
**TECHNICAL EVALUATION OF THE HALIFAX HARBOUR CLEANUP INC.
ENVIRONMENTAL ASSESSMENT REPORT FOR THE HALIFAX-DARTMOUTH
METROPOLITAN SEWAGE TREATMENT FACILITY**

Prepared on behalf of the William's Lake Conservation Company (WLCC)

by:

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Submitted to:

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Federal-Provincial Environmental Assessment
Review Panel

Halifax-Dartmouth Metropolitan Wastewater
Management System

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SUMMARY

The HHCI-EAR is an adequate description of the project, if modified in some respects, but it is inadequate in its impact and mitigation analyses with regard to the region of concern to the intervenor (Williams Lake Conservation Company, hereinafter referred to as the WLCC). Steps to remedy the inadequacies and inaccuracies in the EAR are recommended at the conclusion of this report.

GEOGRAPHIC FOCUS

This technical evaluation of the HHCI-EAR focuses on those elements of the study which relate to the impact of the proposed connector tunnel through the Purcell's Cove 'Backlands', also referred to as the Wildlands. This geographic focus is consistent with the terms of reference of the intervenor project currently being conducted by the WLCC. The project is concerned with Williams Lake and the area, including the Wildlands, which are its watershed. This is a large area comprising other lakes, bogs and animal and plant habitat. This area can be clearly identified on figure 2.14 of the EAR. It should be noted that the WLCC was incorporated in 1968 and has as its mandate the preservation of the lake and its quality.

The EAR report provides an overview of the potential impacts of the

sewage treatment facility proposed for Ives Cove, McNab's Island. There is an attempt to provide an objective measure of the degree of these impacts. Where impacts have been evaluated as potentially significant, there is a limited discussion of possible mitigation of these impacts. Generally, alternatives necessary to avoid negative impacts are not considered.

I. UNSUBSTANTIATED EVALUATIONS

If there is one overriding concern about this report it is the inclusion of unsubstantiated evaluations. While there may be evidence and background to support the conclusions reached by the authors, it is usually not presented in enough substantiated detail (either in the form of field research or reference to available published sources) to permit an adequate review of the EAR results. This general problem is especially apparent when considering those sections and evaluations relevant to the Purcell's Cove Backlands. This, and other concerns regarding the treatment of this area in the EAR, are presented below.

Most of the EAR focuses on the McNab's Island site. This is to be expected because of the central nature of this site to the sewage treatment strategy and because of the sensitive nature, culturally and biophysically, perceived and/or real, of this area. It is probably for this reason that the Wildlands have not received the level of scrutiny that might be warranted given the concerns and clearly demonstrated interest of the residents in the surrounding communities and the 'undeveloped' natural character of this area. WLCC is in part attempting to rectify some of these shortcomings by

participating as an intervenor in the project and conducting its own impact assessment. This assessment will be presented during the public hearings which are part of the environmental review process.

A. ROUTING

HHCI proposes to construct a connector tunnel bored through bedrock across the Wildlands. This tunnel is part of the proposed routing for sewage from the communities of Herring Cove and Mainland South to the McNab's Island facility. The sewage would be collected, as already is the case, from Spryfield, Jollimore, Williams Lake area and Fleming Heights to the Princeton Avenue pumping station location. A new forcemain would also bring sewage from the serviced areas in Herring Cove. This sewage would then be transferred via tunnel across the Wildlands to Purcell's Cove, continue across the Northwest Arm to southend Halifax and across the Peninsula to join up with the main trunk line that would carry the entire collected waste stream to the McNabs Island treatment plant.

Although not clearly stated or explained, it would appear that the rationale for routing the sewage across the Wildlands is to provide the shortest connection for Mainland South with the single regional facility. The report indicates that Mainland South sewage is being transferred to the regional facility in order to address the long-standing irritant of raw sewage discharging into Watley's Cove in the community of Herring Cove. Herring Cove residents have very actively lobbied to keep any waste treatment facility out of their area. The Backlands tunnel routing proposal has been a response

to this lobbying.

The corridor proposal evaluated in the EAR report is one of several Mainland South routes that HHCI has investigated over the past year. Previous versions have been viewed with skepticism and concern by residents of Williams Lake/Jollimore, Purcell's Cove, Spryfield, Ferguson's Cove and Herring Cove. The Wildlands Working Group (WWG), a coalition of citizens from these communities, is especially concerned about the proposal to bring a sewer line across the Wildlands and it therefore developed its own proposal for an alternative routing. This was rejected by the HHCI in favour of its current routing option.

The current routing proposal was not among the earlier versions presented to area residents (other than the WWG), although it is a modification of past routing options. While it has the potential to create less short-term disturbance than some of the other options evaluated in the public process, its long-term effects are just as severe as those created by options rejected in the public process. The report should explain the objectives of selecting the chosen route and method of construction.

The current routing, a straight line connecting the Roach's Pond collection facility to a bore shaft in Purcell's Cove, passes beneath Flat Lake (Fig.214). It should be noted that on a map (Figure 2.5.1) provided to the WLCC by Mr. Simms, Senior Engineer, HHCI, by way of covering letter dated September 21, 1992, the routing skirts the lake rather than passing under it as shown in the EAR map. This is a curious selection considering that

residents in the area expressed strong concern regarding the impacts of any crossing option (pipe or tunnel) on the complex surface and ground water hydrology of the area. The investigators do not justify or substantiate the selection of this routing. They apparently have not investigated the impact of this choice on the area's hydrology (at least no evidence of such a study is presented in this report) and consequently cannot reasonably expect the route to be accepted on the basis of a well-researched routing option. This apparent indifference to potential impacts appears to be based upon the fact that the route is a tunnel in bedrock beneath the water table (Fig. 2.18 shows the depths to be 40-100m). Given the high rates of flow of water into some wells drilled to this depth into this granite (pp. 142 and 143), it is not clear that this indifference is justified. Indeed, when considering wells in Purcell's Cove, the report does acknowledge that the effects of tunnelling in the bedrock near the Meguma/granite interface might be so severe that mitigation in the form of compensation to homeowners might be required (p. 478). Under these circumstances, why have potential effects on groundwater in the Backlands been completely ignored?

B. POTENTIAL FOR SURFACE DISTURBANCE TO AREA HABITAT

The investigators do not present an original analysis of the habitat structure of this area, including identification of sensitive or unusual sites. Impacts on these environments might be caused by surface disturbance associated with tunnel construction and servicing, or in the case of the waterbodies and wetlands by disturbance to the ground water regime. The investigators assume that there will be no surface disturbance (such as

access/servicing corridors) associated with the tunnel. They therefore do not consider it necessary to investigate surface water quality, vegetation and the associated animal communities. Since the investigators do not explain how they can be confident that it will be possible to bore a tunnel through the hard igneous rock underlying the Backlands, it is not clear that their confidence is justified. If the boring machine proves incapable of creating the tunnel, the obvious alternative is that drilling and blasting would be used for this purpose. Under these circumstances, additional tunnel access points might be created, including a servicing road. If these options are implicitly unacceptable (which the report assumes), then it is necessary for the report to evaluate the impacts of an acceptable alternative, or alternatives. That this has not been done is a major deficiency of the report.

The proponents appear confident that the tunnel will be bored and not blasted and that the project will be able to bear the cost of this very expensive proposition. However, at page 101 of the EAR it is stated:

There is no assurance that a tunnel boring machine will or will not be used on any particular section (with the exception of through Purcell's Cove); it is more likely where sections are long (several kilometers) and where the rock is consistent. (emphasis added)

Boring this tunnel through granite will require more time and effort than will be needed to bore through the Halifax Formation slates. It would seem likely that the tunnel option might be abandoned altogether in the event of cost overruns which are endemic to projects of this magnitude. This investigation neither acknowledges this possibility nor considers the potential

environmental impacts of alternatives and the mitigation of those impacts.

C. TUNNEL

Other questions arise with respect to the tunnel itself. The tunnel has a life expectancy of 60 years. What happens after this time? Is it abandoned? Will service access corridors be created for the purpose of maintenance? How durable is the cement seal between the bedrock and the tunnel? After how many years will the cement fracture and will these fractures channel ground water flow? Questions like these are important for the assessment of the long-term impacts of the proposal, but they have not been addressed adequately in the HHCI-EAR.

D. WETLANDS

The proponents are also unaware of some important environmental policy that has direct relevance to their routing option. The New Federal Policy on Wetlands Conservation (Government of Canada, March 9, 1992) was developed as part of the Green Plan initiative. The Policy requires that any activities involving federal government departments or funding adhere to the principal of no-net-loss of wetland functions. Wetlands are an integral habitat and hydrologic feature of the Wildlands and are potentially threatened by this proposal, as explained above. The proponents do not provide any analysis of the impact of this proposal on wetland function. They appear unaware of the nature of the wetlands and their functional importance to the area.

E. SOCIO-CULTURAL IMPACTS AND POTENTIAL FOR UNPLANNED DEVELOPMENT:

The proponents have been very cavalier in their treatment of the socio-

cultural impacts of their routing option on the Mainland South communities. They do acknowledge that the area residents are concerned that this option might lead to uncontrolled development of the Wildlands. At page 386 it is stated:

The implementation of the sewage treatment system may indirectly promote development in the Backlands by introducing potential sewer service (the bored tunnel) into an undeveloped area. Halifax Mainland South residents strongly oppose uncontrolled development in the Backlands. The Backlands and supporting system of lakes and streams are highly valued by residents of Purcell's Cove and Williams Lake as the heart of their communities and any development without stringent land use planning and environmental protection will be considered an unwanted alteration in quality of life.

This statement is the only analysis of the socio-cultural aspects of this development proposal. The investigators do not attempt a fuller understanding of the community's use of and aspirations for this area, nor for that matter, what this area can provide to greater Halifax as a natural recreational amenity. The statement ignores the recommendation of the regional Detailed Area Planning Committee (1980) that the Backlands remain undeveloped. Despite a high level of community input in DAPC the recommendation was overturned and the area is presently zoned Residential Development District, as seen on the present Generalized Future Land Use map.

The acknowledged reason for not investigating these concerns is shallow. At page 387 it is stated:

Nevertheless, residential development is consistent with the city's current land use by-law and the introduction of development is considered to be some 20 years away (Section 7.3). The tunnel is not intended to provide service to the Backlands; hook-ups for future servicing

are not provided as they are at the Purcells Cove Road and Purcells Cove/Northwest Arm shafts. Other service infrastructure including water, power and roads would also be required for development to proceed, none of which is currently planned. Thus, given the indirect and uncertain relationship of the project to future development and the time frame required for the potential impact to occur, the impact during the operation has been rated insignificant. The impact during construction is rated significant.

Given the above statement, these reviewers wonder why Fig. 2.18 includes "future connection BH M2" (a sewer connection) at a site adjacent to Purcell's Pond in an ecologically sensitive area of the Wildlands. If this is simply idle speculation, then what place has it in an EAR?

A more direct example of equivocation over the role of the Wildlands pipeline can be found in the contrast between the statement on page 387 that "the tunnel is not intended to provide service to the Backlands", while on p. 63 it is stated that "there will capability [sic] to pick up local sewage in the area south and west of Flat Lake and the areas around Purcell's Cove". South and west of Flat Lake is the core area of the Wildlands.

More careful consideration of the implication of this tunnel to the Wildlands would suggest that the relationship between this proposal and future development is neither indirect nor uncertain. The current time frame of twenty years was established before there was any discussion of a possible service corridor across this area. It is entirely conceivable that such a corridor could advance this planning period by ten years, if not more. Installation of such a pipe would be a substantial capital expenditure for the

City of Halifax. Installation of the pipe as part of the Sewage Treatment Facility opens up opportunities which, prior to this, were only distant possibilities. HHCI, even if inadvertently, is assisting the City of Halifax in realizing its development aspirations for the Mainland South area and should therefore assume some of the responsibility for ensuring that the implications of this action are fully investigated, especially with respect to the impacts this subsequent development will have on the existing natural, recreational and aesthetic amenities.

F. BIOPHYSICAL AND SOCIO-ECONOMIC ASSESSMENT

The inadequacy of the biophysical and socio-economic assessment of the Wildlands can be illustrated with three examples of error and inconsistency in the report.

- (i) In section 6.1, Terrestrial Habitat, it is stated that "...areas of relatively undisturbed terrestrial habitat, such as McNab's Island and Point Pleasant Park, are focuses of study". It might be argued that since these are parkland areas, this justifies not considering the undisturbed Wildlands. However, the Wildlands already contain two wildland park reserves, consisting of about 64 acres of undisturbed terrestrial habitat (see Parkland Plan for Halifax, City of Halifax, 1990). It is interesting to note that these parks have been conveniently omitted from the map in Fig. 5.1, although included in Table 4.3. The HHCI-EAR is riddled with inconsistencies like this. If a tunnel under Point Pleasant Park

makes this park deserving of a biophysical impact analysis, why should future parkland in Mainland South not deserve the same level of consideration?

- (ii) The Construction Shaft Site in Purcell's Cove was examined for its impact on archeological resources (see Fig. 4.60) and local viewplanes (see Fig. 4.35). Remarkably, the same shaft is shown in two different locations on two different maps. Unless these reviewers have misunderstood this component of the project, it is clear that one or the other (or perhaps both) of these components of the EAR is in error.
- (iii) On p. 151, the following statement can be found: "The jack pine stand near York Redoubt...(does) not lie within any of the areas that might be affected...". The report therefore implicitly acknowledges that jack pine is regionally rare and that it might be a Valued Ecosystem Component if subject to impact. Had even a cursory vegetation study been done in the Wildlands, an investigator would have found that the York Redoubt "stand" extends to a wetland immediately overlying the proposed tunnel. The Department of Natural Resources retains one of its permanent forest plots within the Wildlands and have collected data on the site for many years - something which could have been discovered had DNR data been examined.
- (iv) There are statements about hiking trails in the Wildlands, which

tend to downgrade both actual usage and potential usage. Hikers interviewed appeared to be someone from the Dartmouth Volksmarch Club and Colin Stewart. Since neither individual is an area resident, is it any wonder that they have not enjoyed the trails in the Wildlands? This does not indicate a proper "sociological" analysis. Even more revealing about the quality of the research done in this study is the following statement (p. 231), "... and there are all-terrain vehicle trails throughout the Backlands along old country roads ...". These statements are inaccurate and could only have been written by someone who is unfamiliar with the area.

While each of the items above is only a minor criticism of the report, taken together they constitute a major criticism. Had the scientific methods been adequate, these mistakes could not have been made.

Finally, it is worth criticizing one of the fundamental underpinnings of this study. Demographic study is one of the most important elements of good planning. Estimating future population size has important cost implications in designing a major project like the Sewage Treatment Facility. There is good reason to believe that the demographic analysis (e.g. p. 5 and Table 1.2) greatly over-estimates population growth in the area to be serviced by the STP. The design of the Facility might be different if the demographic analysis were better. Figure 4.1 shows that population growth in the sewage-collection area has grown by 12% per ten years in the last 20 years, and the rate has declined slightly in the last 5 years. A significant drop in Total Fertility Rate since 1969 is an important contributing factor which will continue to be

effective for many years to come. Even if we use this 12% figure (which is probably too high) to project population growth over the next 50 years (see p. 5), we find that the population projection for the serviced area has been over-estimated by more than 100,000 people, or more than 20% of the total. Why has this study made precisely the same error that it identified as an error in previous demographic analyses of the Metropolitan area (see p. 209 for a criticism)? Surely, if in one part of this study there is a warning that the Halifax-Dartmouth Regional Development Plan was seriously flawed demographically, one would have expected that there would not be internal demographic contradictions in this study. Although consistency may be difficult to maintain in a report of this magnitude, it is essential for the validity of the study.

II. RECOMMENDATIONS

In light of the inadequacies and inaccuracies which have been indicated, the intervenors recommend the following:

1. That consideration be given to alternatives to the Backlands sewer route;
2. That the impacts of less desirable (but nevertheless possible) alternatives to boring the tunnel be investigated;
3. That a hydrological study of the Backlands be conducted.
4. The above analyses should include consideration of long-term biophysical

and socio-economic impacts resulting from secondary effects of sewer line construction, notably the facilitation of development in the area. Re-analysis of the impact of the construction of infrastructure in Purcell's Cove is probably required in view of apparent inconsistency in mapping.