less dense industrialization and population have resulted in fewer environmental concerns associated with port developments. However, problems associated with acid rain and toxic substances have raised our awareness about the fragility of our environment. For centuries, Canadians have enjoyed pristine forests and wide open spaces, detached homes and "back-yards', fresh Arctic breezes, relatively clean rivers and lakes, wildlife and flora. They do not intend to allow these amenities to become spoiled through poorly planned commercial or industrial development.

Canadians want to make sure that major projects, including federally sponsored port expansion and operation master plans, yield a positive end result after all factors, alternatives and mitigating steps have been evaluated and taken into account.

2. CANADA'S APPROACH - A DECENTRALIZED, INFORMAL AND FLEXIBLE PROCESS

The Canadian approach to environmental assessment could be characterized as a flexible one which has allowed it to evolve considerably over the last 15 years. This approach was determined in part by our parliamentary system of government and the division of powers on environmental matters between the federal and provincial governments.

A flexible, decentralized approach is also appropriate perhaps for a very sparsely populated but immense country (the second in size after the Soviet Union), spread east-west over seven time-zones but with a small proportion of arable land, with its bilingual nature and multicultural diversity. Some of its main principles are self-assessment, public involvement, informal rather than adversarial procedures for its public hearing process and the formation of independent environmental assessment panels to conduct public reviews of major projects.

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Canada's federal environmental assessment review process is a constructive planning tool rather than a regulatory procedure. It applies to federal government departments' and agencies' initiatives, activities on federal lands, including the offshore, and activities funded by the federal government. More details about EARP are provided in the Annex to this paper.

Canada's approach to optimizing the socio-economic and environmental cost-benefits of port expansion projects is illustrated by the following case studies: the application of EARP to the Roberts Bank Port Master Plan (1976-1979) and to the Port of Quebec Master Plan (1978-1984).

These two EARP reviews were quite distinct in their scope. The Roberts Bank review, because of its location focussed principally on environmental issues while the Port of Quebec expansion review, provided a forum for discussion of major socio-economic concerns.

3. THE ROBERTS BANK PORT EXPANSION MASTER PLAN (1976-79)

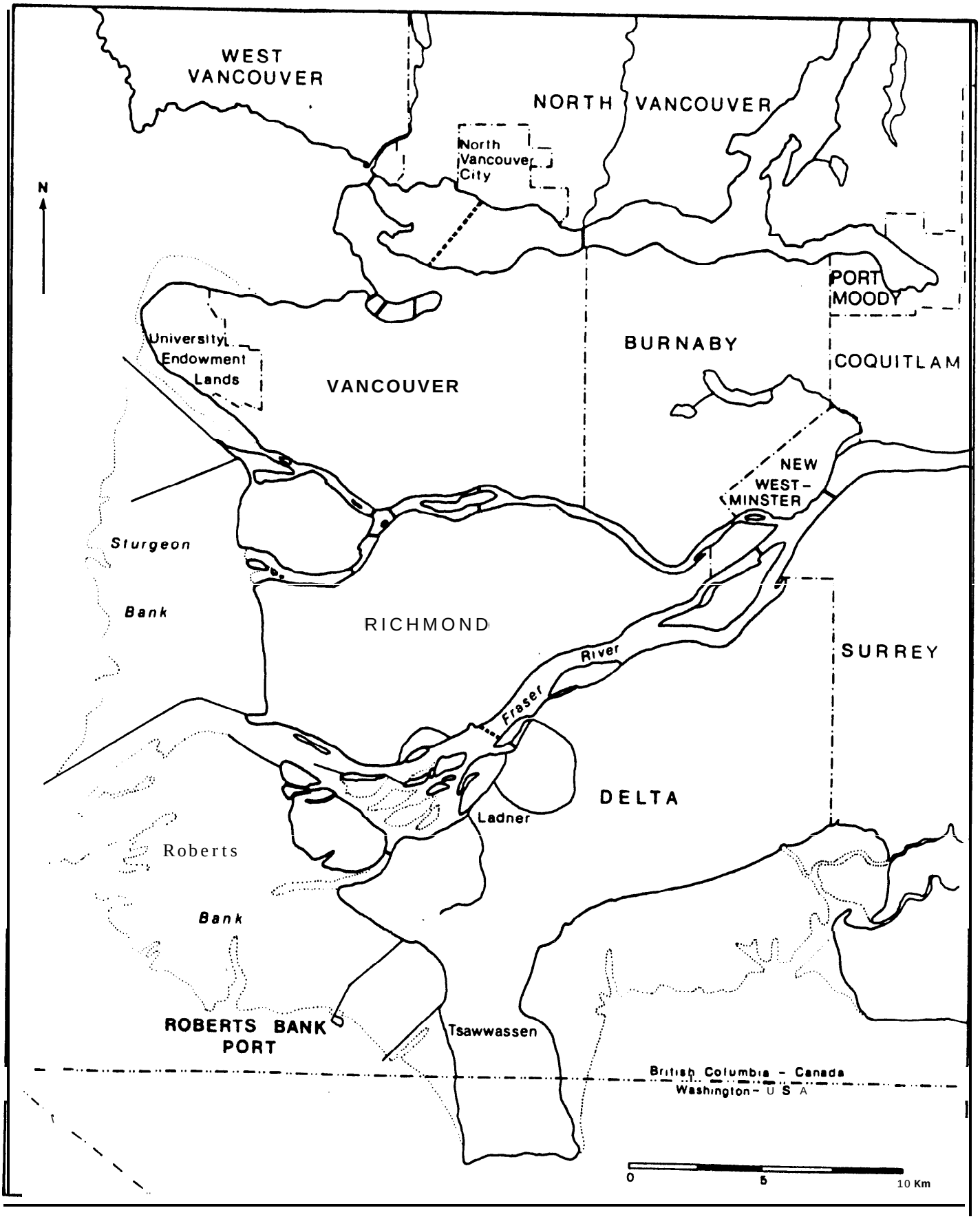
3.1 Background

The original Roberts Bank port facility consisted of a 20 hectare man-made island created from dredged materials. It was constructed in the late 1960's and operation started in 1970. It was then considered one of the largest single berth terminals in Canada. It consisted of coal train unloading and ship loading equipment, storage, stockpile for coal, a single ship berth and offices. It was linked to the mainland by a causeway, 5 kilometres in length and 30 metres wide, providing rail and road access. It was operated by Westshore Terminal Ltd. and was used for handling coal and coal products from the Kaiser Resource Mines and the Fording Coal Mines in southeastern British Columbia. Westshore operated the terminal under lease from the Vancouver Port Authority. The Port of Roberts Bank accommodated ships averaging 65,000 tons deadweight. However, the maximum ship size that could berth at Roberts Bank was 100,000 tons deadweight due to design limit of the wharf.

Roberts Bank is located south of Vancouver in the municipality of Delta (see figure 1) and is within the ecologically important Fraser River estuary supporting the most important salmon migration in North America. The Bank extends along the Delta front south from the main arm of the Fraser River to the Canada-US Border. It slopes gently from the dyked delta lowlands out to a deep water drop-off about 5 kilometres from shore. In the vicinity of the existing causeway, the exposed intertidal area is approximately 3,000 metre wide.

Another causeway, serving the Tsawassen Ferry, 3 kilometers in length, is located 3 kilometers south and is parallel to the Port causeway.

FIGURE 1



Project location

The Roberts Bank ecosystem is characterized by a variety of ecologically important habitat types. The most important among these were large beds of eelgrass. These habitat types are essential to the populations of varied estuarian life forms including fish, crabs and birds. These beds of eelgrass were divided by the construction of the Port causeway in the late sixties.

Roberts Bank is situated in the seaward fringes of the municipality of Delta, fast becoming urbanized as a residential suburb of Vancouver. There are still large areas of agricultural land within the municipality. Two residential areas of Delta, Tsawassen and Ladner are directly affected by the Port activities. In addition an indian band, the Tsawassen Indian Band, occupies 200 hectares of land on the shore between the two causeways occupied by the Port and the Ferry Terminal respectively.

3.2 The Roberts Bank Port Proposal

In 1976, the National Harbours Board on behalf of the Port of Vancouver proposed to expand the existing facilities at Roberts Bank by constructing 80 to 110 hectares of storage area adjacent to the existing terminal (see figure 2). The proposed expansion called for the addition of four new terminal areas (20 hectares each), an administrative area, an increase in the ship berthing channel and the addition of a ship turning basin. The causeway was to be enlarged to accommodate increased rail trackage and road required for the new terminals. The proposal had also been conceived to balance the amount of fill required for the construction of new terminals with the amount of dredging necessary to expand the ship berthing and turning basin area.

The proponent anticipated that the most probable use of the terminals would be for transhipment of coal in the case of two terminals, grain in the case of one and potash or potash and sulphur in the case of the other. It was also proposed to create an area for the probable handling of bulk liquids using a pipeline connection between one of the berths and a tank farm to be located in an industrial area on the northwest side of the causeway. Information presented during the assessment could not support the requirement for expansion for commodities other than coal.

3.3 Public Review of the Proposal

In accordance with the Environmental Assessment and Review Process (EARP), the Port Authority requested a formal review of the proposal. An environmental assessment panel was appointed by the Minister of the Environment to conduct the review and to report back to him on the acceptability of the proposal and under what conditions it could proceed if it was deemed acceptable.

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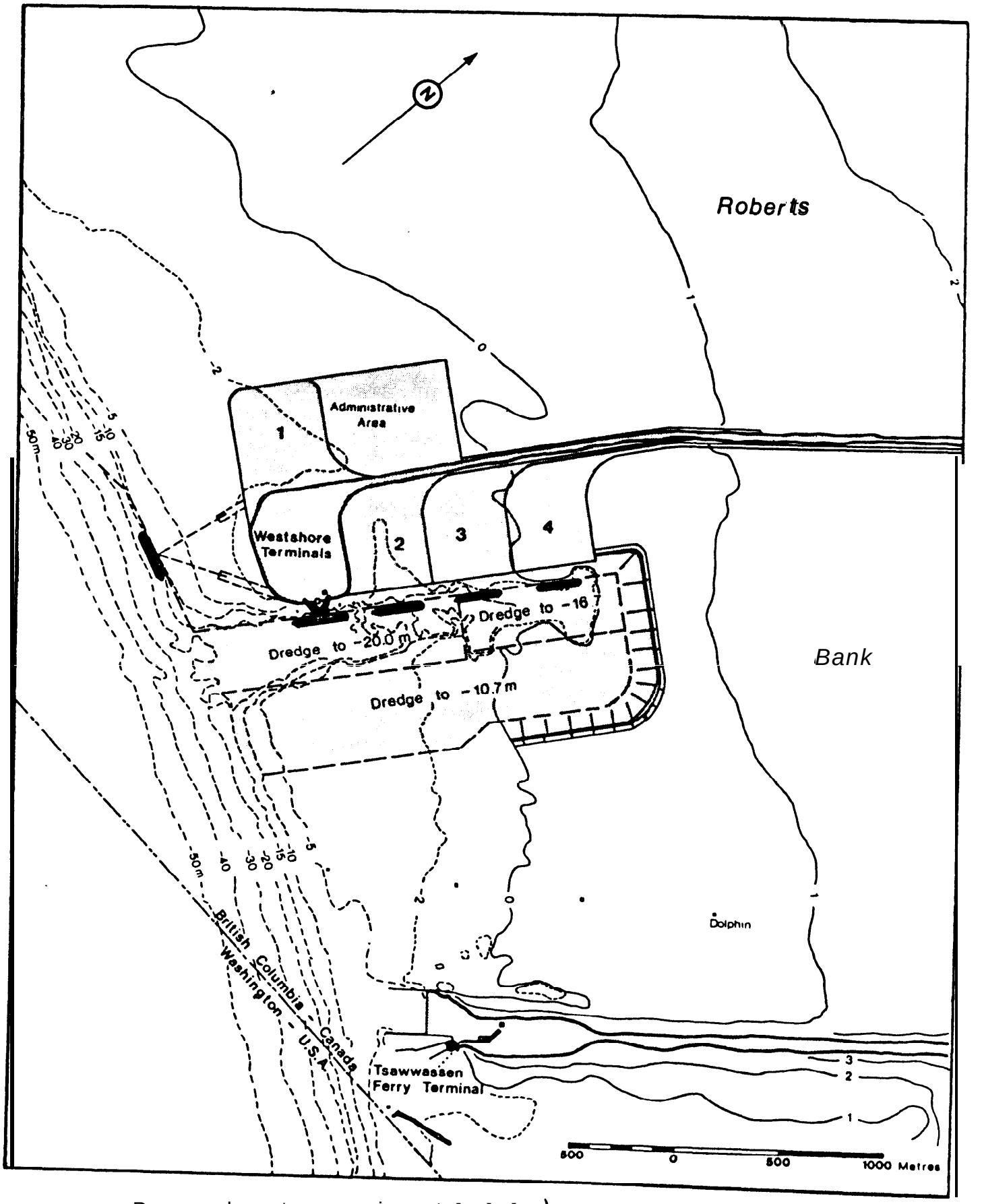
FIGURE 2



Proposed port expansion. **(shaded)**

The Panel's first task was to develop guidelines to be used by the proponent in preparing its Environmental Impact Statement (EIS). After public consultation on draft guidelines, the Panel issued its final guidelines to the National Harbours Board in March 1976. In October 1977 the proponent submitted an Environmental Impact Statement (EIS) to the Panel which was found deficient as a result of a review by the Panel, government agencies, technical experts and other participants in the review. The Panel, therefore issued the proponent with a statement of deficiencies in February 1978. The proponent responded in June 1978. Satisfied that the proponent had responded adequately, the Panel called for public hearings to be held in late October and early November of 1978. The hearings could not be called in August, after the normal 30 day period due to that being the height of the commercial fishing season, thereby preventing fisherman from participating. The hearings lasted 6 days and were held in the communities of Richmond and Delta adjacent to the proposed development.

Because of the possible encroachment of the proposal on what is recognized as one of the most dynamic and productive ecosystem in Canada most of the issues discussed at the hearings were ecological although some discussions on socio-economic issues took place. This ecosystem supports the Fraser River Salmon Fishery, one of the most important fishery resources on the West Coast.

The main ecological concerns raised during the hearings were related to the impact of the Port expansion on the habitat for salmonids, crabs and waterfowl. Furthermore arguments were expressed and much discussion took place on the impacts of the project on the ecology of Roberts Bank area and its interrelationship to the broader context of the Fraser River Estuary ecosystem. Dyking of the Fraser River earlier at the turn of the century and the building of the first terminal at Roberts Bank in the late sixties have already had a major impact on the ecosystem. The need for the proposal was also a major issue of concern during the review. These issues are discussed in more detail below.

3.3.1 Erosion of Eelgrass Beds and Other Benthic Habitats

An important issue of concern repeatedly discussed during the assessment of the Roberts Bank expansion proposal was the potential for increased erosion of eelgrass beds and other aquatic vegetation which are recognized as major habitat and feeding grounds for juvenile salmonids, crabs and other benthic organisms. Various organisms living in eelgrass serve as food for fish and birds particularly for juvenile salmonids.

Concerns were therefore expressed regarding the impacts of the proposal on the eelgrass beds which could be caused by a change in wave or current regime or by the dredging and filling activities related to the construction of the proposed expansion including the enlargement of the turning basin.

Information was provided concerning the change in the wave and current regime caused by the existing causeway which had resulted in the stabilization of the sediments in the intercauseway area.

However the assessment of information presented during the review led the Panel to conclude that the increase or decrease in salmon fishery was directly proportional to the addition or deletion of eelgrass beds and therefore that this important habitat should be protected.

Studies presented by the proponent and technical experts and briefs submitted to the Panel revealed that the areas on the southeast of the causeway and immediately adjacent to the existing terminal had little eelgrass and other living organisms. It was therefore concluded that a limited development could be realized with little impact on eelgrass if it took place in the areas of the proposed terminals 2 and 3 (see figure 2).

The Panel therefore recommended that a hydraulic model be developed to test whether the expansion could avoid excessive erosion of eelgrass beds and other benthic habitat.

3.3.2 Estuarine Pollution and Water Quality

The construction of the causeway in the late 1960's created a physical obstruction to the natural flow of the water from the Fraser in a south easternly direction and consequently has altered the distribution of sediments from the river along the littoral of the Roberts Bank. The sediments flowing from the Fraser River are now deposited south of the junction of the Tsawassen Ferry terminal causeway and the shore (see figure 3).

Consequently concerns were expressed during the assessment regarding the effect of dredging and filling operation on water quality during the construction phase of the proposed expansion. The main impact would be on benthic habitats and non-swimming organisms which could be destroyed by dredging.

FIGURE 3

Aerial photograph of intercauseway area.

Eelgrass requires clear salty water to grow. The building of the causeway in late sixties has provided a good environment for the growth of eelgrass in the intercauseway by keeping brackish water from the Fraser out of the area. Construction activities however would result in greater turbidity in local water. This kind of disruption is however considered transient and recolonization of disrupted coastal areas has been observed elsewhere to take approximately a year for some species.

It was concluded that if construction was timed to avoid certain critical life stages of crabs and fish, water pollution would not be an environmental problem.

Concerns were expressed regarding the lack of contingency plans to deal with accidental run-off from storage areas and discharge of oily ballast water. Bulk liquids such as hydrocarbons present a greater threat to an estuarian environment than bulk solids. For instance, if hydrocarbons were spilled in the intercauseway it could be spread by currents over the whole area causing a serious impact on biological productivity. It could spread beyond the intercauseway and endanger the whole Delta.

3.3.3 Cumulative Impact on the Estuary

Concerns were expressed regarding the cumulative effects of major development on the Fraser Estuary particularly as it is recognized as one of the most dynamic and productive **ecosystem in Canada.** Many participants expressed the view that the Roberts Bank proposal not be considered in isolation of other proposed developments in the estuary. The Panel shared the view that more study should be done on the entire estuary but questioned whether a single proponent should be taxed with this responsibility. Instead it felt that it was a government responsibility and expressed surprise that it had not been done previously.

3.3.4 Justification for the Expansion

Major disparities existed between the proponent's projections and the intervenors opinions on the project's need. Information presented at the hearings indicated that there were sufficient facilities in other ports on the west coast to service present and future requirements for

handling potash and sulphur. Therefore the Panel concluded that there was no need to expand Roberts Bank existing facilities for the transhipment of those commodities.

Major objections were expressed concerning the handling of bulk liquids at Roberts Bank because of the risk a spill could have in the intercauseway and the estuary.

No concensus was established among the industry representatives concerning the need for a future coal port facility. However coal authorities presented growth projections that justified the establishment of a southern port facility. With the information received during the review the Panel concluded that the only demonstrated need for expansion at Roberts Bank was for coal shipments.

3.3.5 Air and Noise Pollution

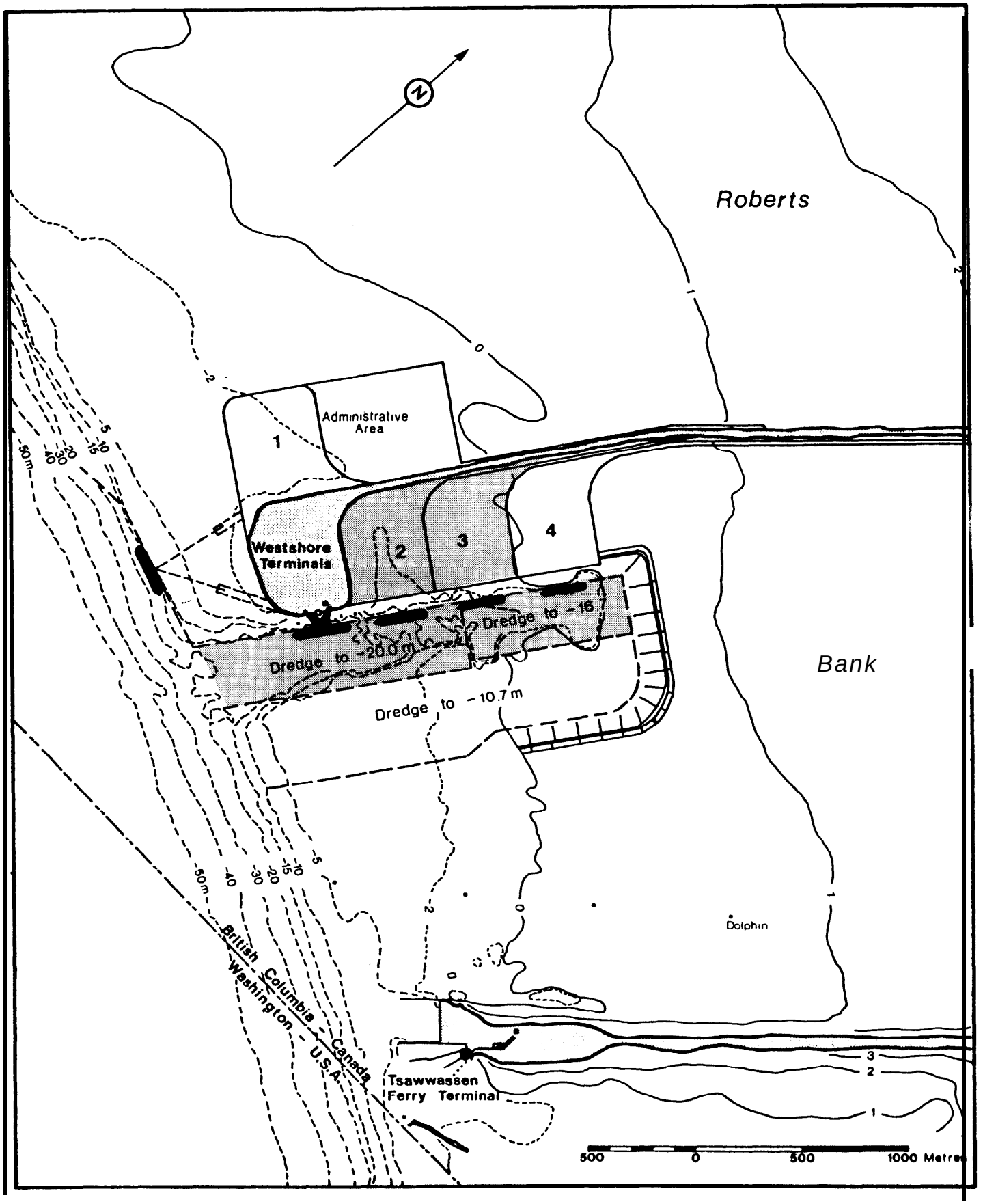
These two issues were the object of some concern by participants. The increase in number of trains would increase the amount of coal dust and noise levels from engines idling while being unloaded. The increased amount of coal stored on the expanded facility would also increase the amount of coal dust in the air. The Panel, however, concluded that mitigation measures could be implemented to minimize these impacts.

3.4 Report of the Environmental Assessment Panel (March 1979)

After the hearings, the Panel analyzed the information received during the review and prepared a report to the Minister of the Environment concerning the acceptability of the proposal and the conditions under which the proponent could proceed. The report contained 19 recommendations, 10 of which were to be implemented if a reduced expansion were to take place and 9 general recommendations to be implemented whether or not port facilities were to be expanded on this site.

The major conclusion of the Panel was that the proposed expansion would cause major disruption to an area which is part of the most important estuarine ecosystem in North America. The Panel recommended that a limited expansion could be tolerated in the area of proposed terminals 2 and 3 (see figure 4). This conclusion was reached based on a recognition that the need for expansion was related to the increase in coal transhipments projected for the future, that the area of the proposed expansion was not of uniform ecological value or sensitivity and that an area of minimal ecological existed within the area proposed for expansion.

FIGURE 4



Recommended limits of expansion (shaded)

However a number of important conditions were also added: 1) the ship channel not be enlarged significantly beyond the existing channel; 2) any proposed expansion be tested on a hydraulic model to determine a design that would prevent erosion of eelgrass beds and other benthic habitat; 3) a construction schedule be developed to minimize impacts on fish and crabs in the area; 4) an environmental coordinator be appointed to serve as a point of contact for public and technical agencies during the design phase and construction; 5) an Environmental Review Committee under the chairmanship of Environment Canada be formed to monitor the implementation of the Panel recommendations and compliance to requirements of various government departments and; 6) further work on environmental design of a reduced expansion be done and be made available to the public.

General recommendations were also made concerning:

1) the prevention of further shoreword erosion of the existing berthing channel;
2) prohibition to ship bulk liquids from Roberts Bank; to bunker ships at Roberts Bank; and to discharge dirty ballast water;
3) the development of an environmental emergency plan.

3.5 Implementation of Panel Recommendations

In 1980 an Environmental Review Committee was formed to ensure that the recommendations contained in the Panel report were responsibly addressed. It overviewed the construction of the Port between 1981 and 1983 and has since prepared two reports on action taken concerning the Panel recommendations and results obtained. A few observations are worth noting.

The configuration of the Port expansion took place in a slightly different way than recommended. The final design of the new terminals and expanded causeway was developed after additional studies were conducted at the request of the Environmental Review Committee as had been recommended in the Panel report. The ship turning basin was designed in accordance with the safety requirements of the Canadian Coast Guards. These designs were reviewed in a series of public meetings in December 1980. Based on these designs, one pad was built in the area identified by the Panel as less important ecologically than the rest of the intercauseway area while two pads were built North East of the causeway. To date only coal has been handled at the Port. Only one of the additional pads is being used for coal handling while two continue to be unused.

The hydraulic model testing of the proposed expansion has been conducted. Conclusions drawn from the test of the scale model revealed that the reduced expansion would not result in erosion of eelgrass beds or benthic habitats. On the basis of the results, the final design for expansion was approved. Monitoring after the expansion was constructed confirms the predictions of the hydraulic model.

A schedule of construction activities was developed to minimize impacts on fish and crabs in the area. Various biological monitoring programs were recommended by the Environmental Review Committee and implemented by the National Harbours Board. Studies focussing on entrainment of organisms by suction dredges were used. Crabs were equipped with radio transmitters and released near an operating drill in order to investigate the effects of dredging. Based on the results of studies of this kind, dredging activities were monitored closely during construction and could be curtailed in periods deemed important to vital stages of fish and crabs. The studies and the monitoring helped delineate critical periods and sensitive areas when the impacts of construction could be minimized.

To prevent further shoreward erosion of the existing berthing channel the Port of Vancouver developped an erosion control structure, consisting of a broad shallow trench filled with gravel and topped with protective rock, for the ship channel and turning basin. These protection works extended around the perimeter of the dredged basin. The structure was constructed during the winter of 1981/82 at the cost of $1.5 million. Studies conducted in order to determine the effectiveness of the protection works revealed that the largest of the dendritic channels, which formerly drained into the original channel and the borrow pit, filled in and revegetated with eelgrass within two years of construction of the erosion control structure. Annual monitoring has been conducted by the Port of Vancouver to evaluate the long term effectivess of this measure.

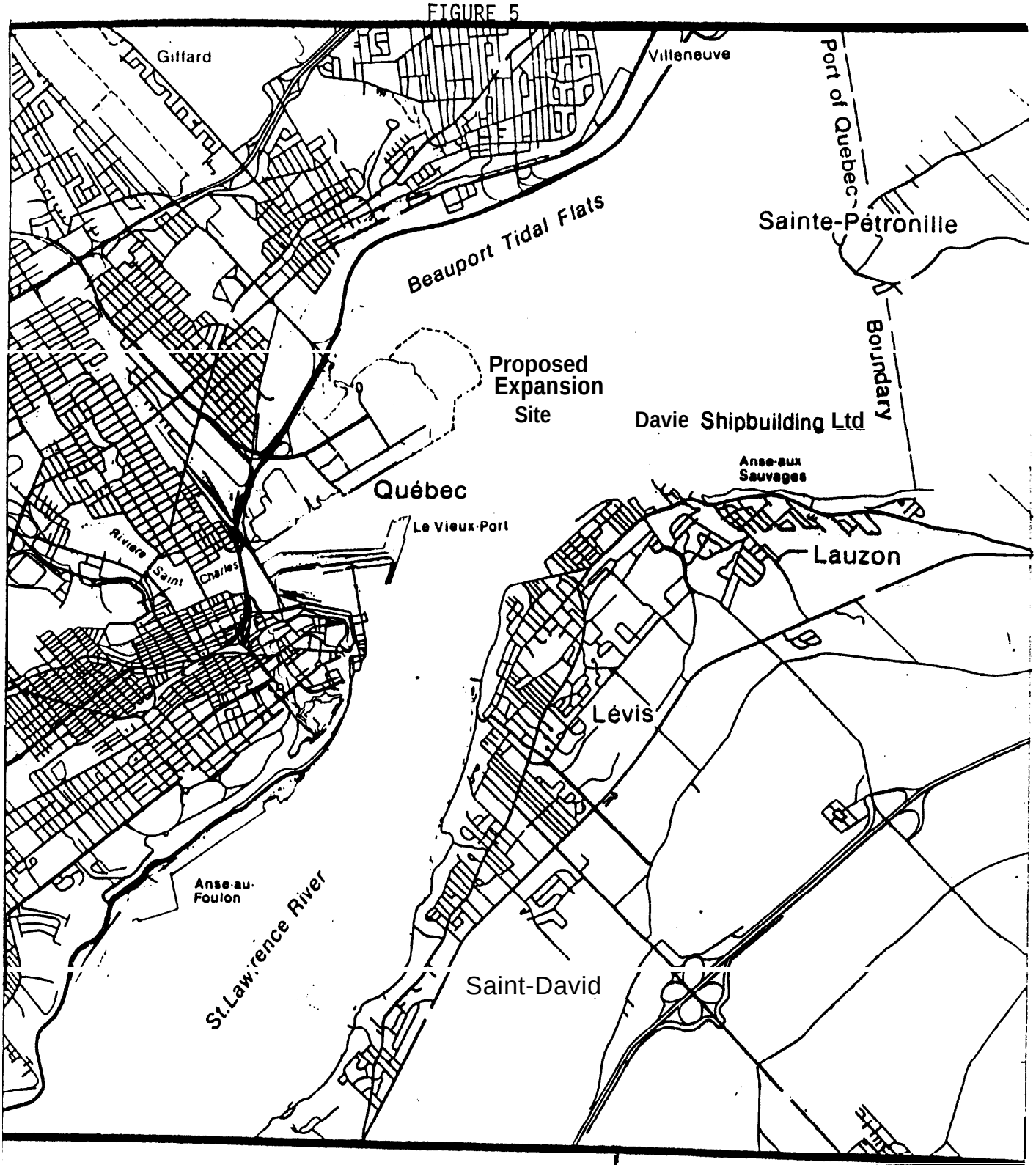
In general, all Panel recommendations were complied with and their implementation monitored.

4. THE PORT OF QUEBEC EXPANSION MASTER PLAN (1978-1984)

4.1 Background

The Port of Quebec occupies the entire north bank of the St. Lawrence River in the heart of old Quebec City (see figure 5), more than 1,400 kilometres inland from the Atlantic Ocean. Its location places it at the centre of economic activity of the markets of

FIGURE 5



AREA UNDER REVIEW

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EXTRACTED FROM **ENVIRONMENTAL** IMPACT
STATEMENT FOR THE **PORT OF QUEBEC EXPANSION**

northeastern North America. The Port can accommodate ships up to 150,000 tonnes deadweight. Thus, it serves as a centre for trans-shipment of bulk goods from lakers coming down the St. Lawrence Seaway to ocean-going cargo vessels.

The Port's infrastructure consists of some 30 wharves and a total port-oriented area of 188 hectares. In 1981, the Port handled over 15,000,000 tonnes of cargo according to the latest statistics available at the time of the final phase of the environmental panel review. The urban area north of the Beauport Flats (Battures de Beauport) is primarily residential with a commercial and industrial sector along its southern fringe which provides a transitional buffer between the residential zone and the Port.

The Beauport administrative district includes the intertidal shorelands, an important ecological habitat famous for its wealth of marine organisms, plants and wildlife, both marine and avian. In addition to its traditional port function, this sector has gradually attracted increasing numbers of local residents and visitors to a sandy beach which developed naturally following construction of an earlier wharf.

Provincial and federal authorities alike take a keen interest in protection of the unique ecology offered by this intertidal shoreland. For example, further to public hearings on the proposed Dufferin-Montmorency provincial expressway in 1979, the Quebec Government modified the original engineering design such that the new road would skirt the shoreline instead of encroaching on the Beauport Flats.

Finally, it is relevant also to note that the Quebec region's socio-economic orientation is, in accordance with its function as the seat of the provincial government, primarily directed towards the tertiary sector, with the public service and tourism predominating. For this reason, during the Quebec region's Economic Summit held in September 1973, spokesmen for the region's leading socio-economic interests stressed the need to diversify and generally strengthen the regional economic infrastructure, an aspect relevant to the project's assessment.

4.2 The Port's Initial Proposal (1978)

In 1978 the Port of Quebec Authority unveiled an ambitious master plan for carrying out future expansion in the Beauport Flats which, encompassed all of the tidal flats and covered 440 hectares. In accordance with the procedure established by the federal Cabinet in 1973 and modified in 1977, an environmental assessment panel was appointed in the autumn of 1978 with the mandate to conduct a public review of this proposal.

Taking into account the Quebec provincial government's special interest in this problem area, the federal Minister of the Environment invited his Quebec colleague to nominate a member to the Panel. The 1978 master plan called for the filling of all of the tidal Beauport Flats and was designed to accommodate marine as well as port-industrial activities in three distinct zones: one each for marine, intermediate and industrial operations. Significantly, the master plan's conception would have resulted in complete disappearance of the tidal flats.

In accordance with EARP, the Panel issued preliminary guidelines in October 1978 which were discussed at public meetings the following month. In response to the views and concerns expressed at these public meetings, the Panel broadened and finalized its guidelines, communicating them to the proponent, the Port of Quebec Authority, in January 1979. The Port was thereby instructed to prepare an environmental impact statement (EIS) describing the nature, scope and predicted impact of the project.

In its covering letter, the Panel reminded the Port that at the public meetings many had expressed concerns about the timing and extent of the proposed expansion, its location and its net value to the regional economy. The Panel therefore suggested that the Port re-examine the project in the context of overall development of the Quebec region, and that this re-evaluation take place in cooperation with provincial, regional and local municipal representatives.

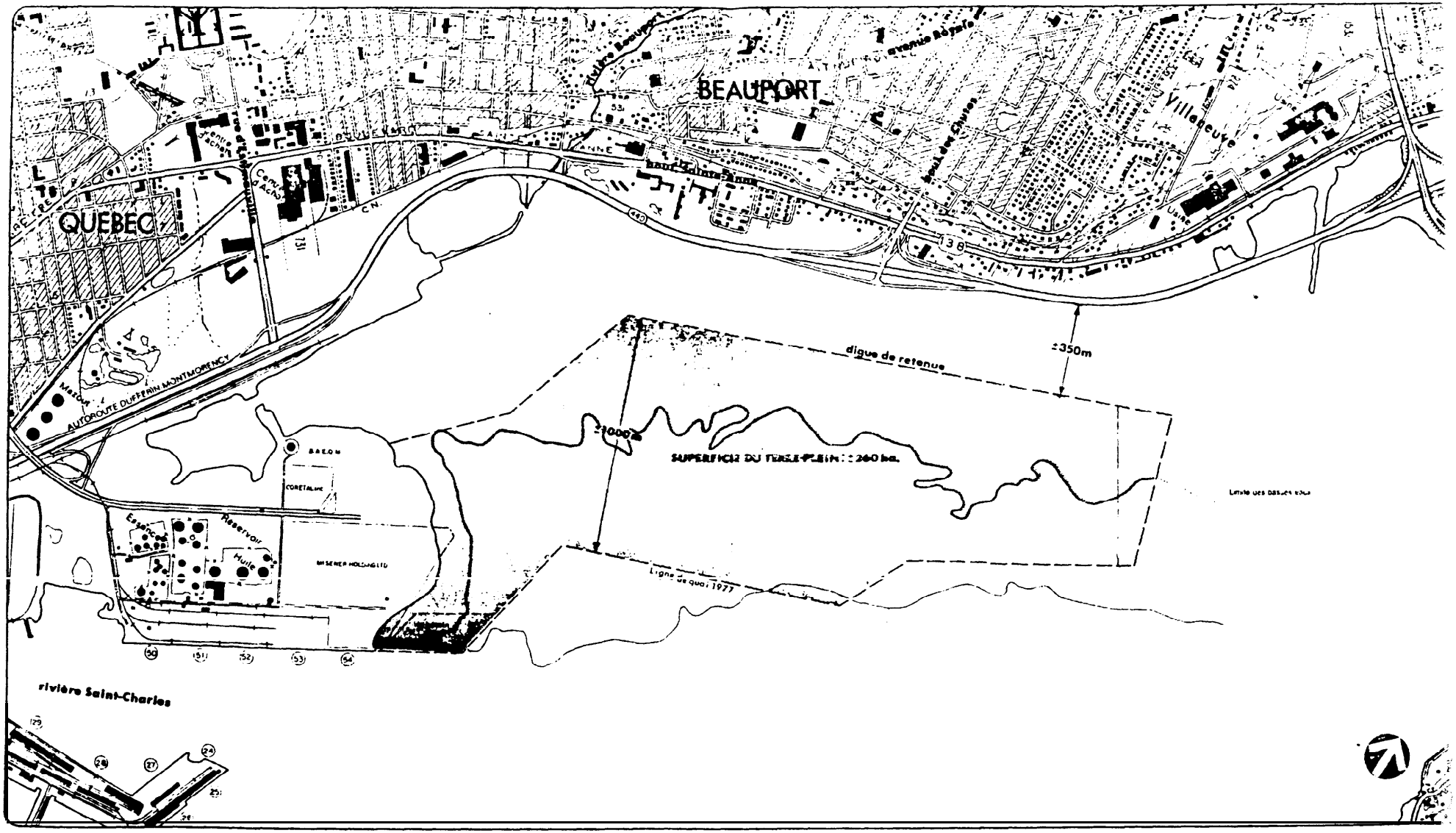
It was obvious at this stage of the review, based on the public input to the Panel's guidelines, that the Port Authority would have to justify its need for such a large expansion proposal particularly because of its major encroachment on the Beauport tidal flats. Moreover, the lack of socio-economic information concerning the proposal was also noted by the Panel.

4.3 The Second Expansion Master Plan (1981)

Three years later (December 1981), the Port Authority responded to the Panel's 1979 guidelines by submitting an environmental impact statement (EIS) for a new and more modest expansion proposal. This new master plan encompassed only 210 hectares and restricted development to the lands lying below the low-water line (see figure 6). Furthermore, the industrial zone foreseen in the original 1978 proposal had been eliminated.

While this second master plan described a number of likely port activities, it did not specify how the newly created land area was to be used or according to what schedule filling was to proceed. The plan also described an inventory of all potential development sites along with an

FIGURE 6


BEAUPORT
QUÉBEC
digue de retenue
±350m
±1000'
SUPERFICIE DU TERRE-PLEIN : ± 260 ha.
Ligne de quai 1977
rivière Saint-Charles
Port de Québec
ÉTUDE DES RÉPERCUSSIONS ENVIRONNEMENTALES DE L'EXTENSION DU PORT DE QUÉBEC
Projet de développement étudié
Échelle 1 : 15.000
NOVEMBRE 1981
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analysis and evaluation of the proposal's impact on the socio-economic and biophysical environments.

All interested citizens and organizations were invited to comment on whether the Port's EIS complied with the guidelines issued by the Panel in 1979 and whether the statement contained sufficient information to allow for a thorough evaluation of the proposal. The Panel granted a period of four months for preparation of written briefs and, during this delay, held a public information meeting at which the Port of Quebec Authority provided clarifications concerning its EIS along with other relevant port information. Panel members and participants questioned the Port Authority and its consultant about the master plan and its biophysical and socio-economic impacts.

As a result of the many representations concerning the project's socio-economic impact made at the meeting by most intervenors, the Panel asked the proponent to prepare a study of the area involved, including a profile of the local population, a summary of the employment situation, its public and private infrastructure and its fiscal status. The proponent was also requested to outline in what way the proposal would affect access to the river and the general aesthetics of the Beauport area. Finally, the project's impact on the region's social, economic and cultural life was also to be assessed.

The Panel also noted that the EIS did not demonstrate that protection of the tidal flats at Beauport was satisfactorily guaranteed by the project. It therefore requested the proponent to describe and analyze the environmental impact on the tidal flats of each stage of the project, to elaborate on its residual impacts, and to describe the mitigating steps planned for each stage of construction.

It was obvious at this stage of the Panel review that although there were still a few biophysical concerns, most of those participating were now more concerned that the socio-economic impacts such as access to the water front, use of the area for recreational purposes, visual impacts, noise, etc., had not yet been adequately addressed.

4.4 The Final Expansion Project (1983)

In November 1983, the proponent presented the Panel with a new EIS in support of an even more reduced project covering only 42.5 hectares. Further modified so as to entirely avoid the Beauport tidal flats, the newly proposed expansion perimeter would abut on the existing facility's northeastern limit and comprise 38 hectares for port activities, screened by a greenbelt of approximately 4 hectares, featuring a beach measuring up to 4.5 hectares at low tide. The greenbelt would vary in width between 50 and 90 metres, providing a buffer zone between the Port facilities and the recreational areas open to the public.

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Land fill would be obtained from material dredged in the river for a total of some 2,600,000 cubic metres and construction would proceed in three stages. The beach would be completed at the end of the second stage while the greenbelt would be landscaped during the third stage.

As to the marine transport sector itself, the proponent stated that it would ensure that future users abide by the rules to be promulgated by the Quebec Urban Community as part of its regional development master plan. Figure 7 outlines the proposed construction phases.

4.5 Final Review of the Quebec Port Expansion Proposal (1983-1984)

By the end of 1983, the Panel was satisfied that the proponent's new studies and final EIS answered all the questions raised both in its guidelines issued in January 1979 and in its request for additional analysis of May 1982. Consequently, public hearings were called in order to receive the views and opinions of interested citizens and organized groups regarding the latest expansion proposal.

Five days of public hearings were held in Beauport in March 1984 to discuss the remaining areas of concern. The main issues that were discussed at those hearings and for which the participants in the review and the Panel needed a commitment on the part of the Port Authority are presented below.

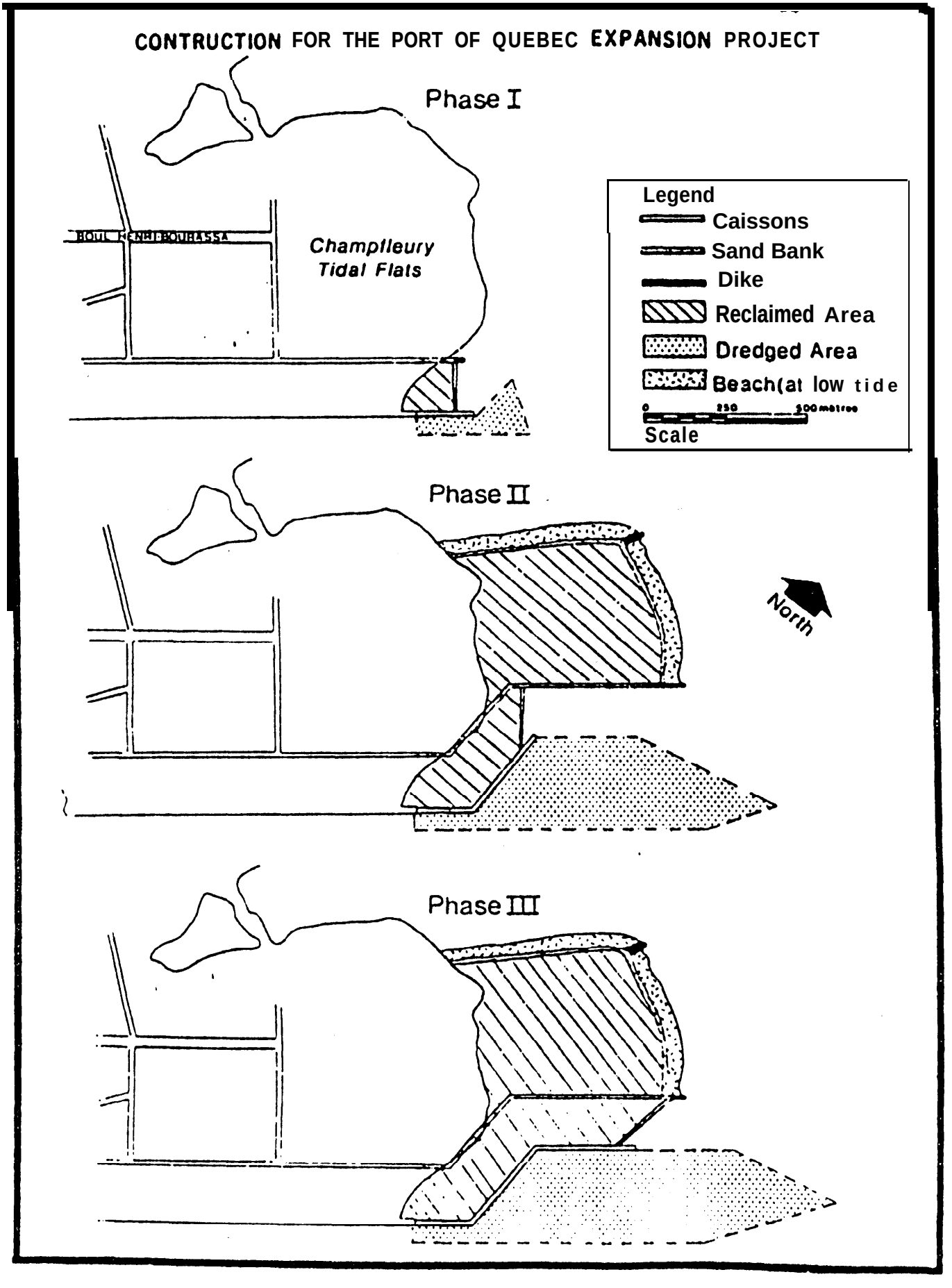
As the total area to be covered by port expansion had by then been drastically reduced by the proponent so as to avoid any encroachment on the Beauport Flats, most of the biophysical concerns for the tidal ecology's protection appeared to have been satisfactorily answered. This evolution in the assessment process led all participants -- the public, the proponent and the Panel -- to devote increased attention to further potential refinements in the area of the project's socio-economic effects. This shifting emphasis took the form of devising and evaluating several imaginative alternative design and construction features.

Even so, one specific aspect of the intertidal ecosystem remained always uppermost on the biophysical priority list, i.e. its extreme south-west inlet (le rentrant sud-ouest) whose continued careful protection was to be safeguarded in view of its significance as a habitat for migratory birds, particularly during spring and autumn.

4.5.1 The Beach

An important element repeatedly referred to throughout the assessment exercise was the beach, which had been created fortuitously after an earlier port development, and whose remarkable socio-economic net

FIGURE 7



EXTRACTED FROM WE ENVIRONMENTAL IMPACT STATEMENT FOR THE PORT OF QUEBEC EXPANSION

benefits numerous members of the public strongly wished to perpetuate. Taking this desire into consideration, the proponent, in its final EIS, provided for a series of small groynes around the perimeter of the proposed landfill which would facilitate the accretion of a new beach similar to the one currently in existence.

Indeed the Panel did not only recognize the importance of safeguarding the beach but eventually agreed with those participants in the assessment process who had insisted that construction of this new beach be moved ahead from Phase II, as originally foreseen by the proponent, to Phase I and recommended simultaneous construction of these two phases. This constituted a typical instance of environmental mitigation resulting in socio-economic benefits playing a role in the scheduling of a port development component.

4.5.2 Greenbelt Screening the Perimeter

Ranking alongside the importance of the proposed new beach was another mitigating measure introduced by the Port as a result of public representations in previous meetings. The greenbelt buffer zone (50 to 90 metres wide) would screen port activities from the beach area and any other recreational amenities that would eventually be accommodated along the beach, such as foot and bicycle paths. The Port Authority's commitment to **such an undertaking** was well received by public and Panel alike and it was agreed that the possible effectiveness of shrubbery and trees should be examined further in this connection.

4.5.3 Visual Impact

With respect to the visual impact of the Port expansion and its effect on adjoining real estate values, the Panel felt that the view of the beach and of windsurfers in action would add to the quality of that specific aspect of the local environment. If this was the case, the creation of the new beach could be considered a secondary benefit. The Panel concluded that if all the mitigation measures proposed by the Port Authority were implemented, adjacent properties to the development could benefit.

4.5.4 Areas of Administrative Policy

Finally, the comprehensive assessment process also yielded some noteworthy findings in the area of administrative policy at both provincial and municipal level. This unexpected result -- concerning issues lying outside the mandate and responsibility of the Panel -- was

due to strong concerns voiced by several environmental groups. These groups perceived a lack of adequate consultation with the public on the adoption of a comprehensive management plan to maintain public access to the St.Lawrence River in the entire Quebec City region.

The second finding in the area of administrative policy and regional planning was in connection with the construction of a Quebec Urban Community sewage treatment plant. The definitive location of this proposed plant was felt to require more careful review such that it would fit in harmoniously with the present satisfactory solutions being worked out for the Port expansion project, particularly the protection of the south-west tidal inlet. Many intervenors expressed concerns about the cumulative impacts of future developments in the area on the Southwest tidal inlet.

Once the hearings were completed, the Panel proceeded to write its report using all information received from the public at the hearings as well as all documentation provided by the Port. The Panel report was issued in September 1984.

4.6 Report of the Environmental Assessment Panel (September 1984)

A full discussion of the Panel's report is beyond the scope of this paper. In brief, however, the Panel considered and evaluated mainly the following aspects of the final Port expansion project in light of all the information gathered during the project assessment.

Regarding the need for port expansion, the Panel concluded that no one had seriously challenged the arguments on which the proponent based its proposal. The Port of Quebec had shown that existing wharf capacity was stretched to the limit and that there was no space left on which future facilities could have been economically built and operated. The 25 hectares or so still available had already been earmarked for definite use and, unless the Port was allowed to expand its facilities, it would be unable to attract and serve any new customers.

As to the scope of the proposed expansion, the Panel noted that the final Project fully met the requirements for protection of the tidal offshore lands at Beauport.

The Panel's main conclusion was that the Port of Quebec Expansion Project presented in November 1983 and as discussed at the public hearings could be implemented without unduly harming the biophysical environment. The Panel also concluded that the socio-economic impacts expected to be directly related to the biophysical environment were also acceptable. Furthermore, the Panel noted that this project would have a positive

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impact on local employment and on municipal finances. For all these reasons, the Panel concluded that the project could proceed taking into account a series of important recommendations.

The main conditions on approval of the Quebec Port Expansion Project, were aimed at ensuring full compliance by the proponent with the numerous mitigating measures envisaged by several participants in the assessment and review process. To this end formation of a "Monitoring Committee" including ministerial and municipal representation was advocated. With respect to the scope of further expansion of port facilities in the tidal flats sector of Beauport, the single most controversial issue surrounding the Quebec Master Plan for the last six years, the Panel made it quite clear that "no further expansion beyond 42.5 hectares" should be allowed.

5. CONCLUSIONS

5.1 As demonstrated throughout this paper, the Canadian Environmental Assessment and Review Process (EARP) is an important planning tool designed to assist proponents in the design of their projects early in the conception stage. The cases of the proposed expansions of the Port of Roberts Bank and the Port of Quebec presented in sections 3 and 4 are good illustrations. The proponents, using the EARP process, tested the acceptability of much larger proposed developments (100 hectares and 440 hectares) than were approved (40.0 hectares and 42.5 hectares) as a result of the public reviews. Change was accomplished through public consultation which evaluated all environmental and socio-economic aspects of the projects. No one can yet determine the overall cost-benefit associated with the development of the Port of Quebec Expansion because the project has not yet been developed. In the case of Roberts Bank, however, 3 new pads were constructed and one is currently used for coal handling while two pads are still unused. To date there seems to be ample port facilities in the Vancouver area for the handling of other commodities such as potash, sulphur, etc.

It can, therefore, be concluded that such processes as EARP are useful and practical tools for the evaluation of major port expansion proposals from both the environmental and the socio-economic points of view as long as the process is implemented early in the conceptual stage of the proposal.

5.2 Furthermore, both assessments revealed that:

- o while strictly internal considerations led the Port Authorities to plan expansion on sites adjacent to existing facilities and/or which they own or control, such lands may be environmentally sensitive (tidal or marshy) offshore areas;

o when such expansion is to take place in or near centres of population, as was the case for both expansion projects but more specifically for the Port of Quebec, the planning task is further complicated and constrained by the likely injection of several socio-economic concerns such as:

  -- noise, vibration, dust and noxious emissions during construction and/or ongoing operations;

  -- visual impacts on the surrounding inhabitants, cottagers and visiting tourists (a particular concern in capital and other cities where architectural aesthetics enjoy high priority);

  -- many different recreational amenities usually associated with waterfront real estate that may be adversely (or indeed sometimes favourably) affected;

  -- the local employment situation that may require more (or less) labour- intensive economic activity on the site depending on its relative oversupply (or scarcity) in the region; and finally;

  -- local municipal finances that may also be directly/indirectly affected by the kind of port expansion, or indeed land-use, envisaged for the site.

o in the review process for the Port of Quebec Expansion Project, ample and in-depth information on all the above aspects were gathered and made available for public discussion. This was done with the full cooperation of the Port Authority, which showed great ingenuity in gradually revising its alternative designs and mitigating measures as consecutive public meetings, hearings and consensus-formation progressed. Because of public consultation and discussion of issues of concern to local citizens, the Port of Quebec Authority was granted approval to expand on 42.5 hectares which included recreational and greenery areas rather than the originally proposed 440 hectares strictly for port and industrial use. Moreover, the Port Authority itself realized through the review that 42.5 hectares was all it required to meet its need.

o in the review process for the Port of Roberts Bank Expansion proposal many concerns were expressed concerning the adequacy of the information presented in the Environmental Impact Statement and the lack of justification presented by the proponent for this expansion. The public review helped the Panel conclude that the expansion sought was not appropriate. It also permitted an extensive scientific discussion on the need to protect this very important ecosystem. Using a public process, as a planning tool, the Port Authority realized that a limited expansion was all it

required to fulfil1 its need. Furthermore, the review also provided for the establishment of an Environmental Review Committee which has closely assisted the Port Authority in minimizing the impacts of its construction activities and in implementing the Panel recommendations.

5.3 One of the main features of EARP is its informal and non-judicial nature based on self-assessment by the proponent. Public participation is an integral part of environmental assessment in Canada, and its significance has grown in all jurisdictions (e.g., provincial, territorial, etc.). People want to participate, either in their capacity as affected parties or as representatives of national or regional organizations or interest groups. In Canada, this is more evident at the phase of EARP where proposals are referred for review by independent panels of experts, as was the case in the Port of Quebec and Roberts Bank proposals.

5.4 The original (1973-74) procedure was aimed predominantly at purely ecological aspects of a proposed development (i.e., biophysical, esthetical, noise, quality of life, etc.). Since then, practical experience has shown that the inclusion of socio-economic cost-benefits along with the environmental ones enables everyone involved to form a more informed opinion on the proposal under review. Apart from a small minority, a general consensus can usually be obtained based on the input of citizens who are concerned with the quality of life in their community. The cases illustrated in this paper are good examples.

5.5 The biophysical and socio-economic environment varies considerably over Canada's 10 million square kilometres. Consequently it is important for agencies involved in environmental impact assessment or for panels conducting public reviews of proposals to attempt to determine the relative importance of issues that need to be addressed in a specific EIA. Of late, panels and government agencies have used public consultation mechanisms to determine the scope and relative importance of issues related to the proposal under review.

Summarizing, the author feels justified in concluding that all relevant environmental and socio-economic costs and benefits to the communities affected by both proposals were carefully evaluated and weighed, thus ensuring an overall positive end result.

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7. ANNEX: THE CANADIAN ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS

WHAT IS THE EARP?

In Canada, environmental impact assessment (EIA) is recognized as an important tool for ensuring that economic development activities can occur in an ecologically and socially sound manner. It is a mechanism that permits the integration of environmental and economic considerations in decision making and it has become a major component of project planning and resource management in Canada. Basically, EIA is designed to identify, predict, interpret and communicate information about the impact of a project on human health and well-being, including the well-being of ecosystems on which human survival depends.

For more than a decade this process has been used by the Government of Canada to determine the potential environmental impacts of proposals that require a federal government decision.

The federal Environmental Assessment and Review Process (EARP) deals with the physical and biological aspects of development proposals: air, land, water, plants, animals and people. Its scope covers the potential environmental and directly related social effects of proposals; effects that could bring adverse changes to the natural environment and the effects that these changes could have on people. The scope of a public review may be extended by the ministers concerned to cover the broader socio-economic effects, assessment of technology, the need for the proposal, or other relevant issues.

Over its fifteen year history, EARP has been in continuous evolution. Changing priorities of governments and increasing public demand for an accessible and credible forum for addressing the environmental effects and related socio-economic effects of development proposals, particularly those of major large-scale undertakings, have been the stimulus for that constant evolution. The government is currently engaged in re-examining its process, with an eye to improving it. One of the conclusions reached to date is that the greatest need for change is at the initial assessment phase of EARP, where a need for a greater rigour in procedures and more accessibility by the public is apparent.

Canada was the second country in the world after the United States to adopt an administrative mechanism to conduct environmental impact assessment. Unlike the United States, Canada chose not to legislate its process. Many countries and Canadian provinces modelled their process on the Canadian EARP but chose to enshrine it in legislation. Canada is currently considering the possibility of legislating its process, including certain changes resulting from the ongoing public examination of EARP.

EARP was initially established by a decision of the federal Cabinet in 1973 and adjusted by Cabinet decision in 1977. On June 22, 1984, the process was strengthened and updated with the issuance of the Environmental Assessment and Review Process Guidelines by an Order in Council, an administrative order made by the Cabinet under the authority of the Government Organization Act, 1979.

This Guidelines Order is now the authority for the process. It reaffirms those aspects of the original policy and procedures that proved their worth and incorporates others that came about through evolution. Roles and responsibilities are more precisely defined and public participation is reconfirmed as an essential element of the process from beginning to end.

EARP is a planning, rather than a regulatory, process. It is a planning tool intended to help administrators make good decisions, just as economic and engineering studies are planning tools. It helps to ensure that Canada's resources are not inadvertently wasted or irretrievably lost through lack of awareness or poor planning.

The Guidelines Order applies to all departments, boards and agencies (such as the Port of Quebec Authority) of the Government of Canada. Parent corporations (mostly former proprietary Crown Corporations) are expected to make EARP a part of their corporate policies, unless this is not possible under their legislation.

A department with the authority to make a decision about a development proposal is called the initiating department or initiator, while the organization (or the initiating department itself) that intends to undertake the proposal is called the proponent.

WHEN IS EARP USED?

EARP is used when a department:

- intends to undertake any proposal of its own; or
- has the authority to make a decision about a proposal of another organization (private or public corporation) that:
  - might have an environmental effect on an area of federal government responsibility;
  - would require federal government financial commitment, or
  - would be undertaken on lands administered by the federal government, including the offshore.

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Departments are also expected to ensure that Canadian activities do not bring about adverse effects in other countries, including those benefiting from foreign aid.

HOW DOES IT WORK?

Initial Assessment

Initial assessment is the first step in the process, encompassing everything a department does to determine what potential adverse environmental effects a proposal may have. It begins with a screening: an assessment of potential environmental effects and public concerns carried out by the department that has decision-making authority for the proposal being examined (see figure 1). Initial assessment may lead to an additional detailed study called an initial environmental evaluation (IEE).

After a proposal has undergone initial assessment, it will either proceed, be abandoned, or be referred for review by a panel.

This phase of the process has been often criticized because it is not implemented consistently throughout the government. Furthermore, individual government departments' decisions are not subject to public input. Suggestions for reform concerning the initial assessment phase include creation of a list of projects which should be automatically subjected to an initial environmental evaluation (IEE) with an opportunity for the public to request a public hearing should there be dissatisfaction with the decision taken as a result of the IEE. Suggestions have also been made to include, at this stage, opportunities for the public to provide comments and concerns regarding the proposal under review by the initiating agency.

Panel Reviews

When an initial assessment leads to the decision that a proposal's potentially adverse environmental and directly related social effects are significant, or that public concern is such that a public review is desirable, the minister of the initiating department refers the proposal to the Minister of the Environment for a public review by an environmental assessment panel.

Public reviews of proposals may differ in type and focus, but two characteristics are always present: the proposal undergoes detailed examination by an independent panel of experts, and there is opportunity for public involvement, including participation in public hearings.

Each panel has a specific mandate, describing the nature and scope of the review, which is set out in the terms of reference issued by the Minister of the Environment.

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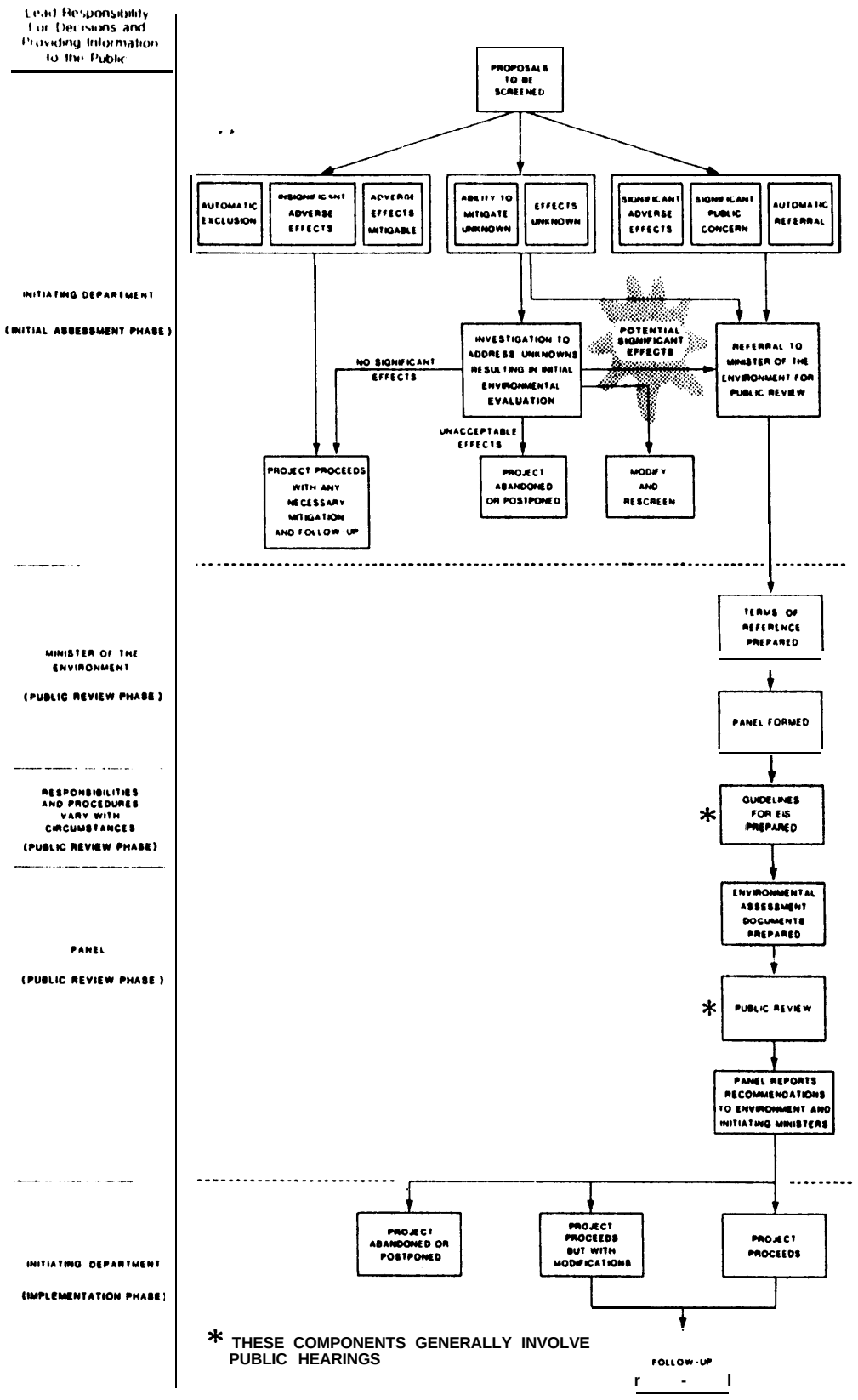
Figure 1 ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS



The nature of the proposal and the scope of the review will be specified in the terms of reference. Most often, a specific project, such as the cases presented in sections 3 and 4, is carefully examined and the panel eventually recommends whether the project should proceed, and if so, under what conditions. In some cases, when the Cabinet decides in advance that the proposal must proceed in the national interest, a panel review results in terms and conditions for the project rather than a decision on whether it should proceed.

The Panel

Panel members are appointed by the Minister of the Environment for the duration of the panel review. Anyone can be chosen, provided certain requirements for objectivity and competence are met. Members must be free of potential conflict of interest or political influence, and have special knowledge or relevant experience that is useful for reviewing the anticipated effects.

Normally, a panel is chaired by the Executive Chairman of the Federal Environmental Assessment Review Office (FEARO), or his delegate. When there is a joint review with a province or territory, the panel may be co-chaired by persons appointed by the two jurisdictions. Panels are supported by a secretariat from the FEARO staff. Administrative and financial arrangements for panels are managed by FEARO.

In 1987 a Study Group, composed of a retired judge, a lawyer and a university professor, was appointed to review the procedures used by panels for their public reviews and recommend whether these procedures should be formalized to become quasi-judicial. On the subject of panel members the Study Group report reaffirmed the principles stated above including the following recommendations:

> "Members of environmental assessment panels must be unbiased with respect to the proposal being reviewed and yet collectively have special expertise related to the proposal; they must be able to function as members of an interdisciplinary panel; they must understand and respect the purpose of the review process generally and the hearing process specifically; and they must be able to get the necessary information from the public hearings.
>
> Panel members must be independent of the federal government and of the proponent. Neither the proponent nor a special interest group should have the right to a representation on the panel."

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Panel Procedures and Activities

Each panel establishes and publishes its own operating procedures, based on FEARO's Procedures and Rules for Public Meetings.

FEARO's procedures and rules help ensure policy and procedural consistency between reviews. They may be modified by FEARO for a federal-provincial review; or in special circumstances, as for example, when the Office negotiates provincial or territorial participation in a review, federal participation in a provincial review, or participation in any other cooperative study of a proposal.

To conduct reviews, panels must have appropriate information upon which to focus. Typically, this begins with an environmental impact statement (EIS) describing the proposal and its potential effects.

A panel may issue guidelines for the preparation of an EIS by the proponent and hold public meetings beforehand to determine the scope and relative importance of issues to be covered by these guidelines.

Throughout the review, the panel secretariat disseminates information about panel activities and the review process. This is done through personal contact, letters, press releases, advertisements, libraries and local information centres. The public are encouraged to contact the secretariat for information and to participate in the public meetings. The Study Group on Hearing Procedures mentioned earlier also recommended 13 general principles of ethics that should be adopted de facto by any panel conducting a hearing under EARP.

The Environmental Impact Statement

All essential elements of a proposal are contained in one document, usually an environmental impact statement (EIS), which provides the focus of the public review.

An EIS generally describes the proposal; shows the need for the development under consideration and states alternatives; describes the present environment, resource use, and social patterns; predicts potential impacts; and indicates how the adverse impacts will be mitigated or avoided altogether. The EIS states where the proposed development will occur, how long it will last, how it can be carried out and the preferred way to do this so as to minimize any potential adverse impacts during construction.

The EIS is submitted to the panel and made public. Indeed, all material submitted to a panel during this, or any other stage of the review, becomes public information. The panel also allows sufficient time for review participants to examine and comment on the information received before it holds public hearings.

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If the information in an EIS is adequate, a panel goes ahead with its public hearings. If it is considered deficient, the panel requests more information and the hearings are delayed until the material is received and reviewed.

The Public Hearings

Public hearings, held by panels, fall into two categories:

- special meetings seek public input on issues requiring further study during the review, and receive comments on draft guidelines for the preparation of an EIS;

- final hearings provide the principal forum for public comment on the proposal and assist the panel in the eventual preparation of its report.

The hearings offer a public forum for supporting and opposing views of the proposal. To encourage the broadest public participation, hearings are as informal and flexible as practicable and are held in the area affected by the project. No one can be subpoenaed to appear before the panel or asked to take an oath. There is no cross-examination in the legal sense and no need to be accompanied by legal counsel. However, the panel may question the relevancy and content of any information submitted to it. The Study Group on Hearing Procedures however, recommended that panels be given the power to subpoena in order to provide them with better access to information they may need if such information was known to be witheld. The Study Group also recommended against cross-examination in the legal sense as it recognized panel members' ability to question information being presented to them.

Participation in the hearings by both the experts and the public is vital to the review. For, while a panel needs technical and scientific analyses from experts, it also needs to hear from people who could be affected by the proposal, particularly those who live near the proposed site. Although an impact may not be significant to the "experts", it may be so for people living and working near the site. Local residents may have information and insights not available to an outsider. Recognizing the importance of public participation in environmental assessment and more specifically public hearings, the Study Group on Hearing Procedures recommended against the use of judicial procedures which would turn a hearing into a trial and therefore would reduce if not eliminate spontaneous public participation. In fact the Group stated that "a public hearing is not a privilege granted to the population, but a service requested of the public by the government to help it make a better decision and to favour a harmonious relationship between economic development and environmental protection?

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The Panel Report

When the public hearings are completed, the panel writes a report for the Minister of the Environment and the minister of the initiating department or, in the case of joint reviews, for additional ministers or organizations that may also be involved. A panel's report is advisory; the ministers make the final decisions.

A report usually contains:

- a brief description of the proposal;
- the characteristics of the proposed site;
- the potential impacts;
- comments, issues and analysis; and
- conclusions and recommendations.

Recommendations

It is the responsibility of the two federal ministers receiving the report to make it public.

The initiator decides to what extent panel recommendations must be adopted before the proposal can proceed. These are incorporated into the design, construction, and operation of the proposal. The initiator must see to it that decisions on suitable implementation, mitigation measures, inspection, and monitoring programs are carried out.

The proponent must make certain that any post-assessment monitoring, surveillance, and reporting, laid down as conditions for proceeding with the proposal, are undertaken.

Decisions stemming from the panel's recommendations are made public. The initiator decides how this is done.