

On 3 April, the communities of Halifax and Dartmouth moved closer to a cleaner harbour as a Federal-Provincial Environmental Assessment Review Panel concluded 12 days of intensive hearings into the Halifax Harbour Cleanup Project.

The four-person panel, chaired by Dr. Shirley Conover, held 17 public sessions, some general, some community-oriented and others focusing on specific technical aspects of the project from 22 March to 3 April.

"Everyone involved in the project wants the basic objective of improving the harbour's water quality met," Dr. Conover said. "The Halifax-Dartmouth Metropolitan Regional Wastewater Management System is to be developed and improved not just for us, and the area in which we live, but for our children, our grandchildren and those who come thereafter."

Many individuals, community groups and organizations participated, but most of the questions came from the intervenors who had received federal funding to assist with their review of the project. Two community groups represented the Eastern Passage Ratepayers Association and the Williams Lake Conservation Company, while a third, known as the Metro Coalition for Harbour

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Cleanup, represented other local groups collectively.

HHCI president Paul Calda told the review panel the environmental assessment had been a building process. "As the assessment unfolded, we found ways to enhance the project, to reduce any negative effects on the environment while improving its ability

to significantly improve the quality of the harbour waters," he said. "We also found ways to reduce the cost.

"The process made us reflect, in detail, on that building process. We have reflected on the questions and the submissions from intervenors and examined our decisions. Having done so, we are even more confident this solution is a good one and it should move forward."

Mr. Calda told the hearing the proposed sewage treatment system incorporates information gathered from 20 years of study of the sewage problem in Halifax Harbour, including the findings and recommendations of an 18-month study by the Halifax Harbour Task Force, chaired by Dr. Robert Fournier.

As part of this project's environmental review process, HHCI commissioned an Environmental Assessment Report including 24 separate studies to assess the project's impact on the local environment.

The report was a result of 18 months of field study, analysis and production by approximately 130 skilled and seasoned local professionals.

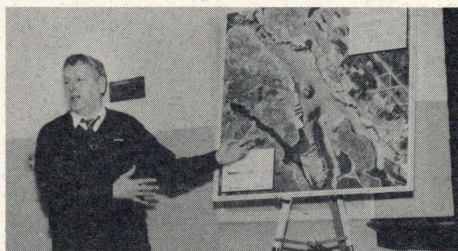
It will take until later this summer for the four-member panel to review the project's environmental, social and economic impact



Environmental review panel members (from left) Leslie Griffiths, Robert Parker, Dr. Shirley Conover and Dr. Dan Thirumurthi hear presentations on HHCI's proposal for cleaning up Halifax Harbour.

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The Issues of Harbour Cleanup



Leading up to and during the course of the Federal-Provincial Environmental Assessment Review Panel public hearings, several key issues of concern arose and were explored in detail. The following is a summary of those concerns and how HHCI's proposal addresses them.

1 SITE

Can this sewage treatment plant exist next to a park? Are there other sites that are better suited for such a facility? Are there cheaper sites?

Intervenors proposed three other potential sites for the sewage treatment plant – Sandy Cove behind the Nova Scotia Hospital, Woodside Ocean terminals near the Woodside Ferry and Eisner Cove near Eastern Passage. The Environmental Assessment Review Panel asked HHCI to review those sites and the costs associated with building the plant in these locations.

► PROPOSAL:

HHCI plans to create an artificial island adjacent to McNabs Island. This 9.3 hectare, infilled island at Ives Cove was chosen to be the best site for the treatment facility based on engineering, environmental, cost and community considerations.

Architect, engineering and environmental consultants have designed a facility which will be compatible with the surroundings of McNabs Island and the harbour and imitate the visual appearance of both. These architectural drawings have been presented to over 50 community groups.

HHCI accepts that McNabs Island is a park and should be kept that way. HHCI does not agree that this proposal threatens the status of McNabs as an island park. In fact, its status as an island

park faces a far greater threat from continued inaction on harbour pollution.

After thoroughly investigating the three additional sites the review panel asked HHCI to undertake, HHCI could not find cost savings significant enough to warrant further review of these alternative sites. In fact, HHCI found a number of potential community impacts that indicate these sites would not be good choices, including the concern of citizens who live near the alternative sites.

2 SINGLE REGIONAL TREATMENT PLANT

Should Halifax and Dartmouth build a single treatment plant or would it be cheaper and more practical to have two or more plants?

► PROPOSAL:

HHCI proposes to build a single regional sewage treatment plant serving Halifax-Dartmouth and Mainland South with capacity for future expansion.

This question has been studied extensively over the last 20 years and each study has confirmed that a single facility is the most cost-effective and practical solution for Halifax Harbour. In 1977, a Metro Area Planning Commission (MAPC) engineering report recommended a single regional treatment plant providing primary treatment as the best and most cost-effective way to deal with Metro's sewage treatment problems.

This recommendation was confirmed in a second MAPC study by

another consulting engineer, ten years later, in 1987. Then in 1990, the Halifax Harbour Task Force conducted an 18-month study which concluded for the third time that a single regional sewage treatment facility providing primary treatment was the best approach for dealing with this problem.

The rationale is straightforward. In the long term, it is cheaper for the communities to operate and maintain a single plant than to operate two, three or more. HHCI strongly contends that the single treatment facility is viable, well-conceived, thoroughly investigated and workable.

3 LEVEL OF TREATMENT

The question of appropriate level of treatment lies at the heart of much of the debate concerning HHCI's proposal. Is the level of treatment proposed enough and what exactly will primary treatment do?

► PROPOSAL:

HHCI proposes to construct a primary sewage treatment system which will remove floatables as well as 40-60 percent of suspended solids. The treated effluent will be disinfected before discharging into the harbour.

Like the single regional treatment facility, primary treatment is a fundamental component of HHCI's proposal. Also like the single regional treatment plant, primary treatment was recom-

mended for the region in three separate and extensive studies on the issue.

Most recently, it was part of an 18-month study by the Halifax Harbour Task Force which confirmed earlier recommendations that primary treatment was the appropriate choice for dealing with Metro's sewage problem. In its report, the Task Force said: "The results of the water quality modelling indicated that a primary level effluent discharged into the harbour would enable water quality guidelines to be met. Boosting the treatment level to secondary would show minimal improvements in concentrations of contaminants in the water column."

In addition, a monitoring program will gauge the quality of the effluent and determine if a higher level of treatment is required sometime in the future. If it is, space has been provided so that higher levels of treatment can be added. However, primary treatment is required before any other level of treatment can be added.

4 ALTERNATIVE TECHNOLOGIES

Would alternative treatment technologies improve the level of treatment while reducing the cost?

► PROPOSAL:

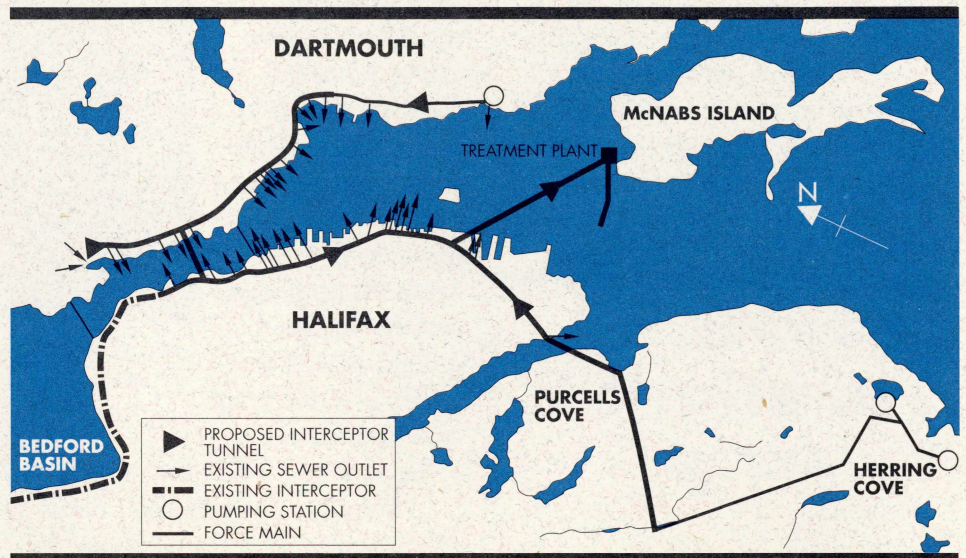
HHCI's proposed sewage treatment plant would use primary treatment and a sludge management system which will treat the sludge on site. After primary treatment, disinfected effluent will enter a diffuser on the harbour floor.

A number of alternatives that intervenors suggested are forms of secondary sewage treatment, a treatment level that requires primary treatment as a necessary first step. These technologies cannot be considered alternatives but should be considered additional levels of treatment. Because they require primary or at least, pre-treatment, they are considerably more

expensive than primary treatment and take up much more space.

One alternative presented during the hearings was an engineered wetland to treat Mainland South sewage. However, the proposed alternative seriously underestimated the cost, the land area required and the environmental damage to implement such a strategy. It also does not adequately consider the implications of implementing such an alternative in cold climates.

In an effort to analyse and properly respond to the wetland proposal, HHCI asked Mr. Sherwood Reed, North America's leading expert in engineered wetland technologies, to study it. After reviewing the report, Mr. Reed concluded: "The intervenor's report indicates a



Proposed sewage collection system: The small arrows represent the existing outlets through which 100 million litres of raw sewage flow into the harbour daily. An 18 kilometre tunnel will be constructed around the harbour to intercept the sewage and direct it to the treatment plant at Ives Cove.

lack of understanding and experience with respect to the design and performance of these systems. Their proposed 15 hectare system has no rational basis, and would be inadequate to achieve the desired performance goals."

In HHCI's opinion, many of the alternatives presented failed to look at the problem in a holistic and long-term way. Instead they advocated breaking up the system, pointing to cost savings in one place but failing to consider cost increases in the other.

5 OIL-FROM-SLUDGE

Is this new process safe, will it work and will there be a marketable by-product?

► PROPOSAL:

Sludge is a by-product of any sewage treatment process. Sludge management is a world-wide problem. The HHCI proposal advocates the use of a new Canadian technology to process the sludge on site. Oil-From-Sludge offers an exciting, environmentally-sound, cost-effective and proven way to deal with that problem and has attracted significant world-wide interest.

Canada alone produces over

500,000 tonnes of sewage sludge each year. Disposal of these vast amounts of sludge is cumbersome and expensive. Some municipalities dispose of their sewage sludge by dumping it into the ocean.

A pilot project was built, demonstrated and tested in Burlington, Ontario and Canada's first full-scale OFS facility is under design in Scarborough, Ontario. It has passed and received all necessary Ontario permits and has passed the strict air quality emissions standards set by the Ontario Ministry of Environment.

6 DISINFECTION WITH CHLORINE

There is a growing concern over the use of chlorine in our environment and, in particular, its use as a disinfectant for sewage effluent.

► PROPOSAL:

Like most sewage treatment facilities in North America today, HHCI proposes to use chlorine as a disinfectant. Under the current regulations, new sewage treatment systems will not receive approval to operate without disinfection.

The residual chlorine used in the HHCI proposed system will be reduced to 0.5 mg/L by the time it reaches the diffuser, about the same found in drinking water. At these levels it will not result in a measurable increase in chlorinated by-products. Therefore, there are no adverse impacts anticipated to the marine environment.

The alternatives cited by the intervenors are ozone and ultra-violet light. These technologies are not proven to be either practical or cost effective for effluent from primary treatment; but, research to improve the use of technologies is advancing. HHCI is monitoring these developments closely, reviewing their applicability, and will certainly take advantage of any viable alternative to chlorine disinfection that may be available by the time the sewage treatment plant is designed.

7 SOURCE CONTROL

What can be done about toxics entering the harbour?

► PROPOSAL:

HHCI's proposal is for a sewage treatment system which will collect and treat 100 million litres a day of raw sewage entering the harbour.

Toxics entering the harbour originate from two sources. They are: point sources, generally industry and institutional chemicals which can be identified; and non-point sources such as fertilizers, automobile oil and grease spills, road asphalt abrasion, and the natural leaching of chemicals from the land.

One answer to this problem is to ensure that toxics do not get into the raw sewage in the first place by establishing and enforcing strict source controls. Point sources can be controlled by existing legislation, including municipal sewer-use bylaws. However, non-point sources, which are equally important, are very difficult and, in some cases, impossible to control and capture for treatment because they are so diverse. Even the most rigidly imposed legislation will not prevent all toxics from entering sewer systems.

HHCI's mandate is to design and build a regional wastewater interception and treatment system. This is part of the overall management of wastewater in the Metro region. Source control is another part. HHCI fully supports the principle of source control. The legal, regulatory and inspection authority, however, rests with the municipalities and the Department of the Environment.

Primary treatment can remove a portion of the toxics entering the treatment plant. They are the toxics which become trapped in the sludge which results from the treatment process. The system will use an oil-from-sludge process to deal with the sludge. At the end of the process the metals are chemically bound with an inert, non-leaching ash resulting from that process.

Higher levels of treatment are far more expensive and can only do a better job of ridding the wastewater of toxics by increasing the level of suspended solids removed. This project will significantly improve the quality of the harbour waters. Without this project water quality will continue to deteriorate.

8 COST AND FUNDING

Is HHCI's approach the most cost-effective way to deal with harbour pollution? Existing agreements between government are for about 65 percent of the project. Where will the rest of the money come from?

► PROPOSAL:

The estimated cost of HHCI's proposal is \$385 million, for a project starting in late 1993.

The communities of Halifax and Dartmouth need a sewage treatment facility and when asked in a recent public opinion survey, almost 80 percent of Metro residents contacted responded that the project is important enough to warrant a \$400 million expenditure.

The most recent estimate, \$385 million, is an "upper limit" cost and includes provisions for rising costs of goods and labour over the time required to construct the project. In other words, these are escalated dollars, not 1993 dollars. Assuming no drastic changes to the project and its parameters and no significant delays, this cost, if anything, will go down as the project becomes better defined.

Claims that the project could be designed to provide better treatment for less money simply do not stand up under scrutiny. When comparing costs of different projects, estimators need to look at lifecycle costs which factor in both what it will cost to build and what it will cost to maintain. A single regional treatment facility at Ives Cove is the most cost-effective, long-term solution to Metro's sewage problem.

So far commitments have been made for about 65 percent of the project's estimated cost. HHCI is confident the partners will find a way to fund the shortfall.

New Poll Results Show Public Wants Harbour Cleanup Now

■ Eighty percent of Metro residents feel the cleanup of Halifax Harbour isn't moving forward quickly enough, according to results of a public opinion survey conducted earlier this spring.

Ninety-four percent believe the longer the project waits, the worse the harbour pollution problem will become.

Harbour pollution continues to be the number one environmental issue on the minds of Metro residents according to the poll results. Forty-six percent named water pollution as the most important environmental problem facing the Metro area. In comparison, 25 percent said the landfill/incineration issue is most important.

A possible measure of how important the public views harbour cleanup is response in the survey to questions on the issue of cost. The survey revealed almost 80 percent feel the importance of harbour cleanup justifies the \$400 million expenditure. Only 10 percent said it was not important enough. Six percent said it depends on other factors, such as where the money will come from and how it is spent.

When asked if they would be willing to pay an additional surcharge on their water bills to support the project, most said they would.

Harbour Cleanup Project to Create Economic Opportunities in Region

■ The proposed sewage treatment system for Halifax-Dartmouth will potentially create 1,700 person years of employment for Nova Scotians, according to economist Frank Schwartz of ARA Consulting Group. Mr. Schwartz conducted an economic opportunities study on the project for HHCI for the environmental assessment review.

Nova Scotians will likely collect \$63 million in wages as a direct result of the construction of the project, says Mr. Schwartz. Over the same period, firms in the province will likely supply \$91 million in goods and services to the project.

Preliminary Design Work Benefits Environmental Assessment

■ Information collected by Metro Engineering during the pre-design phase of the harbour cleanup project provided opportunities for improvements during the environmental assessment. The environmental assessment team was able to collaborate on many issues and the pre-design engineers incorporated environmentally beneficial changes at an early stage.

Pre-design translates the project's various requirements and guidelines into conceptual, physical plans. Processes such as risk and cost/benefit analyses enable pre-design engineers to decide how the system should work, visualize its physical appearance and

determine its cost.

Several aspects of the design presented significant challenges. The island's size and shape had to blend harmoniously with the existing landscape and be compatible with other harbour activities. While meeting the Task Force's recommendation for primary treatment, the plant configuration and choice of technology had to be suitable for expansion or upgrading in the future.

Innovative technology played a major role in meeting these goals. The basic process uses plate clarifier technology. Only the second such system to be built in North America, it allowed the

designers to reduce the size of both the plant and the island, and to fully enclose the plant. State-of-the-art submersible pumps permitted dramatic modifications to the pumping station.

Each of these design decisions meant significant savings on the total project cost. Pre-design is a process of constant evolution. Engineers make design changes whenever they identify a safer, more economical or more efficient way. As a result of extensive, investigative geo-technical drilling completed during the past year along the collector route and at the plant site, portions of the collector tunnel were rerouted to more geologically suitable areas.

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The Last Word From Panel's Chairperson

At the conclusion of the public hearings for the Federal-Provincial Environmental Assessment Review of the Halifax-Dartmouth Regional Wastewater Management System, the chairperson, Dr. Shirley Conover, closed the session with a few remarks.

She explained how the panel tried to prepare itself for its final and hardest task, the writing of their report and recommendations to the Federal and Provincial Environment ministers. "Our work started in 1990, working with the province and federal government in drafting and finalizing the guidelines for this environmental assessment, and in that process, of course, there was public input.

"There have been some important, and even some unique, features of this particular review ... everyone, the proponent, the intervenors, the public

and all levels of government want the basic objective of the project to be met: a wastewater management and treatment system be designed, built and operated for the Halifax-Dartmouth Metropolitan area, so that raw sewage will no longer be dumped into Halifax Harbour.

"Within the overall general agreement that the system is needed, however, the panel has recognized and has now heard about some areas of strong disagreement between the proponents and the various groups, as well as a variety of views from individual members of the general public," she added.

"These are disagreements about where and how the project should be carried out. Understanding those disagreements and the reasons for them is one of the primary jobs of our panel. That is why there is a long history in this project of proponent,



Dr. Shirley Conover, chairperson of the Federal-Provincial Environmental Assessment Review of the Halifax-Dartmouth Regional Wastewater Management System.

public and technical input and review to the panel, but also to each other.

"The final decisions are, in the end, political decisions, and so have to be made at the highest levels of government after all relevant views have been considered," Dr. Conover concluded.

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and develop its recommendations on how to proceed. The panel's recommendations will go to the Federal and Provincial ministers of the Environment and the minister responsible for the Atlantic Canada Opportunities Agency, who will make a final decision on the project.

Halifax Harbour Cleanup Inc. is optimistic the panel will recommend the project proceed, and by the end of the century, says president Paul Calda, residents can end the 200-year-old practice of flushing our sewage directly into the Halifax Harbour.

Clean Currents is a quarterly publication of Halifax Harbour Cleanup Inc.

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