REPORT OF THE JOINT
ENVIRONMENTAL ASSESSMENT PANEL

Lachine Canal Decontamination Project

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All documents and briefs submitted in connection with the joint public review as well as the transcripts of presentations are available for consultation at the Bureau d'audiences publiques sur l'environnement and the Canadian Environmental Assessment Agency.

The joint panel would like to thank the individuals, groups and organizations who participated in its proceedings as well as the staff of the Bureau d'audiences publiques sur l'environnement and of the Canadian Environmental Assessment Agency, who provided the professional, technical and administrative support necessary for the preparation of this report.

This document is an English translation of the final report of the joint environmental assessment panel reviewing the Lachine Canal Decontamination Project. The translation was provided by the Canadian Environmental Assessment Agency.

The concept of environment

Over the past few decades, the concept of the environment has taken on a much broader meaning. It is now agreed that the environment is not limited solely to biophysical components, but also encompasses social, economic and cultural aspects. The joint panel's terms of reference were to **review the environmental impacts of the project in light of this broader concept of the environment. Moreover, this view is supported by Canada's highest courts. In 1992, the Supreme Court of Canada, in** *Friends of the Oldman River Society,* clearly **indicated that the concept of environmental** quality should be interpreted according to its broader definition. Likewise, in 1993, the Quebec Court of Appeal **confirmed** in ***Bellefleur*** the importance of taking account of the impacts of a project on people and their **cultural** and social life in decisions **affecting** the environment.

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JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING
THE LACHINE CANAL DECONTAMINATION PROJECT

Montreal, September 13, 1996

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The Honourable Sheila Copps
Deputy Prime Minister and
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The Honourable Diane Marleau
Minister of Public Works and
Government Services
Room 256, Confederation Bldg.
House of Commons
Ottawa, Ontario
K1A 0A6

Dear Ministers:

The joint environmental assessment panel has completed its review of the above-mentioned project, in accordance with the terms of reference assigned to it on October 29, 1990. We are pleased to present the joint panel's final report.

As requested, the joint panel has reviewed the potential environmental and social impacts of the proposed project.

Sincerely,

Johanne Gélinas
Provincial Co-Chair

Michel Slivitzky
Federal Co-Chair

Encl.

JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING
THE LACHINE CANAL DECONTAMINATION PROJECT

Montreal, September 13, 1996

Ms. Claudette Joumault
Vice-Chair and Acting Chair
Bureau d'audiences publiques sur l'environnement
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Quebec City, Quebec
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Mr. Michel Dorais
President
Canadian Environmental Assessment Agency
Fontaine Building, 14th Floor
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Hull, Quebec
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Dear Sir and Madam:

The joint environmental assessment panel is pleased to present a copy of its final report on the Lachine Canal Decontamination Project. A public review of this project was conducted by a joint panel set up by the federal and Quebec environment ministers in October 1990.

In accordance with the agreement concluded between the environment ministers, the joint panel today presented its report to the Honourable David Cliche and to the Honourable Sergio Marchi, as well as to the Honourable Sheila Copps, Minister of Canadian Heritage, and the Honourable Diane Marleau, Minister of Public Works and Government Services Canada.

The joint panel would like to point out the excellent contribution of the entire team which supported it in carrying out its terms of reference.

Sincerely,

Johanne Gtlinas
Provincial Co-Chair

Michel Slivitzky
Federal Co-Chair

Encl.

Table of Contents

List of figures

List of tables

Chapter 1 Background of the joint environmental assessment process

Context of the joint public review

In June 1989, in accordance with the provisions of the *Environmental Assessment and Review Process Guidelines Order (the* Guidelines Order), the Canadian Parks Service asked the federal environment minister to appoint an environmental assessment panel to conduct a public review of the Lachine Canal decontamination project. In October 1989, the Old Port of Montreal Corporation requested that the proposed work in the downstream portion of the canal, which lies within its jurisdiction, be subject to the same public review, to be conducted in conjunction with the Canadian Parks Service.

Parks Canada and the Old Port of Montreal Corporation proposed to conduct a clean-up of their respective sections of the canal and to dispose of contaminated sediments in order to reopen the canal to the public for recreational use. Given the scope and nature of the project and its potentially significant environmental and socio-economic impacts, the federal authorities requested, in accordance with the Guidelines Order, that the project be referred for public review by an independent panel. The presence of contaminated sediments upstream from the canal, partly in the sector within the jurisdiction of the Quebec government, was deemed to pose a potential risk of recontamination of the canal. It was also recognized that any decontamination work carried out in this sector would be subject to the Quebec environmental impact assessment and review process. In light of this situation and in order to avoid duplication and overlap, the federal and Quebec environment ministers agreed to conduct the two environmental assessment processes jointly.

In October 1990, the two environment ministers announced their decision to conduct a single public review for the entire project. The ministers indicated that the public review would follow a joint assessment process which would meet both Quebec and federal requirements (Document CAL 1.1-1).

Finally, the ministers agreed that the public review would be undertaken by a joint Canada-Quebec four-member panel, with two members appointed by the federal government and two by the Quebec government.

Terms of reference of the joint panel

In a news release issued on October 29, 1990, the federal and Quebec environment ministers announced the members of the joint panel. The Quebec members were Claudette Joumault, panel co-chair, replaced in March 1996 by Johanne Gélinas, a member of the Bureau d'audiences publiques sur l'environnement (BAPE), and Jean-Baptiste Sérodes, a member of BAPE and director of the Department of Civil Engineering, Laval University. The federal members were Michel Slivitzky, panel co-chair, Professor at the Institut national de la recherche scientifique, and Patrice Dionne, former Regional Director of Environment Canada.

The environment ministers indicated that the joint panel's terms of reference were:

> *[...] to assess the environmental and social impacts of the decontamination of the Lachine Canal and to report its findings and recommendations to the [...] ministers [...]. The panel will examine various techniques to decontaminate, treat and dispose of the contaminated sediments at the bottom of the Lachine Canal and the basin located upstream. The panel will recommend the most appropriate method and define the manner in which it is to be implemented. With respect to the part of the project under the jurisdiction of the Old Port of Montreal Corporation, the panel's mandate is to examine the environmental and social impacts of the depollution of this section of the canal which has been drained and filled. Furthermore, the panel will examine the different methods of disposing of the material (fill and sediments) originating from the locks which could prove to be contaminated at or beyond criterion "C" of the Politique québécoise de rehabilitation des terrains con taminés.* (Appendix 1)

With regard to the scope of the review, the ministers stated that:

> ***The panel will evaluate the project with regard to the potential impacts, both positive and negative, in the overall context of the water quality in the region adjacent to the Lachine Canal and of the basin located upstream: the potential for the introduction of new contaminants: and the potential for the recontamination of the restored areas. [...] The public review includes a discussion of the different uses of the canal waterway for recreational purposes. It excludes specific management choices that would be implemented after the decontamination process.*** (Appendix 1)

Stages of the public review

In the context of the joint review process the environment ministers agreed that the joint panel, in accordance with the federal process, would be responsible for developing the guidelines for the preparation of the Environmental Impact Statement (EIS) and for determining whether the EIS complied with these guidelines. They also agreed that an information and consultation period as well as public hearings would be held in accordance with the Quebec environmental impact assessment and review process.

The joint panel's first task was to identify the key issues and the information it would need to assess the potential impact of the project. In December 1990, the joint panel began a series of public meetings to solicit input regarding the project's environmental assessment requirements. On the basis of the comments received, the joint panel prepared draft guidelines and invited the public to submit comments in writing. On May 15, 199 1, the joint panel released the final guidelines.

On May 18, 1993, the Federal Environmental Assessment Review Office, which has since been replaced by the Canadian Environmental Assessment Agency, made funds available under the participant funding program to help interested groups and individuals study the EIS and participate in the public review.

On December 7, 1993, the joint panel released the EIS prepared by Parks Canada and the Old Port of Montreal Corporation. The joint panel invited public comment on the compliance of the EIS with the guidelines.

On May 11, 1994, the joint panel concluded, on the basis of the comments received and its own analysis, that the EIS did not contain all the information required to conduct public hearings. It sent the proponents a deficiency statement identifying the additional information required to proceed with the public hearings and the information which could be provided during the hearings.

On March 2, 1995, the joint panel received the additional information requested in response to the deficiency statement and, on April 5, 1995, it concluded that the EIS provided the information needed to conduct public hearings. In accordance with the joint review process agreed upon by the environment ministers, the joint panel informed the Quebec Minister of Environment and Wildlife of its decision and indicated that it was ready to proceed with the joint public assessment and review process.

On February 28, 1996, the Quebec Minister of Environment and Wildlife asked BAPE to make the EIS public and to begin the information and consultation period. The minister also directed BAPE to hold public hearings following the consultation period. The public information and consultation period began on March 18, 1996; Part I of the public hearings was held on May 13, 14 and 15 and Part II on June 17 and 18, 1996.

Chapter 2 Description of the decontamination project

This chapter briefly outlines the history of the canal and provides a short description of the proposals of Parks Canada and the Old Port of Montreal Corporation. For the purposes of the public review, the joint panel considers that Parks Canada and the Old Port of Montreal Corporation Inc. together constitute the "proponent" for the entire Lachine Canal decontamination project. The information contained in this chapter is based on the EIS and the documents submitted to the joint panel (Appendix 2) as well as on comments received during the public review.

History of the canal

Construction of the Lachine Canal began in the nineteenth century in order to improve shipping by bypassing the Lachine Rapids. The 13-kilometre-long canal, which has a current depth of 5.5 metres, consists of five basins separated by a system of locks. The new waterway attracted a number of industries to its banks. Industrial expansion in this area is considered the main source of the contamination of the adjacent lands and of the sediments in the Lachine Canal.

With the opening of the St. Lawrence Seaway in 1959, Lachine Canal was closed to navigation. In the 1960s, the downstream section of the canal, which currently lies within the jurisdiction of the Old Port of Montreal Corporation. was filled in with material provided primarily by the excavation of the Montreal subway system.

Management of the upstream section of the canal was transferred from Transport Canada to Public Works Canada in 1974' and to Parks Canada in 1977. The section of the canal opening into the Old Port is still under the responsibility of the Minister of Public Works and Government Services Canada.

In 1979, Parks Canada prepared a master plan for the development of this long corridor. The objective of the plan is to preserve, enhance and develop heritage resources. In the document entitled ***Canal de Lachine. Enjeux et orientations, planijication des aires patrimoniales,*** Parks Canada cites this master plan:

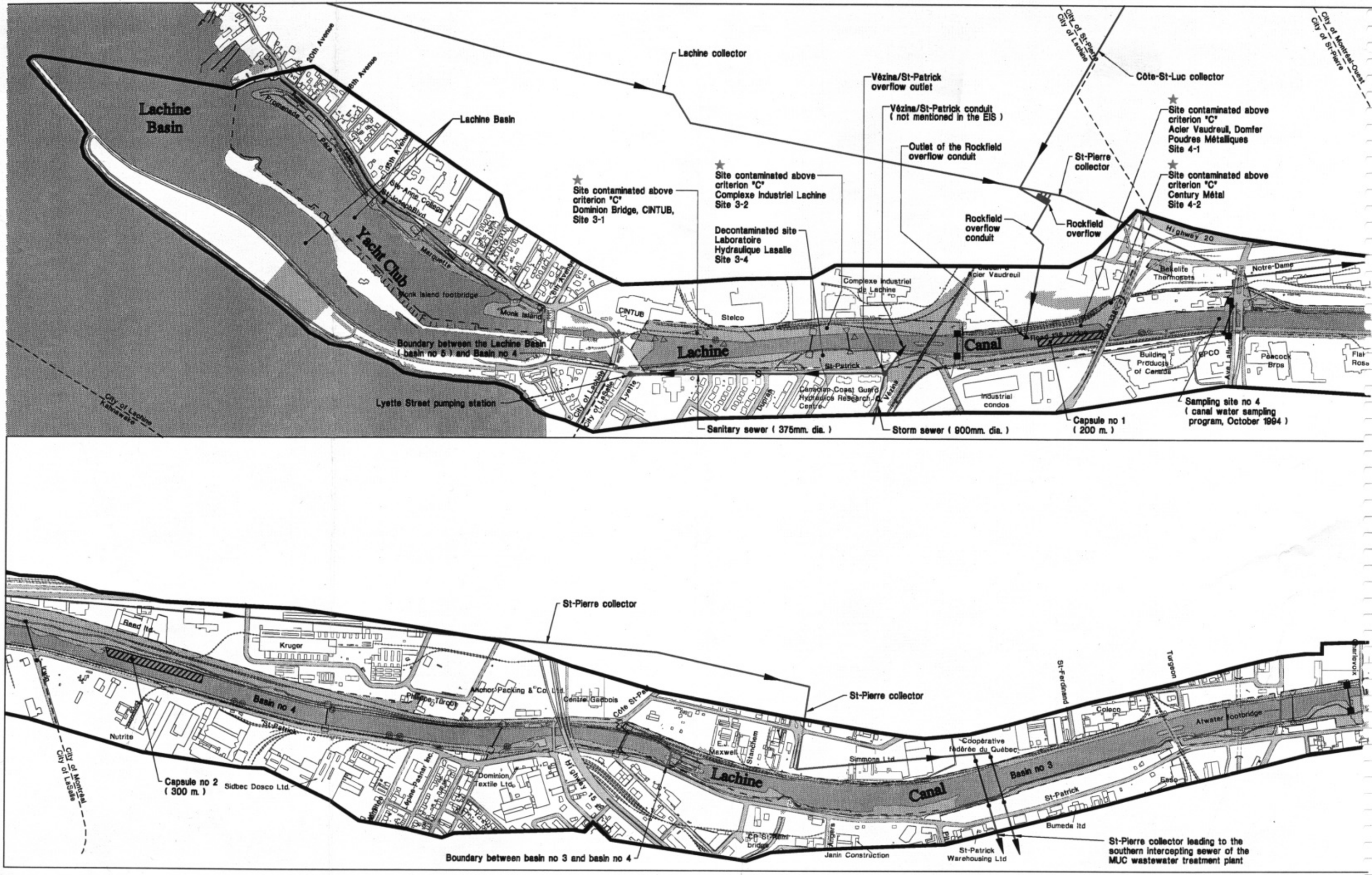
> ***The functional and spatial organization of the canal property is defined, in accordance with this plan, as a corridor of activities punctuated by crossroads (access, links, integration with the surrounding environment) and stopping places (points of interest, interpretation elements, stopping points) linking the two historical poles of Lachine and Old Montreal (entrances to the corridor).***
> (Document DA4, p. 8)

In 1982, citing poor water quality and a level of sediment contamination, Parks Canada closed the canal for recreational uses (Document **D4A,** p. 19).

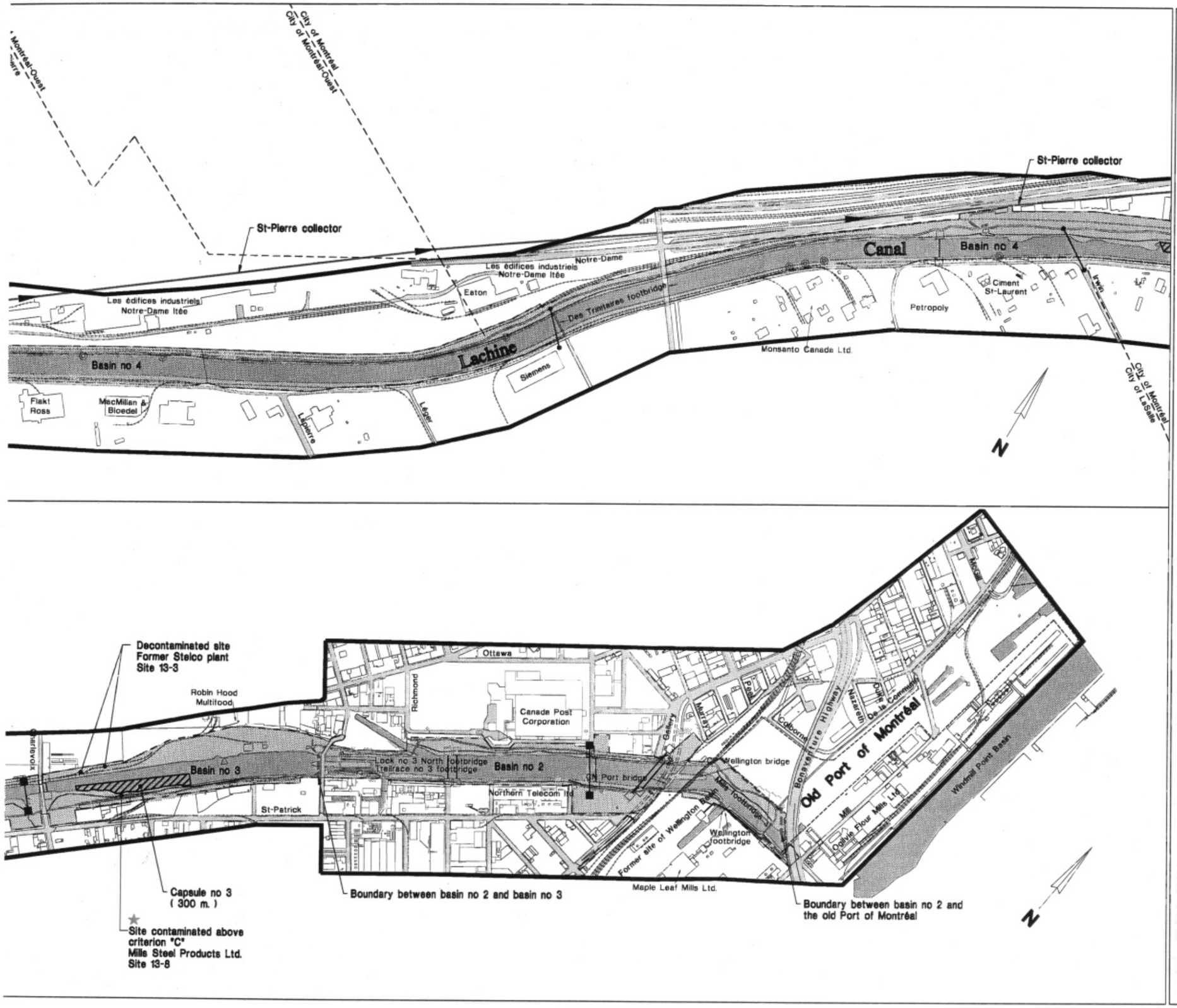
In the **1980s,** road infrastructures built between basins 4 and 5 (Figure ***2.1)*** partially obstructed the locks in this area, rendering them unusable.

In 1985 and 1986, the Old Port of Montreal Corporation held public consultations in order to identify the needs and expectations of the public regarding the development of the Old Port. The Corporation relied on the input from this consultation in determining the future uses of this area, which was redeveloped in the early 1990s.

[1] The dates indicated in various documents submitted to the joint panel do not always agree with those in the Environmental Impact Statement. Some of **the** dates indicated in this report may therefore be subject to confirmation.

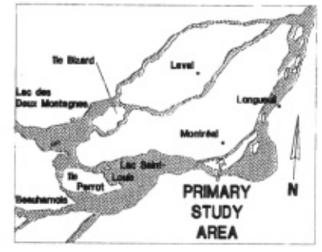

Lachine Basin
Lachine Basin
Yacht Club
Promenade
Fata
20th Avenue
19th Avenue
18th Avenue
17th Avenue
Ste-Anne-Collège
St-Joseph Blvd
Marquette
Monk Island footbridge
Monk Island
Boundary between the Lachine Basin (basin no 5) and Basin no 4
Lyette Street pumping station
City of Lachine
Kahnawake
Lachine collector
Site contaminated above criterion "C" Dominion Bridge, CINTUB, Site 3-1
CINTUB
Stelco
Site contaminated above criterion "C" Complexe Industriel Lachine Site 3-2
Decontaminated site Laboratoire Hydraulique Lasalle Site 3-4
Lachine
Canal
Complexe industriel de Lachine
Vézina/St-Patrick overflow outlet
Vézina/St-Patrick conduit (not mentioned in the EIS)
Outlet of the Rockfield overflow conduit
Rockfield overflow conduit
Rockfield overflow
St-Patrick
Vézina
Canadian Coast Guard Hydraulics Research Centre
Industrial condos
Sanitary sewer (375mm. dia.)
Storm sewer (900mm. dia.)
Capsule no 1 (200 m.)
City of St-Pierre
City of Lachine
Côte-St-Luc collector
St-Pierre collector
Site contaminated above criterion "C" Acier Vaudreuil, Domfer Poudres Métalliques Site 4-1
Site contaminated above criterion "C" Century Métal Site 4-2
Highway 20
Bakelite Thermosets
Notre-Dame
Building Products of Canada
BPCO
Peacock Bros
Ave Lafleur
Sampling site no 4 (canal water sampling program, October 1994)
City of Montréal-Ouest
City of St-Pierre
Reed ltd
Kruger
Nutrite
Capsule no 2 (300 m.)
Sidbec Dosco Ltd.
Basin no 4
St-Patrick
Philippe Turcot
Anchor Packing & Co Ltd
Centre Gadbois
Côte St-Paul
Dominion Textile Ltd.
Highway 15
Maxwell
Stanchem
Simmons Ltd
Coopérative fédérée du Québec
Basin no 3
Lachine
Canal
St-Ferdinand
Turgeon
Coleco
Atwater footbridge
Charlevoix
Esso
Burnedz ltd
St-Patrick Warehousing Ltd
Janin Construction
Boundary between basin no 3 and basin no 4
St-Pierre collector leading to the southern intercepting sewer of the MUC wastewater treatment plant
City of Montréal
City of LaSalle

Lachine Canal decontamination project



Utilities

- Sewage collector crossing
- Electric line or cable
- Telephone line or cable
- Gas pipeline
- Water supply inlet
- Pluvial and industrial discharge emissaries
- Storm drain
- Boundary between basins
- Sewer (collector)
- Location of containment capsules
- —S— Sanitary sewer
- —P— Storm sewer
- ★ Site contaminated above criterion "C"



Scale 1 : 10 000

100 0 200m

Figure 2.1

Parks Canada's proposal

The section of the canal under the responsibility of Parks Canada extends from lock 5, located downstream from the Lachine Basin, to an area upstream from basin 2 of the Old Port (Figure 2.1). Parks Canada wants to decontaminate the sediments in order to reopen the canal to the public.

Description of the environment

The terrestrial and human environments

The canal was built partly in the bed of a lake and a river and partly above the natural water level, which required the construction of embankments. Some 93 per cent of the canal's banks are comprised of walls, which are generally in a state of disrepair. These walls are composed of various materials (concrete, wood, armouring, gabion) depending on the section of the canal and the portion of the wall.

The Lachine Canal, which is fed by Lac Saint-Louis, crosses the southern tip of the Island of Montreal and ends at the Old Port of Montreal. It passes through the Montreal neighbourhoods of Griffintown, Faubourg-des-Récollets, Pointe-Saint-Charles, La Petite Bourgogne, Saint-Henri, Côte-Saint-Paul and Ville-Émard, as well as the municipalities of LaSalle, Lachine and Saint-Pierre.

The region through which the canal runs has a population of approximately 80,000. This population, which historically benefit-ted from the industrial era of the Lachine Canal, is now in economic decline.

The buildings and lands along the canal are primarily industrial, but there are also some residential, commercial and recreational areas. In addition, some of the old canal structures, foundations of old industrial buildings and remnants of even older structures are still standing.

There is currently a significant presence of infrastructures and utilities. More specifically, the EIS indicates that there are some 20 bridges and foot bridges, two tunnels, one subway line crossing, a large concentration of railways, industrial water intakes and several wastewater outfalls. Utilities include hydro and telephone lines and natural gas mains. A bicycle path was built along the canal by Parks Canada in 1979.

Hydrological environment

Upstream from the canal is the Lachine Basin, which ranges from 1 to 6 metres in depth and which is delineated by a large pier separating it from Lac Saint-Louis. Part of the Lachine Basin is comprised of basin 5, along Promenade Père-Marquette, a part which no longer connects with the canal but is linked directly to Lac Saint-Louis.

Analysis of the hydrological conditions of the Lachine Basin and of the Lachine Canal indicates in general a low flow rate. Fed essentially by waters from the Lachine Basin, the average flow of the canal was estimated at 13 m^3/s and its average speed at 10 cm/s. These conditions make the Lachine Basin an area conducive to the deposition of suspended particulate matter, which range in concentration from 7 to 15 mg/L. In the canal, however, concentrations range from 2 to 5 mg/L. The canal is not very conducive to the deposition of particulate matter and therefore seems to be in a state of sedimentological equilibrium.

Concentrations of chromium, copper, lead and phosphorus in the water in the Lachine Basin slightly exceed the levels which the Quebec Department of Environment and Wildlife (MEF) considers safe for the protection of aquatic life. Concentrations of cadmium, lead and copper in the canal are also equal to or slightly higher than the criteria for protecting aquatic life. The bacteriological quality of the water at the entrance to the canal makes this area unfit for recreational activities (EIS, Summary, p. 7 and 8).

Flora and fauna

The plant and animal life of the Lachine Canal is not distinctive. The aquatic flora is characterized by the presence of a few rare beds of water-milfoil, eel-grass and Canada waterweed. The terrestrial vegetation comprises trees, shrubs and herbaceous species.

In terms of aquatic life, the EIS identified 11 benthic taxons, primarily molluscs, and 16 species of fish, the most common being the pumpkins&. Some 15 species of birds were inventoried. Interestingly, few species of mammal occur in or near the canal.

Sediment contamination

The EIS makes reference to sediment contamination levels 1, 2 and 3 and soil contamination values A, B and C. In order to facilitate the understanding of these contamination criteria, the joint panel felt it would be useful to review the definition of these criteria in the inset below.

In the Lachine Basin, only 3 to 6 per cent of the sediment analysed contained level 3 concentrations of cadmium, mercury, nickel, lead, PCBs, organic carbon or oils and greases. The proponent concludes that the level of contamination of the sediment sampled in the Lachine Basin is relatively low (EIS, Summary, p. 8).

However, the situation is different for most of the sediment sampled in the Lachine Canal:

- copper, chromium, lead, zinc and PCB concentrations generally far exceed level 3 for virtually the entire canal;

- mercury concentrations are particularly high in basin 4 of the canal, where they exceed level 3.

According to these surveys, only the sediments in the canal would require decontamination, not those in the basin. According to the EIS, the volume of contaminated sediment is estimated at 122,000 m^3 with an accuracy of plus or minus 32 per cent. This represents a layer 26 cm thick on average over the entire length of the canal.

Definition of sediment evaluation levels and the values assigned to soils, based on their degree of contamination

Sediments

- Level 1: Background concentration, no effect threshold, considered free of contaminants; above this level, there is still no restriction on dredged materials, but efforts must be made to ensure that there is no degradation of the receiving environment.

- Level 2: Minor effects threshold, affects 15 per cent of benthic organisms; above this threshold, a review and analyses are conducted and efforts must be made to ensure that dredged materials do not contribute to the degradation of the receiving environment.

- Level 3: Adverse effects threshold, affects 90 per cent of benthic organisms; above this level, dredged materials must be treated or contained.

Source: Adapted from ***Critères intérimaires pour 1 'évaluation de la qualité des sédiments du Saint-Laurent,*** Environment Canada and Quebec Department of the Environment, April 1992 (Document CAL 02.02-9).

soils

- Value A: Background concentration of contaminants occurring naturally in the environment and the detection limit for organic chemicals.

- Value **B**: Threshold above which detailed analyses are necessary; above this value, decontamination is not required unless there is an impact on the water table, in which case certain restrictions may be imposed on the use of soils.

- Value C: Threshold above which immediate corrective action may be necessary. There are restrictions on the use of soil contaminated above this level.

Source: Adapted from ***Politique de réhabilitation des terrains contaminés,*** Quebec Department of Environment, February 1988 (Document CAL 02.014).

Decontamination options

The EIS describes six decontamination options. Three of the options consist of containment techniques, namely terrestrial containment, *in situ* containment of the sediments on the bottom of the canal and encapsulation of the sediments on the bank. The other three options consist of treatment techniques, namely *ex situ* and *in situ* solidification/stabilization and physico-chemical extraction. Table 2.1 provides a brief description of each option.

In order to determine the best option, the proponent relied on a comparative analysis method adapted from the method developed by Holmes (1971). This method involves identifying a series of criteria and assigning each a relative importance. The method is applied by evaluating the criteria for each option in order to compare them to each other. The criteria selected were of a technical, economic and environmental nature, both permanent and temporary. Table 2.2 describes each of the 12 criteria, their category of importance as well as the possible evaluation rankings.

Determination of the category of importance makes it possible to assign a relative weight to each criterion, with the criteria deemed more important (category 1) having a higher weight. Each option was evaluated based on these criteria by determining a ranking, with the top ranking corresponding to the highest performance. Finally, the option which obtains the highest number of top rankings weighted by the categories is the one preferred by the proponent.

Table 2.1 Alternatives examined by the proponent

Options	Description	cost	Timetable
Terrestrial containment	The sediments are excavated with a dredge, transported and then contained at the chosen site.	$6 M new cell $22 M Model City (NY) $28 M Cintec LaSalle (1993 dollars)	1 year
In situ containment of sediments on the bottom of the canal	The sediments are covered with a geotextile membrane placed directly on the bottom of the canal which is then covered with crushed stones.	$6 M (1993 dollars)	27 weeks
Encapsulation on the bank	The sediments are excavated with a dredge, then contained inside containment cells built in the canal.	$10 M (1993 dollars)	2 years
In *situ* solidification/stabilization	The sediments are fixed in a matrix inside the canal. Reagents and chemicals are added. The sediments then become solid and are no longer permeable. No dredging is required.	$12 M to $24 M (1993 dollars)	several months to 18 months
Ex situ solidification/stabilization	The sediments are treated as in the preceding method except that the work is done out of the water. Dredging of the sediments is therefore necessary as well as transportation of the solidified and stabilized sediments to a storage site.	$6 M to $12 M (excluding the disposal technique) (1993 dollars)	18 months
Physico-chemical extraction	The sediments are first excavated with a dredge. They are treated using various methods to remove metals and organic contaminants. On completion of the process, the sediments are regenerated and therefore reusable.	$30 M to $43 M (1993 dollars)	2 years

Source: Developed from data in the EIS, Volume 2, p. 39 to 72. The proponent provided an update of these costs in May 1996 (Document DA8).

Table 2.2 Evaluation criteria for the options

Criteria	Category	Possible ranking
Permanent environmental criteria		
1. Elimination of contaminants	2	1": treatment and complete elimination of contaminants 2nd: containment or fixation of the contaminated sediments
2. Sediment management in the federal study area	1	1": the sediments remain in the study area (federal property) 2nd: part or all of the sediments are transported outside the study area
3. Heritage	3	1st: no change in the layout of the canal 2nd: change in the layout of the canal
4. Risks of contamination of canal water and groundwater after completion of the work	2	1st: no risk of contamination: the contaminants are no longer in the study area 2nd: low risk of contamination: the contaminants are contained or fixed in the canal, in a completely hermetically sealed enclosure 3rd: moderate risk of contamination: the contaminants are contained or fixed in the canal, but not in a completely hermetically sealed enclosure
5. Substrate characteristics after completion of the work	3	1st: substrate similar to the natural state 2nd: substrate composed of pebbles (added materials) 3rd: substrate made of cement
Temporary environmental criteria		
6. Inconveniences caused by the presence of a construction site	1	1st: most of the work done outside the study area: minimal work on the site, little storage and work completed within a year or less 2nd: work in the study area: work done on site, including storage, and work completed within a year or less 3rd: work in the study area: work done on site, including storage, and work requires more than a year to complete
7. Inconveniences caused by trucking	1	1st: minimal trucking (mobilization, demobilization, refuelling) 2nd: high level of trucking (mobilization, demobilization, refuelling and transport of fill material) 3rd: very high level of trucking (mobilization, demobilization, refuelling and transport of sediments outside the study area)
8. Impact of work on fauna and flora	3	1st: little or no reduction in water level, minimal dredging and mechanical agitation 2nd: little or no reduction in water level, dredging 3rd: significant reduction in water level

Criteria	Category	Possible ranking
Technical criteria		
9. Infrastructure-related work	2	1": canal bottom similar to the natural state 2nd: canal bottom similar to the natural state but presence of enclosures on the banks 3rd: characteristics of the canal bottom altered (e.g.: cement or geomembrane)
10. Technical feasibility	1	1st: commercially proven technology for a similar treatment 2nd: commercially proven technology for a different treatment 3rd: commercially unproven technology (pilot or pre-industrial project)
Technical and economic criterion		
11. Follow-up measures in study area and associated costs	2	1st: no follow-up required 2nd: monitoring required, easy 3rd: monitoring required, difficult
Economic criterion		
12. Total cost	1	1st: $10 M 2nd: $10 to $30 M 3rd: over $30 M

Source: Adapted from the Environmental Impact Statement, Volume 2, p. 75 to 91.

Option selected and impacts of the project

The option of encapsulation on the bank chosen by the proponent would require the construction of three capsules in the canal. Two would be constructed in basin 4 and another in basin 3. They would be made of granular material and impermeable membranes to contain the contaminated sediments. The encapsulation would require the partial drainage of the canal to maintain a water level of approximately 1 metre during the installation of the cells.

The proponent identified several impacts and proposed a number of mitigation measures. During the decontamination phase, the water quality would be affected by the work. However, the proponent is of the opinion that the weak flow velocity, the closure of the downstream end of the canal and monitoring during the work would minimize the impacts. According to the EIS, other elements might be affected by the work, specifically vegetation, land traffic and the visual aspects. For example, road

traffic and the bicycle path would be disrupted, but an information program would inform the public of the necessary detours in a timely manner. In terms of the risks of this option, the proponent points out that there would be no health risk to the public either during or after the work.

According to the proponent, once the work is completed, the project will have a positive effect, For example, it cites the improvement in recreational and tourism activities and in the quality of life of most residents as well as economic spinoffs for businesses along the canal. However, real estate development could lead to the gradual displacement of certain segments of the population. Since Parks Canada has no authority in this regard, it suggests that the municipalities concerned have a important role to play in preventing such an occurrence.

To ensure that the mitigation measures are applied, the proponent is proposing an environmental monitoring and follow-up program. It plans, among other things, to monitor water quality in the spillway downstream from each capsule during the decontamination activities. Upon completion of the work, it plans to verify the recolonization of the site by fauna and flora, the impermeability of the cell and the quality of the sediments to determine if any recontamination has occurred.

According to the proponent, there are various sources of potential recontamination of the canal, notably the Rockfield overflow, the Lachine Basin and contaminated lands. The proponent states that analysis of the various sources identified has shown that there is generally little risk of recontamination of the Lachine Canal.

Old Port of Montreal Corporation's proposal

The portion of the Lachine Canal under the responsibility of the Old Port of Montreal Corporation is located in the western section of the Old Port of 'Montreal. It includes basin 1 and the part of basin 2 located downstream from the Bonaventure Autoroute. As part of its heritage enhancement and development efforts, the Corporation has completely redeveloped the Old Port area. Its designation as a regional park coincided with Montreal's 350th birthday celebrations. All work in this area was completed in 1992, i.e., during the public review and prior to the hearings on the decontamination project.

This work on the canal included the partial excavation of basins 1 and 2 by removing the fill material that had been placed in the canal during the construction of the subway system. One of the locks was also restored and is now functional.

In 1990, at the start of the public review, the Old Port of Montreal Corporation informed the joint panel that, of the 187,300 m^3 of material characterized and excavated during the work, only 4,050 m^3 had been managed by the proponent as follows:

> ***All "questionable" materials and those that exceeded criterion "C" were temporarily and safely stored in an impervious cell at the Old Port site.***
> **(EIS,** Volume 3, p. 34)

A second characterization of these 4,050 m^3 was conducted in 199 1 and revealed that 3,371 m^3 were within the A-B range and that the remaining 689 m, were in the B-C range. This material was left in the cell and was capped with a geotextile membrane and convered with 1 metre layer of A-B soil, which was then seeded with grass.

The sediments on the bottom of the canal below the unexcavated fill material were not touched. In the EIS, the proponent explains that it is highly unlikely that the bottom sediments, which slightly exceed criterion "C" for lead content, could contaminate the water since the unexcavated material in the basins acts as a barrier limiting contaminant migration from the bottom sediment into the water.

Since none of the material excavated to conduct this work was contaminated above criterion "C" and since all the work has been completed, the joint panel therefore devoted the rest of its analysis to Parks Canada's project.

Chapter 3 Participants' concerns

This chapter outlines the concerns and comments expressed by the participants at each stage of the consultations during the public review. Over the past few years, the participants have had three separate opportunities to express their views. First, the joint panel held public meetings and gathered comments on the guidelines for preparing the EIS. Following the submission of the EIS, the participants were invited to comment on its compliance with the guidelines. Finally, once the joint panel was satisfied that the EIS was in compliance with the guidelines, the public was able to participate in two rounds of public hearings. In Part I, participants were able to ask the proponent and the resource persons questions and, in Part II. they were able to express their opinions about the project.

Table 3.1 summarizes the three phases of consultation since 1990 and presents, by category, the number of participants involved at each stage as well as the issues addressed.

Consultations on the guidelines

Between December 10 and 13, 1990, the joint panel held eight public sessions to identify and discuss the issues raised by implementation of the decontamination project. These sessions were also intended to determine the key issues that should be addressed in the EIS. Some 30 participants attended these public meetings, 22 of whom responded to the joint panel's invitation to submit written briefs.

In February 199 1, the joint panel released draft guidelines prepared on the basis of the briefs and comments received, to give the participants an opportunity to submit written comments on their form and substance. The final guidelines, which took into account all the comments received, were issued to the proponent in May 1991.

Rather than reviewing all points addressed, the joint panel will present, in order of importance, the issues raised most frequently by the participants, notably the role and use of the canal and its development and enhancement, the search for a permanent solution, the possible recontamination of the canal, the contaminated lands bordering the canal, the transport of sediments and the possibility of decontamination in phases.

Role and use of the canal and its development and enhancement

The overwhelming majority of participants stressed the importance of enhancing and developing the canal in order to promote the economic development of southwest Montreal. However, not all shared the same vision of what the role of the canal should be.

The group Action-Gardien argued above all for the reestablishment of industry along the canal:

> *[Trans.] A consensus exists concerning* ***the urgency of developing light manufacturing industries along the Lachine Canal and creating the road infrastructures needed to support these industries.***
> (Brief, December 1990, p. 1)

Some envisioned development based mainly on the recreation and tourism industry:

> [Trans.] [...] ***why sacrifice the canal by industrializing it if we can create more jobs for the southwest by making the canal attractive and interesting for everyone? [...] The canal mainly has a recreational, cultural and tourism potential.***
> (Mr. Pierre Savaria, session of December 12, 1990, evening, p. 38)

Table 3.1 Consultation phases of the public review December 1990 to June 1996

	Phase 1			Phase 2	Phase 3	
	Guidelines			Comments on EIS's compliance with the guidelines January-March 1994	Public hearings	
Participants	Public meeting December 10-13, 1990	Briefs submitted January 1991	Comments on the final guidelines April 1991		Part I May 13-15, 19%	Part II June 17-18, 1996
Associations Socio-economic University and community	11	7	2	7	6	6
Environmental groups	3	0	0	0	0	1
Industries and unions	3	4	2	3	5	7
Governments Municipal Provincial and federal	7	6	6	10	• **	6
Individuals	6	5	3	1	6	5
Total (participants)	30	22	13	21	17	25
Main issues addressed in each phase	•Uses and development of the canal *Permanent solution -Recontamination •Contaminated sites *Transport of sediments •Decontamination in phases			• Technical comments • Role and use of the Canal • Comparative analysis • Potential for recontamination	• Encapsulation on the bank • Impacts of the project • Comparative analysis • Project cost	• Development of the canal • Reopening the canal • Comparative analysis • Decontamination options • Impacts of the project

• *. During Part I of the public hearings, the municipalities and the various departments participated as resource persons.

Finally, others believed that industrial and recreational/tourism activities can co-exist:

> *[Trans.] It is very important in our view that the Lachine Canal region conserve its industrial role while increasing its recreational/tourism potential, thereby once again becoming a factor which promotes economic growth in the region.*
> (Brief presented by Conseil central de Montreal (CSN), December 1990, p. 5)

> *[Trans.] The issue is the future of the local community, once the canal has been decontaminated.*
> (association of four Community Health Departments (CHD), Comments on the draft guidelines, March 14, 199 1, p. 2)

A number of participants felt that the role of the canal should be defined even before proceeding with its decontamination:

> [Trans.] *The decontamination objectives normally depend on the planned use. Once the future users have been defined, it will be possible to review the necessity and the scope of the work required and to make an enlightened choice of the methods to be used.*
> (Brief presented by Monsanto Canada Inc., January 199 1, p. 1)

Certain groups expressed their concerns about the possibility of real estate developments. They believed that a decontaminated and improved canal might attract the development of luxury condos and thus result in the displacement of part of the local population.

A permanent solution

The overwhelming majority of the participants would like to see a definitive solution to decontamination:

> *[Trans.] For us, the residents, the idea of going through this whole process again is not very appealing* [...] *A few years later, is this issue going to be brought up again and all the work redone?* [...] *If we're going to do it, let's do it right, once and for all.*
> (Mr. Arthur Sanbom, session of December 11, 1990, afternoon, p. 104)

> *[Trans.] More permanent solutions, such as incineration or stabilization (and **detoxification**) of the sediments, represent in our view a much more realistic and acceptable solution.*
> (Brief presented by Conseil central de Montreal (CSN), December 1990, p. 4)

Possible recontamination of the canal

Various groups addressed the question of the possible recontamination of the canal, notably by the Rockfield overflow, by the contaminated lands bordering the canal, by the Lachine Basin and its effluents and by industrial wastes discharged into the canal.

The City of Montreal identified the occasional discharges from the Rockfield ovefflow as a potential source of recontamination of the canal:

> [Trans.] *Generally speaking, we know that the repercussions of this type of discharge involve a loading of solid debris near the outfall, a certain bacteriological contamination in the discharge plume and a loading of organic matter and sediments in the receiving environment.*
> (Brief, December 1990, p. 9)

For its part, the City of Lachine considered that the Lachine Basin:

> *[Trans.]* [...] *must be an integral part of the area under study since it is impossible to contemplate reopening the locks without studying the consequences of contaminated sediments being put back into suspension by currents and nautical activities.*
> (Brief, December 1990, p. 2)

Other groups would like a more comprehensive picture of all the potential sources of recontamination:

> [Trans.] *In our view it is also important that the proponents have some concern for the possible recontamination of the canal after the clean-up operations, either by the industries still present or by other sources.*
> (Brief presented by Conseil central de Montreal (CSN), December 1990, p. 6)

Contaminated Sites

A number of participants raised the issue of the contaminated sites bordering the canal. Some think that these sites represents not only a source of possible recontamination of the canal, but also an even more serious pollution problem than the canal sediments. Some suggested that these sites should be cleaned up at the same time as the canal sediments, while others preferred that they be decontaminated on a priority basis.

Union representatives addressed the subject of contaminated sites in these terms:

> *[Trans.] The presence of a significant quantity of heavily contaminated sites adjacent to the canal banks must be taken into consideration and must be &contaminated at the same time as the decontamination of the canal waterway.*
> (Brief presented by Conseil central de Montreal (CSN), December 1990, p. 4)

> [Trans.] We *would like to see the canal finally decontaminated.* [...] *But, at the same time, we should also take advantage of the opportunity to decontaminate the adjacent sites because there are a lot of industrial and other sites that are heavily contaminated.*
> (Mr. Normand Guimond, session of December 12, 1990, evening, p. 18)

Transport of sediments

Some believe that the transport of sediments must be reduced as much as possible in order to minimize the environmental and social impacts:

> [Trans.] [...] *to transport this material uncovered well, we 'll be breathing the fumes from that for quite a while because there's a pretty thick layer of that stuff in the canal.* [...] *What we would like to see, if there is a technology which makes it possible to avoid all this stirring-up, which makes it possible to avoid all this transport, which can be done more on-site, not by big shovelfuls, but in a way that would avoid the impacts on the air and over the longer term on the population, that would be much appreciated.*
> (Mr. Normand Guimond, session of December 12, 1990, evening, p. 30 and 31)

Decontamination in phases

A number of participants mentioned the possibility of carrying out the decontamination step-by-step or sector-by-sector, which would make it possible to adjust the level of decontamination according to the planned use in the various sectors and to use the most appropriate technology depending on the type of contaminants.

As a representative of McGill University pointed out:

> [...] *it seems to us that a solution in steps will be appropriate. And what I mean by that, even if the final solution is in situ or not, if you consider that the whole canal has five basic sections, as they are explained on the document, and each one of the sections has its history, has its problems, considerations and so on, it seems to me that is a very appropriate solution to discuss each problem separately, because each one of the sections has its weak characteristics.*
> (Mr. John Hadjinicolaou, session of December 11, 1990, afternoon, p. 88)

The City of Montreal, for its part, considered that:

> [Trans.] *We should also keep open the possibility of selecting a combined &contamination option which would take into account the spatial variations in toxicity levels as well as the specific characteristics of the surrounding environment.*
> (Brief, December 1990, p. 10)

At the end of this first phase of consultations, it appears that the **majority** of the participants agree with the Lachine Canal decontamination project. The perception of a serious sediment contamination problem explains such unanimity. However, it is also quite obvious that decontamination is only one of the steps necessary for the enhancement and development of the Lachine Canal. The future role and use of the canal or its development, in fact, generate more interest than the decontamination project itself

Consultations on the compliance of the EIS with the guidelines

The joint panel received the EIS from the proponent in December 1993. The document was then made public for comments. The purpose of the consultation period, which began on December 7, 1993 and ended on February 25, 1994, was to enable the joint panel to ensure that the document submitted by the proponent complied with the guidelines issued in May 199 1. The joint panel was to determine whether the EIS contained the required information and whether each issue was properly covered, so that it could serve as a basis for discussion during the next phase of public hearings. At this stage of the review, the joint panel was therefore not asking for opinions on the project itself, but on whether the EIS was in compliance with the guidelines.

Twenty-one participants submitted comments to the joint panel. The majority of the comments received were from representatives of governments and socio-economic agencies (Table 3.1, p. 23).

The comments received at this stage are varied and technical. For example, Fisheries and Oceans Canada requested additional information on the potential of fish habitats in the study area. The industries bordering the canal and the Quebec Department of Industry, Commerce and Technology were concerned with the water supply and water quality during the work. Heritage Montreal and the Quebec Department of Culture wanted a more complete picture of the archeological potential and were concerned about the project's impacts on heritage. The comments of the Quebec Department of Environment were rather technical and dealt with the EIS as a whole. Health Canada and community health officials wanted more information on the health risks to workers during the implementation of the project.

Other issues were also addressed, particularly the role and use of the canal, the comparative analysis and the potential for recontamination.

Role and use of the canal

The participants believe that the proponent does not provide sufficient details about the role and use of the canal. Hence, they find it difficult to offer an opinion on the possible impact of one method rather than another on future uses of the canal. Some participants mentioned reopening the canal to navigation as a possibility that should be taken into account in the EIS.

The Association professionnelle des géographes du Quebec considers that:

> [Trans.] *From the standpoint of the suggested recreational activities, there is a serious lack of details which does not permit an enlightened analysis of the needs, effects and scope of the decontamination work required to attain the desired objectives.*
> (Brief, February 1994, p. 5)

For its part, the City of LaSalle believes that:

> [Trans.] [...] *we cannot ignore the possible impacts of the chosen decontamination option on the eventual reopening of the canal in the long term.*
> (Brief, February 1994, p. 16)

Comparative analysis criteria

A number of participants called into question the choice of the criteria used by the proponent to select the decontamination method. In particular, they criticized the weight given to the various selection criteria

The Regroupement pour la relance economique et sociale du Sud-Ouest (RESO) commented on the comparative analysis in these terms:

> [Trans.] *We consider the method of choosing the evaluation criteria unsatisfactory. There are no criteria which take into account: the potential for industrial development, the irreversibility of the solution, respect for the 3R concept. The criterion relating to management in the study area is considered positive only for encapsulation. The possibility of implementing other options in the study area must be verified. For example: burying in cells can be done in the study area. The evaluation of the criteria also strikes us as arbitrary. Management in the study area does not mean that we must absolutely in every case leave the pollution where it is.*
> (Brief, February 1994, p. 7)

The representative of Polydec Environnement Inc. asked the following question:

> [Trans.][...] *is it more important that the sediments be managed in the federal area (assigned 1st priority in the EIS) than the criterion "elimination of contaminants in the contaminated sediments, " which was assigned a 2nd priority in the EIS? The latter criterion is, in our opinion, more important in terms of the justification of the project.*
> (Brief, February 1994, p. 3)

For its part, Environment Canada believes that:

> *[Trans.] The EIS should present a precise definition and justification for each of the categories assigned to the criteria deemed relevant for the analysis of the option, since they are the very foundation of the decision to choose a particular decontamination option. A reassessment of criteria 1 and 6 is called for in terms of a better definition of the categories. Criterion II, presented twice in the tables, deals in fact with two separate aspects: the technical complexity of the follow-up and the economic cost of the follow-up; these should have been made two separate criteria.*
> (Brief, February 1994, p. 4)

Potential for recontamination

Some participants feel that additional information on the potential sources of recontamination is necessary.

Among other things, the community health representatives would like:

> [Trans.][...] *to see in tabular form the overall cumulative impact of the various sources of recontamination that have been identified by the authors, rather than the separate impact of each of them as is currently the case.*
> (Brief presented by the Direction de la santé publique of the Régie regionale de la santé et des services sociaux du Montreal mttropolitain, March 1994, p. 1 and 2)

For its part, Health Canada has questions about the potential sources of new contaminant loadings from soils bordering the canal. These contaminants could affect the water quality and, indirectly, the health of users.
(Brief, March 1994, *p.2)*

Public hearings

This section summarizes public input during Parts I and II of the public hearings, based on the questions raised during the three public sessions held in LaSalle in May 1996 and the comments, opinions and positions contained in the briefs submitted a month later.

Questions raised during Part I

During Part I of the hearings, the participants had an opportunity to ask questions of the proponent, as well as of the representatives of the government departments and municipal agencies invited by the joint panel to participate in the public sessions. The questions dealt with a limited number of issues, which are outlined in Table 3.2

Table 3.2 Number of times issues were addressed in Part I of the public hearings

Issues	Number
Encapsulation on the bank option	16
Impacts of the project	11
Comparative analysis of the options	7
Project cost	5
Total	**39**

The economic development groups for southwest Montreal and of the decontamination industry were particularly interested in the decision to opt for encapsulation on the bank as the containment method for contaminated sediments. They questioned the advisability of this option in view of its temporary character, costs, impact and economic repercussions. A number of participants wanted more information on the technical characteristics of encapsulation on the bank.

Through their questions, they sought to compare the merits of the proposed option with other solutions, notably terrestrial containment. In this regard, a number of points were raised concerning the method used for the comparative analysis of the various options.

Other participants had questions about the probable impact on the enhancement and development of the site of carrying out or not carrying out the Lachine Canal decontamination project.

Some members of the public addressed the issue of uses, mainly from the standpoint of accessibility to the bicycle path during the work and the eventual opening of the Lachine Canal to pleasure craft.

Finally, industries questioned the proponent about the quality of canal water during the work as well as about possible disruptions in rail transport.

Opinions expressed during Part II

In total, the joint panel received 24 briefs (Appendix 3) while one participant preferred to present an oral brief. The overwhelming majority of participants represented municipal agencies, social and economic organizations and the decontamination industry. One association, two companies and several individuals also expressed their opinions about certain aspects of the project.

Opinions appear to be unanimous concerning the urgency of taking action to enhance and develop the Lachine Canal. However, a significant number of participants called into question the proponent's choice of encapsulation on the bank as the preferred method. This option, in the opinion of a number of participants, would restrict the potential uses associated with the development of the canal. In this regard, a number of participants, mainly cities that support the *Grand Montréal bleu* project, asked the proponent to take into account the possible reopening of the canal to pleasure craft.

In this section, the joint panel summarizes the opinions expressed, which are grouped under four headings, namely, enhancement and development of the canal, comparative analysis of the options, the encapsulation on the bank option and the impacts of the project.

Enhancement and development of the canal

A number of participants addressed the decontamination issue in the broader context of the canal's development. They based their opinion on the fact that, since the canal was closed in 1959, it has continued to deteriorate, thereby causing the social and economic decline of the region. Hence, in the view of some participants, steps must be taken to develop the canal as soon as possible regardless of whether or not the canal decontamination project is carried out:

> [Trans.][...] *the development of the canal is ardently desired by everyone, and as quickly as possible. This development, even if it is carried out in phases, must begin as soon as possible. This will give our region a much needed boost, given the depressed climate from which it suffers particularly.*
> (Brief presented by Pole des Rapides, June 1996, p. 7)

What is urgent is to develop the canal, regardless of whether or not the decontamination project is carried out. This is a unanimous position which was aptly summarized by one participant:

> [Trans.] *Moreover, a socio-economic summit was held last fall, and it was clear that, in southwest Montreal, on the Island of Montreal, the economic development tool is the Lachine Canal.*
> (Mr. Bernard Magnan, session of June 17, 1996, p. 108)

Thus, all the participants agree that the time has come to take action, that the time for studies is over and that action must be taken to develop the canal, with or without decontamination.

Moreover, some participants expressed the opinion that the decontamination project should be reviewed in light of the development objectives.

In its brief, Pôle des Rapides confirmed that there is no unanimity among its members on the necessity of decontaminating the Lachine Canal:

> [Trans.] *However, if it is necessary to decontaminate the canal, and we deliberately ask the question in order to demand a justification of the operation, should the proposed method, i.e. encapsulation on the bank, be supported?*
> (Brief, June 1996, p. 5)

In the view of the City of Montreal, the project could have advantages for the enhancement and development of the canal:

> [Trans.][...] *the symbolic value of removing the toxic sediments from the site and thereby improving the quality of the aquatic environment, combined with the other development projects, should have very positive spin-offeffects on the image and development of the area. The investment in decontamination could generate a spin-off effect on the entire canal development project and on the resulting revival of Montreal.*
> (Brief, June 1996, p. 4)

The City of Lachine expressed a different point of view. It questions the advisability of decontaminating, notably in light of the findings of the risk study:

> [Trans.][...] *since the most recent risk studies conducted in 1992-1993 concluded that the canal's contaminated sediments did not pose significant risks for human health, for public access to secondary-contact recreational activities, and that this is the ultimate objective of Parks Canada, we have serious doubts about the advisability of the decontamination project in light of these new data and we question the proponent's justification for carrying out this project in the 1996 context.* [...] *we understand that the* status quo *may be acceptable in the immediate future, both for use of the canal waterway for secondary-contact recreational activities and for its reopening to pleasure craft.*
> (Brief, June 1996, p. 2)

The Régie regionale de la santé et des services sociaux de Montreal-Centre also notes that:

> [Trans.] *The risks for the population associated with the chemical contamination of the sediments do not in fact justify the decontamination project. We can understand that the federal government wants to set an example through the Lachine Canal decontamination project. However, we believe that instead of investing large sums to restore an environment where no significant impact will be observed on water quality, on contamination of the fish, and on the health of the population, it should invest these sums in sites where beneficial effects would be observed.*
> (Brief, June 1996, p. 10 and 11)

Without taking a position on the advisability of decontaminating the Lachine Canal, the City of Montreal considers that the decontamination should be based on:

> [Trans.][...] *the goals of not compromising the opening of the canal to pleasure craft, ofproceeding without delay with work to enhance and develop the canal and the area, of avoiding significantly modifying the integrity of the sites and of adapting the &contamination project to the costs and the actual risks to public health and the environment.*
> (Brief, June 1996, p. 4)

Reopening of the canal to navigation

All of the socio-economic agencies and associations expressed a wish to see the canal reopened to navigation.

These included the Association des gens d'affaires du Sud-Ouest de Montreal (AGASOM), which has sought to bring together the RESO, the Regroupement pour la relance tconomique et sociale du Sud-Ouest, the Chambre de commerce du Sud-Ouest, Pôle des Rapides and elected municipal officials in the five cities (including Verdun) located along the Lachine Canal so that they can work together to promote the development of the canal. According to AGASOM, recreating a navigable waterway and facilitating access to it, promoting pleasure navigation and creating a potential traffic of pleasure craft are among the preferred means of promoting the revival of the southwest Montreal area (Brief, June 1996, p. 6).

All of these participants agree that the development of the recreational and tourism potential of the Lachine Canal depends on reopening the canal to navigation:

> [Trans.] *In our region, there is a unanimous consensus in favour of reopening the Lachine Canal to marine traffic: small pleasure craft, recreational boats and sightseeing vessels.*
> (Brief presented by Pôle des Rapides, June 1996, p. 5)

Like the other municipalities, the City of Montreal considers that reopening the canal to pleasure craft and to traffic transiting between the Old Port of Montreal and Lac Saint-Louis is an essential and priority component of the Lachine Canal development and redevelopment project:

> *[Trans.] The reopening of the canal to pleasure craft is an essential component of the Grand Montreal bleu project, a vast project, approved by 132 reeves and mayors in the greater Montreal area, aimed at developing the region's waterways for recreational and tourism purposes.*
> (Brief, June 1996, p. 2)

Comparative analysis criteria

The comparative analysis of the options was the target of numerous criticisms by the participants, notably in terms of the choice and weighting of the criteria:

> [Trans.] *We would like to point out that the proponent did not take advantage of the Holmes multicriteria method, incorporating public participation in decision-making regarding the choice of the decontamination option. On the contrary, it limited the advantages of this technique to a simple tool for aiding decision-making.*
> (Brief presented by Les ami-e-s de la Terre, June 1996, p. 5)

Some participants questioned the importance of the criterion "elimination of contaminants in contaminated sediments":

> [Trans.] *We were surprised that the proponent assigned criterion I, "Elimination of contaminants in contaminated sediments': to the second category, while it is the very essence and raison d'être of this EIS. In our opinion, this criterion should have been assigned to the first category.*
> (Brief presented by Les ami-e-s de la Terre, June 1996, p. 5)

In the view of the representatives of RESO:

> [Trans.] *This criterion is practically useless if we consider the initial parameters (budget), but what is even more serious is that it conceals the absence of a useful criterion (capable of discriminating among the options that are genuinely economically feasible), i.e. a criterion that would make it possible to measure the definitive character of the solution, not for the sediments, but for the canal and its ecology.*
> (Brief, June 1996, p. 6)

Several participants also emphasized the importance of preserving the heritage value of the Lachine Canal. They expressed astonishment that this criterion only rated a

category 3, while the very mandate of the proponent is to preserve and promote heritage.

Some argue that the criterion "Sediment management in the federal area" biased the results of the comparative analysis:

> [Trans.] *We think that this criterion alone, applied without qualification, is inadequate to reflect the responsibility of the federal government in environmental matters.*
> (Brief presented by RESO, June 1996, p. 6)

> [Trans.] *This criterion could have been presented as follows: "Adequate management of sediments" and would certainly have changed the analysis results.*
> (Brief presented by Les ami-e-s de la Terre, June 1996, p. 6)

According to others, the criterion "Inconveniences caused by trucking" should have been assigned a category lower than 1, considering the temporary nature of this negative effect on the environment:

> [Trans.] *This criterion was assigned a category I (the highest), while this is only a temporary impact.*
> (Brief presented by RESO, June 1996, p. 7)

The criterion relating to "total cost" also elicited numerous comments:

> [Trans.] *The economic criterion should include the development potential of the environment industry. In general, the absence of an assessment of the impacts on economic development associated with the various options is regrettable. We are thinking about direct and immediate jobs as well as about the longer term spin-offs associated with the development of the Quebec and Canadian environment industry.*
> (Brief presented by RESO, June 1996, p. 7)

The majority of participants said they agreed with the importance attached to this criterion. However, some believe that too much importance was assigned to the economic criterion:

> [Trans.] *Technical and economic considerations are omnipresent (duplication in the justification of the weighting of the criteria) in the series of criteria defined for conducting the comparative analysis of the six &contamination options.*
> (Brief presented by Les ami-e-s de la Terre, June 1996, p. 6)

> [Trans.] [...] *the three initial categories (environment, technical and economic) are not equally important. The economic criterion involves only the "total cost" and since it is assigned a category I in the weighting, its weight is very significant. Meanwhile, the eight environmental criteria reflecting various aspects of the project ranging from the heritage value to the inconveniences caused by trucking, since they are assigned to different categories, will have a lower overall weight in the total. Hence, it is the economic criterion which takes precedence in terms of importance.*
> (Brief presented by Bokor et al., June 1996, p. 24)

Finally, going beyond the criteria, some participants such as Les ami-e-s de la Terre would have preferred that the status quo option be evaluated on the same basis as the other options in the context of the comparative analysis and that other discriminating criteria be considered such as water quality during the work and the repercussions of the work on the local economy.

Decontamination options

The encapsulation on the bank option proposed by the proponent was overwhelmingly rejected by the participants, mainly because it is not a permanent solution and because it would compromise the integrity of the environment:

> [Trans.] [...] *it is vital to recall the importance of favouring decontamination options which offer a permanent solution to the contamination problem. The encapsulation option which was selected strikes us as a temporary solution because of the uncertain lifetime of the encapsulation cells. Furthermore, this choice completely fails to take into account the progress in &contamination technologies which has taken place in recent years.*
> (Brief presented by Verreault Navigation Inc., June 1996, p. 3)

In the view of Le Groupe Serrener Inc.:

> [Trans.] *The goal therefore is not, if you will, long-term storage, but rather to eliminate the problem today in order to avoid, in 15, 20 or 30 years or in the long term, having to eventually review the solution proposed.*
> (Mr. Jean Shoiry, session of June 18, 1996, evening, p. 134)

According to RESO:

> *[Trans.] We must emphasize an option which constitutes a genuine solution to the contamination problem and, to this end, we aim to eliminate the risks of possible recontamination, risks entailed by encapsulation, which leaves the sediments in the canal* [...].
> (Brief, June 1996, p. 8)

Even though it agrees with the general concept of dredging and containment, the City of Montreal:

> [Trans.] [...] *also has serious reservations about the choice of the bank containment site, notably with regard to the proposed backfilling of the canal. The City of Montreal believes that the backfilling of the canal, even in limited areas, will have negative impacts on navigation and on the integrity of the canal in visual and heritage terms as well as on the redevelopment potential of the properties on either side of the canal.* [...] *In functional terms, even if a minimum corridor is maintained it will substantially reduce manoeuvrability in the canal as well as its attractiveness for pleasure craft. In visual terms, the proposal to reduce the width of the canal from* 50 *to 20 metres in three places would substantially reduce the presence and visual impact of the water. In heritage terms, it would modify the historical boundaries and would bury certain characteristic elements (notably the walls). In addition, despite the efforts to camouflage the capsules and to demonstrate that they are safe, the fact that the capsules are so visible risks leaving a daily reminder that the contaminated sediments are still there. All these impacts risk generating negative impacts in terms of the development of the lands adjoining the canal.*
> (Brief, June 1996, p. 8)

Socio-economic development agencies have insisted on the importance of the heritage character of the canal. In their opinion, the encapsulation on the bank option

disfigures the canal and compromises its heritage integrity (brief from RESO, June 1996, p. 8 and brief from Pole des Rapides, June 1996, p. 5).

Moreover, the Association des climatologues du Quebec, on the basis of a study on the effects of climatic change, considers that the encapsulation on the bank option should not be selected because of the anticipated drop in water levels which could have an impact on elements such as water quality. It could also:

> *[Trans.] [...] erode the protective layer of sand and expose the protective geomembrane to the ultraviolet rays of the sun, which could cause a rapid deterioration of the material and leakage of the encapsulated contaminated sediments.*
> (Mr. Bhawan Singh, session of June 18, 1996, afternoon, p. 31 and 32)

A number of participants preferred the option of terrestrial containment:

> [Trans.] [...] *in our view it is essential that the sediments be removed, contained and transported away from the site. Moreover, in this regard, there are places that are authorized to receive these sediments and which could very easily accept them.*
> (Mr. Benoit Longprt, session of June 18, 1996, evening, p. 92)

Throughout the hearings, a number of participants pointed out the advantages of the option proposed by a local decontamination firm:

> *[Trans.] [...] we believe that the panel must take into consideration the presence in the study area of a soil and sediment decontamination plant and the new possibilities which it offers, notably the possibility of pumping the sediments without resorting to trucking, the possibility of reducing them by dehydration and the possibility of reusing, at low cost, a large part of the sediments (those classified in the B-C range) as material for covering refuse.*
> (Brief presented by RESO, June 1996, p. 8)

Cintec Environnement Inc. pointed out that, contrary to what is described in the EIS, it does not necessarily propose burying the Lachine Canal sediments using its maximum security cell: It believes:

> *[Trans.] [...] that the characteristics of these contaminated sediments, once dredged by a hydraulic aspiration pump, flocculated and dehydrated by a system of pressure belt jilters, equipment which we have in our plant in southwest Montreal, would meet the B-C*

> ***standards of the Miron landfill site for most of the dredged material. Our cost estimate, based on this assumption, would make this proposal even more economical for the proponent.***
> (Brief, June 1996, p. 2)

Finally, the joint panel received information on new decontamination technologies. Two companies made brief presentations on the techniques which they offer. Le Groupe Serrener Inc. proposed a technique based on an electrokinetic process, while Verreault Navigation Inc. submitted one which relies on a technology which modifies the treatment processes used by the mining sector.

In the event that the decontamination work is carried out, several municipalities and public agencies have proposed that a performance specification be used by the proponent to issue public tenders and avoid conducting yet another exhaustive study aimed at choosing one decontamination method over another:

> [Trans.] [...] ***the idea of using a performance specification is based on the fact that we may be able to agree on certain objectives or certain results to be attained, such as excavating the problem contaminants, removing them from the canal, and then waiting a while to see what the various contractors who have equipment propose for disposing of these sediments.***
> (Mr. Pierre Legendre, session of June 18, 1996, afternoon, p. 60)

Impacts of the project

Several participants have expressed doubts about the mitigation measures and about the proponent's efforts to attenuate certain impacts of the project on the environment, mainly with respect to the use of the bicycle path and the water supply for industries:

> [Trans.] ***I have not been persuaded that the proposed attenuation or mitigation measures would be sufficient to enable the users to continue their recreational activities (bicycling, in-line skating and other outdoor sports).***
> (Brief presented by Ms. Henriette Léger, June 1996, p. 1)

> [Trans.] ***We are concerned about the negative impacts which the closure or extended detour of the bicycle path during the work could have according to the proposed decontamination scenario*** [...]
> (Brief presented by Pole des Rapides, June 1996, p. 6)

[Trans.] In 1994 and 1995, there were major interruptions in the canal water supply, due to work on the Wellington Bridge. During this time, we had to use City of Montreal water to meet our cooling needs. We discovered that the City could not provide the necessary pressure to supply our entire plant.
(Brief presented by **Aliments CanAmera,** June 1996, p. 1)

*[Trans.] I can tell you that during the past year **[1995]** we experienced a problem with poor water quality, and that is why I have come back and why I am insisting on this point **[...]** the water supplied by the City of Montreal is much more expensive than the water from the canal.*
(Ms. **Nicole** Patenaude, session of June 18, 1996, afternoon, p. 101)

Chapter 4 Project justification

According to the terms of reference of the joint panel, the scope of the public review includes evaluating the relevance of the project and various issues associated with the environmental impacts and uses of the canal.

In this chapter, the joint panel analyses the two aspects which comprise the project justification. It also examines them in light of the opinions expressed by the public and reported in the previous chapter.

In 1989, the intention of the Canadian Parks Service was to open the canal to all types of recreational activities, including swimming. Hence, this justified the decontamination project on the grounds of safeguarding public health. Moreover, the joint panel developed its guidelines with this use in mind However, in 1993, the proponent scaled back its plans for recreational activities in the canal to secondary-contact activities only. Nonetheless, in the proponent's opinion, these activities still justify decontamination of the canal sediments. Moreover, in the context of the federal policy which calls for the Government of Canada to set an example in the area of environmental clean-up, the proponent considers its project a measure to clean up the aquatic environment.

As submitted, the Parks Canada project proposes secondary-contact recreational activities in the canal, such as rowing, canoeing and paddle-boating, without reopening the locks. In order to assess the potential health risks posed by the presence of contaminated sediments in a canal which would be used for such activities, the proponent commissioned a study (Document CAL 2.1-36). The findings of that study are unequivocal: the health risk associated with the ingestion of water and sediments is considered very low, even insignificant. The health risks of skin contact with the water and sediments are also considered negligible. In its brief, the Rigie regionale de la santé et des services sociaux (RRSSS) de Montreal-Centre concurs with these findings (brief, p. 10).

The joint panel understands that, in its initial plan for maximum use of the canal, including swimming, the proponent had concerns about public health. However, the joint panel has difficulty understanding why the proponent continued to maintain its decontamination objective after a study showed that the contaminated sediments did not pose a threat to public health during secondary-contact activities.

Parks Canada also justifies the decontamination of the Lachine Canal as a means of cleaning up the aquatic environment. In support of its project, Parks Canada cited the federal environmental clean-up policy and indicated that it wanted to set a good example by beginning with one of its own properties. This approach is in keeping with the objectives of the St. Lawrence Action Plan, introduced in 1988, and of St. Lawrence Vision 2000, adopted in 1993, which are aimed at protecting the waters of the St. Lawrence River.

Support for the decontamination project is based on the connection between the presence of contaminated sediment on the bottom of the canal, benthos, which is one of the links in the food chain, and contamination of fish tissue. The proponent is of the view that decontamination of the sediments will help clean up the aquatic environment by eliminating an adverse effect on benthic organisms. However, it concedes that improving the living environment of benthic organisms will have no significant effect on the level of contamination of fish in the canal (EIS, Information Supplement, p. 22). In fact, these fish, which come primarily from Lac Saint-Louis, are exposed to other sources of contamination besides the canal sediments. Moreover, their level of contamination is similar to that of fish that occur in the Lachine Basin, Lac Saint-Louis and the St. Lawrence River.

The joint panel notes that the arguments advanced to justify the decontamination project have changed over time. Nonetheless, the proponent still wishes to proceed with the decontamination of the sediments. While the decontamination of an environment is in itself a laudable objective and one which the joint panel supports, the panel cannot fully endorse the validity of decontaminating the canal sediments solely on the basis of the arguments submitted.

The joint panel therefore wonders why decontamination of the sediments should receive so much attention within the context of cleaning up the aquatic environment of the St. Lawrence River. Given the fact that the presence or absence of contaminated sediment would scarcely change the level of contamination of the fish, which come from the St. Lawrence River, the joint panel has difficulty understanding the proponent's insistence on taking action to decontaminate these sediments on the basis of these grounds.

Moreover, it is important to point out that the views expressed by the participating individuals and organizations regarding the use of the canal and the need to decontaminate it also changed over the course of the public review.

At the beginning of the public review, the health risks associated with contact with the water were perceived as real concerns. Decontamination of the sediments was therefore endorsed by the participants at the outset. There was no particular public concern about cleaning up the aquatic environment. Most of the participants considered decontamination of the sediments a worthwhile end in itself but it was no longer viewed as essential to the protection of their health or to the development of the canal. Moreover, some participants questioned the need to decontaminate the canal, preferring to see public funds used to enhance rather than decontaminate the canal.

With few exceptions, the participants view the enhancement of the canal as being dependent on the reopening of the canal to pleasure boating. Originally, they wanted to see development along the banks of the canal, including new industries. However, at the public hearings, the main message conveyed by most of the participants was focused primarily on development of the canal through recreational and tourism activities.

That being said, the joint panel is of the view that beyond the arguments in favour of the project, other aspects of the decontamination of the canal merit more detailed analysis: first, because there are other sources of contamination besides the sediments; second, because there are good reasons to question the proposed decontamination option; and finally, because the possibility of reopening the canal to pleasure boating, as called for by the participants and not ruled out by the proponent, raises the risk of contaminating the waters by putting the sediments back in suspension. These aspects will be dealt with in the next chapter.

Chapter 5 Sources of contamination of the Lachine Canal

A number of sources of contamination were identified in the EIS and during the public hearing. However, they were evaluated only from the perspective of possible sources of recontamination of the bottom sediments in the eventuality that the decontamination work on the canal was carried out; very little consideration was given to them as a factor limiting future uses of the canal. Although one of the project objectives is to reopen the canal to the public for secondary-contact recreational activities, data on water quality and specifically on the bacteriological aspects remains sketchy and is not linked with local sources of contamination that might still exist.

Some sources of contamination, such as the Rockfield overflow outlet, received considerable attention while others, such as the discharge of wastewater directly into the canal, were not brought to the attention of the joint panel until quite late in the review process. In this chapter, a detailed analysis of these sources of contamination puts their relative importance into perspective, not only from the standpoint of recontamination of the bottom sediments, but also from the standpoint of the limitations imposed on recreational uses of the canal.

Rockfield overflow outlet

The Rockfield overflow outlet was built between 1930 and 1933. This structure carries part of the wastewater and runoff from the Côte-Saint-Luc collector to the Lachine Canal (Figure 2.1, p. 8). The discharge of overflow from the Rockfield outlet into the Lachine Canal is permitted under the terms of a lease between the federal government and the City of Montreal. However, the federal government reserves the right to withdraw this permission at any time and without compensation (Mr. Mohamad Osseyrane, session of May 14, 1996, p. 66).

The rectangular conduit connecting the Rockfield outlet to the Lachine Canal is 3.35 metres wide by 1.60 metres high and approximately 400 metres long. This conduit receives only overflow from the Cote-Saint-Luc collector. Although water from the Lachine collector (Saint-Pierre collector) cannot ovefflow into the Rockfield outlet, it does contribute to the backflow of water from the Côte-Saint-Luc collector when its flow is at the maximum.

Work is currently under way to stop wastewater from the Saint-Pierre collector from flowing directly into the St. Lawrence River. This project, scheduled to be completed by the end of 1996, will divert water from the Saint-Pierre collector to the southern intercepting sewer of the Montreal Urban Community (MUC) wastewater treatment plant, thereby changing the flow regime in the Saint-Pierre collector and, consequently, the frequency of overflows from the Rockfield outlet (Mr. Mohamad Osseyrane, session of May 14, 1996. p. 69).

The EIS provides projections of recontamination of the Lachine Canal bottom sediments caused by overflows from the Rockfield outlet based on a study conducted in 1992 (Document DB12). That study estimated the frequency of overflows at twice a year and, once the drainage basins emptying into the Cote-Saint-Luc and Lachine collectors are fully developed, at 40 times a year. The latter situation would result in annual sediment loadings of 100,000 kg, 70 per cent of which would be deposited in the canal. Based on the metal content of this suspended matter, recontamination of the bottom sediments to level 3 would take only 25 years, prompting the proponent to state that the "Rockfield outlet represents a significant potential for recontamination" (EIS, Information Supplement, p. 26).

Furthermore, the 1992 study recommended that retaining basins be constructed, at a cost of $44.8 million, to reduce water flow in the three main collectors, thereby reducing the frequency of overflows from the Rockfield outlet. In this case, the sediment loadings would be reduced to 18,000 kg, of which only 50 per cent would be deposited in the canal. According to this new scenario, it would take nearly 300 years for recontamination of the bottom sediments to reach level 3, thereby prompting the proponent to state that "the potential for recontamination by the Rockfield outlet, once the retention measures are put in place, would be very low" (EIS, Information Supplement, p. 29). However, the work proposed in the 1992 study was not completed.

Nonetheless, a number of changes have occurred since 1992 which have altered the situation described above. These changes are:

- retention at the source of runoff from new developments in the municipalities of Lachine and Saint-Pierre and the Côte-Saint-Luc district;
- diversion of runoff from the Lachine industrial park to the Lachine collector;
- decision to drop the construction of a spillway at the Saint-Pierre Haut-Niveau collector;
- diversion of water from the Saint-Pierre collector to the MUC southern intercepting sewer (which has an interception capacity of 21.2 m^3/s).

In order to take these new factors into account, the City of Montreal commissioned a study in May 1996 to update the 1992 study regarding water flows in the sewer system during rainfalls (Document DB2). According to this simulation study, the frequency of overflows from the Rockfield outlet is estimated at once a year for the current development conditions of the tributary basin and at three times a year once the basin is fully developed. However, the findings of the City of Montreal indicate an actual frequency of once every two years (Mr. Mohamad Osseyrane, session of May 14, 1996, p. 77).

However, since no information was provided on the volumes of water and the pollutant loadings associated with overflows, it was still difficult to evaluate the potential for recontamination of the bottom sediment of the canal under these new conditions. The joint panel therefore requested additional information. According to the latest study dated July 1996 (Document DB24), with an overflow of once every two years, annual loadings of solids to the canal would be only 6,129 kg, of which 4,300 kg would accumulate on the bottom of the canal. Under these conditions, it would take centuries, not 25 to 30 years, to recontaminate the bottom sediments of the canal to level 3.

This succession of often contradictory figures inevitably generates confusion regarding the relative importance of the Rockfield overflow outlet as a source of current contamination and of recontamination in the event that the canal is decontaminated. It is also important to bear in mind that estimates of the time required to recontaminate the canal bottom sediments is based on loadings of suspended matter determined by simulation and not on actual measurements taken during an overflow event. Given that the number of overflows was also established by simulation, it follows that some uncertainty remains regarding the actual importance of the

Rockfield overflow outlet as a source of current contamination and of future recontamination.

However, the joint panel is of the opinion that, although significant, contaminant loadings from storm overflows from the Rockfield outlet do not in themselves represent a compromising source of recontamination of the canal sediments in the event that the canal is decontaminated.

Vézina/Saint-Patrick conduit

It was not until June 1996 that it was brought to the joint panel's attention that there is a conduit that empties directly into the Lachine Canal. This conduit, which was never mentioned in the previous studies, is located in LaSalle and is called the **Vézina/Saint-Patrick** outlet. The City of LaSalle has confirmed that a storm sewer 900 millimetres in diameter empties into the Lachine Canal and that a sanitary sewer 375 millimetres in diameter is connected to it (Document DB23).

This sanitary sewer acts as a by-pass in the event of a major breakdown or failure at the sewage pumping station located on Lyette Street (Figure 2.1). According to the City of LaSalle, such incidents have occurred only twice in the last five years. However, it could not provide the joint panel with information on the average duration of a failure or the average total pollutant loadings to the water of the canal during such incidents.

However, the 900 millimetre diameter storm sewer drains runoff from the area around the intersection of Saint-Patrick Street and **Vézina** Street toward the Lachine Canal during every rainfall event.

Although it is impossible to determine the loadings due to the **Vézina/Saint-Patrick** conduit, the fact remains that urban runoff is regularly discharged into the Lachine Canal. The joint panel is of the opinion that these discharges are currently a significant and definite source of contamination and that they could represent a major source of recontamination.

The joint panel deplores the fact that this intermittent source of contamination was not identified earlier or taken into consideration in the EIS or in the Information Supplement that followed. In view of the proposed uses of the canal, the joint panel recommends that every effort be made to eliminate discharges from the **Vézina/Saint-**Patrick conduit into the canal.

Lachine Basin

The studies revealed that water quality in the Lachine Basin is characterized by very low loadings of suspended matter and that water quality is essentially the same as in the Ottawa River which feeds it (EIS, Volume 1, p. 30).

The nautical activities which take place in the basin as well as periods of heavy winds or rises in water level do not appear to notably increase the loadings of solids to the canal, which remain very low (EIS, Information Supplement, p. 32).

It was originally thought that the Lachine Basin might represent a significant source of contamination of the canal. However, in light of the available information, the joint panel is of the view that the Lachine Basin has only limited potential for recontamination of the Lachine Canal sediments in the event that the canal is decontaminated.

Contaminated sites along the banks of the canal

Based on an additional characterization study of the canal banks conducted in 1993. the EIS mentions the existence of contaminated sites along the canal banks and in the study area (Document CAL 2.1-28). It points out that of the seven areas known to be highly contaminated, five could represent a potential source of recontamination of the canal. Two of the seven areas recognized as being heavily contaminated have been decontaminated since 1992. One is the site previously occupied by the Laboratoire hydraulique LaSalle (Figure 2.1, site 3-4) and the former Stelco plant site (Notre-Dame Works) (Figure 2.1, site 13-3) (Documents DA1 9 and DA20).

The other five heavily contaminated sites are:

the lands leased by Parks Canada successively to Sew Properties Inc., Dominion Bridge and Cintub (Figure 2.1, site 3-l);

the land leased by Parks Canada to Mills Steel Products Ltd. (Figure 2.1, site 13-8);

the land leased by Parks Canada to the Complexe industriel Lachinc (Figure 2.1, site 3-2);

the land owned by Parks Canada adjacent to Acier Vaudreuil (Slacan) and Domfer Poudres métalliques (Figure 2.1, site 4-l).

the lands adjacent to Century Metal (Figure 2.1, site 4-2).

The five sites which represent a potential source of recontamination of the canal are those numbered 3-1, 3-2, 3-4, 4-1 and 4-2 on Figure 2.1; of these sites, only site 3-4 has been decontaminated (Documents DA21, p. 1 and CAL 2.1-28, p. 22).

The 1993 characterization study points out that the contaminants present in the soil in concentrations above MENVIQ criterion "C" are primarily metals and mineral oils and greases, which have low mobility (Document CAL 2.1-28, p. 22). This study also showed that the contamination levels of the sites were generally higher than B or C.

According to federal and provincial public health officials, the health risks posed by contaminated sites are closely linked to the probability of direct contact by an individual with the soil. The risks are therefore particularly high for children because they have more frequent skin and mouth contact with soil (Mr. Than Le-Van and Mr. Luc Lefebvre, session of May 14, 1996, p. 14 1 to 143).

However, the proponent pointed out that the most contaminated sites along the Lachine Canal are currently used by industry and are therefore seldom frequented by the public (Mr. Michel Caron, session of May 14, 1996, p. 143).

Because of the type of contaminants found in the sites along the canal and because of groundwater movement, the joint panel is of the opinion that contaminant loadings from sites along the canal can be expected to have only a minor impact on the recontamination of the canal.

However, the level of contamination of certain sites may seriously limit their use. The joint panel therefore supports the position expressed by Parks Canada during the hearing, namely that as soon as the Lachine Canal bank management plan is completed and the role and uses of the various sites has been determined, Parks Canada will begin the decontamination of all its lands that are to be used for recreational purposes.

Occasional illegal discharges

The EIS identified overflows from the Rockfield outlet as being the greatest, if not the only, source of bacteriological contamination of the water in the canal. The bacteriological pollution caused by every ovefflow event should last only 72 hours (EIS, Volume 2, p. 12). However, in addition to the Vézina/Saint-Patrick conduit, other sources of contamination have recently been brought to light.

During the hearings, the joint panel wondered about the possible causes of bacteriological contamination observed at point No. 4, near the Lafleur Bridge (Figure 2.1, p. 8), during the canal water quality sampling program carried out in October 1994. Since this point is located immediately downstream from the Rockfield overflow outlet and since there was no overflow from the Rockfield outlet in the days preceding the sampling, the possibility that other still unidentified sources of discharges thus came to light.

A brief inspection of a section of the Rockfield outlet on June 14, 1996 provided visual confirmation of the presence on the conduit connecting the overflow to the canal of "a connection that should not be there" (Mr. Pierre Legendre, session of June 18, 1996, afternoon, p. 89). In addition, the water analyses conducted by the MUC further upstream had a fairly high coliform count, leading the joint panel to suspect that there were other illegal connections in the area. In fact, in August 1996, the City of Montreal confirmed to the joint panel that four other connections had been discovered. Since these conduits drain territory under the jurisdiction of the City of Lachine, the City of Montreal asked it to correct the situation (Document DB25).

Although it is impossible to determine the extent of the loadings due to these numerous connections, the joint panel feels that they would constitute a significant source of recontamination, should the canal be decontaminated. Once again, the joint panel considers it unacceptable that these intermittent sources of contamination were not identified earlier or considered in the EIS or Information Supplement. In view of the planned uses for the canal, the joint panel recommends that every effort be made to locate and eliminate all illegal connections.

In addition, a 1986 study dealing with the restoration of the contaminated bottoms of the Lachine Canal and the Lachine Basin (Document CAL 02.01-l 0) indicated the presence of 26 outfalls emptying into the canal. Although these conduits were not mentioned in the EIS, the joint panel was concerned about their condition and their possible use since leases are still in effect between Parks Canada and various municipalities and industries. The City of LaSalle confirmed to the joint panel that the conduits on its territory have since been eliminated (Document DB23, p. 2).

However, under one of the leases which Parks Canada provided to the joint panel, the City of LaSalle is able to maintain and use the drains which it says it has eliminated (Document DA24). Finally, in August 1996, the City of Montreal forwarded to the joint panel copies of three leases to which it was a party, which were not among those submitted previously by Parks Canada. These documents confirm that the drainage water and runoff from the Atwater and Saint-Rémi tunnels discharge into the Lachine Canal.

The joint panel is of the opinion that Parks Canada should clarify its position regarding leases granted to municipalities along the canal as well as to certain industries. In view of the fact that these leases allow the discharge of water of varying degrees of contamination into the canal, Parks Canada should also study the impact which they have on water quality.

The proponent focussed little attention on the bacteriological quality of the water in the canal despite the fact that it plans to allow secondary-contact recreational activities. By considering, a priori, that the Rockfield outlet was the only source of contamination, the EIS failed to, determine whether there were any other sources of contamination.

Now that the existence of such sources has been brought to light, the joint panel is of the opinion that Parks Canada should monitor the water quality of the canal not only to identify discharges, both legal and illegal, but more importantly to ensure that the bacteriological quality of the water meets MEF requirements for the planned activities. Compliance with the standards should be assured once these activities have been permitted, even if the bottom sediments are not decontaminated.

Conclusion

After analysing the known sources of contamination and the new sources of contamination brought to light, the joint panel feels it is a priority that, even if the bottom sediments of the canal are not decontaminated, corrective action be taken to eliminate these sources and thereby prevent continued poor water quality from compromising planned and potential recreational uses.

The joint panel also believes that the risks of recontamination of the canal are too high to consider a project to decontaminate the sediments without first taking action to control the main sources, in particular the Vézina/Saint-Patrick conduit and the illegal connections, notably those on the Rockfield overflow outlet.

Chapter 6 Decontamination options

This chapter looks at the comparative method used by the proponent to select a decontamination option. It looks at the option of encapsulation on the bank and terrestrial containment as well as new technologies. The *status quo* option requested by the joint panel in its guidelines is also considered, as well as the possibility of reopening the canal to navigation.

Comparative analysis

The proponent used a comparative method to analyse the various options. The details of this method were presented in Chapter 2. The analysis was based on twelve pre-determined evaluation criteria that fall into one of the following categories: permanent environmental criteria, temporary environmental criteria, technical criteria, technical and economic criterion and economic criterion.

The results of this analysis led the proponent to conclude that encapsulation on the bank represented the best option, followed, in order, by terrestrial containment, physico-chemical extraction, *in situ* solidification/stabilization, *in situ* containment at the bottom of the canal and, finally, *ex situ* solidification/stabilization. While recognizing the merits of the analytical method used by the proponent to determine the best possible decontamination option, the joint panel has identified certain deficiencies in how it was applied.

The joint panel notes, among the main shortcomings of the EIS, the absence of a breakdown of the costs and the lack of precision concerning the total cost for each option.

At the hearings, the proponent presented, at the request of the joint panel, an update of the cost breakdown for the various options based on the SNC-Lavalin study of 1985 (Document DA8). Following the analysis of this document, the joint panel noted that the proponent had not felt it was useful to review the 1985 breakdown and, hence, was unable to take into account the changes in the decontamination market since that date.

Moreover, during the public hearings the joint panel received substantially different information concerning the estimation of dredging costs. While the proponent stated that dredging represented the largest component of construction costs (Mr. Michel Caron, session of May 14, 1996, p. 56), the proponent submitted a document to the joint panel in which the updated dredging costs were estimated at $400,000 (Table 4.2) or less than 6 per cent of the total cost of encapsulation on the bank. However, in the same document, Table 3.5 provides a much higher cost for the dredging operation, which the proponent has never been able to explain (Document DA8). Finally, the proponent submitted another document in which the dredging costs were estimated at $800,000 (Document DA15).

Given the inconsistency of the cost figures submitted by the proponent and its inability to provide reliable figures, the joint panel has doubts about the validity of the proponent's conclusions in terms of an equitable comparison of the options and about the results which would have been obtained had a rigorous cost estimate been conducted.

Moreover, the comparative analysis of the costs completely fails to take into account the economic benefits of each option. This analysis would have been more useful if it had highlighted the local economic spin-offs, such as job creation and the development of industries specialized in the area of the environment and decontamination.

Still with regard to the comparative analysis, many participants in the public review called into question the importance accorded by the proponent to the categories of criteria and the ranking of the options. The joint panel concurs with this criticism, notably with respect to analysis criteria 1, 2 and 3, namely "elimination of contaminants in the sediments," "sediment management in the federal area" and "heritage." While the elimination of contaminants constitutes the raison d'être of the project, in the joint panel's view, this criterion should have been assigned to the first category of importance. Secondly, in its analysis and throughout the public review, the proponent's insistence on managing sediments on its own property is such that this consideration becomes a prerequisite rather than one criterion among others. Presented in this manner, this criterion undoubtedly favours the encapsulation on the bank option.

Moreover, participants in the hearings indicated that, if they had been consulted, they would have assigned less importance to this factor. Finally, the joint panel is of the opinion that the heritage criterion should have received greater weight than the "sediment management in the federal area" criterion. It is important to recall that part of the mandate of Parks Canada is to "[Trans.] ensure the commemorative integrity of national historic sites [...], protect them and develop them for the benefit, education and enjoyment of current and future generations, with all the consideration which the precious and irreplaceable heritage represented by these sites and their resources represent" (Document DA4, p. 7). Given the proponent's role in the field of heritage conservation and promotion, the joint panel has difficulty understanding why this criterion was assigned only a category of importance 3.

One of the other weaknesses of the comparative analysis is undoubtedly the exclusion of the status *quo* from the options analysed. On several occasions since the beginning of the public review, the joint panel asked that the *status quo* be analysed on the same basis as the other options. This would have made it possible to establish a comparative basis for a fair assessment of the advantages and disadvantages of each option. To this request the proponent replied that:

> *The* status quo *option is not retained* [...] *because it does not respect the will of the federal government, which is to rehabilitate this property.*
> (Environmental Impact Statement, Information Supplement, p. 46)

All of these shortcomings lead the joint panel to consider the results of the comparative analysis inconclusive.

Choice of technologies

During the public hearings, the participants focussed almost exclusively on two of the options presented by the proponent, namely encapsulation on the bank, the option preferred by the proponent, and terrestrial containment. There was very little discussion of the other options analysed by the proponent. The joint panel is of the opinion that these two options are more noteworthy than the others and deals with them in greater detail. Among the new technologies, the joint panel briefly examines two suggested methods since they meet one of the objectives of the guidelines, namely promoting the "definitive decontamination of the sediments."

Encapsulation on the bank

Despite the proponent's decision to manage the contaminated sediments on its own land and although encapsulation on the bank appeared to be the least costly option, this option nonetheless has major disadvantages from technical, economic and environmental perspectives.

The concept submitted by the proponent appears to be very preliminary and entails numerous uncertainties and technical deficiencies. Several basic technical questions were not considered in the option, such as the addition of strainer wells, pumping, the construction of embankments with clay rather than pit run materials, the consolidation of the sediments with granular material and the installation of a leakage detection system (Brief presented by Mr. Andre Poulin, June 1996, p. 3).

Furthermore, as one participant pointed out:

> ***[Trans.] The pre-engineering studies were conducted more than ten years ago. Given that environmental technologies have progressed considerably since that time, I believe it would be appropriate for the proponent's engineers to review this method in light of the new solutions recently developed on the market.***
> (Brief presented by Mr. Andre Poulin, June 1996, p. 3)

Needless to say, these technical deficiencies, which come on top of the uncertainties regarding dredging costs, result in an under-estimation of the costs of implementing the project. In this regard, the joint panel points out that the cost factor was a decisive criterion in assigning this option to the first rank. However, under the current circumstances, the joint panel is absolutely unable to estimate the costs of implementing this option.

When the guidelines were issued, the joint panel had asked the proponent to favour options that would, whenever possible, provide a permanent solution to the contamination problem identified. However, encapsulation on the bank does not permanently solve the contamination problem because of the uncertain lifetime of the cells, the risks of recontamination from the capsules which hold the sediments in the canal and uncertainties concerning the impact on future uses, which could eventually require the removal of the cells and the resumption of work at the site with all the disadvantages this entails.

With respect to the option preferred by the proponent, the representative of the Quebec Department of Environment and Wildlife described the situation as follows:

> [Trans.] *The problem we have is that there is no way of knowing how long our site will continue to perform. How will our site behave in 10, 20 or 50 years?* [...] *We can build safe sites, but we must be aware that the problem of contaminants in our sediments has not necessarily been eliminated.*
> (Mr. Gilles Brunet, session of May 14, 1996, p. 37 and 38)

In addition, the presence of three cells in the canal would substantially reduce its width (from 50 to 20 metres) and would compromise its possible reopening to navigation by limiting manoeuvrability in the canal. These cells would also create a significant visual impact which, regardless of the nature of the landscaping, would constitute a daily reminder for visitors and users of the presence of contaminated sediments.

Finally, the major shortcoming of this decontamination option is that it would jeopardize the heritage integrity of the canal. The joint panel concurs with the many participants who are keen to preserve this heritage integrity. Moreover, changing the configuration of the canal would be contrary to the very mission of Parks Canada, which is to preserve heritage.

The proponent has not succeeded in convincing the joint panel that encapsulation on the bank represents the best method for decontaminating the Lachine Canal, notably because of the technical deficiencies it entails and uncertainties regarding the costs. Moreover, from an environmental standpoint, the joint panel considers encapsulation on the bank unacceptable mainly because it would compromise the heritage value and because of the non-permanent nature of the proposed solution. For these reasons, the joint panel recommends that the method of encapsulation on the bank be rejected.

Terrestrial containment

During the public hearings, several participants discussed the method of terrestrial containment of sediment. The joint panel learned with great interest that by dredging and dehydrating the contaminated sediments, it would probably have the characteristics of a soil contaminated to the B-C level, which would make it acceptable as capping material in sanitary landfill sites. On the other hand, if some of the sediment so treated still remained contaminated to a level in excess of criterion "C", it could be contained in maximum security cells, as required by the applicable regulations. This new information would have a major impact on the costs of the

terrestrial containment option. One participant pointed out that the costs of disposal at a sanitary landfill site, such as the former Miron quarry, are $5 a tonne, compared to the costs of burying in a maximum security cell, which can range from $85 to $110 a tonne (Mr. Tony Lemme, session of June 17, 1996, p. 125).

The joint panel believes that if the bulk of the treated sediment could be sent to a sanitary landfill site, this option would be very attractive from an economic standpoint, while being acceptable from an environmental standpoint.

However, this possibility raises the question of whether aquatic sediments, once dredged and treated, can be considered soil. Indeed, the criteria in the aquatic environment and the terrestrial environment cannot be directly compared. While recognizing that sediment criteria 1, 2 and 3 are relevant for determining the necessity of intervening in the aquatic environment, the joint panel is of the opinion that the dredged sediment designated for management in the terrestrial environment should be considered soil and be subject to the applicable criteria Thus, if the same evaluation scale is used for the dried sediment and for soils, it is quite possible that the sediment, once physically treated and dehydrated, would become acceptable as capping material in sanitary landfill sites, at competitive prices. The joint panel suggests that the Quebec Department of Environment and Wildlife clarify this question of applicability of the criteria, a fundamental concept in cases of dredging and management of contaminated sediment in the terrestrial environment.

The joint panel considers that this option, ranked second by the proponent despite the high estimated costs, could have appeared as the best option.

Moreover, if it is deemed necessary to decontaminate the sediments in the Lachine Canal, the joint panel is of the opinion that this type of treatment should be considered on the same basis as other competing methods.

Other proposed technologies

Two companies presented new technologies which mainly involve treating the sediments to extract the contaminants.

The first technology proposed is based on an electrokinetic process which is described as:

> [Trans.] *[...] highly effective in terms of the decontamination of fine relatively impermeable matrices such as sediments, silty and clayey soils as well as fine residues produced by conventional washing processes.*
> (Brief presented by Le Groupe Serrener Inc., June 1996, p. 1)

> *[Trans.] Hence, this is a kind of extraction, if you will. It is in fact a leaching process directed at the contaminants in the matrix, which are then precipitated and confined in a mud. Hence, there is a very significant reduction in volume. [...] The treated sediments can then be reused.*
> (Mr. Jean Shoiry, session of June 18, 1996, evening, p. 143)

The other method submitted is based on a technology which modifies the treatment processes used by the mining sector:

> [Trans.] *The goal of the method which we are currently exploring is to treat the sediments sufficiently so that the bulk of them can be discharged in open water. At that point, the processing plant could be on a barge or floating platform* [...]. *There would then be a small quantity* [of sediments] *relative to the total volume,* [...] *which would have to be treated or sent* [...] *it could be sent directly, for example, to foundries or to oil and grease recovery centres, after treatment.*
> (Mr. Vital Julien, session of June 18, 1996, evening, p. 69 and 70).

The joint panel believes--albeit on the basis of very incomplete information--that these technologies could reduce the concentration of certain contaminants in the sediment and offer a more permanent solution than other methods. However, as even the companies promoting them will concede, these technologies require further research to validate their large-scale effectiveness and to make them competitive in terms of cost.

The option of not decontaminating the sediments

At the outset of this public review, when the proponent was proposing a wide range of uses for the canal, up to and including swimming, the need to decontaminate seemed obvious. In the current context, in which it is contemplating only secondary-contact activities, the question of whether or not it is necessary to decontaminate the sediments becomes entirely legitimate. Although the proponent has not considered the *status quo* option in its EIS, this option was raised on several occasions during the hearings both by the participants and by the joint panel.

In fact, the joint panel is of the view that, in addition to requiring substantial expenditures, the decontamination of the canal sediments offers very few environmental benefits. Indeed, it has been demonstrated, both by the proponent and by the participants, that the presence of contaminated sediments within the context of the proposed use of the canal (secondary-contact recreational activities) poses no public health risks. The same is true for contamination of the fish tissue, which would be virtually unchanged. Finally, the joint panel has demonstrated that the project would have no beneficial effects on the bacteriological quality of the water since this is influenced by other factors.

Moreover, the joint panel considers that the option of not decontaminating the sediments has certain advantages, notably by allowing the development of the canal to proceed without further delay. No impact would be felt by the users of the canal, particularly with regard to the heritage value of the site and the use of the bicycle path. Not decontaminating would eliminate the need for a work site, would avoid the impact on water quality for industry as well as the inconveniences caused by trucking.

Although decontamination is a laudable objective in itself, the joint panel recommends, on the basis of all these facts, that the contaminated sediments in the Lachine Canal not be decontaminated.

Reopening the canal to navigation

The majority of the participants believe that reopening the canal to pleasure craft and vessels transiting between the Old Port of Montreal and Lac Saint-Louis is a critical element of the Lachine Canal development project. The reopening of the canal is supported by the *Grand Montréal bleu* regional project, whose objective is to link the waterways of the greater Montreal region by carrying out work on the Soulanges Canal, the Lachine Canal and the dam on Rivière des Prairies (Document DB20).

Very little information has been forwarded to the joint panel on the impact of reopening the canal to navigation. In fact, a single document was prepared in June 1996 on behalf of the proponent in order to evaluate the potential of putting sediments back into suspension. This document concludes that putting the locks back into service and the movement of vessels in the canal could put sediments back into suspension (Document DA22).

Should the canal be reopened to navigation, the joint panel feels it is essential to examine the risk of putting sediments back in suspension by the passage of boats, by the lock operations and by an eventual modification of the hydraulic conditions which would increase the flow of water from the Lachine Basin. In the panel's opinion, the proponent could determine fairly quickly the risk of contamination and make an informed decision concerning the necessity and extent of the decontamination.

In the event that the reopening of the canal requires some decontamination of the sediments, the joint panel proposes that the proponent select a decontamination method based on a performance specification which would set objectives to be met and constraints to be followed.

Without specifically determining the content of this performance specification, the joint panel believes that the following elements should be considered on a priority basis. The proponent should select an option which would preserve the layout of the canal and its heritage value, reduce the impact on water quality and on the bicycle path during the work, and minimize the transport of sediments over long distances. In addition, this method should, preferably, provide a permanent solution to the problem of the sediments and be tested on a pilot or commercial scale. The costs and duration of the work should also be decisive in the choice of a technology.

Conclusion

The analysis of the various sediment decontamination options leads the joint panel to consider the option of encapsulation on the bank as unacceptable because of its technical and economic deficiencies as well as its environmental disadvantages. For these reasons, the joint panel recommends that the method of encapsulation on the bank be rejected.

Moreover, in light of the fact that no significant environmental gain would be obtained by the decontamination and that, furthermore, there are certain advantages to not decontaminating the sediments, the joint panel recommends that the sediments in the Lachine Canal not be decontaminated.

However, if the canal is in fact reopened, the joint panel is of the opinion that the risks posed by putting sediments back into suspension should be evaluated. In this eventuality and if the risk is found to be acceptable, the joint panel is of the opinion that the non-decontamination option would remain valid. On the other hand, if this risk were to be unacceptable, the joint panel recommends that an appropriate decontamination of the sediments be carried out. The choice of the decontamination option should be based on a performance specification.

Conclusion

In accordance with its terms of reference, the joint panel studied the environmental impacts of the Lachine Canal decontamination project proposed jointly by Parks Canada and the Old Port of Montreal Corporation, both of which are subject to the federal environmental assessment and review process.

Because some work could be necessary in the Lachine Basin, which lies partly within provincial jurisdiction, the federal and Quebec environment ministers agreed to submit the entire project to a public review under the authority of a joint Canada-Quebec panel.

For the section within the jurisdiction of the Old Port of Montreal Corporation, the joint panel considers it regrettable that the work was undertaken and completed during the public review, thus putting it in front of a tit accompli. The joint panel notes that the project as implemented, in particular the refilling of the partially excavated basins with water, does not constitute a risk of recontamination of the water. The joint panel also notes that the excavated material was managed in accordance with the applicable rules.

For its part, Parks Canada justified its proposal to decontaminate the sediments of the Lachine Canal on the basis of two factors, namely secondary-contact activities, excluding swimming, and the remediation of the aquatic environment. Where necessary, the decontamination of an environment is in itself a laudable objective and is supported by the joint panel. However, the joint panel is of the view that the reasons advanced to **justify** the decontamination of the canal sediments are not sufficient in themselves.

On the basis of its analysis of the various sediment decontamination options, the joint panel considers the option of encapsulation on the bank unacceptable because of its technical and economic deficiencies and its environmental disadvantages. This option compromises the heritage integrity of the canal, could eventually restrict certain uses and does not permanently resolve the contamination problem. For these reasons, the joint panel recommends that the option of encapsulation of the sediment on the bank be rejected.

The joint panel is also of the view that in addition to requiring substantial outlays, decontamination of the sediment offers very few environmental benefits. It has been demonstrated by both the proponent and the participants that the presence of contaminated sediments in the context of the proposed use of the canal (secondary-contact recreational activities) does not pose a public health risk. The same is true for contamination of fish tissue. Finally, the joint panel has shown that the project would have no beneficial effect on the bacteriological quality of the water because this is influenced by other factors. The joint panel is also of the opinion that there are certain advantages to not decontaminating the sediments, notably allowing the development of the canal to proceed without further delay.

On the basis of all of the above factors into consideration, the joint panel recommends against the decontamination of the contaminated sediments in the Lachine Canal.

Furthermore, in the course of its work, the joint panel had an opportunity to analyse known sources of contamination and to identify new sources which have an impact on water quality and which might recontaminate the sediments. The panel considers it regrettable that these sources were not identified earlier or considered by the proponent in its EIS or Information Supplement.

Regardless of the future uses of the canal, the joint panel finds it incomprehensible that the proponent is proposing to decontaminate the sediments in the Lachine Canal for the purpose of cleaning up the environment, without first ensuring that it is aware of and controls the main sources of contamination of the local environment. The joint panel therefore recommends that the proponent develop, on a priority basis, a plan to locate and eliminate direct sources of contamination whether they come from legally or illegally connected conduits.

With regard to the Lachine Basin, the joint panel is of the opinion that the basin represents only a limited potential for recontamination of the sediments in the canal and that its role was overestimated at the outset.

Finally, the joint panel is of the opinion that if the canal were to be reopened to navigation - a proposal which was strongly supported by the participants but which was not one of the objectives of Parks Canada or adressed in its EIS - the risks posed by putting sediments back into suspension would have to be assessed. In this eventuality and if the risks were found to be acceptable, the joint panel is of the view that the option of not decontaminating would remain valid. On the other hand, if these risks became unacceptable and required decontamination, the joint panel recommends carrying out the appropriate decontamination of the sediments by selecting a method based on a performance specification which would set out the objectives to be attained and the constraints to be followed.

DONE IN MONTREAL,

(original signed)
JOHANNE GÉLINAS
Provincial Co-Chair

(original signed)
MICHEL SLMTZKY
Federal Co-Chair

(original signed)
JEAN-BAPTISTE SERODES
Panel Member

(original signed)
PATRICE DIONNE
Panel Member

Bibliography

CAL 2.2-2 LAVALIN ENVIRONNEMENT ET SANEXEN. *Équipements et méthodes de dragage recommandés sur le fleuve Saint-Laurent, resume,* July 1, 1990, 14 p.

CAL 2.2-3 ROCHE LTÉE. *Creation d'aménagements à partir de déblais de dragage et applicabilité de ce concept au Saint-Laurent, March* 1, 1990, 31p.

CAL 2.2-4 BÉLANGER, L., LEHOUX, D., GRENIER, *C. Propositions d'aménagement d'îles dans le fleuve Saint-Laurent pour la sauvagine avec des matériaux de dragage,* October 1, 1989, 16 p.

CAL 2.2-8 CENTRE SAINT-LAURENT. *Guide pour le choix et l'opération des équipements de dragage et des pratiques environnmentales qui s'y rattachent,* September 1, 1992, 81 p.

CAL 2.2-9 CENTRE SAINT-LAURENT. *Critères intérimaires pour l'évaluation de la qualité des sediments du Saint-Laurent,* April 1, 1992, 28 p.

CAL 2.2-10 CENTRE SAINT-LAURENT. *Guide méthodologique de caractérisation des sediments,* April 1, 1992, 160 p.

CAL 2.2-l 1 ANDRÉ MARSAN ET MS. INC. *Étude sur les voies de solution au problème des sediments contamines dans le lac Saint-Louis et le bassin La Prairie, annexes,* November 1, 1985,250 p.

CAL 2.2-l 1.1 ANDRÉ MARSAN ET ASS. INC. *Étude sur les voies de solution au probleme des sediments contamines dans le lac Saint-Louis et le bassin LaPrairie, annexes,* November 1, 1985, 150 p.

CAL 2.2-14 ENVIRONMENT CANADA - *C & P. Bilan Saint-Laurent - Le fleuve . . . en bref,* April 1, 1992, 52 p.

CAL 2.2-15 ENVIRONMENT CANADA - CENTRE SAINT-LAURENT. *Qualité des sediments et bilan des dragages sur le Saint-Laurent, March 1, 1993, 273 p.*

CAL, 2.2-16 ENVIRONMENT CANADA - CENTRE SAINT-LAURENT. *Guide pour l'évaluation et le choix des technologies de traitement des sediments contaminés*, April 1, 1993, 333 p.

CAL 2.2-18 ÉCO-RECHERCHES CANADA INC. AND ENVIRONMENT CANADA. *Projet archipel zone Sud-Est. Évaluation de la qualité des sediments du secteur de la jetée de Lachine et de la vieille centrale de ville LaSalle, caractérisation chimique tcotoxicologique des sediments,* December 1, 1985, 40 p.

CAL 2.2-20 QUEBEC DEPARTMENT OF ENVIRONMENTAL AND WILDLIFE, DIRECTION DES SUBSTANCES DANGEREUSES (HAZARDOUS WASTE BRANCH). *Politique de rehabilitation des terrains contamines,* February 1, 1988, 54 p.

CAL 2.2-21 LES CONSULTANTS JACQUES BÉRUBÉ INC. *Repercussions environnementales du dragage et de la mise en depot des sediments,* September 1.1994, 109 p.

CAL 2.2-22 LES CONSULTANTS JACQUES BÉRUBÉ INC. *Cadre législatif de gestion des sediments au Quebec,* October 1, 1993, 78 p.

CAL 2.2-23 MEUNIER, JEAN-YVES. *La consultation publique du Vieux-Port de Montreal. L'enquête publique française. Analyse comparative des procedures,* February 1, 1987, 750 p.

BEAUCHEMIN, BEATON, LAPOINTE INC. *Étude des niveaux d'eaux permissibles dans le canal de Lachine, ministère des Affaires indiennes et du Nord, Parcs Canada,* December 1978, without pagination.

CANADA GAZETTE. *Environmental Assessment and Review Process Guidelines Order,* Part II, vol. 118, no. 4, June 2 1, *1984, 9* p.

HOLMES, J. C. *An Ordinal Method of Evaluation,* Urban Studies, vol. 9, 1971, p. 179 to 191.

Appendix 1

Terms of Reference

Minister of the Environment

Ministre de l'environnement

Joint news release

This information was released to the wire services on the date indicated. Despite the delay, some releases and speeches are mailed to out-of-town media because the content is not time-dependent or because it will be useful for background files.

~~FOR IMMEDIATE RELEASE~~

JOINT PUBLIC REVIEW OF LACHINE CANAL DECONTAMINATION PROJECT

MONTREAL -- OCTOBER 29, 1990 -- The federal and Quebec Environment ministers, Robert R. de **Cotret** and Pierre Paradis, today announced the membership and terms of reference of the environmental assessment panel responsible for the joint public review **of** the **Lachine** Canal decontamination project.

The panel members are:

Michel Slivitzky, panel co-chairperson, Technical Advisor to the National' Institute for Scientific Research;

Claudette Journault, panel co-chairperson, permanent member of the Bureau **d'audiences** publiques sur **l'environnement;**

Jean-Baptiste **Sérodes,** Vice Dean of Research, Faculty of Science and Engineering, Lava1 University; and

Patrice Dionne, former Regional Director General, Environment Canada and former Chief of operations of the Canadian Parks Service.

This project was submitted to the federal Environment Minister for public review at the request of the Canadian Parks Service and the Old Port of Montreal Corporation, which is under the jurisdiction of the federal minister of Public Works. Because part of the project involves an upstream area under provincial jurisdiction, it is also subject **to the** Quebec environmental impact **assessment** and review procedures.

The Environment ministers have agreed to have the entire project assessed through a joint public review that will satisfy both the federal **and** Quebec requirements.

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Canada

The panel will assess the environmental and social impacts of decontaminating the Lachine Canal and the upstream area at its entrance. It will submit its findings and recommendations to the federal and Québec Environment ministers and the federal Minister of Public Works.

The panel's mandate is to study the environmental impacts of various methods of decontaminating, treating and disposing of the sediments in the Lachine Canal and the basin located upstream. It will recommend the best method and will set out the conditions of implementation.

The Environment ministers emphasized that, although several co-operative environmentalassessmentpanelreviews have been undertaken in the past, this is the first joint assessment panel allowing for a full integration of the federal and Quebec procedures.

Further information:

André Latreille
Minister's Office
Environment Canada
(819) 997-1441

Danielle Paré
Minister's Office
Environment Quebec
(418) 643-8259

(Aussi disponible en français)

TERMS OF REFERENCE OF THE ENVIRONMENTAL ASSESSMENT PANEL LACHINE CANAL DECONTAMINATION PROJECT

In June 1989, the Canadian Parks Service asked the federal Environment Minister to appoint an environmental assessment panel to hold a public review of its project to decontaminate the Lachine Canal. In October of the same year, the Old Port of Montreal Corporation decided to submit to the public review panel its decontamination operations in the area of the Lachine Canal under its jurisdiction.

Furthermore, the presence of contaminated sediments in an area located upstream, part of which is under provincial jurisdiction, could recontaminate the canal. Because any decontamination activities in this area would be subject to the Quebec environmental impact assessment and review procedure, it was agreed that the project would undergo a joint Canada-Quebec review.

A public review of the proposed decontamination project was requested in view of the magnitude of its potential environmental and socio-economic impacts, given the scope of the project and its location in an urban centre.

The purpose of this document is to define the scope of the review and the methods to be used, and to specify the Environmental Assessment Panel's terms of reference.,

PROJECT DESCRIPTION

The Lachine Canal is part of the national historic sites system. Most of the Canal is administered by the Environment Canada, Canadian Parks Service.

The surrounding area was the site of intensive industrial development at the turn of the century, and wastewaters from municipalities and industries located upstream and along the canal were dumped into the waterway. As a result, contaminated sediments are still present at the entrance and on the bottom of the canal.

Although the bacteriological quality of the water in this area has been considerably improved, if the sediments are disturbed, the sediments contained therein could be released and recontaminate the canal.

The federal Parks Service wishes to re-open the canal to the public for recreational purposes and, to do so, plans to clean up the canal and dispose of the contaminated sediment in order to eliminate any risk to human health. The decontamination of the canal is part of the St. Lawrence River Action Plan.

The depollution operations of the Lachine Canal consist of either removing or neutralizing the up-to-one-metre-thick layer of sediments on the bottom of the canal. The volume of sediments is estimated at over 215,000 m^3.

To ensure that the project is profitable in the long term, and to prevent possible recontamination in the event of restoration, all contaminant sources that flow into the canal should be eliminated, whether they originate from the basin located upstream from the entrance to the canal, which is the source of a water supply, from run-off waters or from other sources. The bottom of the basin located upstream of the Lachine Canal is covered with an estimated volume of 230,000 m^3 of contaminated sediments, roughly two-thirds of which is found in a sector under Quebec jurisdiction. The risk of recontamination of downstream areas must be taken into account.

The depollution project also includes an area downstream from the Bonaventure Autoroute, which is administered by the Old Port of Montreal Corporation, but which is under the jurisdiction of the federal Minister of Public Works. The canal was drained at this location a number of years ago and packed with fill material. An outfall was set up to ensure the flow of water toward the river. The Old Port of Montreal intends to refill this section of the canal with water and to re-open it to the public.

There are a number of decontamination methods available to the proponents. Their implementation would use the latest technology and equipment and should be in compliance with standards and regulations currently in force.

PANEL'S TERMS OF REFERENCE

The Panel's terms of reference are to assess the environmental and social impacts of the decontamination of the Lachine Canal and to report its findings and recommendations to the federal Quebec ministers of the environment and to the Minister of Public Works Canada. The Panel will examine various techniques to decontaminate, treat and dispose of the contaminated sediments at the bottom of the Lachine Canal and the basin located upstream. The Panel will recommend the most appropriate method and define the manner in which it is to be implemented.

With respect to the part of the project under the jurisdiction of the Old Port of Montreal Corporation, the Panel's mandate is to examine the environmental and social impacts of the depollution of this section of the canal which has been drained and filled. Furthermore, the panel will examine the different methods of disposing of the material (fill and sediments) originating from the locks which could prove to be contaminated at or beyond criteria «C» of the Politique québécoise de rehabilitation des terrains contamines. Preliminary work, such as repairs to the locks and retaining walls, are not included in the Panel's terms of reference.

SCOPE OF THE REVIEW

The review will evaluate the project with regard to:

the potential impacts, both positive and negative in the overall context of the water quality in the region adjacent to the canal and the basin located upstream;

the potential for the introduction of new contaminant: and

the potential for the recontamination of the restored areas.

The panel's review will cover matters concerning the duration, nature and magnitude of the project's impacts on the environment, including water, air and soil quality, aquatic and terrestrial plant and animal life, noise, visual context, and the modification or loss of habitats.

The review will cover questions related to socio-economic impacts of the decontamination projects. They include risks for public health, changes in land use patterns, customs and quality of life for the residents in the project area, risks of accidents, impacts on industries and nearby service corridors; and the historical and archaeological aspects of the area.

The public review includes a discussion of the different uses of the canal waterway for recreational purposes. It excludes specific management choices that would be implemented after the decontamination process.

Other activities planned by the Parks Service in the area, especially on sites along the canal where especially soil is contaminated, are excluded from the terms of reference. However, the panel will take these activities into account as well as any information regarding their impact on the recontamination of the canal. It will also consider the scope of these activitiesin order to better assess the cumulative effects of all activities planned in the region.

REVIEW PROCESS

At this project is subject to the federal Environmental Assessment and Review Process (EARP) in certain respects, and is in other respects, partially subject to the Quebec environmental impact assessment and review process, the public review involves a joint assessment procedure which meets the requirements of both the federal and the Quebec process.

The public review includes the following steps:

1. a joint environmental assessment panel will be appointed by the federal and Quebec environment ministers;

2. the parameter3 of the environmental assessment will be established by determining the major issues to be examined. The Panel will take into account previous studies conducted on the project -and the results of preliminary consultations undertaken by the federal 'Parks Service, and it will hold public consultations regarding guidelines for the preparation of an environmental impact statement (EIS);

3. the guidelines will be released by the Quebec Minister of the Environment and by the Panel';

4. the proponents will prepare an environmental impact statement for submission to the 'Panel;

5. the 'Panel will distribute the EIS to the public and government organizations for comments and decisions as to whether it contains all information required to 'hold a public 'hearing on the project. The panel may request additional information as needed in order to make the EIS acceptable;

'6. when it is deemed acceptable, the panel will 'forward the EIS to the Environment Minister of Quebec who, with minimum delay Will officially make public the environmental Impact Statement, instruct the 'project initiator that he may proceed with the information and public consultation stages, and direct the Bureau d'audiences publiques sur l'environnement to hold public hearings-on the project;

7. an information period and the public hearing will be held in accordance with the requirements of the Quebec process, and within six months. The: Panel wi 1.1 hold public hearings in two parts, first to examine the project and its environmental, social and economic impacts, and then to seek the views and comments of the public and interested. organisations;

8. the panel will submit a report of its conclusions and recommendations to the 'federal -and Quebec 'ministers of the environment and the Minister of Public Works Canada, who will then release it within 60 days of its receipt;

9. participants in the public hearings will be informed, by both governments, of the joint decision on the project.

Government of Quebec

Minister of Environment and Wildlife

Quebec City, February 28, 1996

Ms. Claudette Joumault
Acting Chair
Bureau d'audiences publiques sur l'environnement
625 St-Amable Street, 2nd Floor
Quebec City, Quebec
G1R 2G5

Dear Ms. Journault:

In accordance with the joint environmental assessment process established for the Lachine Canal decontamination project, the public consultation period and public hearings must be held in accordance with the Quebec process and within six months.

In this context, I would like to inform you that I will be making the environmental impact statement concerning the project, public on March 18, 1996, in accordance with the provisions of the first paragraph of section 3 1.3 of the *Environment Quality Act.*

I would therefore ask that the Bureau d'audiences publiques sur l'environnement prepare the file of the Canadian Parks Service and Old Port of Montreal Corporation for public consultation, as provided for under sections 11 and I2 of the *Regulation respecting environmental impact assessment and review.*

As Minister of Environment and Wildlife and in keeping with the authority granted to me under the third paragraph of section 31.3 of the *Environment Quality Act* (RS.Q., c. Q-2), I direct the Bureau d'audiences publiques sur l'environnement to hold public hearings on this project and to report its findings and analysis to me.

The Bureau will begin its mandate on May 18, 1996, immediately following the consultation period.

Yours sincerely,

(original signed)
David Cliche

c.c.: François Ouimet, MNA, Marquette
Liza Frulla, MNA for Marguerite-Bourgeois
Russell Copeman, MNA for Notre-Dame-de-G&e
Nicole Loiselle, MNA for Saint-Henri--Sainte-Anne
Jacques Chagnon, MNA for Westmount--Saint-Louis
André Boulerice, MNA for Sainte-Marie--Saint-Jacques

Government of Quebec

Minister of Environment
• **nd Wildlife**

Quebec City, April 10, 1996

Ms. Claudette Joumault
Acting Chair
Bureau d'audiences publiques
sur 1 **'environnement**
625 St-Amable Street, 2nd Floor
Quebec City, Quebec
G1R 2G5

Dear Ms. Joumault:

Further to your letter of April 9, 1996, and accompanying letter **from Johanne Gélinas,** co-chair of the panel charged with conducting an environmental assessment and public review of the **Lachine** Canal decontamination project, I hereby agree to move forward the date on which the Bureau d'audiences publiques sur l'environnement will begin its enquiry and public hearings mandate to May 13, 1996.

Yours sincerely,

[original signed **]**
David Cliche

Appendix 2

Documentation

The reference numbers beginning with CAL correspond to the filing system of the Canadian Environmental Assessment Agency. All other numbers correspond to the filing system of the Bureau d'audiences publiques sur l'environnement.

Initial file

News releases

CAL 1.1-1 JOINT RELEASE, FEDERAL AND PROVINCIAL ENVIRONMENT MINISTERS. *Joint Public Review of Lachine Canal Decontamination Project, news* release, October, 29, 1990, 2 p., (French version available).

CAL 1.1-2 Panel Members Biography.

CAL 1.1-3 Terms of Reference, 5 p.

CAL 1.1-9 JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Public Meetings to Identify the Important Issues in the Environmental Assessment,* news release, November, 19, 1990, 3 p., (French version available).

CAL 1.1-11 JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Correction Concerning the Location of Public Meetings held by the Panel and Public Information,* news release, December 4, 1990, (French version available).

CAL 1.1-13 JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Reminder of Period for Public Comments for the Preparation of Draft Guidelines,* news release, December 21, 1990, 1 p., (French version available).

CAL 1.1-15 JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Panel Makes Public Draft Guidelines to Receive Comments from the Public,* news release, February 15, 1991, 2 p., (French version available).

CAL 1.1-l 6 Draft Guidelines, 23 p., (French version available).

CAL 1.1-19 JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Temporary Closing of the Panel's Information Office, news* release, March 21, 199 1, 1 p. (French version available).

CAL 1.1-21 JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Panel Responds to the Letter of Vieux-Port of Montreal Corporation Concerning Draft Guidelines, news* release, April *23, 199* 1, 1 p., (French version available), attachment.

CAL 1.1-23 PR2 JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Panel Releases Final Guidelines for the Preparation of an Environmental Impact Statement,* news release, May 15, 1991, 2 p., (French version available).

CAL, 1.1-25 Guidelines for the Preparation of the Environmental Impact Statement, 20 p., (French version available).

CAL 1.1-27 JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Panel Releases a Progress Report on the Status of the Environmental Impact Statement,* news release. July 17, 1992, 1 p., (French version available), attachment.

CAL 1.1-33 FEDERAL ENVIRONMENTAL ASSESSMENT REVIEW OFFICE. *Federal Participant Funding for Public Review of the Lachine Canal Decontamination Project,* news release, December 22, 1992, 2 p., (French version available), attachments.

CAL 1.1-39 FEDERAL ENVIRONMENTAL ASSESSMENT REVIEW OFFICE. *Extension of Deadlines for Applications for participant Funding, news* release, January 14, 1993, 2 p., (French version available).

CAL 1.1-41 FEDERAL ENVIRONMENTAL ASSESSMENT REVIEW OFFICE. *Federal Participant Funding for Joint Public Review of the Lachine Canal Decontamination Project,* news release, May 18, 1993, 3 p., (French version available).

CAL 1.1-43 JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Public invited to Provide Written Comments on the Conformity of the Environmental Impact Statement with the Guidelines,* news release, December 7, 1993. 2 p., (French version available).

CAL 1.145 **JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT.** *Information Meetings,* **news release, January** *26, 1994,* **1 p., (French version available).**

CAL 1.1-47 Guide for Conformity Analysis of EIS, January 26, 1994, 6 p., (French version available).

CAL 1.1-48 JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Panel Issues Decision on Conformity of Proponent's Environmental Impact Statement,* **news release, May 11, 1994, 1 p., (French version available), attachment.**

CAL 1.1-50 PR7 JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Panel Releases Its Decision on the Adequacy of the Environmental Impact Statement,* **April 5, 1995, 1 p., (French version available).**

Correspondence

FEDERAL MINISTER OF THE ENVIRONMENT. *Letter to the Quebec environment minister concerning an agreement respecting a joint public review of the project,* **May 11, 1990, 1 p.**

OLD PORT OF MONTREAL CORPORATION *Letter to the joint panel regarding the draft guidelines,* **March 15, 1991, 1 p.**

JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Panels response to the letter from the Old Port of Montreal Corporation concerning the draft guidelines,* **April 17, 1991, 3 p.**

JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Letter to the proponents transmitting the deficiency statement,* **April 29, 1994, 1 p.**

JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT. *Letter to the Quebec Minister of Environment and Wildlife announcing the panel's decision regarding the adequacy of the EIS,* **April 3, 1995, 2 p.**

Documents submitted by the proponent

CAL 2.1-2 **OLD PORT OF MONTREAL CORPORATION** *Restoration of a Section of the Lachine Canal,* November 1, 1990, 4 p.

CAL 2.1-3 PR8.1 **PARKS CANADA.** *Lachine Canal: Decontamination Project,* October 1, 1990, 60 p.

CAL 2.1-4 **PARKS CANADA.** *Canal de Lachine : dossier photographique,* February 1, 1978, 70 p.

CAL 2.1-5.1 **BEAUCHEMIN-BEATON-LAPOINTE INC.** *Étude des niveaux d'eau permissibles dans le canal de Lachine,* December 1, 1988, 60 p.

CAL 2.1-7 **MARSAN, ANDRÉ ET ASS.** *Demonstration de transfert et fixation de boues et de sediments contamines, in situ : bassin Wellington, canal de Lachine, volume 1: sommaire exécutif,* June 1, 1986, 41 p.

CAL 2.1-8 **MARSAN, ANDRÉ ET ASS.** *Inventaire et analyse biophysique,* November 1, 1977,200 p.

CAL 2.1-9 **MARSAN, ANDRÉ ET ASS.** *Canal de Lachine : etude de sediments,* October 1, 1978, 150 p.

CAL 2.1-10 **LAVALIN ENVIRONNEMENT.** *Restauration des fonds contamines du canal et du bassin de Lachine,* November 1, 1986, 70 p.

CAL 2.1-11 **MARSAN, ANDRÉ ET ASS.** *Étude pour la dépollution du canal de Lachine,* April 1, 1984,200 p.

CAL 2.1-12 **LAVALIN ENVIRONNEMENT.** *Résultats des essais en laboratoire sur la performance de nouvelles membranes de géotextile,* January 1, 1987.70 p.

CAL 2.1-13 **LAVALIN ENVIRONNEMENT.** *Les contraintes de realisation du projet,* November 1, 1986, 52 p.

CAL 2.1-14 **LAROSE, JOSÉE.** *Aperçu des moyens de retention des ions métalliques presents dans l'eau des bassins, encapsulation des sediments contamines du canal de Lachine,* December 4, 1986, 30 p.

CAL 2.1-15 **MARSAN, ANDRÉ ET ASS.** *Stabilisation des boues de fond du canal de Lachine, rapport Parcs Canada,* March 1, 1984, 200 p.

Documents submitted by the proponent

CAL 2.1-2 **OLD PORT OF MONTREAL CORPORATION** *Restoration of a Section of the Lachine Canal,* November 1, 1990, 4 p.

CAL 2.1-3 PR8.1 **PARKS CANADA.** *Lachine Canal: Decontamination Project,* October 1, 1990, 60 p.

CAL 2.1-4 **PARKS CANADA.** *Canal de Lachine : dossier photographique,* February 1, 1978, 70 p.

CAL 2.1-5.1 **BEAUCHEMIN-BEATON-LAPOINTE INC.** *Étude des niveaux d'eau permissibles dans le canal de Lachine,* December 1, 1988, 60 p.

CAL 2.1-7 **MARSAN, ANDRÉ ET ASS.** *Demonstration de transfert et fixation de boues et de sediments contamines, in situ : bassin Wellington, canal de Lachine, volume 1: sommaire exécutif,* June 1, 1986, 41 p.

CAL 2.1-8 **MARSAN, ANDRÉ ET ASS.** *Inventaire et analyse biophysique,* November 1, 1977,200 p.

CAL 2.1-9 **MARSAN, ANDRÉ ET ASS.** *Canal de Lachine : etude de sediments,* October 1, 1978, 150 p.

CAL 2.1-10 **LAVALIN ENVIRONNEMENT.** *Restauration des fonds contamines du canal et du bassin de Lachine,* November 1, 1986, 70 p.

CAL 2.1-11 **MARSAN, ANDRÉ ET ASS.** *Étude pour la dépollution du canal de Lachine,* April 1, 1984,200 p.

CAL 2.1-12 **LAVALIN ENVIRONNEMENT.** *Résultats des essais en laboratoire sur la performance de nouvelles membranes de géotextile,* January 1, 1987.70 p.

CAL 2.1-13 **LAVALIN ENVIRONNEMENT.** *Les contraintes de realisation du projet,* November 1, 1986, 52 p.

CAL 2.1-14 **LAROSE, JOSÉE.** *Aperçu des moyens de retention des ions métalliques presents dans l'eau des bassins, encapsulation des sediments contamines du canal de Lachine,* December 4, 1986, 30 p.

CAL 2.1-15 **MARSAN, ANDRÉ ET ASS.** *Stabilisation des boues de fond du canal de Lachine, rapport Parcs Canada,* March 1, 1984, 200 p.

CAL, 2.1-17 LAVALIN ENVIRONNEMENT. *Plan de restauration des remblais et des sediments du canal de Lachine dans le Vieux-Port. Rapport. Le View-Port de Montreal, May 31,* 1990, 50 p.

CAL 2.1-18 LAVALM ENVIRONNEMENT. *Examen prealable du projet d'enlèvement d'une partie des remblais situés dans le secteur ouest du territoire du Vieux-Port. Rapport. Le Vieux-Port de Montreal, revision 02,* July 1, 1990, 30 p.

CAL 2.1-19 LAVALIN ENVIRONNEMENT. *Caracterisation des sediments et des remblais appartenant au Vieux-Port dans le secteur du canal de Lachine. Rapport synthese. Le Vieux-Port de Montreal,* March 1, 1990, 100 p.

CAL 2.1-20 LAVALIN ENVIRONNEMENT. *Caracterisation des sediments et des remblais appartenant au View-Port dans la branche nord de Lachine, rapport : Vieux-Port de Montreal,* May 1, 1990, 100 p.

CAL 2.1-21 OLD PORT OF MONTREAL CORPORATION *La Société du Vieux-Port de Montreal dévoile son plan d'aménagement 1992,* April 18, 199 1.20 p.

CAL 2.1-22 ENVIRONMENT CANADA. *Plan de caractérisation de la contamination des sols et des eaux souterraines des abords du canal de Lachine : synthèse historique,* **January 1,** *1990, 190* p.

CAL 2.1-28 ARECO CANADA INC. *Caracterisation complémentaire des berges du canal de Lachine,* January **1,** 1993, various pagings.

CAL 2.1-29 CENTRE ST. LAWRENCE. *Validation de procédés de traitement des sediments contaminés du canal de Lachine,* January 1, 1992, *84* p.

CAL, 2.1-30 PLANI-CITÉ. *Étude de potentiel - canal de Lachine,* unpublished, January 1, 1991, 41 p.

CAL 2.1-31 LAVALIN ENVIRONNEMENT. *&valuation et selection des technologies de traitement des sédiments contaminés applicables au site du canal de Lachine,* unpublished, January **1, 1991, various** pagings.

CAL 2.1-32 LAVALIN ENVIRONNEMENT. *Caractérisation de l'eau et des sediments - canal de Lachine,* January 1, *1992, various* pagings.

CAL 2.1-33 GÉOPHYSIQUE GPR INTERNATIONAL INC. *Mesure du volume de sediments par I 'approche géophysique - modelisation de type interactif, dynamique,* January 1, 1992, various pagings.

CAL 2.1-34 TECSULT INC. / ROCHE LTÉE. *Suivi des matières en suspension à l'été 1992, projet de décontamination du canal de Lachine,* January 1, *1992,* 31 p.

CAL 2.1-35 TECSULT INC. / ROCHE LTÉE. *Étude des conditions de glace, projet de décontamination du canal de Lachine,* January 1, 1992, 15 p.

CAL 2.1-36 TECSULT INC. / ROCHE LTÉE. *Analyse de risque du statu quo, projet de décontamination du canal de Lachine,* January 1, *1993, 5* 1 p.

CAL 2.1-37 TECSULT INC. / ROCHE LTÉE. *Analyse de risque pour la santé humaine, restauration et phase d 'utilisation du canal après les travaux, document de support, projet de decontamination du canal de Lachine,* January 1, *1993, 27 p.*

CAL 2.1-38 BEAUCHESNE ET ASS. *Étude sur les perceptions de la population à l'égard du projet de décontamination du canal de Lachine,* January 1, 1992.49 p.

CAL 2.1-39 SNC-LAVALIN ENVIRONNEMENT. *Étude sur l a possibilité d'un confinement extérieur des sediments du canal de Lachine,* January 1, *1992, various* pagings.

CAL 2.1-40 ENVIRONMENT CANADA - CANADIAN PARKS SERVICE. *Compte rendu, atelier d 'information et d'échange sur les orientations à donner à l'étude d'impact relative aux options de décontamination du canal de Lachine,* August 29, 1989, 3 p.

CAL 2.1-41 ENVIRONMENT CANADA - CANADIAN PARKS SERVICE. *Compte rendu de la consultation préliminaire sur les orientations à donner à l'étude d'impact relative aux options de &contamination du canal de Lachine,* June 1, 1989, 9 p.

CAL 3.2-l-O PR3.4 TECSULT INC. AND ROCHE LTÉE. *Environmental Assessment. Lachine Canal Decontamination. Summary,* Parks Canada, September 1993, 41 p. + appendix. (French version available)

CAL 3.2-l-l PR3.1 TECSULT INC. AND ROCHE LTÉE. *Environmental Assessment. Lachine Canal Decontamination. Volume 1. Area Description and Use,* Parks Canada, September 1993, 115 p. + appendices. (French version available)

CAL 3.2-l-2 PR3.2 — TECSULT INC. AND ROCHE LTÉE. *Environmental Assessment. Lachine Canal Decontamination. Volume 2. Analysis of Decontamination Options and Assessment of Retained Option,* Parks Canada, September 1993, 187 p. (French version available)

CAL 3.2-l-3 PR3.3 — DESSAU ENVIRONNEMENT LTÉE. *Environmental Assessment. Lachine Canal Decontamination. Volume 3. Development of the Lachine Canal Section under Jurisdiction of the Old Port of Montreal Corporation Inc.,* October 1993, 57 p. + map. (French version available)

CAL 3.4-l PR4 — TECSULT INC. AND ROCHE LTÉE. *Environmental Assessment. Lachine Canal Decontamination. Information Supplement,* Parks Canada, January 1995, 103 p. + appendices. (French version available)

CAL 3.4-2 PR8.2 — DESSAU ENVIRONNEMENT LTÉE. *Suivi environnemental des eaux souterraines. Secteur ouest du Vieux-Port,* Old Port of Montreal Corporation Inc., September 1994, 7 p. + appendices. (French version available)

Public participation

CAL 3.3-l PR6 — *Comments on the compliance of the EIS with the guidelines.*

CAL 4.1.1-1 — *Transcripts of public hearings,* December 10, 1990, 67 p.

CAL 4.1.1-2 — *Transcripts of public hearings,* December 10, 1990, 13 p.

CAL 4.1.1-3 — *Transcripts of public hearings,* December 11, 1990, 127 p.

CAL 4.1.1-4 — *Transcripts of public hearings,* December 11, 1990, 77 p.

CAL 4.1.1-5 — *Transcripts of public hearings,* December 12, 1990, 74 p.

CAL 4.1.1-6 — *Transcripts of public hearings,* December 12, 1990, 74 p.

CAL 4.1.1-7 — *Transcripts of public hearings,* December 13, 1990, 124 p.

CAL 4.1.1-8 — *Transcripts of public hearings,* December 13, 1990, 110 p.

CAL 4.2-l — *Compilation of Briefs Submitted to the Panel for the Draft Environmental Impact Assessment Guidelines,* January 1, 1991, *132* p.

CAL, 4.2-2 — *Compendium of Comments Received on Draft EIS Guidelines,* April 1. 1991.57 p.

Public hearings

Communication

CM2 News releases

CM2.1 CAL 1.1-51 **JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT.** *Public Information and Consultation Period and Public Hearings,* news release, March 18, 1996, 2 p., (French version available).

CM2.2 CAL 1.143 **JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT.** *Joint Environmental Assessment Pane1 Begins Public Hearings on the Lachine Canal Decontamination Project,* news release, April 22, 1996, 2 p., (French version available).

CM2.3 CAL 1.1-55 **JOINT ENVIRONMENTAL ASSESSMENT PANEL REVIEWING THE LACHINE CANAL DECONTAMINATION PROJECT.** *Panel Receives Opinions from the Public,* news release, June 3, 1996, 1 p., (French version available).

Correspondence

CR1 Terms of Reference

CR1.l **QUEBEC MINSTER OF ENVIRONMENT AND WILDLIFE.** *Letter from the Quebec Minister of Environment and Wildlife to the acting chair of the Bureau d'audiences publiques sur 1'environnement,* February 28, 1996, 2 p.

CRl.2 **QUEBEC MINISTER OF ENVIRONMENT AND WILDLIFE.** *Letter from the Quebec Minister of Environment and Wildlife agreeing to move forward the date on which the Bureau d'audiences publiques sur l'environnement will begin its mandate to May 13, 1996,* April 19, 1996, 1 p.

Documents filed at the public hearings

By the proponent

DA1 CAL 2.146 **OLD PORT OF MONTREAL CORPORATION.** *Caractérisation environnementale des sols dans la cellule temporaire. Résultats des analyses chimiques / Sol sec (mg/kg),* Dessau-Lavalin, summer 1991, 10 p.

DA2 CAL 2.1-45 — TECSULT ENVIRONNEMENT INC. *Projet de &contamination du canal de Lachine. Presentation dans le cadre de l'audience publique,* May *13,* 1996, 21 pages.

DA3 CAL 2.2-26 — MICHAUD, JEAN-RENÉ AND ANDRÉ POULIN. *Projet de demonstration d'une filière de traitement physico-chimique des sediments contamines au port de Sorel,* February 14, 1996, 7 p.

DA4 CAL 2.2-33 — PARKS CANADA. *Canal de Lachine. Enjeux et orientations. Planification des aires patrimoniales,* January 1996, 34 p.

DA5 CAL 2.2-31 — ZINS BEAUCHESNE ET ASSOCIÉS. *Évaluation du potentiel de marché pour la navigation de plaisance sur le canal de Lachine,* final report, Parks Canada. May 1995, 68 p. + maps and appendices.

DA6 CAL 2.2-32 — ZINS BEAUCHESNE ET ASSOCIÉS. *Étude de marché pour les canaux historiques nationaux du Quebec,* final report, Parks Canada, March 24, 1995,273 p. + maps.

DA7 CAL 2.2-30 — QUEBEC DEPARTMENT OF ENVIRONMENT AND WILDLIFE AND ENVIRONMENT CANADA. *Saint-Laurent : Vision 2000. Rapport biennal 1993-1995, 1996, 52* p.

DA8 CAL 2.1-48 — TECSULT ENVIRONNEMENT INC. *Coûts des différentes options de decontamination du canal de Lachine, complement d 'information,* May 1996, various pagings.

DA9 CAL 2.1-50 — *Lachine Canal Decontamination Project,* overhead transparencies, May 1996, 44 p.

DA10 CAL 2.1-49 — TECSULT ENVIRONNEMENT INC. *Lachine Canal Decontamination Project, Public Hearing Presentation,* May 13, 1996, 20 p.

DA1 1 CAL 2.1-51 — *Canal de Lachine, secteurs de Lachine, Rockfield, Ville Saint-Pierre/LaSalle, Saint-Henri/Côte-Saint-Paul, Pointe-Saint-Charles/Petite-Bourgogne et Vieux-Port de Montreal, 8* maps.

DA12 CAL 2.1-52 — TECSULT ENVIRONNEMENT INC. *Zones d'encapsulation nos 1, 2 et 3, 3* maps.

DA13 — MINISTÈRE DE L'ENVIRONNEMENT, DIRECTION RÉGIONALE DE MONTRÉAL-LANAUDIÈRE. *Letter to Mr. Guy Cormier of Dubé Cormier Construction inc. concerning the disposal of contaminated soil and solid waste at the Old Port of Montreal,* July 16, 1990, 1 p.

DA14 CAL 2.1-53 — CANADIAN HERITAGE. *Bilan récapitulatif des principaies caractéristiques techniques du projet,* review of information presented in the document by Lavalin (1992) entitled «Estimation de coûts pour l'option de confinement exterieur des sediments)), May 15, 1996, 1 p.

DA15 CAL 2.1-54 — CANADIAN HERITAGE. *Ventilation des coûts de realisation des travaux dans la variante d'encapsulation etanche,* review of information presented in the document by Lavalin (1992) entitled «Estimation de coûts pour l'option de confinement exterieur des sédiments», May 23, 1996, 3 p.

DA16 CAL 2.1-48 — CANADIAN HERITAGE. *Coût annuel des operations de suivi des zones d 'encapsulation, estimation preliminaire,* May 15, 1996, 1 p.

DA17 CAL 2.1-55 — CANADIAN HERITAGE. *Extrait de la section 6 du rapport de Lavalin (1992) relatif a des estimations de coûts pour l'option de confinement exterieur des sediments,* 10 p.

DA18 CAL 2.2-56 — CANADIAN HERITAGE. *Stabilisation in situ - coûts,* overhead transparency, 1 p.

DA19 CAL, 2.2-40 — CANADIAN HERITAGE. *Sommaire des travaux de restauration des sols. Site de 1 'ancienne usine Stelco (Notre-Dame Works), Montreal (site 13-3), 2* p.

DA20 CAL 2.2-41 — CANADIAN HERITAGE. *Sommaire des travaux de restauration des sols. Terrain situé au 611, rue Saint-Patrick (site 3-4), Ville LaSalle, 2* p.

DA21 CAL 2.1-57 — CANADIAN HERITAGE. *Identification des sites contamines les plus problematiques, projet de decontamination du canal de Lachine,* 1 p.

DA22 CAL 2.1-58 — TECSULT ENVIRONNEMENT INC. *Decontamination du canal de Lachine. Expertise complementaire en hydraulique,* June 1996, 10 p.

DA23 — CANADIAN HERITAGE. *Le point sur les demandes d'information de la commission,* June 28, 1996, 3 p.

DA24 CAL 2.2-49 — CANADIAN HERITAGE. *Response to a request from the joint panel concerning the leases that give riparian property owners or municipalities the right to discharge wastewater directly into the Canal,* July *17,* 1996, 8 leases.

By resource persons

DB1 *CAL 2.2-27* — QUEBEC DEPARTMENT OF ENVIRONMENT AND WILDLIFE. *Guide d 'implantation et de gestion de lieux d'enfouissement securitaire,* Industrial Policy Branch, Final version, July 1994, 82 p.

DB2 CAL 2.2-29 — ASSEAU. *Ville de Montreal : evaluation complementaire par simulation, collecteur Saint-Pierre et tropplein Rockfield, Study* report, May *13, 1996, 5* p. + maps.

DB3 CAL 2.2-24 — CITY OF MONTREAL. *Memorandum of understanding between the Quebec Minister of Municipal Affairs and the City of Montreal respecting the contribution of government financial assistance for the implementation of a pilot project to assist municipalities in the Montreal region that own contaminated land,* March 29, 1995, 14 p.

DB4 CAL 2.2-25 — CITY OF MONTREAL. *Descriptions of six contamined municipal properties located along the Lachine Canal and restored in the first phase of the pilot project to assist municipalities in the Montreal region that own contaminated land,* May *29, 1995, 12* p.

DB5 CAL 2.2-28 — CITY OF MONTREAL. *Addresses by Lise Cormier, Director, Parks, Gardens and Green Spaces, and Raymond Malo, Director, Technical Services of the RCM of Vaudreuil-Soulanges,* Committee of wardens and mayors of Greater Montreal, seminar of November 24-25, 1995, 13 p.

DB6 CAL 2.2-36 — CITY OF MONTREAL. *Réussir Montreal : plan d'urbanisme. Plan des abords du canal de Lachine,* June 1993, 39 p. + 1 map.

DB7 CAL 2.2-34 — TECSULT *INC. Collecteur Saint-Pierre, Etudes préparatoires : solutions aux refoulements d'égouts duns les quartiers Saint-Henri et Ville Emard,* draft, City of Montreal, January 1995, various pagings.

DB8 CAL 2.2-37 — CITY OF MONTREAL. *Le canal de Lachine, zonage et principes d'amtnagement de ses abords,* draft, Urban Planning Department, June 1995, 41 p.

DB9 CAL 2.2-38 — MONTREAL URBAN *COMMUNITY. By-law respecting waste water disposal in sewers and waterways (Nos. 87, 87-1, 87-2 and CE-1.2).* 15 p. (bilingual)

DB10 CAL 2.2-39 — MONTREAL URBAN COMMUNITY. *By-law pertaining to air purification and replacing by-laws 44 and 44-1 of the Community (Nos. 90 and 90-I). 66* p. (bilingual)

DB11 CAL 2.2-35 — LABORATOIRE D'HYDRAULIQUE LASALLE. *Circuit trop-plein du régulateur Rockfield : lignes d'eau,* April 20, 1960, 1 plan.

DB12 CAL 2.2-19-1 — BEAUCHEMIN, BEATON, LAPOINTE INC. *Collecteur Saint-Pierre et trop-plein Rockfield. Caractérisation d'eaux d'égouts et de debordement et evaluation des impacts des debordements,* City of Montreal, final report, July 1992, 102 p.

DB13 CAL 2.2-19-2 — BEAUCHEMIN, BEATON, LAPOINTE MC. *Collecteur Saint-Pierre et troy-plein Rockfield. Caractérisation d'eaux d'égouts et de debordement et evaluation des impacts des debordements,* City of Montreal, final report, Appendices, Volume 1, July 1992. (This document is available for consultation at the Montreal and Quebec City offices of BAPE only.)

DB14 CAL 2.2- 19-3 — BEAUCHEMIN, BEATON, LAPOINTE INC. *Collecteur Saint-Pierre et trop-plein Rockfield. Caractérisation d'eaux d'égouts et de debordement et evaluation des impacts des débordements*, City of Montreal, final report, Appendices. Volume 2, July 1992. (This document is available for consultation at the Montreal and Quebec City offices of BAPE only.)

DB15 CAL 2.1-47 — CITY OF MONTREAL. *Lachine Canal Decontamination Project, overhead transparencies, 6* p.

DB16 — CITY OF LASALLE. *Response to a request for information regarding the contaminated sediment in the Lachine Canal,* May *21, 1996,* 1 p.

DB17 CAL 2.2-42 — QUEBEC DEPARTMENT OF ENVIRONMENT AND WILDLIFE. *Information respecting the contaminated sites located in the expanded study area of the Lachine Canal and treated by the Department of Environment and Wildlife*, May *28, 1996,* multiple pagings.

DB18 CAL 2.2-43 — QUEBEC DEPARTMENT OF ENVIRONMENT AND WILDLIFE. *Evaluation grid for controlling overflows*, March 1995, 1 p.

DB19 CAL 2.2-45 — MONTREAL URBAN' *COMMUNITY. Plan view of the Rockfield overflow channel,* August 2 1, 1995, 1 plan.

DB20 CAL 2.2-46 — CITY OF MONTREAL. *Le Montreal bleu,* Parks, Gardens and Green Spaces Department, May 1996, kit.

DB21 — CITY OF MONTREAL. *Supplementary information sent to the panel concerning lands owned by the City of Montreal along the Lachine Canal,* June 18, 1996, 2 p.

DB22 CAL 2.2-45 — CITY OF MONTREAL. *Detailed plan of the Rockfield overflow channel,* July 1988, 1 plan.

DB23 — CITY OF LASALLE. *Response to a request from the joint panel respecting the overflow of the Vézina/Saint-Patrick overflow channel and the elimination of the twenty outlets located on the territory of the City of LaSalle*, June 26, 1996, 8 p.

DB24 CAL 2.2-48 — ASSEAU. *Response to questions from the joint panel, Lachine Canal Decontamination Project. Saint-Pierre collector and Rockfield overflow channel,* Study Report, City of Montreal, July 2, 1996, 4 p.

DB25 CITY OF MONTREAL. *Response to questions from the joint panel regarding illegal connections to the Rockfield overflow channel and on leases,* August 1996, several documents.

By the public

DC1
CAL 2.2-44 CINTEC. *Projet de démonstration d'une filière de traitement physicochimique des sediments contamines au port de Sorel,* final report, Environment Canada, March 1995. 118 p. + appendices. (This document is available for consultation at the Montreal and Quebec City offices of BAPE only.)

DC2
CAL 2.2-47 GROUPE LÉGER & LÉGER INC. *Sondage sur la perceptions des habitants du Sud-Ouest de I'île de Montreal sur le contexte socio-konomique de cette zone,* Excerpt, 3 p.

Transcripts

D5 Joint Environmental Assessment Panel. *Lachine Canal Decontamination Project.*

D5.1
CAL 4.1-2-1 First part, Volume 1, session held on May 13, 1996, 7:00 p.m., 201 p.

D5.2
CAL 4.1-2-2 First part, Volume 2, session held on May 14, 1996, 7:00 p.m., 207 p.

D5.3
CAL 4.1-2-3 First part, Volume 3, session held on May 15, 1996, 7:00 p.m., 194 p.

D5.4
CAL 4.1-3-1 Second part, Volume 1, session held on June 17. 1996, 7:00 p.m., 154 p.

D5.5
CAL 4.1-3-2 Second part, Volume 2, session held on June 18, 1996, 1:30 p.m., 126 p.

D5.6
CAL 4.1-3-3 Second part, Volume 3, session held on June 18, 1996, 7:00 p.m., 152 p.

Briefs

DM1 CAL 4.2-3-1 — CITY OF LACHINE. *Brief submitted by the City of Lachine to the Joint Environmental Assessment Panel Reviewing the Lachine Canal Decontamination Project,* June 1996, 6 p. + resolution.

DM2 CAL 4.2-3-2 — CITY OF MONTREAL. *Lachine Canal Decontamination Project. Brief presented by the City of Montreal to the Joint Environmental Assessment Panel,* City of Montreal, June 4, 1996, 11 p.

DM3 CAL 4.2-3-3 — PÔLE DES RAPIDES. *Audiences sur la dkontamination du canal de Lachine.*, Brief, June 1996, 8 p.

DM4 CAL 4.2-3-4 — LÉGER, HENRIETTE. *Brief on the Luchine Canal Decontamination Project,* June 11, 1996, 2 p.

DM5 CAL 4.2-3-5 — REGROUPEMENT POUR LA RELANCE ÉCONOMIQUE ET SOCIALE DU SUD-OUEST (RESO). *Brief*, June 1996, 9 p.

DM6 CAL 4.2-3-6 — VERREAULT NAVIGATION INC. *Presentation of a sediment treatment technique applicable to the Luchine Canal. Brief*, June 13. 1996, 9 p.

DM7 CAL 4.2-3-7 — BOKOR IOAN ET AL. *Brief,* June 14, *1996, 38* p. + appendices.

DM8 CAL 4.2-3-8 — GELTMAN, HAROLD. *Brief*, June 13, 1996, 13 p.

DM9 CAL 4.2-3-9 — LES AMI-E-S DE LA TERRE DE MONTRÉAL. *La méthode d'analyse multicritère de Holmes comme outil d'aide à la décision : ses avantages et son application. Brief;* June 17, 1996, 18 p. + overhead transparencies.

DM10 CAL 4.2-3-1 0 — ASSOCIATION DES GENS D'AFFAIRES DU SUD-OUEST DE MONTRÉAL. *Brief presented at public hearings on the Lachine Canal Decontaminatin Project,* June 17, 1996, 9 p.

DM11 CAL 4.2-3-1 1 — POULIN, ANDRÉ. *Brief on the Lachine Canal Decontamination Project,* June 11, 1996, 4 p. + appendices.

DM12 CAL 4.2-3- 12 — CITY OF SAINT-PIERRE. *Brief on the Lachine Canal Decontamination Project,* June 11, 1996, 5 p. + appendix.

DM13 CAL 4.2-3- 13 — CINTEC ENVIRONNEMENT INC. *Brief on the Lachine Canal Decontamination Project,* June 17, 1996, 2 p.

DM14 CAL 4.2-3-14 — CITY OF LASALLE. *Brief on the hearings on the Lachine Canal Decontamination Project,* June 1996, 4 p.

DM15 CAL 4.2-3-15 — ASSOCIATION DES CLIMATOLOGUES DU QUÉBEC. *Évaluation environnementale. Acquisition et production de données et analyses climatologiques-hydrologiques sur les impacts potentiels d'un changement climatique dû à des gaz à effet de serre,* final report, June 1996, 66 p. + presentation, 2 p.

DM16 CAL 4.2-3-16 — LES ALIMENTS CANAMERA. *Avis sur la proposition de Parcs Canada et la Société du Vieux-Port de Montreal,* June 14, 1996, 2 p.

DM17 CAL 4.2-3-17 — SAVARIA, PIERRE. *Brief;* June 17, 1996.2 p.

DM18 CAL 4.2-3-18 — GROUPE SERRENER INC. *Brief on the Lachine Canal Decontamination Project,* June 17, 1996, 3 p. + appendices.

DM19 CAL 4.2-3-19 — RIPAMONTI, STÉFANIA. *Brief on the Lachine Canal Decontamination Project,* Cintec Environnement inc., June 18, 1996, 15 p.

DM20 CAL 4.2-3-20 — CENTRE DE CONSULTATION ET DE CONCERTATION. *Plan oft-he oral brief presented to the Joint Environmental Assessment Panel Reviewing the Lachine Canal Decontamination Project, 3* p.

DM21 CAL 4.2-3-21 — RÉGIE RÉGIONALE DE LA SANTÉ ET DES SERVICES SOCIAUX DE MONTRÉAL-CENTRE. DIRECTION DE LA SANTÉ PUBLIQUE. *Brief on the public health aspects of the Lachine Canal Decontamination Project,* June 1996, 12 p.

DM22 CAL 4.2-3-22 — HÉRITAGE MONTRÉAL. *Brief,* July 15, 1996, 2 p.

DM23 CAL 4.2-3-23 — HEALTH CANADA. *Additional comments by Health Canada concerning the Lachine Canal Decontamination Project, July 9, 1996, 4* p.

DM24 CAL 4.2-3-24 — CONSEIL CENTRAL DU MONTRÉAL MÉTROPOLITAIN (CSN). *Comments on the Lachine Canal Decontamination Project, July 1996, 15* p.

Oral briefs

Ms. Nicole Patenaude of Krugger

Appendix 3

Information Respecting the Joint Public Review Process

Project

Environmental Impact Statement

Environmental Assessment. **Lachine** Canal Decontamination Project

Proponent	
Parks Canada* and	Represented by Canadian Heritage ▸ LAURENT **TREMBLAY,** Director General, Eastern Quebec . PIERRE PARENT, Acting Director, Montreal District . LYNE **BERNIER-MOREL,** Coordinator . **DENIS VEILLETTE,** Specialist, Environmental Assessments **Accompagnied** by Environment Canada ▸ CAROLL **BÉLANGER,** Head, Federal Contaminated Aquatic Sites Remediation Program Dessau . EL **HADI HAMMOUDA,** Consultant Tecsult . **MICHEL CARON, Consultant** ▸ **NATHALIE DUSSAULT, Consultant**
Old Port of Montreal Corporation	Represented by . **PIERRE BEAUDOIN, Assistant Director** . **LAURENT COMTOIS, Consultant**

. Formerly the Canadian Parks Service, until September 1993

Panel, support team and collaborators

Panel	Team
JOHANNE GÉLINAS, Provincial Co-chair	PASCAL BARRETTE, Analyst
MICHEL SLIVITZKY, Federal Co-chair	FRÉDÉRIC BEAULIEU, Analyst
PATRICE DIONNE, Member	J.-MICHEL BOURGON, Federal Co-secretary
JEAN-BAPTISTE SÉRODES, Member	SERGE DAOUST, Analyst
	JOHANNE DESJARDINS, Officer, Secretariat
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	GUYLAINE RICHARD, Officer, Secretariat
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	MARIE-FRANCE THERRIEN, Analyst
	MARTINE TOUSIGNANT, Provincial Co-secretary

The joint panel was assisted in the phases preceding the public hearings by other individuals. Yves LeBlanc, Sylvie Desjardins and Jocelyne Beaudet successively filled the position of provincial co-secretary. Paula Caldwell, Yves Côté and Catherine Badke acted as analysts.

Consultation centres

Saul-Bellow Library, Lachine	Octogone Cultural Centre, LaSalle
Notre-Dame Library, Montreal	Verdun Library
Saint-Pierre Municipal Library	BAPE office in Montreal and Quebec City
Undergraduate Library Laval University, Sainte-Foy	Central Library University of Quebec in Montreal

When the public review began in November 1990, a consultation centre was set up at the Marie-Uguay Library in Montreal. An information office was also opened on Notre-Dame Street in Montreal from November 1990 to April 1, 1991.

Steps in the joint public review

Preparation of the guidelines

Draft guidelines

- Public meetings

  December 10, 11, 12 and 13, 1990
  Maisonneuve/Dorchester Room
  Le Nouvel Hotel Montreal

- Presentation of briefs

  December 10, 1990
  to January 18, 1991

Final guidelines

- Written comments from the public

  February 15, 1991
  to March 18, 1991

- Publication

  May 15, 1991

Compliance of the EIS with the guidelines

Written comments from the public from December 7, 1993 to February 25, 1994

Deficiency statement, May 11, 1994

Decision on the adequacy of the EIS, April 5, 1995

Public hearings

Part I

May 13, 14 and 15, 1996

Saint-Tblesphore Church
City of LaSalle

Special activities

Visits to the site in November 1990, on September 8, 1992 and on May 9, 1996

Resource-persons for the public hearings

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GILLES BRUNET
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Montreal Public Health Branch

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Fisheries and Oceans Canada

RICHARD BAXTER
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Heath Canada

THANH LE-VAN
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Montreal Urban Community

DANIEL HODDER

City of Montreal

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MOHAMAD OSSEYRANE

City of Lachine

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City of Saint-Pierre

PIERRE BERNARDIN
SYLVAIN GOYETTE

City of LaSalle

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PATRICK PROVOST

Participants in the joint public review

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Quebec Department of Environment

Compliance of the EIS with the guidelines

Submission of comments, January 1994

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LOUIS COSSETTE	Private individual
ROBERT GARDNER	Comité de citoyens pour la preservation des rapides de Lachine
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RACHEL LAPERRIÈRE	Pôle des Rapides
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June 18, 1996, evening session

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