REPORTS OF THE CANADIAN PUBLIC CONSULTATION PANELS

TO THE POLLUTION FROM LAND USE ACTIVITIES REFERENCE GROUP

INTERNATIONAL JOINT COMMISSION
GREAT LAKES REGIONAL OFFICE
WINDSOR, ONTARIO

MARCH, 1978

NOTICE

Statements, views and recommendations presented in this volume are totally those of the public consultation panels and do not necessarily reflect the views and policies of the Pollution From Land Use Activities Reference Group or the International Joint Commission.

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ACKNOWLEDGEMENTS

PLUARG expresses deep appreciation to the panelists, panel chairmen, and report writing committees who gave freely of their time and effort to produce the reports contained in this volume. The reports of the panels are very useful input to the decision making process of PLUARG.

The public consultation programme in Canada was coordinated by Sally M. Leppard. Excellent assistance, throughout the public information and public consultation programmes, has been provided by Mrs. Deborah Egi and Ms. Mary Vassov.

PREFACE

The reports of the Canadian Public Consultation Panels have been reproduced with minimal editing. There has been no editing of content or meaning. Some minor editing was done to conform with International Joint Commission publication policy.

These reports were wholly written, reviewed and approved by each panel. They are the result of a series of three meetings of each panel held during the fall of 1977. The reports reflect the hard work, dedication, and genuine concern of the panelists to meet their Panelist Statement of Work listed below.

1. The panel will consider the Pollution From Land Use Activities Reference Group (PLUARG) reference, major associated issues and possible remedial measures.

2. The panel will identify for PLUARG remedial action most practical from a social, economic and environmental perspective.

3. Each panelist will attend three meetings, necessary travel costs of panelists will be covered by PLUARG.

4. To the extent possible, panelists will interact with members of the groups which the panelists represent, and other groups and elicit responses.

5. At its first meeting, the panel will elect a chairman to conduct meetings and provide continuity. PLUARG staff will provide support services to keep necessary records on participation and views expressed.

6. Panelists will have access to all available reports and to PLUARG resource people.

7. Each panel will present to PLUARG, a written report by January 15, 1978 stating concerns, findings and the panels' recommendations to PLUARG on remedial measures. If there is general agreement on an issue, or general polarization, this should be noted in the report. The panel is not required to come to consensus on any issue.

8. Each panelist will be asked to evaluate the advisory panel process.

9. Findings and recommendations stated in the panel reports to PLUARG (See 7) will be published as one volume of the PLUARG technical report series and made available for general distribution.

BACKGROUND

PLUARG was established by the Governments of the United States and Canada through a reference to the International Joint Commission under the Great Lakes Water Quality Agreement of 1972. The PLUARG reference deals with non-point source pollution and its effect on Great Lakes Water Quality.

Specifically, PLUARG was charged with three questions:

1. Are the boundary waters of the Great Lakes System being polluted by land drainage (including ground and surface runoff and sediments) from agriculture, forestry, urban and industrial land development, recreational and park land development, utility and transportation systems and natural sources?

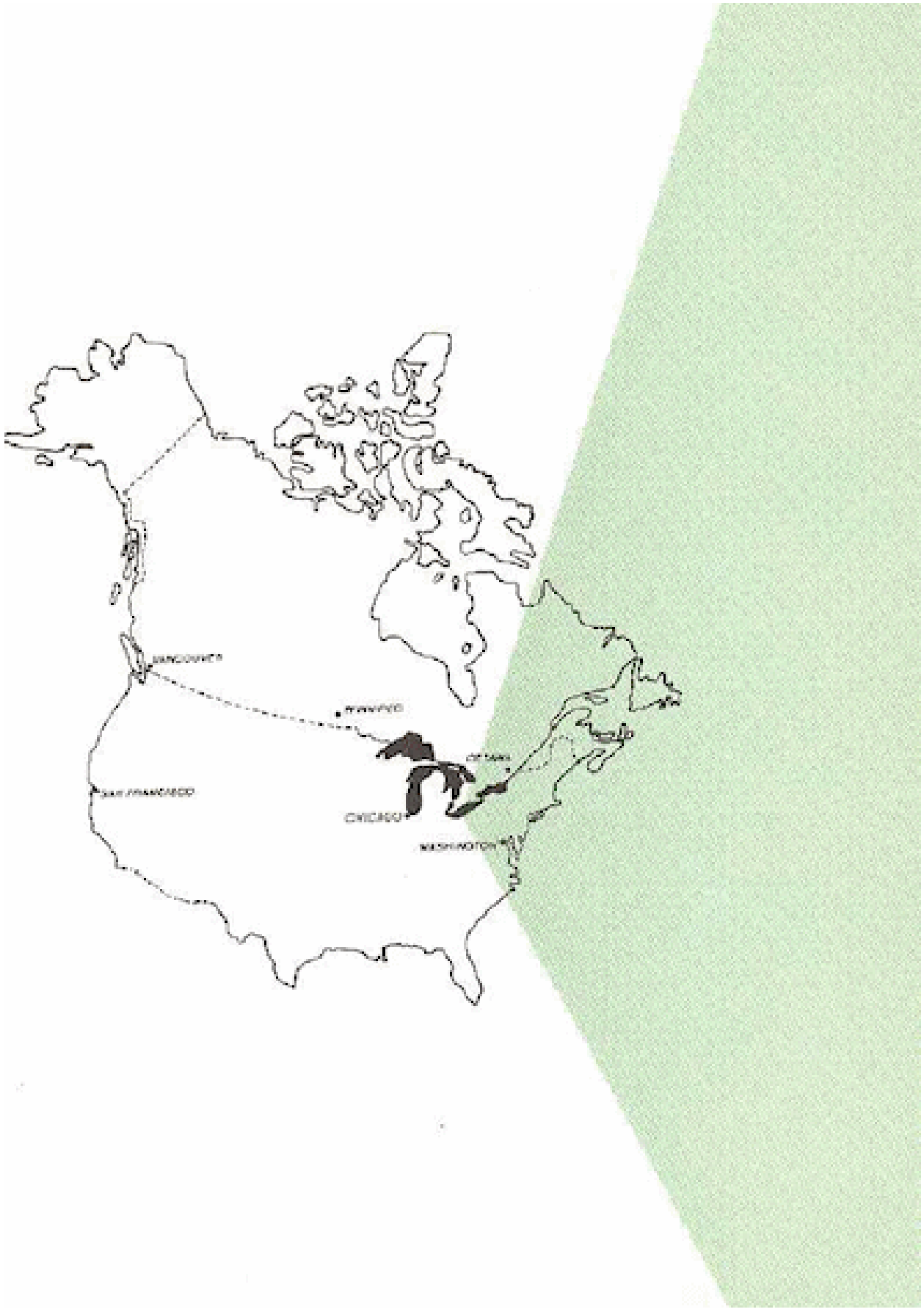
2. If the answer to the foregoing question is in the affirmative, to what extent, by what causes, and in what localities is the pollution taking place?

3. If the Commission should find that pollution of the character just referred to is taking place, what remedial measures would, in its judgement, be most practicable and what would be the probable cost thereof?

PLUARG membership includes nine United States members and nine Canadian members.

Early in 1977, PLUARG began a program of public information and public consultation, leading to the establishment of citizen panels in each of the states bordering the Great Lakes and throughout the Province of Ontario.

PLUARG's public consultation program marks the first time that public input has been sought prior to the completion of a reference group report to the IJC.


CHICAGO

REPORT OF THE
LONDON
PANEL

JANUARY 1978

ACKNOWLEDGEMENTS

PLUARG provided suitable background material on each major land use, and made available I.J.C. publications to prepare panel members for their assignment. Moreover, PLUARG was ably represented by technical resource personnel, Mr. Don Jeffs and particularly Mr. Ed Brubaker, at all meetings.

The excellent coordination by Sally Leppard and the capable chairmanship of Dr. Ed Pleva contributed much to the success of the series of meetings.

Finally the assistance of John Billham on editing and providing typing service was much appreciated.

Douglas Eagles
Coordinator

1. OVERVIEW

Citizens at the, PLUARG open houses at Chatham, Sarnia and Goderich during Jule, 1977 categorized the non-point land use sources of pollution under: agriculture, urban, sanitary landfill, waste disposal, recreational areas, shoreline landfilling, erosion, forestry, extractive industries and transportation. Of these categories, the London PLUARG panel considered agriculture and urban land uses of highest priority because of their phosphorus, nutrient, sediment and toxic chemicals (PCB, DDT, heavy metals) contribution to the lake system. Consequently, a large percentage of panel discussions was devoted to these uses. Waste disposal was considered to be third priority.

The following report summarizes the main issues discussed by the panel, its submissions and recommendations. There was little time or expertise to discuss the economics of remedial measures. However, some idea of costs were presented in PLUARG's "Evaluation of Remedial Measures to Control Non-Point :sources of Later Pollution in the Great Lakes". Throughout the panel report, remedial measures from the Evaluation, are referred to be subject and number, *e.g.* Dutch Drain (No. 3). Inclusion of information from background papers was kept to a minimum, so that the report would reflect primarily panel deliberations and member's opinions as selected from written submissions.

There was general agreement that the public was neither aware of the extent of pollution in the Great Lakes, nor aware of the extent of studies carried out under the auspices of the I.J.C. to control pollution in the drainage basin. In Ontario, limited government legislation, good practices and guidelines are mainly relied on for pollution control. It was felt that the responsibilities of ministries or departments, controlling the complex activities associated with land use, often overlapped; some areas are not yet assigned to any ministry. Voluntary abatement has had some success; however, in some industrial areas some legislation may eventually be required.

Pollution of the Lakes has been ongoing for a long Lime, lately without adequate water quality control. Therefore, reduction in pollutant loading will require long term planning and careful legislation. Furthermore, restrictive controls on land use activities will be expensive. Many of the panel recommendations, although desirable, may be impractical because of cost and other considerations. In view of the "non-point" source nature of pollutants, much of the cost associated with legislation, remedies and control must be assumed by society as a whole. Since the tax burden is already heavy, remedial measures with the most impact on water quality must receive priority attention. Because of the urgency of cleanup and preventative measures, some other approch with lower direct cost is necessary.

The London panel felt an immediate education program should be undertaken to advise the public of ever-present water quality problems, and recommend improved practices in all phases of land use to reduce water pollution. This awareness program might well be part of the curriculum in lower school grades, and include all people whose actions have an impact on water quality. Soil conservation and sediment control could be included in new university while extension studies could

be instituted in most centres. It was suggested that land use education be coordinated with recreational activities, since nearly all people avail themselves of this facility.

In the past many contentious issues have been heard by government committees, and all too often the final decision was based on political issues rather than on technical data. It is suggested that the government, through the media, provide technical background on major issues (such as Great Lakes pollution), so that the public would understand the need and support legislative action. Under the Environmental Assessment Act, (EAA) the public has the right to express its views on most public projects. The final decisions should be based on fact.

The panel members appreciated the chance to participate in I.J.C.'s awareness program, and the opportunity to give public input to PLUARG. At the last scheduled meeting the London. panel supported the Waterloo Resolution for an additional panel meeting in early 1978 to review the PLUARG draft report on land use activities, before its' presentation to the international Joint Commission in July, 1978.

2. LAND USE ACTIVITIES

2.1 AGRICULTURE

Agricultural activities involve 35% of the total land area in the Great Lakes Basin, a large part of which (64%) is located around Lakes Erie and Huron. Intensive farming operations, crop production and animal husbandry have resulted in environmental consequences, and studies are being made to determine their contribution to Great Lakes pollution. In the opinion of the panel, agricultural practice woo one of the two highest priority problems causing non-point pollution. Run-off from agricultural land carries fine soil particles, phosphorus and nitrogen nutrients, pesticides, insecticides and herbicides, and other elements through the tributary system to the Great Lakes. Erosion products from ditches, creeks, gullies and riverbanks add to the problem. The sediment, nutrients and pollutants have a profound detrimental effect on aquatic, plant and fish life - the so-called eutrophication in the Great Lakes.

Panelists were suprised that background papers said fertilizer was being applied up to 2.6 times that required, based on soil analysis, implying that a large portion of the "excess" was being leached away in run-off. There was disbelief expressed by some panelists that farmers were virtually "throwing away" expensive nutrients with no comparable increase in yields. It was noted that earlier agricultural teachings stressed the application of fertilizer for increased production. It is recommended that in light of present cropping practices and run-off losses, that more farmers take advantage of Guelph's soil testing service. It is also recommended that the farmers undertake not to exceed recommended rates of fertilizer application, as disclosed in the soil test or crop needs analysis.

Flash run-offs selectively pick up the finer soil particles and adsorbed nutrients. Remedial measures should include row crops grown in contour strips (No. 31), grassy strips near ditches and river banks, Rip Rap bank protection (No. 82), tiled fields, terraces (No. 22) and special tillage practices depending on the soil type and topography. Too little attention has been paid to flow control in designing run-off systems, so that large amounts of soil and sediments are picked up and carried away in ditches and creeks. Considerable expertise and design to alleviate this problem has been developed in the U.S., and water flows are kept within critical flow rates based on the type of soil type and watercourse. Attention should be paid to vegetation in buffer strips (No. 80), grassed ditches and outlets (No. 39), special culvert design and retention basins to minimize flow rate and sediment pickup.

Another loss of topsoil can be attributed to the removal of hedgerows and bush lots over the years, allowing windblown loss. Trees help maintain the water table, act as windbreaks, and retain soil in place. The Ministry of Agriculture has recommended that 2 rows of trees be planted on each side of lot lines and concession lines, so that 4 rows of trees surround each 200 acre lot. The benefits of the recommendation would have to be balanced against the land lost tor cultivation, which is a concern of the farming community. The provincial Tree by-law has been relatively ineffective in preventing removal of woodlots, and model tree by-laws have been proposed by special study groups (including The Canadian Environmental Law Association), and submitted to the Department of Fisheries for enactment.

> It is recommended that one of the "model tree by-laws" be adopted and enforced to preserve the remaining treed lots, especially about Lake Erie and Lake Ontario.

Intensive cattle, pig and poultry operations, and the disposal of animal waste present a serious pollution hazard. Some members of the panel thought this should be considered as a point source, and thus would come under the Environmental Protection Act and the Ministry Abatement program. There are no approvals required for feedlots or generally for animal waste disposal, although regulations specify distances these intensive operations must be from a dwelling, and recommend manure spreading practices (No. 63). It was agreed new intensive operation should be reviewed pursuant to the Agricultural Code of Practice, and requirements should be set and be controlled by municipal by-law. Similar by-laws should be passed controlling the spreading of sludge waste en agricultural lands (No. 62).

A note of caution was expressed by several panelists regarding too much regulation and requirements, such as sophisticated tilling practices to reduce erosion, and fence erection to exclude livestock from watercourses (No. 99). Farmers might turn more to intensive livestock operations with attendant pollution hazards.

More than half of harvested farmlands are treated with insecticides, pesticides and herbicides. Although only approved chemicals can be used, the application and levels of use are not controlled.

There should be assurance that all chemicals in this area, are biogradable and that the residues will not result in toxic effects to plant life, fish species or man.

Special concern was expressed over increasing concentration of polychlorobiphenyls (PCB), and many other chemicals in the Great Lakes especially since some of them are known carcinogens at extremely low levels.

Improved methods of application, such as incorporation in the soil, would be advised to reduce organic residuals in run-off waters.

The extent of water pollution from agriculture is not generally appreciated by the agricultural community, although most farmers are aware of the probable causes. In spite of substantial research and many published papers on improved farming operations to minimize water pollution, the important findings are not reaching the agriculturalists. A recent "Ontario Agricultural Practices Survey" of 1755 farmers showed that newspaper, radio and T.V. provided the most (54%) information on water pollution from farming activities; government agencies and farm organizations only 19%. It was felt initially that the most effective educational approach would be through the Ontario Federation of Agriculture, Agricultural University programs and Ministry of Agriculture Representatives.

Although pollution control by guidelines has not been entirely successful, panel members generally agreed that the guideline and education approach rather than regulations should be followed. Some legislation might me necessary if guidelines are disregarded in some land use practices.

Federal departments should be more concerned with soil conservation, agricultural drainage, and water pollution control. Waste management, cropping practices and improved animal husbandry operations to reduce pollution would likely come under provincial or municipal by-law control.

Some measure of control over farming practices could be effected by making recommended Ontario Agricultural Practices a condition of financial assistance. This should apply to provincial or municipal support loans, as it now applies to federal support.

Because of the large area devoted to agriculture and marginal operations in many individual cases, financial support for urgent remedial measures to reduce pollution is necessary. Many of the measures are almost cost-prohibitive, and the implementation of viable programs will revolve around the questions; what are the cost and cost benefits, and who will share the costs?

2.2 URBAN

Although urban centres only occupy approximately 6% of the total Basin area, the water run-off carries a disproportionate amount of pollutants because of the relatively impervious nature of urban surfaces. The wide range of pollutants reflect the urban complexity and include fertilizer and

herbicides from lawns and gardens, petroleum residues from roads, soaps, dirt and sediment, salts, phosphates, organics and many trace metals.

Since much of these pollutants are washed from urban areas during the first flush after a rain, steps should be taken to minimize run-off and to collect stormwaters in lagoons from which they can be released slowly to the waterways. The collecting ponds would allow sediment to settle and lower flow rates. Thus in open urban areas some of the same remedial measures apply as were covered under 'Agricultural Practices'.

The most positive method of dealing with stormwater pollutants is to prevent them from entering the system, or alternatively removing them from the effluent stream. However, the costs would be exorbitant, probably equalling those of treating sanitary sewage.

Long range efforts should be concentrated on reducing water usage by households, and lowering pollutant pickup in stormwater systems. Recycling as in car wash operation, could be more widely practised.

Several municipalities, such as the City of Mississauga and the Town of Oakville, have incorporated in their Draft Official Plans, some remedial measures to control run-off, with hopes to approach zero rate of increase run-off in urban drainage. Included are some of the measures discussed by the panel, e.g. gravel parking lots, porous pavements (No. 4), improved catch basins, recharge basins (No. 6), and detention storage (No. 7). Roof ponding (No. 2) and discontinuing the practice of draining eavestrough downcomers to the sewers would relieve the load on the sewer systems. In many cities during heavy rainfalls, the *sewer* systems are overtaxed and the combined flow of sanitary and storm sewers sometimes bypass the sewage treatment plants, allowing additional pollutants, soaps, phosphates, BOD organics, and sediments to enter the watercourses directly.

> It is recommended that sanitary and storm sewers be completely segregated to decrease water pollution at times of heavy rainfall.

Long term planning and cooperative legislation by all levels of government are necessary to control urban pollutants in future. Federal controls in non-point stormwaters, currently not existent, could be applied. The Central Mortgage and Housing Corporation (CMHC), for instance, could require as a condition precedent to financial assistance, that recipients of funding for land assembly adopt appropriate sediment control plans and laws. Since urban sewer and stormwater run-off with its pollutants affects all national waterways, the CMHC should at least set guidelines for sediment and stormwater control. The guidelines could serve as examples for subsequent provincial legislation.

There should be closer liaison of regional, municipal and provincial bodies to expedite run-off control. As mentioned above, some towns and cities are incorporating certain control measures in draft Official Plans. The provincial Ministry of Housing (MOH) and Ministry of the Environment (MOE), have taken stormwater, run-off and sediment control into consideration when planning land

development in large population areas. Where these developments affect drainage in rural areas as well, plans are often made in conjunction with the Conservation Authorities. The actual design and construction comes under the Ontario Water Resources Act. Effective legislation is still lacking. Perhaps controls could be developed and legislated through the various provincial departments, i.e. MOH, MOE, EAA and Conservation Authorities for urban areas. Such controls should be a condition of all plans of subdivision development, and should be integrated with Environmental Plan policies, i.e. density, vegetation, ecological zones and impact zoning. Where developments affect adjoining rural areas respecting stormwater, control of stream siltation, erosion and flood control, the Conservation Authorities should be automatically involved.

It is recognized that the costs of applying stormwater and sediment control are high, and therefore legislation should proceed based on priorities.

Finally, successful control of pollution from urban centres can only be accomplished by the support of the urban population. Therefore, the government should initiate an educational program for all ages to make them aware of the problem and elicit their help to change their habits. The educational awareness program should begin as soon as possible, and be promoted on basis of known technology.

2.3 SANITARY LANDFILL AND WASTE DISPOSAL

With increasing land development, industrial expansion and population growth around the Great Lakes, the most urgent concern after urban and agriculture, was considered to be waste disposal. This includes private waste disposal via septic tanks, solid wastes, sludge from municipal treatment plants, and liquid wastes. Some control exists over present methods of disposal, however, little technology exists on the impact of current practices on water pollution. Immediate research should be conducted to determine how each waste type may be best disposed of on the basis of economics and minimum pollution.

2.4 PRIVATE WASTE DISPOSAL

Of the 20% unsewered households in the Great Lakes Basin, most are served by septic tanks; high density areas are served by the septic tank/tile bed/finger system. It is estimated that a third of the household high density units may have malfunctioning systems. The MOE conducts annual surveys (spot checks only) of private home sewerage systems in selected recreational areas, however limitation of money and personnel, means it will be the year 2020 before all existing cottage systems alone are reviewed and deficiencies corrected.

Phosphorus is the major pollutant from private septic tank systems; trace contaminants are generally low. However, there is a risk that private well supplies might be contaminated by septic tank effluents. A panelist recommended that septic tank installations be inspected every three years and certified. It is assumed that recommendations are made at the time of construction on the

required design in view of soil type and location. Recommended remedial measures for maintenance are discussed in No. 97.

2.5 SANITARY (SOLID) WASTE DISPOSAL

As a result of population growth, more affluent society, and expanded collections services, there will be increasing amounts of solid waste to be disposed of, at a time when the number of available landfill sites near urban centres are becoming limited. Long range efforts should be made to minimize household wastes. There should be separation and recycling of usable waste paper, plastic, glass and metals - and incineration of the remaining organic material to generate steam, heat or power. Wherever possible the householder should be encouraged to compost food and garden wastes.

The Province took over responsibility of waste disposal sites in 1970. Since then over 500 substandard sites have been closed. Some sites with water quality problems continue to operate under MOE approval. Since 1972, the Province has been encouraging county and regional waste management area planning studies, by the provision of a 50% provincial grant. Moreover, a 15 year, $500 million resource recovery program can provide capital funding for the construction of transfer stations and front-end resource recovery plants. More emphasis should be placed on programs of this nature to promote recycling and improve waste disposal.

Even more incentives should be provided to encourage reclamation techniques, in order to reduce the quantities of waste and resultant landfill site requirements. Most regional governments own all disposal sites in their region and some have undertaken studies to determine their short and long term solid waste waste-management options. Closer liason between regional, provincial and research centres is required to develop and apply technology in the waste disposal field.

One panelist mentioned cases where solid waste sites led to the contamination of domestic well water supplies. In future there should be a careful selection of landfill sites based on soil type, level of water table, and topography in order to prevent leaching of constituents to waterways. Remedial measures might take the form of tighter specifications for pond construction, such as impervious clay walls, or the use of liner (No. 106).

Research studies are required on the potential hazards of disposal sites, to determine the chemical reactions involving iron and other constituents, and the migrating rates through different soils to surface waters and groundwaters.

A waste trade centre (Remedial Measure No. 89) was also suggested as a means of reducing waste. Environment Canada has set up such a centre, but found only limited amounts of industrial waste could be recycled.

2.6 SEWAGE SLUDGE DISPOSAL

Sewage sludge from waste treatment plants is often applied to agricultural lands. The application is subject to government site approval. The large volume of land-spreadable sludge that is generated by treatment plants and the relatively small number of MOE approved sites suggest that operators are spreading in environmentally inappropriate places. Regional governments do not retain any responsibility for how and where sewage sludge is land-applied after they contract with a sludge hauler for its removal. Apparently additional personnel are required to monitor haulage destinations as well as spreading techniques.

It is recommended that there be closer liaison between all levels of government and that legislation be enacted controlling all phases of sludge disposal.

Some monitoring of sewage sludge application is also required to make sure the toxic level of certain metals is not exceeded in farm use. The composition of sludge is not constant and industrial discharge may contribute too high levels of heavy metals, toxic organics and chemicals for specific crops. Zinc, copper and nickel concentrations in sludge are much higher than is found in fertilizers; cadmium is highly poisonous to animal life; chromium and lead have adverse effects on the physiological system; and heavy metals tend to build up in the food chain. Heavy metals should be removed from industrial effluents before entering the municipal sewage system. Monitoring is necessary to see present recommended toxic levels of elements are not exceeded, while more research is required to establish what elements are limiting for each agricultural crop.

Studies are in process to determine what constituents and to what extent they are leached from the soil and carried by rain run-off to the waterways. These should be expedited and applied to sludge farming practices.

> It is recommended that sludge be incorporated in the soil shortly after application to reduce loss of nutrients and metals to the waterways.

If the sludge is marketed for application to agricultural lands, it would appear to be open to the Canadian Department of Agriculture's Fertilizer Act. However, as a potential pollutant of water systems monitoring of run-off might be controlled by an environmental agency, i.e. the MOE.

2.7 LIQUID WASTE AND DEEPWELL DISPOSAL

Provincial government policy calls for reducing disposal of toxic liquid industrial wastes in surface landfill sites or in deepwells. Disposal on land sites is covered in remedial measure No. 62. Potential pollution hazards are probably higher risks than those involving sewage sludge.

In some instances the use of retention ponds or lagoons might find application, to allow biodegradation of organic material, and settling of sediment. However, disadvantages in the use

of lagoons, aside from costs, are that the water must be eventually released to waterways and the sludge build-up must also be eventually disposed of.

Industrial liquid wastes which might cause environmental or health hazards at landfill sites, have been disposed of in deep wells. Considerable activities have been carried out in the Great Lakes Basin, close to the St. Clair and Detroit Rivers. Treated residues, brines, caustic and chemical wastes have been injected into the Detroit sands formation. Brines requiring disposal from oil and gas operations are subject to prior permit and regulatory control by the MNR under the Petroleum Resources Act to ensure that fresh waters horizons or bodies of water are not contaminated. At the same time oil field brines are exempt from MOE regulatory control. Problems of control by the two ministries should be resolved and regulatory control be assigned to one department.

Fortunately, from a pollution point of view, the combination of high well contruction costs, plugging of wells, instances of waste appearing in nearly abandoned wells, stricter legislation and public pressure has effectively stopped well disposal activities. The are currently no active deep well disposal sites in Ontario. Although considerable expertise exists in the construction of wells, regarding rock formation, pretreatment of waste, and knowledge of corrosion problems, technology is lacking about the mingling of waste with natural formation waters, and the rate at which injected water migrates through underground strata. There is no assurance that injected chemical wastes do not migrate significant distances to the waterways; on the other hand there is no evidence that deep well wastes have contributed to Great Lakes pollution.

There will always be industrial chemical wastes to be disposed of and methods should be available, either by incineration or deep well, for their disposal. Incineration is probably the safest method for organic wastes, but a second choice is deep well disposal. Well disposal, if used, must be controlled by proper government permit and surveillance. There was no concensus on this issue, and very strong opinions were voiced against well disposal.

One issue of concern was brought to the attention of the panel. Carriers of liquid waste pass Customs with little description of the nature of the toxic materials present. It was suggested that U.S. carriers might be taking advantage of this laxity in some instances to get rid of wastes containing prohibited organic constituents. A monitoring system in which spot samples of incoming wastes were sent to the MOE for analysis might help in this matter.

2.8 SHORELINE AND RIVERBANK EROSION

Erosion and resultant transport of sediment from shoreline and riverbanks has occurred since the beginning of geological time. It is estimated that upwards of 50,000,000 metric tons annually, or 90% of all sediment entering the Great Lakes, is from this source. Some land use by man - construction activities, cultivation, corn cropping and removal of riverbank vegetation - has often accelerated natural erosion rates. High sediment levels, as turbidity in streams, river and lakeshore, reduce light penetration, affecting fish spawning activity and aquatic species. Associated nutrients,

pesticide residues, and organic wastes add to water pollution. Rapid siltation of river mouths and harbours lead to subsequent dredging problems.

Large scale erosion prevention is expensive. However, special attention to land practices can reduce sediments to rivers. Land use practices (construction activities recreational, urban or agricultural) should be subject to guidelines and regulations when taking place on or near lake shorelines or riverbanks. If guidelines are not followed, legislative control should be applied.

Highly erodible areas may be prevented by the construction of groynes, gabion baskets (No. 101), or by revegetation (No. 11). Highway construction and housing adjacent to waterways may need artificial barriers to prevent erosion of shore property by water action. Ditches dug to drain fields often develop into gullies with significant loss of arable land. In Huron County alone, over 117 gullies, varying from a few rods to a mile in length, enter Lake Huron. The larger these become, the greater the exposed surface, and all the soil, topsoil and associated pollutants continue to move into the lake. Similar situations may exist along the other lake shorelines. Grassing of land near banks and steep slopes, and perhaps the construction of check dams (No. 15) in extreme cases would minimize gully erosion.

Where land areas are hazardous (generally defined as erosion or flood prone), the provincial government sometimes acquires them for non-development purposes, and in conjunction with Conservation Authorities, effect measures to minimize water pollution. It should be mentioned that wetlands act as a water reservoir and filter out sediment from incoming influents. They also provide excellent habitat for insects, birds and wildlife.

The Conservation Authorities, although usually concerned with flood control, provide erosion control assistance to private landowners, on request and where budget permits.

Some of the more important pollution studies on watershed areas were mentioned by coordinator Sally Leppard. Upon motion, duly seconded and carried, it was resolved that "PLUARG be asked to expedite the Task C Watershed Studies".

2.9 SHORELINE LANDFILLING

The Conservation Authorities (CA) also undertake large-scale projects, such as landfilling, stream channelizations and dam construction, all of which can have adverse effect on local water quality. The dumping of fill in floodplain areas or in watercourses is permitted under the Fill, Construction and Alternation Waterways Regulation. The CA's have not always exercised the best management and construction practices. However, in future their activities will be subject to prior scrutiny under the Environmental Assessment Act.

Considerable landfilling activity around the Great Lakes occurs and no approvals or permits are required under the Environmental Protection Act. There should be assurance that such landfilling programs close to waterways use only clean fill. Improved engineering, design and management for shoreline landfilling (No. 85) should be a condition of project contracts.

Harbour and rivermouth dredging, often involving federal works results in dumping dredged material back into deeper water. These projects are subject so either environmental assessment or environmental design review, which are then incorporated into contracts between the Department of Public Works and dredging companies. There is little monitoring or effort to ascertain if these operations are detrimental, in terms of sediment pollution, under The Fisheries Act. This should be determined.

Only clean fill should be allowed for shoreline landfilling, and only clean dredged material should be disposed of in deep water.

2 .10 FORESTRY

Forested area, although comprising 63% of the Great Lakes Basin, contributes less than 5% of total sediments to the Basin, of which over half is accredited to natural causes. Sediment to waterways is mainly associated with timber harvesting, road construction and maintenance, and land clearing. These operations lead to stream turbidity which adversely affects stream temperature, habitat and fish life. There is no provision for environmental protection under The Timber Act, and licenses for harvesting operations should include regulated practices for sediment control in tree removal and road construction. Perhaps this should be supervised by the Ministry of Natural Resources. Remedial measures to curb sediment in waterways would be the same as in general road construction, covered under transportation. Clearing of forested areas in strips would help reduce soil loss due to harvesting operations. Recommendations were suggested that:

Forestry management should come under environmental control.

Selective forestry and cutting be applied.

That some forested areas in southwestern Ontario, particularly adjacent to lakes, be maintained to prevent erosion.

Reforestation programs be instituted, e.g. replace 1-3 trees for every one removed.

In past years insecticide sprays for spruce budworm control (DDT), has contributed to contamination of stream and lakes, causing harmful effects on wildlife, birds and toxicity in children. In future only rapidly biodegradable materials should be used, and the residues must not be toxic to wildlife or humans.

2.10 RECREATION

Although the land area devoted to recreational uses in the Great Lakes Basin is less than 3% of the total, most of it is situated near or on shores of waterways. It is projected that there will be a five-fold increase in this land use, as well as in users by the year 2020. Principal pollution from recreational activities arises from soil disturbance from off-road vehicle use, summer home development, marina construction and use, and heavy traffic patterns.

Park management is fairly effective in dealing with environmental pollution, and both federal and provincial ministries invite public input for their 5-year plans. The object is to protect wildlife and plants, and minimize pollution, while serving a large number of people.

In view of the large number of people using recreational facilities close to the waterways, there is an excellent opportunity to make them aware of the water quality issue. In fact Great Lakes water quality might be incorporated in the lower school curriculum, as suggested by panel chairman, E. G. Pleva, (appendix #1). This approach would instill in the young the need for preserving water quality and hopefully also have an effect on older people through contact with their children. A proposal along these lines will be made to Mr. Wells, Ontario Minister of Education.

2.11 EXTRACTIVE OPERATIONS

Local extraction operations principally sand and gravel removal for the construction industry. Since there is little clay and sand settles readily, no widespread contamination of rain run-off occurs. On occasion extractive activities encroach on environmentally sensitive areas, such as sand dunes, and control under the Pits and Quarries Control Act has been found to be inadequate.

Clay mining sites, along the Ausable River drain directly into the river, damaging the spawning of trout and aquatic life. Barriers should be provided to remove sediment before it reaches the Ausable River (No. 11). The MNR under the Mining Act, and MOE might recommend this remedial measure as a provision of the mining privilege.

Base mining industries which produce acid mine water, should neutralize these wastes before discharge to waterways (No. 60). Where heavy metals are present in tailings, evaporative ponds and/or holding basins (No. 57) should be required. If heavy metals toxic to fish life are in the effluents, removal techniques should be applied. The EPS section of the Canada Department of Fisheries and Environment is responsible to protect fish, frequented water and aquatic habitat. A framework for such control should be adopted pursuant to The Fisheries Act.

Uranium mining can result in radioactive wastes in milling effluents, contributing to pollution of waterways. Radioactivity problems have occured at Elliott Lake and at Port Hope. Recurrence of such problems should be prevented by preventative legislation.

In any excavation or mining operations, especially strip mining, at the end of mining activity the site should be restored and vegetation be planted to prevent further sediment loss. This should be a condition of all permits issued to new ventures, and renewals of existing ones.

2.12 TRANSPORTATION

The construction of highways, roads, railroads, airports and utilit corridors, all involve disturbing the natural vegetative cover and result in considerable sediment and nutrients loss to waterways. The Ministry of Transportation and Communication (MTC) has sponsored studies into the effectiveness of sediment control measures on specific construction projects. More research is required. The findings should be built into the Ministry's construction and environmental programs.

Because of the large land area used for these facilities and the impervious nature of road and airport surfaces, many types of contaminants, - rubber, lead, heavy metals, and sediment - accompany drain offs. Improved construction practices, soil stabilization (No. 1) and revegetation should be applied in projects which handle large amounts of soil near tributary drainage routes.

Considerable concern was expressed over the overuse of salt de-icer on roads and highways. Present laws allow for the "moderate" use of salt on highways. However, it appears excessive amounts are being used (approximately 2.8 million tonnes in the Great Lakes Basin), resulting in high chlorides in run-off, damage to plant life and high corrosion rates in autos. Salt run-off studies currently being undertaken by the MTC may lead to lower salt requirements.

> It is recommended that a maximum dosage rate of de-icer for highways be specified, and that sodium chloride be phased out in preference for some alternatives.

Chlorides from road de-icers, and effluents from brine pits account for the significant rise in chloride concentrations in the Great Lakes, expecially Lakes Erie and Ontario.

2.13 ATMOSPHERIC TRANSPORT OF POLLUTANTS

Land use activities inside and outside the Great Lakes Basin contribute pollutants to the atmosphere, which often travel long distances before being deposited on land or water systems. These atmospheric inputs arise from energy production, fossil fuel combustion, municipal incineration, industrial manufacturing, farming and urban operations, transportation and other land use activities.

The most significant pollutants are probably sulphur dioxide, particulates, ozone and aerosols. Sulphur dioxide in air aggravates respiratory problems, and when deposited in some lakes endanger sensitive aquatic species. Lead arising mainly from transportation and base metal extractive industries, is a widespread contaminant, and is toxic to man. Trace levels of mercury, heavy metals (i.e. lead, cadmium, etc.) DDT and PCB from combined atmospheric fallout and land use activities, have reached alarming concentrations in the environment, and have recently jeopardized the drinking water supply and fishing industry in the Great Lakes Basin.

Remedial measures to reduce environmental health hazards, due to airborne pollutants would have to control emissions from nearly all point and non-point sources in the Great Lakes Basin and

beyond. Perhaps the most effective measure to reduce contamination of the Great Lakes system would be to minimize the use of potentially harmful insecticides, pesticides and herbicides.

Heavy metals and pesticide residues deserve special consideration, since man's future in the Great Lakes area depend to a large extent on this water resource. Sport and commercial fishing in the lakes are of economic importance. The overall magnitude and value of harvests by commercial fisheries - 1973 were over 19 million; in addition the value of sport fishing (1975) was estimated at 350 million dollars. There has been a gradual degradation of fish habitats and a proliferation of species such as alewives, smelt and sea lampreys, reducing markedly the preferred species of steelhead, brown trout, brook trout, lake trout, coho and yellow perch. It would be a near calamity if increasing contamination by trace heavy metals and organic residues from pesticides and the like, rendered the total fish catch of the Great Lakes system unfit for consumption. Fishing in various areas has already been curtailed because of too high contaminants in fish flesh.

Man's very existence could be endangered if levels of mercury, Mirex, PCB and other toxic materials continue to accumulate in Great Lakes waters.

In view of the increasing use of toxic materials in pesticide control and their accumulation in the environment, some scientists have recommended a moritorium on use of these chemicals until toxicological data is complete.

3. PUBLIC PRESENTATIONS TO LONDON PLUARG PANEL

Two briefs were presented to the London PLUARG panel by the Huron County Federation of Agriculture and the Kent County of Agriculture. A third presentation by Stewart Hiltz of the geography department, University of Western Ontario, elaborated on regional land use planning and the need for greater appreciation of landscaping planning.

The Huron County presentation expressed support for measures reducing soil erosion and diffuse pollution resulting from nutrient loss from farms. Recommendations, other than covered to date, included:

> That one government ministry, possibly the Ministry of Agriculture and Food, be responsible for all soil erosion problems.
>
> That Universities and Colleges introduce comprehensive courses in soil erosion and conservation.
>
> Conduct research in new crops and cropping practices to reduce erosion.
>
> Encourage the retention of existing forest cover and wet lands, by certain incentives, such as eliminating property taxes.
>
> That new ideas be introduced with a minimum of regulation and maximum use of

public education and extension programs.

The Kent County brief questioned the validity of general statements that agriculturists use more fertilizer than necessary in growing crops. It was pointed out that nitrogen application does not appear to be a problem. Kent County has worked in close cooperation with farmers in tiling of farms, since rapid removal of rainfall is essential for crop protection. Further improvements in drainage practices, especially in ditch and culvert construction would be beneficial and would, hopefully, be paid by the whole society. The two briefs from the agricultural sector noted in the appendices, are available upon request.

LIST OF APPENDICES

1. The Great Lakes Area in Educational Systems submitted by: Dr. E. G. Pleva

2. Huron County Federation of Agriculture Brief to PLUARG submitted by: Mr. Alan Walper

3. Kent County Federation of Agriculture Brief to PLUARG submitted by: Mr. Elliott Hardy

CANADIAN PUBLIC PARTICIPATION PANEL MEMBERS

Mr. Donald F. Wheeler
Goderich, Ontario

Mr. Norm Alexander
Londesborough, Ontario

Mr. Douglas Eagles
Sarnia, Ontario

Mr. John Lugtigheid
Blenheim, Ontario

Mr. Graham MacDonald
London, Ontario

Mr. John Billham
Sarnia, Ontario

Mr. Paul Hansen
Windsor, Ontario

Dr. Edward G. Pleva
London, Ontario

Mr. Ian G. Coles
London, Ontario

Mr. Wayne L. McEachern
Burlington, Ontario

Ms. Vera G. Brand
Forest, Ontario

Mr. James McIntosh
Seaforth, Ontario

Mr. Milford Purdy
Point Edward, Ontario

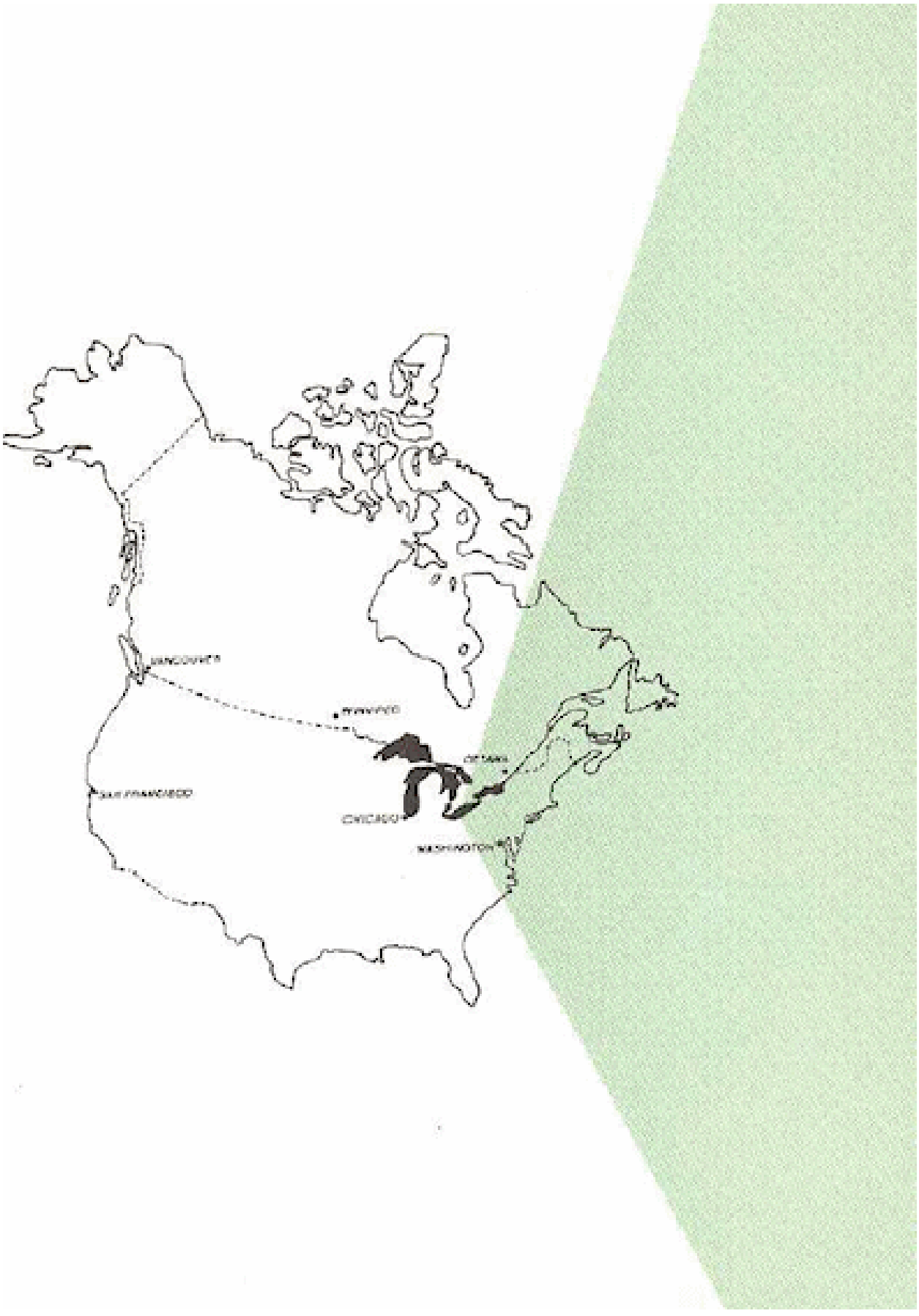
Chief James Mason
Chippewa Hill, Ontario

Mr. Walter Frais
Sarnia, Ontario

Ms. C. Canzona
London, Ontario

Mr. Gary Ingram
Petrolia, Ontario

Ms. Janet Turner
Sarnia, Ontario


VANCOUVER
CHICAGO

REPORT OF THE WATERLOO PANEL

JANUARY 1978

1. INTRODUCTION

1.1 PREAMBLE

The Waterloo panel met on three occasions to discuss aspects of Great Lakes Water Quality and the impact of non-point source pollution associated with land use activities. The panel members represented a number of local organizations and a spectrum of occupational backgrounds, and contributed to a series of wide ranging discussions. The land use in the Waterloo Region comprises a wide range of activities and when calculated on the basis of area, agriculture is predominant. There are, however, within the area covered by this panel, a number of land use practices associated with industrial and urban centres.

It was particularly noticeable that there was no polarisation of opinion between those members of the panel who represented urban and agricultural viewpoints and there was a general realization that all land use practices contributed in varying degree to the deteriorating water quality in the Great Lakes. Data presented by the PLUARG members demonstrated that as much as one-half of the phosphorus entering the lower Great Lakes comes from non-point sources and data such as this demonstrates the importance of reducing such non-point source pollution. There was a strong feeling, however, that the panel was provided with insufficient data and it was therefore not possible to assess the relative contributions of the various point and non-point sources of pollution in certain land use categories. Doubtless, the overall picture will not be changed by the publication of some of the more detailed PLUARG studies but it was felt that if the results of more detailed studies were available, then it would have been easier to place priorities on recommendations. In some cases delay in the provision of background information hindered the panel's ability to grasp the full complexity of the problem.

1.2 GREAT LAKES WATER QUALITY

It is now well known that there has been a considerable deterioration in the water quality of the Great Lakes over the past 60 years. The trend of deteriorating water quality in the Great Lakes has been a gradual one. This change in water quality is partly due to the size of the lakes and the volume of water involved, but it is also due to the increase in human population and its activities in the Great Lakes Basin. Much of the actual change in water quality has occurred in the lower lakes (Erie and Ontario) and this is explained by a complex of climatological, geological, historical and socio-economic factors. Most of the population, agriculture and industry is concentrated in the southern region of the basin where rich soils and more favourable climates prevail. Change is also associated with the processes of eutrophication, thus the magnitude of nutrient and sediment loadings is extremely important. The effects of the release of toxic substances and such activities as over-fishing have also had a considerable impact on the biology of the lakes. Although the main problem is one of eutrophication (and the associated changes in flora and fauna) the panel felt that insufficient weight was given to public health considerations. The trend of decreasing DDT levels in biota and sediments was noted with approval but the data for PCB's (which show no significant

decrease in recent years) was by no means encouraging. PCB's have wide ranging implications for both biota and for public health.

The panel does not wish to suggest that the non-point sources of pollution associated with land use activities could be eliminated over night. This would involve a rapid proliferation of draconian measures which would not be justified, either ecologically, socially or economically.

> Therefore, we URGENTLY recommend to PLUARG that responsibilities to implement a clean-up program be clearly assigned to the various appropriate agencies of the two governments involved and the different levels of government together with clarification, simplicfication and amendment of legislation that will provide the authority for action.
>
> Linked to this must be the provision of sufficient funding so that existing technology may be implemented in an efficient, economic and coordinated fashion.

In all of this, common sense, economy and co-operation must prevail. Political direction and engineering technology must combine to attract financial investment to those programs that produce the most significant improvement to the ecology. Much can be readily achieved, but some advances may require further research into such areas as, for example, agricultural engineering and improved agricultural techniques. As a panel, we are concerned that neither Canada, nor the U.S.A. should be able to reap an economic advantage by putting off pollution control measures. In this day of scarce money and lagging economies, pollution controls are just as important as ever and both countries must be encouraged to proceed with all possible speed. Progress must be made in an equitable manner with controls being implemented by both Nations. Furthermore, as the water of the Great Lakes mix across the International boundary, it makes little sense for one country to implement controls without reciprocal action by the other.

1.3 WATER QUALITY GOALS

There will always be a larger or smaller gap between the scientific definition of water quality and the more commonly perceived aesthetic criteria. Evidently the water quality of the upper Great Lakes is regarded by most people as acceptable. The water is clear and the lakes are oligotrophic. (We leave the consideration of specific concerns to the panels in N. Ontario). In the case of upper Great Lakes, scientific and aesthetic criteria come close together.

In the case of the lower Great Lakes, however, there is some debate as to whether or not the Lakes should be (even if they could be) returned to a condition similar to the upper Lakes. A marked reduction in point source loadings of phosphorus (for example) to 1 mg/L will improve the water quality of the lower Lakes. At this point, non-point sources of phosphorus become an important target for action. To return Lake Erie to an oligotrophic condition will lead to improvements in water quality from both scientific and aesthetic viewpoints. To achieve this, reductions in both phosphorus

and nitrogen loadings are desirable as well as a reduction in sediment loadings. Certainly most would agree that a reasonable goal for the lower lakes would be to improve water quality to the point where the water had reduced sediment loadings and has a cleaner and clearer appearance. Reduced algae growth would prevent nuisance blooms washing up on beaches. Also, depletion of oxygen in bottom waters in summer should cease to be a severe problem in Lake Erie.

Geological factors in the basins of the southern Great Lakes show that these lakes can never become as clear as the upper lakes and the higher nutrient loadings would tend to produce inherently more eutrophie lakes. The recommendations listed below do indicate, however, that much can be done to reduce the effects of land use on the water quality of the Great Lakes. The panel wishes to stress, however, that a co-ordinated international approach is essential and that point source effluents must also be controlled effectively if the overall effect is to be worthwhile.

2. LAND USE ACTIVITIES - SOME PROBLEMS AND REMEDIES

2.1 PREAMBLE

Panelists were provided with background papers describing sources of pollution from various land use activities and also information respecting remedial measures. In their discussions on these matters, frequent reference was made to point sources of pollution as it was found that many land use activities produce both point and non-point pollution and it is impossible to separate out what, in fact, is a chain of related events. Many human activities form parts of loops wherein materials are cycled through both human and other natural processes.

There are very strong and direct linkages between the nine land use activities identified by PLUARG and many of the concerns listed below apply in more than one category. The panelists were provided with a manual outlining 109 remedial measures and believe that the various *agencies* no doubt have further technical knowledge at their disposition. Thus debate of these matters would have been repetitive and most likely uninformed.

The panel did not feel its mandate required the production of detailed specific technical recommendations regarding individual problems but rather that it should collectively advise PLUARG of general areas of concern and its unanimous recommendation that the subject of water quality in the Great Lakes should be given a high political priority. The panel believed that at this time it is important that PLUARG appreciate that in the opinion of the panel there is strong public support for action to fulfill the provisions of the 1972 Agreement.

2.2 LAND USE ACTIVITIES

The panel identified the following areas for concern and consideration. As noted before, the panel did not list priorities since all activities and their impacts must be considered. It is assumed that, as problems and solutions are identified, that both Governments will direct the appropriate agencies

to take necessary action with in the framework of an overall program. The panel trusts that the present studies and research being undertaken by PLUARG will lead specifically to the establishment of such a program by the I.J.C. and its subsequent endorsement by the Governments of Canada and the United States of America.

Agriculture

- encourage use of crop rotation to reduce erosion

- encourage use of contour plowing

- discourage plowing too close to watercourses

- encourage planting of windbreaks to reduce soil erosion

- Ontario Ministry of Agriculture and Food (O.M.A.F.) should encourage greater use of soil testing for fertilizer application and discourage the application of fertilizer in excess of recommended rates

- redirection of dollars from Great Lakes clean-up to assistance of farming practices (prevention is better than cure)

- make the availability of certain Capital Grants and other financial incentives covering municipal drains, fence row removal and forest cover removal conditional on evidence that harm to the hydrologic regimes will not result or that adequate compensating measures are part of the project

- encourage use of sewage sludge as fertilizer provided that it does not contain heavy metals or toxic substances

- improved application techniques respecting the use of sewage sludge required

- feedlots can cause B.O.D. problems; consider grouping of such activities to enable economic provision of treatment of wastes

- agricultural subsidies could discourage farming practises detrimental to long term soil quality

- examine the relationship between increasing land costs and over intensification of tillage (this applies both in terms of crops grown and the use of marginal land)

- stringent control of growth stimulants in agriculture if public health hazard is demonstrated. Testing and approval must be conducted by and within a government agency (but not that which issues the licence for approval of use)

- any financial incentives for erosion and sedimentation control on agricultural lands should be concentrated in key problem areas, not widely dispersed to "all" farmers; the effectiveness of the investment is very low in the latter case

- O.M.A.F. through its 4H, Junior Farmers, Soil and Crop Improvement Associations etc. should strongly promote a land stewardship ethic to balance its all out production emphasis

- more government supported research is needed to adopt minimum tillage equipment (from the U.S. midwest) to Ontario conditions - particularly in certain cash crops

- there should be a removal of taxes on certain farm improvements which control pollution, such as manure holding tanks; the taxation of these as capital improvements is a disincentive to pollution control

- O.M.A.F. should redirect funds from such fringe areas as the planting of shrubs/flowers and the building of ice rinks to erosion control

Urban

- municipalities should be required to adopt as part of their development control procedures the mandatory submission of detailed plans for runoff and erosion control during and after construction accompanying all development applications - such procedure might include:

- application of simple environmental assessment processes to identify measures required to reduce runoff during construction phase

- extended use of zero-increase runoff principle in engineering for storm drainage

- encourage use of "traps" to collect contaminants in runoff from streets, parking areas and other paved areas used by vehicles

- limit removal of top soil in construction

- limit urban sprawl by use of infilling and higher densities where possible

- reconsider growth projections in light of changing fertility rates and migration policies

- clearer enunciation respecting provincial policy on urban settlement patterns

- examine potential health hazards of development of old orchard sites where previously high concentrations of heavy metal sprays were used

- discourage dumping of fill in floodplains, environmentally sensitive areas or any other locations where it cannot be immediately stabilized

- municipalities should be encouraged at the Official Plan development stage to incorporate environmental planning principles which seek to locate development firms in landscapes which are most capable of supporting these with the least detrimental impact on the aquatic environment

- consider construction of sewage plants including storm surge tanks and other facilities to reduce by-pass problems from runoff. This would also reduce overflow of plants and main sewers into rivers and streams

- encourage public to minimize garbage disposal volume and reduce impact of urban landfill on ground water

Transportation

- phase out leaded fuels

- increase road sweeping to reduce heavy metals etc. in runoff - consider vacuum cleaning techniques?

- reduce weed spraying by use of low close-growing shrubs or by use of extended selective mowing

- re-examine possible use of studs in order to reduce salt use (cost of road repair might be less than cost of environmental damage or compensation to farmers)

- examine vegetation of roadside strips, encourage planting of wind breaks. Use of subsidies?

- encourage development patterns that encourage use of public transit instead of private automobiles

- reduce use of salt on roads whenever possible

Recreation

- position paper cursory and unsatisfactory and further research and consideration is required

- encourage provision of additional recreational areas (private as well as public) so as to reduce intensive over-use of facilities and the erosion of same

- encourage designation of recreation areas which are not just holding areas for future power stations or transportation corridors

Solid Waste and Sewage Sludge Disposal

- examine opportunities to reduce leaching of PCB's from existing landfill *sites* and eliminate same from all future landfill operations

- monitor the operations of sludge haulers and encourage agricultural recycling wherever possible

- encourage recycling of material resources and recovery of potential energy (to minimize the need for landfill)

Deepwell Disposal

- promote recycling of industrial wastes to reduce the need for deepwell disposal

- consider the continuation of disposal of radioactive material in proven deepwells

Forestry

- reduce clear felling practises to reduce soil erosion and phosphorus runoff

- reduce land clearance of marginal lands in order to maintain forest cover

- improve spraying techniques to reduce runoff of same

- encourage use of non-persistent sprays

Extractive Areas

- restoration of worked out pits to reduce erosion

- application of environmental assessment process to ensure proper practices

Shoreline and Riverbank Erosion

- minimize or eliminate development in sensitive locations

- exercise regulations and undertake management practices to reduce erosion

- ensure rigorous application of environmental assessment prior to undertaking harbour 'improvements' or modifications

Private Waste Disposal Systems

- apply regulations to ensure that soil conditions are adequate for the system proposed

- encouragement of 'improved' systems to eliminate environmental impact and to recycle wastes

3. INSTITUTIONAL RESPONSE - STATEMENT OF CONCERN

All levels of (Canadian) government must be given the legislative DUTY to protect the water quality of the Great Lakes Basin. This day, consistent with Article Two of the Water Quality Agreement of 1972, would relate to all regulatory, fiscal, planning, and management functions.

To achieve this goal, there are two fundamental requirements:

Any person, upon establishment of a *prima facie* case, should have standing to appear in (Canadian) courts of law to seek restraint of activities claimed to be damaging to water quality. (The panel notes with concern but has no remedy for the problem of costs being an extremely inhibiting factor).

All levels of government must recognize the problem of water pollution from non-point sources: to date, water quality management has seriously neglected this aspect. Therefore, with regard to the legislative duty described, administrative agencies should be required IMMEDIATELY to proceed to eliminate existing inconsistencies and clarify the interpretations of the regulatory framework. A short number of pressing examples are given below:

Shoreline landfilling, where a regional policy regarding environmentally sensitive areas may conflict with federal ownership and plans for the development of said lands ostensibly to "the general advantage of Canada".

Hazard and sensitive land areas, where such areas, acquired for non-development to minimize water pollution, are then developed for recreation purposes by , say, a conservation authority, leading to a reduction in water quality.

Toxic liquid industrial waste disposal regulation, where provincial government policy calls for reducing such disposal in deepwells and in surface landfill sites: because of present insufficient industrial reclamation of liquid wastes and increase in these wastes, these policies cannot be carried out.

4. PANEL EVALUATION

The panel wishes to express its appreciation to PLUARG for recognizing the need for public participation and pioneering this IJC involvement in the public participation process. Any criticism implied in this report does not apply to PLUARG but rather to the problems that they are confronting. We see the need for continued public participation in and support for PLUARG's activities. At our second meeting we passed a motion stating that:

> "Sally Leppard and the PLUARG representative convey to the I.J.C. and all panelists throughout the system that PLUARG recommend that panel activities be continued and funded".

By way of explanation, we look forward to reviewing the draft PLUARG recommendations to the I.J.C. and indeed, we foresee the value of continuing the public participation program through to the implementation of the required new legislation and programs. You may wish to consider the merits of a more or less continuous public participation program. We do appreciate, however, that it may not be necessary to keep the entire panel system in being through all stages of the process. We wish to assure you that at least some of us are prepared to continue to donate our time and expertise in order to assist you in the fulfillment of your objectives.

CANADIAN PUBLIC PARTICIPATION PANEL MEMBERS

Mr. Robert A. Trotter
Elmira, Ontario

Mr. Jim Ott
Cambridge, Ontario

Mr. Richard Walker
Simcoe, Ontario

Mr. Glen Crain
Brantford, Ontario

Mr. Lanfranco Martini
Hamilton, Ontario

Mr. Al E. Kruzins
Burlington, Ontario

Mr. Richard E. Legate
Waterloo, Ontario

Mr. Dave R. Cressman
Kitchener, Ontario

Ms. Laurie S. Mannell
Oakville, Ontario

Mr. Mark Stagg
Waterloo, Ontario

Mr. Norris W. Webb
St. Mary's, Ontario

Mr. Ron Phillips
Stratford, Ontario

Mr. Jim Walker
Alma, Ontario

Mr. Sam Bowman
Elora, Ontario

Mr. Joe Hujer
Burlington, Ontario

Mr. Don Mooney
Guelph, Ontario

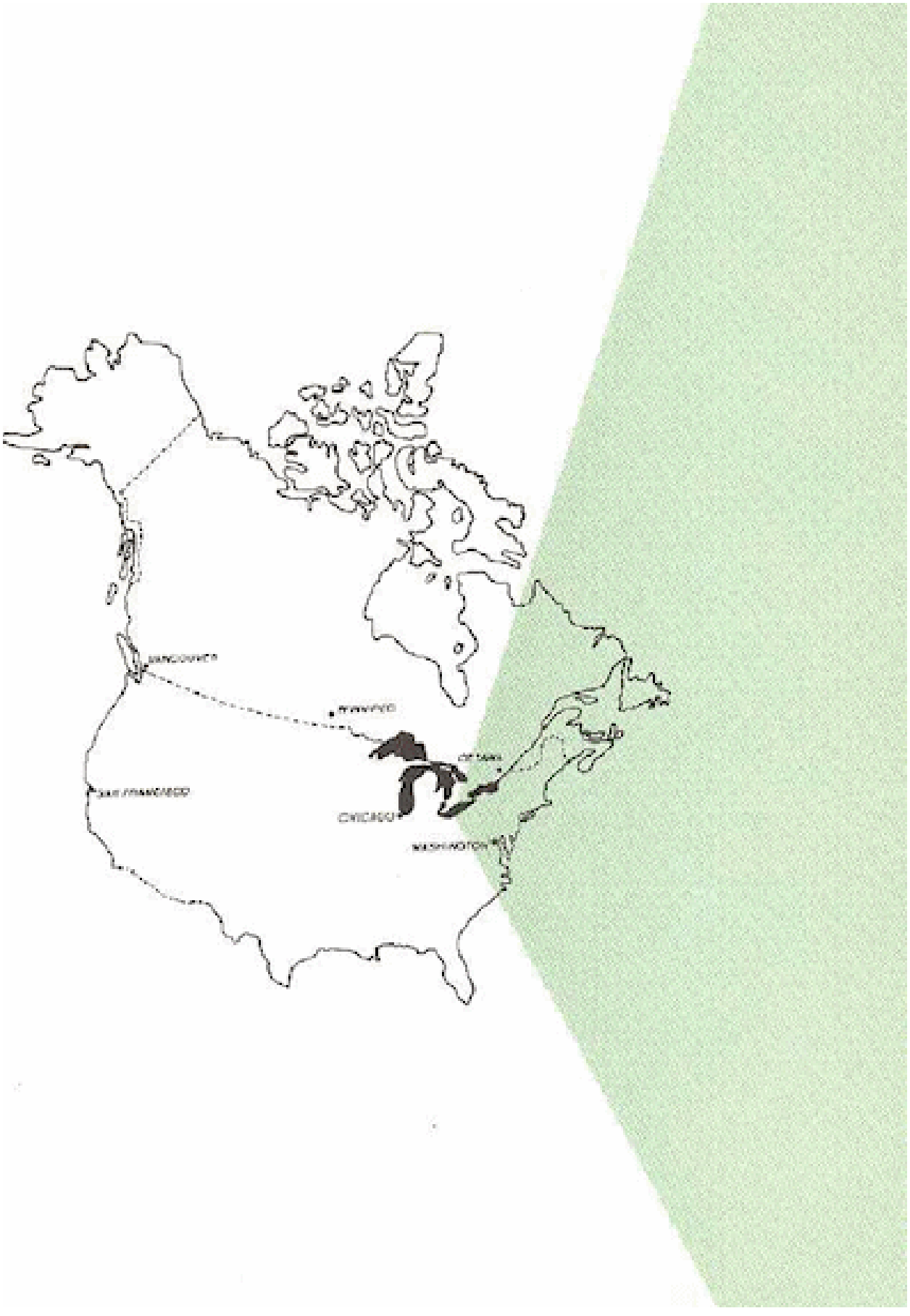
Dr. Graham P. Harris
Dundas, Ontario

Ms. Betty Barhydt
Burlington, Ontario

Ms. Gil Simmons
Hamilton, Ontario

Ms. Claudette Millar
Cambridge, Ontario

Dr. George Priddle
Waterloo, Ontario


CHICAGO

REPORT OF THE OWEN SOUND PANEL

JANUARY 1978

1. PREAMBLE

The following viewpoints were generated by assigning one or more members of the panel to a specific area of concern as outlined in the PLUARG materials provided. About three weeks was then allowed for panel members to study a specific area of concern as assigned. Then further consultation among members took place at another meeting, where reports were prepared and presented to the panel in a plenary session for comment, question, or dissent.

The following text was collated by the Editorial Committee for review by panel members to permit correction or amendment.

The Committee was comprised of Mr. Stephen Shivas, Committee Chairman, Mr. Lorne Creighton, Panel Chairman and Mr. Robert List, Panelist.

The above process was to enable the panel to function within the time constraints and to assure an open process.

2. SUMMARY

A summary of this report is expressed as a number of needs and recommendations. The numbers following in brackets give the subject reference, detailed on the following pages.

2.1 PERSONNEL

To inspect and enforce improvement of the inadequate septic tanks especially near watercourses (C, H, K5).

To train and equip strategically placed emergency crews to remove or contain major contaminant spills or other environmental disasters (A).

2.2 RESEARCH

To diagnose the long range toxicity of trace materials (B).

To develop natural predators and biological insecticides to replace toxic chemicals (E, G).

To correlate toxicity with the state of metals (B).

To find the ultimate home for toxins (F, K5).

2.3 LEGISLATION AND LABS

To report, test and control the flood of all the new menacing chemicals (K5).

2.4 EDUCATION - (E)

In public schools to teach environmental hygiene and prevent litter (C).

In high schools - possibly using PLUARG literature as a text in geography.

In university so a graduate will have had a complete course and will understand all the disciplines involved in the broad aspects of pollution (K, C).

2.5 INCENTIVES

To encourage treatment at the source before dilution and before ecological degradation (K1) so:

Industry, including agriculture, can afford to develop its own adequate treatments (E).

Households will separate paper etc. for recycling. Gas will be lead free (B).

Erosion can be reduced by reforestation, preserving swamps and both rural and urban runoff decreased (D, J, K3, K4, K6).

Generally, the panel preferred educational and incentive encouragement rather than more bureaucratic regulations (E, K3).

2.6 INFORM THE PUBLIC

Of the already available sources of knowledge and expertise and provide more ready access to this resource (D, E) by:

Developing a more extensive bibliographical service on pollution subjects.

Making available and encouraging the use of college libraries, and the computer reference resource at the Canada Centre for Inland Waters.

Publicizing the expertise of Conservation Authorities, Agricultural representative etc. (K4).

2.7 REDUCE SALT

For de-icing according to vehicular concentration (A, E).

2.8 CONSOLIDATE GOVERNMENT CONTROL

Into one department:

Erosion into the Ministry of Agriculture and Food (E, K3).

Quarries into the Ministry of Natural Resources (I).

Catch and treat initial storm runoff (A, D).

Part of the panel's duty was to report the following:

I. List the order of priority of our recommendations.

II. Establish a timetable for implementation.

III. Recommend the ideal agencies to implement remedies.

The Editorial Committee has attempted to do this in Table I.

TABLE I: RECOMMENDATIONS. IMPLEMENTATION AND AGENCIES

Column A Item	Column B Need	Column C Danger	Column D Time	Column E Agency
1b	Septic Tank	2	3	Local Health Units
2a	Trace Toxins	3	5	Ministry of Health and Welfare
2b	Biocides	4	5	Entomology Dept. Ontario Agricultural College
2c	Metals	3	3	Post graduate at Universities
2d	Disposal of Toxins	2	5	Inland Waters Labs at Burlington
3	New Chemicals	1	1	A new federal department with lab work at National Research Council
4	Education	5	5	Ministry of Education
5	Incentives			
5a	Treatments	4	2	Taxation Department
5b	Recycling	5	5	Municipal by-laws
5c	Lead Free Gas	3	4	Provincial tax reduction on lead free gas
5d	Erosion	5	3	Through Conservation Authorities
6	Publicity			
6a	Bibliography	5	5	Regional Libraries
6b	Computers	5	5	In technical magazines
6c	Authorities	5	5	Local Agencies
7	Road Salt	4	5	County Dept. of Highways
8	1 Dept.	5	5	Provincial Taxation Dept.
8a	Erosion	5	5	Ministry of Agriculture and Food
8b	Quarries	5	5	Ministry of Natural Resources
9	Runoff	3	5	Ministry of the Environment

EXPLANATION OF TABLE

Column A

Refers to the needs and recommendations in our summary:

i.e. 1 - Personnel
2 - Research

Column B

Describes the need.

Column C

Lists the priorities by danger in numerical from 1 - 5.
1 means top priority; being the greatest immediate danger to life and our environment.

5 has the least priority but should be accomplished eventually to obtain our ultimate goal of environmental purity.

Column D

Lists the priorities by time 1 - 5
1 is most urgent and should be implemented as soon as possible.

5 requires no rush but should be phased in slowly over a 5 year period.

Column E

Shows the recommended initiating or enforcing agency.

3. DISCUSSION OF DESIRABLE WATER QUALITY IN GREAT LAKES

At the November 9, 1977 workshops the following parameters were established for water quality in the Great Lakes:

Continuous supply of water safe and adequate to drink with minimal treatment.

Water which will support a viable commercial fishing industry and attract sports fishermen.

All water in the main lakes should be adequate for swimming and other recreational uses.

Lakes and rivers should be aesthetically pleasing and attractive to tourists.

Further eutrophication of Lakes Superior and Huron must be prevented so that we can at least maintain the existing quality. Lakes Erie and Ontario must be cleaned up.

Commensurate with the above, we must maintain our food production, our industry and our heritage.

The panel was divided into a number of subject groups and each presented a brief. These briefs were then discussed by the entire panel. The subjects and their reporting chairman are listed below and their briefs are included in this report.

A.	Transportation Corridors	- Mr. Douglas Hubbell
B.	Urban, Liquid and Solid Waste	- Mr. Lorne Creighton
C.	Recreation	- Mr. Robert List
D.	Shoreline and Riverbank Erosion	- Mr. Howard Krug
E.	Agriculture	- Mr. Robert Taylor
F.	Deepwell Disposal	- Mr. Robert Taylor
G.	Forestry	- Mr. Howard Krug
H.	Septic Tanks	- Mr. Lorne Creighton
I.	Extractive	- Mr. Robert List
J.	Shoreline Landfilling	- Mr. Douglas Hubbell
K.	A resume of some recommendations made during six (6) public presentations by various organizations and individuals to the panel	- Mr. Stephen Shivas

A. TRANSPORTATION

The transportation report of the PLUARG Committee concentrates on the following major pollutants from transportation corridors:

Sediments
Metals
Chemicals

We cannot comment on these findings other than to say that they sound logical.

Sediments are a major pollutant of construction and maintenance work on transportation corridors. In extremely sensitive areas such as near major watercourses, construction could be scheduled so that it is completed in time to put the proper seed and mulch coat on the exposed areas before winter. Some of the major sedimentation occurs when a road project carries over two years and the spring floods erode the unprotected banks of the construction. Where construction cannot be completed and given a final seeding and mulching cover before winter, then consideration should be given to putting a preliminary emulsion coat or netting or whatever other means is at hand to protect the watercourse from sedimentation during the spring runoff.

It is not an uncommon practise for many small municipalities never to finish off their construction with seeding and mulching. In some areas this does not contribute to sedimentation of watercourses, but in areas where there is a potential danger of this, the Ministry of Transportation and Communications should encourage the municipalities to provide seeding and mulching or other erosion protection at critical areas.

Proper attention should be given to proper design of ditch slopes and ditch protection in areas where the quantity of water or slope causes erosion problems with the accompanying sedimentation problem.

In the near future all municipalities will have to do environmental assessment reviews of road construction projects and we imagine that one of the things that they will have to adjust themselves to is the elimination or reduction of erosion of construction embankments and ditches.

Metals are a major pollutant from transportation corridors and Table I outlines the major metals. Lead is emitted from automobile exhaust because it is an additive in fuels. This incidence of lead should decrease in the future as more and more vehicles operate on unleaded gasoline. We do not have any recommendations for the elimination of other metals from transportation corridors unless the problem can be attacked at the source in the design of the vehicle. In urban areas the deposition of metals on the roadway can be treated by the proposal to trap the initial storm runoff from storms and have this treated as sanitary water through the treatment plant. These metals would then be trapped in the sludge and would have to be disposed of with properly laid out precautions for the use of sewage sludge.

> It is recommended that all major urban areas seriously consider the feasibility of catching and treating initial storm runoff. Also eavestroughs should be redesigned so that rain falling on roofs would drain into the ground instead of into storm sewers directly.

Probably no other practise that road authorities perform is more controversial than the use of sodium chloride and calcium chloride to remove ice from roadways during the winter. On one hand we have people of vegetation, and on the other hand we have the demand for roadways that are not dangerous to ride on in the winter. From a point of view of economics it is almost a staggering task to try to determine the expenses incurred by our society through the use of road salt and the costs to our society through the reduction in efficiency on the roads in winter. The PLUARG issue paper does not attempt to outline the magnitude of the problem of increasing salinity of the Great Lakes nor does it address itself to the effects of partial solution to the problem by reducing the amount of salt. In other words do we buy more time by reducing the amount of road salt used by say 40% or 50% or do we effectively eliminate the problem by reducing the number of roads salted by that amount?

We propose that the amount of salt that is placed on the roadways should be controlled and in some cases this could be done painlessly, by controlling the use of salt. The following are point form controls that can be imposed:

The dumping of collected snow directly into watercourses, and the Great Lakes is now prohibited. This prevents the direct flow of salt content of rivers and the Toronto Harbour due to this practice. We believe it has been prohibited, in all cases at this point and time.

Roads to be treated with salt in the winter should be selected primarily by traffic volume. For instance, in Grey County, approximately 113 miles of road or 26% of the County Roads are salted. Salt is not used on gravel roads unless there is a sleet storm and it is only used on hard top roads if the volume of traffic is over 500 vehicles per day. In other words after the storm a bare level of pavement is used only on high volume roads.

Control of the application rates for salt and specific quality control programs for the use of salt on those roads that have been selected for bare level of service would be initiated. Reporting procedures should be laid out so that supervisors will know the exact amount of salt being applied to roads. We believe that it is a fallacy to put a small amount of salt on the road and then have to come back and put another application down because the first application was not sufficient. This generally results in a larger amount of sodium chloride being put on the road and additional fuel being used to cover the route twice.

Sand should be used on all low volume roads wherever possible and when the temperature gets down to approximately 20°F the use of salt should be restricted because of its ineffectiveness at lower temperatures.

Sand domes and salt storage sheds should be built to prevent the salt from getting into the groundwater or directly into watercourses and the Great Lakes.

Selective salting on hills and curves could be applied with snow packed levels on straighter sections of even higher volume roads if the public will accept this.

A publicity campaign should be undertaken to make the public aware of the changes in level of service that municipalities may be anticipating by reducing the amount of salt. This may help to alleviate the liability that a municipality may incur through accidents and injuries due to changes in levels of service.

The final type of pollution that has not been elaborated upon in the PLUARG issue papers is the miscellaneous type of pollution that could occur through spills. We have had numerous cases where tanker cars have overturned with potentially dangerous chemicals being spilled into watercourses. In urban areas spills of tanker trucks or railway cars could become disastrous because the chemical could be transported through a storm sewer system directly into the Great Lakes or into larger watercourses that empty directly into the Great Lakes. In order to alleviate the possible hazards created by this type of emergency all major municipalities should develop emergency control measures to counteract or to react to major disasters such as this.

B. SOLID WASTE DISPOSAL

One major area of concern relates to the variety of ways of waste disposal. Certain wastes should be reduced at the source before disposal into municipal sewage systems. Thus, for example, an industrial process with a heavy metal waste product would not be allowed to dispose of the same into sanitary or storm sewers. It is assumed that ultimately such regulation would not only cost less, but assure complete absence of the toxin from municipal sewage sludge.

As a general principal therefore, it becomes doubly desirable to apply preventive measures rather than corrective measures.

Research should be funded into the state of metals in waste prior to directing its proper disposal. Chromium in the hexavalent state is extremely toxic. Also, caution is in order to prevent non-toxic wastes becoming toxic after they get into the lakes. Can chlorinated municipal water allow free chlorine ions to return to the lakes where they then might combine with hydrocarbons to pose a threat from a build-up of chlorinated hydrocarbons? Research is in order!

Residual and bioaccumulative toxins must be removed from industrial wastes at source, assuming it is less expensive and more effective than attempting to extract it from municipal sludge later. Cost benefit analysis may support a cost-sharing program with industry by government.

The TOXIC SUBSTANCES CONTROL ACT (U.S.A. '76) and the ENVIRONMENTAL CONTAMINANTS ACT (CANADA) should include control of both old and new toxins and priority must be given by both authorities to adequate funding.

Storm waters wash lead compounds from auto emissions off urban streets and throughways. Since this is a serious polluter, on a significant scale, and one which separating storm and sanitary *sewers* will not eliminate we must:

> Establish a schedule to compel auto manufacturers, domestic and foreign, to design auto engines able to use non-leaded fuels. Only such vehicles would be available for sale by the stated deadline.
>
> Until such a deadline, sales advantages enjoyed by vehicles not requiring unleaded fuels must be balanced by a significant reduction in provincial, state and federal taxes on unleaded gasoline. Unleaded gasoline should be the cheapest on the market, by at least five (5) cents per gallon.

There must be effective communication of research findings between the researchers and industrialists. Easy access must be assured to research data by all publics. The consumer of a product and the citizen at large have a right to police the protection of the biosphere - the more so if the research has been funded in whole or in part by the public. The pollution problem has no less right of access to research data than the development scientist.

All PLUARG handouts to panelists should be in all regional libraries in the Great Lakes Basin (both sides of the border).

There needs to be adequate cost-sharing by all levels of government to encourage a comprehensive program of solid waste disposal by municipalities, which is environmentally sound and conserves renewable and non-renewable resources.

Extraction of metals and glass for recycling would be most economic if these were separated by the householder prior to pickup. Such a program could make use of color - coded containers for glass, metal, and paper and enforce separation by law, refusing pickup unless separated.

The residue, after removal of all resources from the waste, should be incinerated and the end product disposed of in landfill sites. Such a reduction in volume of waste has obvious advantages relative to the acquisition and operation of landfill sites.

Not only the cost of disposal of municipal solid wastes would be reduced, but also the price of goods could be lessened, if a life-style was actively promoted to eliminate excessive packaging and encourage re-use of many containers. The throw away mentality leads to higher prices for goods and mountains of waste with costly disposal, extensive pollution and waste of energy resources.

c. RECREATION

Introduction

Pollution problems related to recreational activities in this area of the Great Lakes water basin were examined with respect to the most notable effects that recreational uses had on local development both existing and proposed. In addition, a generalized examination of potential effects of minor influences on water quality was also undertaken.

Local Effects

The PLUARG paper dealing with recreations' contribution to pollution of the Great Lakes summarized that the overall effect of recreational activity on the water quality of the Great Lakes was negligible. Taking the basin as a whole and in comparison with other contributors, it would appear that such a statement is relatively accurate. Nevertheless, it is the opinion of the Owen Sound Panel that an important, localized problem which does not meet the terms of reference of the panel (provision of a potable water supply and safe swimming areas) exists in our area of the Great Lakes which directly relates to recreational development.

It would now appear a requirement of the Provincial Ministry of the Environment that water lines used for the source of drinking water be placed at a minimum distance of 200 feet into the lake from the high water bend mark. It would appear that leaching of wastes from septic units along the shoreline has prompted this requirement. Although the effect on overall water quality of the basin is not noticeable as a result of such leaching, it provides an extremely detrimental effect on

potential water quality in the area of its highest use - along the shoreline. As such, measures to assist in the reduction of this problem (improper installation, use, and maintenance of septic waste systems) resulting from seasonal or permanent recreational development are detailed as follows:

A change should be made with regard to standards for location of septic tanks on lots. In particular, more site specific information should be utilized and an examination of subsurface transferral of wastes made in every application. Importation of material for tile beds to specifications laid out in Regulation would appear inadequate as is presently the case.

Bonding and Certification of commercial contractors installing waste disposal systems should be examined and made mandatory.

Final inspections of waste disposal systems should be made when all work inclusive of most landscaping is completed. Such examination of the system by the use of detection devices, ensures that all components of the system are in place below the ground surface.

Inspections should be comprehensive, ongoing, and performed only by highly qualified personnel who have received training in geology and hydrology in addition to Public Health.

Potential Minor Influences

Influences on water quality related to recreational development in general were assessed by PLUARG to be minor. Our panel is in agreement with such a statement except as noted previously. In order however, to reduce the effects of some recreational uses on land use pollution sources such as sedimentation resulting from improper use of all terrain vehicles, improper vegetation of ski slopes, and improper methods of cut and fill operations, it was suggested by our panel that an overall education program in basic ecology, conservation, and land use methods should be established in elementary schools as an integral part of a social science or geography program.

D. LAKESHORE AND STREAMBANK EROSION

Sediments deposited into our lakes and streams are the main cause of pollution from this source.

Reforestation of streambanks is very important in helping to control this type of erosion. In the past, even without many trees along a stream, there were usually elms scattered along its course and, with their large root systems, they helped to hold the bank in place. It is very important, in the long run, to grow trees to take the place of elms.

All streambanks should be protected with the appropriate vegetation. In farming operations, a buffer zone of approximately ten to twenty feet should not be ploughed along our streams and rivers to prevent soil from being carried away with the runoff.

Rip-rap bank protection is a very important method of shoreline and streambank protection in places where the waves or current are cutting into the banks. Gabian baskets and precast concrete blocks are also useful for special cases.

Proper planning should be done for any buildings being erected along any waterway so as to minimize the resulting erosion from the excavations. Even at a distance from the waterways, removal of the top soil and its replacement after construction will help a great deal in reducing erosion.

Chemical soil stabilizers can be used in special cases as temporary measures to retard erosion. Seeding bare areas and then protecting them with either organic mulch, netting, matting, or a combination of these can effectively take care of some problem areas.

Grassed outlets provide an erosion resistant at places of higher velocity flow such as drainage pipes emptying into streams. Culvert outlets should be protected with a plunge pool, gabion baskets, or rock to give protection against the velocity of the discharge water.

Grass-lined channels are excellent for prevention of erosion of small streams, but it is important to have the proper types of grasses.

Check dams help to stabilize streambanks and control their erosion. In spite of all the damage done by beavers in recent years, beaver dams, can significantly help to stabilize the stream flow.

In some places, temporary or permanent diversion channels are important to divert the water to places where it can be disposed of with less erosion. Jetties and deflectors are also used to accomplish this.

Comments

Priorities should be selected from the recommendations.

Answer: Recommendations in first, second and third paragraphs, in that order should get priority.
The public should be made aware of where help can be obtained to carry out any of the recommendations.

Answer: Conservation Authorities have personnel that will give assistance on these various points. The Authorities try to publicize this with exhibits at public gatherings such as Fairs, Ploughing Matches, etc. and by speaking at Clubs, Schools and other such meetings.

E. AGRICULTURE

Possible areas of pollution from agriculture are derived from pesticides, nutrients, chemicals, and sediments.

1. Pesticides

The pesticide industry has had invoked upon it very stringent controls. Research in agricultural use of pesticides is advancing and reduced amounts are being applied.

Fungicides have a very high LD_{50} rating and therefore are of little consequence.

Insecticides are being used in reduced amounts and any persistent organchlorine insecticides, such as DDT are no longer used. The present insecticides have not been detected in the Great Lakes, therefore no action is necessary.

Herbicides, are used to a large extent in Southern Ontario and atrazine, in a very small amount was the only detectable herbicide, which through degradation and dilution is not detrimental to the water quality of the Great Lakes.

Remedial Action

Continue an education process whereby farmers are made aware of the safe use of pesticides.

Governments should make more money available for research into biological control of insects.

NO regulations or restrictions need be imposed on the agricultural community at this time.

2. Nutrients

Nutrients added to farmland consist of Nitrogen, Phosphorus and Potash and are deposited there either from chemical fertilizers or from animal wastes primarily.

Nitrogen and Potash appear to be of little concern.

Phosphorus is a vital element in balancing the soil requirements. It is also the most costly in an NPK mix to purchase. Therefore, farmers are applying the best cultural practises they know to ensure that this element stays on their farm.

Remedial Action

Educate the farmer as to the best utilization of the fertilizers and as to the cultural practises that best retain these nutrients.

Continue the free soil test and expand it to include leaf analysis of fruit trees (which is the only effective means for these crops).

Fertilizer companies should be required to provide a wider range of fertilizers that contain little or no phosphorus. (At present such fertilizers can only be purchased on a large volume order).

Phosphorus content of animal wastes is one area in agriculture which contributes to the pollution of the Great Lakes.

Farm buildings like towns, villages and cities were originally located near a river or stream for their source of water. Consequently, all contribute to the pollution of that watercourse. It would not be practical to require any to relocate but all should make an effort to reduce their pollution.

Pasturing cattle that may defecate in streams is of little concern considering that only one-third of the farmers that have cattle allow free access to a stream, and for only half of the year. Also that the time required for an animal to consume its daily requirements of five gallons of water is not very long.

Remedial Action

Manure and sewage sludge should not be spread on hillsides or near watercourses during the late fall, winter or early spring.

New buildings of husbandry should be situated such that the resulting seepage will have minimal impact on the water quality of a nearby watercourse. This should be included in the building permit. If this is not possible then a suitable means of retaining this seepage should be installed.

Educate the farmer through all avenues of communication as to means of curbing water pollution and as a responsible citizen be will make an effort to do so.

Financial incentives should be made available through governments to farmers to assist them in cleaning up their present situation if a sufficient level of pollutant is present. These incentives should be separate from the present Capital Grants Program.

The authority to administer any policies should be the Ministry of Agriculture and Food.

3. Chemicals

Chemicals which include heavy metals, PCB's Sodium Chloride and others are present in agriculture without any endorsement of the farmer. Farmers do not want these chemicals on their land because they can often lead to crop losses or injury to the soil.

Remedial Action

Fertilizers should be checked at plants to ensure that they contain low levels of metals.

Municipalities and/or industries should be required to remove heavy metals and other hazardous chemicals from sewage sludge before it is applied to agricultural land. Also, recommendations for its application should be included in the Agricultural Code of Practice.

The Ministry of Transport and Communications should be supported in its program to reduce the application of salt on highways.

Atmospheric pollution should be reduced and further studies should be conducted as to their polluting impact on the Great Lakes watershed area.

4. Sediments

Sediments are low on a priority scale in agriculture.

Farmers employ the best cultural practices they know to retain the top six inches of soil on their farm. Their livelihood depends upon it.

Wind erosion usually just transfers soil from one farm to another. Erosion through acts of nature such as heavy rains are beyond anyone's control and often cause the most damage.

Remedial Actions

That research stations be funded to continue and expand research in low tillage practices.

That more documented information be available to farmers on ways to curb erosion.

Recommend that farmers not cultivate their land within ten feet of a stream or municipal drain.

That the Ministry of Transportation and Communications plant trees in wind swept areas to reduce the impact of wind erosion.

In conclusion, farmer very responsible people and usually the first to act in a crisis, therefore, given the leadership and incentives by the government they would be among the first to assist in preventing pollution.

We do not believe that regulations in our over-regulated society is the correct route. Try the other avenues first and if these fail then regulate but only in the areas of the greatest pollution. OMAF should be the authority and the MOE where OMAF cannot function.

F. DEEPWELL DISPOSAL

The whole area of deepwell disposal, by its nature, is a very specialized area and one which involves a realm of mystery to most people. Consequently, no person on our panel was knowledgeable enough to contribute detailed input.

We understand that in the St. Clair Lake area pollution from deepwells has entered the Lake. and although PLUARG does not give this a high priority area it is of concern. Our society and products of it are ever changing and more toxic chemicals are created as by-products which must be disposed of in some manner.

We would like to question the whole areas of pumping, under pressure, a toxic chemical down a

hole which is in excess of 1,000 feet. Basic physics shows us that it will find a point of least resistance, whether it be a shift or crack in rock formation, a nearby gas well, or underground stream.

The ministry of the Environment and Environment Canada should be held responsible for this area of disposal.

Research should be initiated as to other means of disposal. In the meantime other means should be invoked.

The deepwell proposed in Lampton County should be abandoned if possible and if not we would suggest that this be the last well for the disposing of hazardous chemicals.

G. POLLUTION FROM FORESTS

Sediments due to erosion are the chief cause of pollution to the Great Lakes from our forest.

Road construction through our forested areas to provide transportation of material being extracted from the forest, as well as for public transportation, should be planned so that resulting erosion will be kept at a minimum.

As soon as possible after the construction of these roads, when the erosion will be the greatest, grasses, mulches, or other suitable stabilizers should be applied to hold the soil in place. Hydra seeding could be one way of getting some of these difficult grades or other badly eroded slopes revegetated. It should always be kept in mind to use the best type of plants for each particular soil type.

In earlier years when horses were used for skidding in our forests, the forest floor was not disturbed very much with very little resulting erosion. Now the large diesel driven skidders tear up the soil, knock over and crush the smaller trees and vegetation allowing much more sediment to be carried with the runoff. Equipment should be developed that would log our forested areas with more sensitivity to the remaining forest and thus achieve log removal with less impact on the remaining forest and with less resulting erosion.

After logging operations for the removal of the forest products, proper steps should be taken to have the areas covered with forest again, either by artificial or natural reforestation.

Eventually most open areas will become covered with trees but on open areas near streams, application of a mulch will help to prevent erosion until the trees get started. In very critical areas, netting can also be used until the vegetation takes over.

With streams running down steep slopes, the surface water, when in excess, can be diverted by the construction of ditches to spread the water and cut down its loading of sediments. Terraces have also been suggested to remedy this and they could be used in very critical cases.

Pesticides have not been used to a great extent in the forested areas of Ontario draining into the Great Lakes. Up to the present, Christmas tree growers have been the principal users of pesticides but the increase in numbers of the Spruce Budworm and the Forest Tree Tent Caterpillars may require some spraying in the near future with some of the pesticide eventually finding its way into the Lakes. To prevent this, alternatives to chemical pesticides such as insect sterilization, insect toxins, and insect attractants should be used when practicable. The resulting defoliation of trees by these insects, especially the tent caterpillar, will be followed by greater erosion in many areas.

Up to the present, fertilizers have only been used in an experimental way in our forests so the pollution from this source is negligible. However, all foresters would like to make our trees grow more rapidly so chemical pollution from this source might become a greater factor in the future.

Grazing in our forested areas should be kept to a minimum as the removal of the forest floor vegetation will allow more of the soil to be eroded and carried off with the runoff into our streams and eventually into the lakes.

Comments

The method of clear-cutting trees from large areas of our forests was brought up and it was pointed out that it depends on the timber type as to what is the best method of harvesting the crop. Some types require clear-cutting to get the best method of harvesting the crop. Some types require clear-cutting to get the best regeneration but consideration should always be given to leaving trees in special locations where badly-eroded slopes could develop.

Tree-cutting by-Laws were mentioned with the suggestion that they should be uniform in the different counties. Here it was pointed out that, while our diameter by-laws have helped to save many small trees from being cut, this is not the best forestry practice in most cases as is evidenced by the way the Ministry of Natural Resources personnel mark trees for sale in private woodlots. Here the average diameter of trees marked for removal is very often below the minimum diameter as defined in the County by-law.

Cutting the more valuable species of Pine and Spruce and leaving the Poplars and Birch was also mentioned. This is often due to the economics of the operation when there is no market for the wood of the less desirable species. In some of these cases, it might be best to leave the whole stand until such times as these other species could also be used even if it is not in the immediate future.

H. SEPTIC SYSTEMS

All septic systems, (old and new) must be subject to periodic inspection and the remedy must be obligatory.

The Ontario Ministry of the Environment survey is a joke, by reason of its pacing, it will take fifty years to complete. It doesn't take fifty years for a system to falter.

This program needs more budget and better teeth. It should include corrective action.

The total cost of improvements or of replacement should be declared tax deductible from Provincial Income Tax, or included in the Ontario government tax rebate scheme.

Standards should provide for new municipal sewage systems where the soils, population density and other such factors dictate it as preferable environmentally (i.e. Sauble Beach, Lake Simcoe cottage concentrations, Bala, Wasaga Beach, Long Point and other probable localities).

Priority in the Ministry's Program should be given to concentrations on the periphery of watercourses and lakes.

I. EXTRACTIVE AREAS

Introduction

Comments contained within this brief related to Extractive Industrial Operations within the Great Lakes Water Basin are viewed only in one vein of interest indicated in the PLUARG summary paper. This interest relates to Aggregate Reserves (sand, gravel, etc.) and the sedimentation resulting from such land disturbing activity as opposed to the other four areas detailed by PLUARG inclusive of acid and iron rich mine drainage from coal mines; contaminated drainage from base metal mining operations; brines requiring disposal from oil, gas and salt mines; and radioactive compounds in drainage from uranium mining areas.

Setting

PLUARG reports that the production of industrial minerals in direct support of the construction industry in the form of lime, sand, gravel, and crushed stone is presently evaluated at 13 metric tonnes/year and is expected to quadruple by the year 2020. Generally, in the Province of Ontario there would appear to be no shortage of crushed stone or of sand but, research to date indicates that a severe shortage of high quality gravel demanded by the construction industry will occur within the next twenty five year period unless areas which are thought to contain such reserves are somehow preserved and protected for such use as opposed to other use.

At the present time, detailed information concerning the extent and location of such deposits is not available. However, indications at present point to Grey County as a major supplier of Aggregate in the future.

PLUARG Notation

PLUARG notes that problems associated with the extraction and production of the industrial minerals are not serious. Their studies have noted that although the effluent from washing operations may contain sand or silt, it is seldom burdened with clay. Thus, the effluent can be readily cleared of its suspended materials through the use of settling ponds. This is a common practice as it allows the re-use of water in the production cycle. Analyses of pump down discharge

indicate that suspended sediments and solids are generally in an acceptable range. Environmental impacts are associated more often with the aesthetic considerations of site reclamation and noise and airborne dust problems at the local level.

Comment

A recent report to the government of the Province of Ontario by the Mineral Aggregate Working Party hinted at the possibility of the government tinkering with the market system of supply of aggregates in order to push aggregate extraction areas away from the Toronto-Hamilton conurbation and into the areas of quality reserves which are less likely to create an urban nuisance in their operation amongst other reasons. Should such a system of control be implemented, the following concerns are noted:

The area of supply may become more concentrated.

The demand on such supply would appear to be dramatically increasing (quadrupling).

The environmental concern would certainly be a local concern but would be controlled by the Province.

The area potentially affected in Grey County is served entirely by one watershed being the Saugeen Valley basin which, of course empties into Lake Huron. Unless adequate drainage controls are implemented, the fisheries in this system may be adversely affected.

Details of Legislation

PLUARG notes the following:

The MOE has the principal responsibility for controlling water pollution from mining, pits and quarries, and related activities. However, administrative and statutory responsibility for control of some aspects of these activities with water pollution implications, such as rehabilitation, is vested in the MNR. There are problems along the dividing line between the two Ministries - including overlaps, gaps covered by neither of them and areas where the MOE is responsible for the ends, but the MNR controls the means.

Under the Mining Act the MNR has the authority to require that a bond or security deposit be posted by the mining operator in an amount necessary to complete rehabilitation. However, security deposits for rehabilitation of mine tailings areas have rarely been required by the MNR.

Abandoned mines are regarded as the principal environmental problem in the mining industry. There are approximately 30,000 such mines in Ontario, though no more than 30 to 50 are regarded as contributing to significant environmental degradation. A multi-million dollar program has been initiated by the Provincial government to identify and clean up abandoned mine tailings.

The MOE is also attempting to ensure that future mine operations observe its guidelines for the post abandonment control of contaminants. However, post abandonment control techniques (i.e. revegetation) can only be required through the Mining Act.

The principal Provincial statute in relation to pits and quarries control and rehabilitation, administered by the MNR, does not apply to large numbers of such operations in the northern, southwestern and eastern portions of the province.

Rehabilitation of pit and quarry sites, under the Pits and Quarries Control Act, has been found to be inadequate according to a provincial working party report. Gaps in the legislation and its enforcement respecting rehabilitation, have been compounded by insufficient staff resources.

In addition to the preceding PLUARG comments it is the recommendation that the following also be noted:

> The Pits and Quarries Control Act does not directly address water quality issues. Although information is requested upon application for the drainage provisions of the proposal, no specific request relating to effluent quality of such possible drainage is required.
>
> The Aggregate Working Party did not appear to address itself to the problem of watershed pollution resulting from aggregate operations.
>
> Recommendation
>
> Control of all facets of the establishment and operation of a pit or quarry should be mandatory at the local, county or regional level and such control should be cognizant of effluent or other nuisance factors which may have effect beyond the site itself. Such control should be based upon minimum provincial guidelines as set out in new regulation.
>
> Other

Remedial measures outlined in the PLUARG report entitled "Evaluation of Remedial Measures to Control Non-Point Sources of Water Pollution in the Great Lakes" are generally acceptable with respect to aggregate development if one realizes that the main control of water sedimentation pollution is the settling pond or variation thereof. Other measures outlined in the report would generally not be required if the legislative procedure for approval of new pits was improved.

It should be noted that progressive rehabilitation of Pits and Quarries is generally essential as compared to a one shot operation or the temporary rehabilitation of a working face.

J. COMMENTS ON THE SHORELINE LANDFILLING REPORT

The PLUARG paper on landfilling indicates that the incidents of this type of work are scarce along the Canadian side of the Great Lakes. Upon checking with the Ministry of Natural Resources personnel, they confirm that there is very little landfilling in the Grey Bruce area. They gave general figures of approximately "three or four areas in the last few years". Shoreline landfilling is controlled through the requirements of the Public Lands Act whereby anyone wishing to do this type of work must take out a permit with the Ministry of Natural Resources. The applicant must indicate the extent of the landfilling and how he proposes to undertake the work and the Ministry examines it to see if it is going to have a detrimental effect on the ecology of the area. Marine life specialists examine specific problems relating to sedimentation effects on the marine environment. In most cases toney material is used to reduce sedimentation and if fine grain material is used for fill, then the Ministry will require that a coffer dam must be constructed at the outer limits of the landfill prior to any infilling.

It appears evident from the foregoing that even with the minor incidents of landfilling, controls imposed by the Ministry of Natural Resources ensure proper engineering.

In the area of swamp land preservation it is common practise now to preserve such areas both for the abundance of plant and wildlife habitat preservation and to preserve the strainer-like action that river mouth swamps provide.

With these comments in mind we find no disagreement with the findings of the Pollution from Land Use Activities Reference Group concerning shoreline landfilling.

K. PUBLIC PRESENTATIONS - A SUMMARY

A resumé of briefs heard by the panel and presented by various organizations and interested individuals.

1. PRESENTATION

By Harold Davidson on behalf of the Dufferin County Federation of Agriculture. He emphasized the need for economic incentives to encourage delinquent farmers to reduce pollution.

2. PRESENTATION

By Ms. Beverley Brown, a farmer. She mentioned that more research is needed into sludge. If sludge proves safe its stigma should be removed and the material utilized.

3. PRESENTATION

By Merle Gunby on behalf of the Huron County Federation of Agriculture. The following are some quotations from this brief:

"Research should be carried out immediately to find feasible ways to minimize soil erosion and pollution of our foodlands. Farmers seem to find themselves in a perennial cost/price squeeze. Any proposed solutions must not make the business of agriculture less viable. Any proposals that require major cost of production increases or large capital expenditures on the part of farmers must be supported by the public sector, so farmers will not be placed in a financially crippling situation. It should be kept in mind that all of society will benefit from an improved environment and a viable agriculture.

Huron County Federation of Agriculture would like to suggest several areas it feels should be considered as steps in reducing soil erosion and other diffuse pollution resulting in nutrient loss from our farms, and contamination of both foodlands and the Great Lakes.

One government ministry or department should be designated to be responsible for all soil erosion problems. We believe that the Ministry of Agriculture and Food would be the most logical choice.

Universities and colleges should introduce comprehensive courses in soil erosion and conservation.

It seems to us that disposing of sewage by dispersing it into our lakes is a short sighted wasteful practice. We urge that a major research project be instituted, with its goal being to reclaim and purify sewage for use as fertilizer. We recognize that at present much sewage effluent quite often contains many heavy metals and other toxins that must be removed.

Research is needed to develop new crops and cropping practises suitable for Ontario growing conditions. For example - chisel plowing or contour plowing - are they practical? Will they work under Ontario conditions? For example - protein derived from legumes more legume cover would help hold the soil in place; but can it be made to be economical?

Forest cover and swamplands should be retained or replanted by:

- eliminating property tax on this type of area
- discourage clearing of such areas
- prohibit residential and other building and development from encroaching on these areas

Regulation governing farming must be reasonable and non-conflicting i.e. one department quite often orders one course of action, another department orders the opposite.

We would prefer to see that any new ideas be introduced with a minimum of regulations and a maximum use of public education and extension programs. We have found that excessive regulations result in costly and annoying bureaucratic red tape.

We in agriculture, are eager to find ways to lessen any pollution from our operations, we recognize that it will not be a simple task; we ask your Panel to help point the way."

4. PRESENTATION

By Les Tervit on behalf of the Saugeen Valley Conservation Authority. He described the objectives and concerns of the Authority and had these three recommendations:

It is recommended that conservation authorities continue to be recognized as agencies involved in the control of erosion problems encountered in their respective watersheds.

It is recommended that proper land use practices, such as contour cultivation and suitable setbacks for cultivation practices adjacent to watercourses, be investigated for implementation.

It is recommended that suitable bulk waste handling facilities continue to be emphasized in the agricultural community.

5. PRESENTATION

By Martin Parker on behalf of the Saugeen Field Naturalists. He urged that our panel take a positive stand and demand from the Governments of the Great Basin that any major development plan contain a major statement on the effects the development will have on water quality and how this impact will be reduced or eliminated. He also expressed concern about the disposal of sludge from sewage plants, the inadequate investigation and treatment of cottage sewage, and the flood of new, potentially toxic, chemicals as expressed in this quotation:

"The last area of concern that we are going to address is the problem of the toxins within our water system. The chemicals that come to immediate attention are DDT, PCB, Mirex and Mercury. Are you aware that these are the only chemicals that have been sampled for in the fishes of the Great Lakes? There are hosts of other compounds that have not been tested for yet. It has been stated that 300 to 500 new compounds come on the market annually and it is obvious that some of these have the potential for being environmental toxins. The potential impact of toxins is tremendous. Efforts have to be taken to reduce the rate at which these substances are entering the environment. We will have to do more testing to determine their effects both by themselves and in combination with other substances. If no action occurs in this area then the potential exists to kill a substantial proportion of our aquatic life."

6. PRESENTATION

By Harvey Davis on behalf of the Bruce County Cattleman's Association. He stated that the Government should give grants for the building of runoff facilities.

4. PANEL CHAIRMAN'S CONCLUDING REMARKS

Since the terms of reference to the panels included a charge to state priorities for a program of pollution abatement in the Great Lakes, we wish here to emphatically declare that the financial resources available will be best spent initially in curtailing point source pollution where it is on a grievous scale, before we dissipate the resources of government, industry and individuals to eliminate what is a trickle of pollution relative to the damage to the lakes by both private and public culprits. It interests us that although PLUARG has invited public participation, we have not heard of citizen participation in the process of preparing a report for the Commission of point sources.

5. EDITORIAL COMMITTEE CHAIRMAN'S SUMMARY

PLUARG panel meetings are a valuable educational experience both from the literature supplied and from the intelligent discussions. The suggested cures and ideas were as diversified as the panelists, so seldom was their unanimous agreement.

Generally the panel did reflect considerable anxiety for the future. They were definite about controlling more deterioration. There was unanimous revulsion of our inadequate septic tanks. Generally, there was a feeling of "what can we do here and now at the local level by education and action", rather than await the heavy hand of new restrictive legislation by higher government bureaucracies.

The Owen Sound group contained panelists with considerable expertise on just about every subject. The reports on these subjects have been presented with minimal editorial change.

Respectfully submitted by the Editorial Committee:

Mr. Stephen Shivas
Mr. Robert Taylor
Mr. Lorne Creighton

CANADIAN PUBLIC PARTICIPATION PANEL MEMBERS

Mr. Bill Petter Lion's
Head, Ontario

Mr. Douglas Hubbell
Owen Sound, Ontario

Mr. Roger Cunningham
Mar, Ontario

Mr. Robert Taylor
Clarksburg, Ontario

Mr. Lorne Creighton
Owen Sound, Ontario

Mr. Stephen Shivas
Barrie, Ontario

Mr. Edward Murray
Collingwood, Ontario

Mr. Robert M. Campbell
Owen Sound, Ontario

Mr. Robert List
Owen Sound, Ontario

Mr. Howard Krug
Chesley, Ontario

Mr. John Bryce
Paisley, Ontario

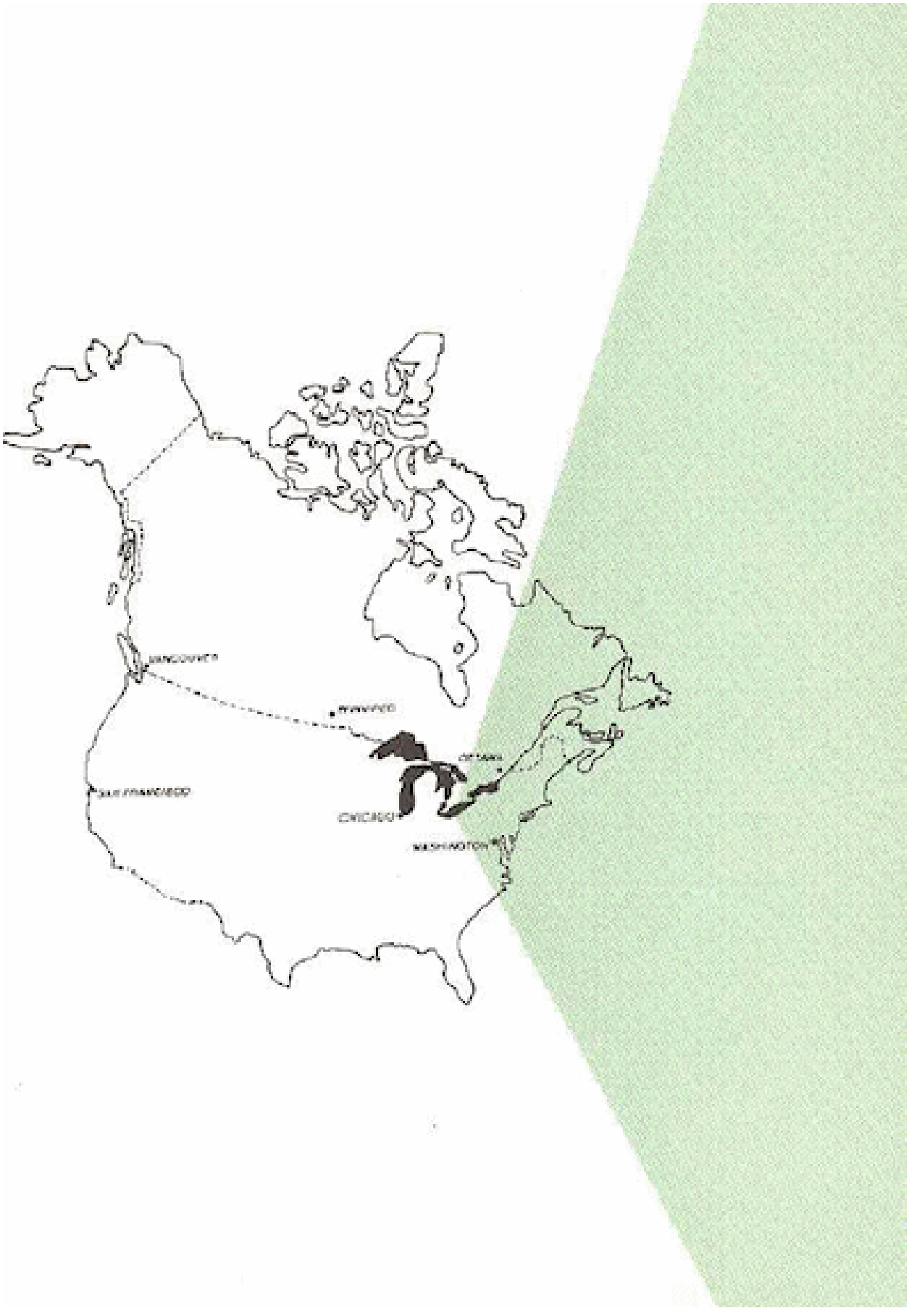
Ms. Sylvie Cioran
Annan, Ontario

Mr. Barry Hemphill
Owen Sound, Ontario

Mr. Edward C.J. Moric
Hanover, Ontario

Mr. Warren C. Lougheed
Owen Sound, Ontario

Chief Franklin Solomon
Wiarton, Ontario


VANCOUVER
CHICAGO

REPORT OF THE TORONTO PANEL

JANUARY 1978

1. ROLE AND FUNCTION OF THE PANEL.

Public consultation in the form of representative panels is a new experience for IJC, and a new experience as well for most of the panelists. Thus, one of the first actions of the Toronto panel was to question our intended role and how our recommendations would be incorporated into the overall process. After some discussion, it became evident that the role of the panel could not, and should not, be to provide detailed technical recommendations on remedial measures. We have neither the time nor expertise for that, and in any case, this function properly rests with PLUARG staff. We also readily concluded that there was relatively little value in public consultation if we were just to repeat back the findings of the issue papers.

However, as a group of informed citizens representing many of the segments of society influencing Great Lakes water quality, we do see a legitimate role for this panel in applying our values and perceptions to the problems identified and possible solutions suggested. This values application can perhaps be best illustrated by a series of questions which seem to underlie much of the panel discussions:

> Do the problems being identified fit with our experiences?
>
> Do we believe these problems are really significant enough to be worth worrying about?
>
> If they are, how far should the government or other involved groups be going to resolve these problems?
>
> What trade-offs are we as individuals willing to make (in terms of economics, lifestyle, etc.) to see the problems resolved?
>
> Do some directions appear more desirable to us than others to resolve the problems (regulatory vs incentive, etc.)?

While these questions are not answered explicitly in this report, they do provide a general framework within which recommendations can be viewed. While a specific recommendation usually denotes an action the panel feels necessary, it can also often be viewed as an indicator of the general direction and extent of remedial measures we feel justified and acceptable in that area.

The Toronto panel met formally on three occasions (October 19, 1977, November 14, 1977, December 7, 1977). As well, small groups and individuals from the panel took considerable additional time to discuss issues and formulate verbal or written responses. The panel also was presented with three briefs from the Lakefront Owners Association, Ontario Saling Association, and Great Lakes Citizen Action Centre.

While this report summarizes the major concerns and recommendations of the Toronto panel, it cannot include all of the viewpoints raised, nor all the concerns expressed of a more local nature. In some cases, recommendations were made without access to final reports of the investigations involved. All recommendations, therefore, must be contingent on the validity of the data provided us, and we reserve final judgement until this data is confirmed.

At the outset of the panel discussions, three issues were recognized which have a major bearing on our approach to the problem.

Firstly, the complexity and sophistication of the socio-politico-economic and physical environments renders it impossible to propose solutions to problems in one sector of either environment without affecting the operation or behaviour of other sectors of either or both environments. The old adage that the alleviation of an air pollution problem creates a water pollution problem which in turn creates a land pollution problem and so on *ad infinitum* is amplified in this broader context. Thus, today's problems are multi-dimensional and simple solutions (particularly those directed to problem symptoms) should be regarded with suspicion for these solutions will generally ignore the inter-actions amongst the problem area and other areas of the environments. This issue is especially magnified by the consideration of a topic as broad as land use - the base of essentially all of man's activities. Any attempt to forward solutions to land use based problems of water quality must, in some way, simultaneously address the question of the impact of these solutions on other aspects of land use.

The second issue is an issue of problems themselves and a recognition that there will always be more problems than resources (human, monetary, and physical) to solve these problems. It is therefore important to establish priorities in solving problems. This necessitates not only an ordering of different problems (i.e., eutrophication vs. chemical toxicity vs. radioactive toxicity, etc.), but also an ordering of different causes of the same problem (i.e., sources of eutrophication such as nutrients from treated sanitary sewage, stormwater overflows, non-sewered urban runoff, cropland runoff, feedlot and barnlot runoff, and industrial sources). A long list of problems without an ordering of priorities is not very useful. It presents the problem solver with a Don Quixotean role and the usual outcome. Prerequisite to an ordering of priorities is a statement of objectives. The objectives may be production (economic), health, aesthetics, recreation, conservation, etc. The ordering of priorities for solving problems will never be clear if objectives and values are not clearly stated.

The third issue is one of alternative solutions - there is rarely just one way to solve a problem. Generally, a full spectrum of alternative solutions exists for "solving" problems, although alternatives are seldom equal and problems are seldom truly solved. The alternatives may be of an institutional, legal, management or engineering nature or they may be more fundamentally associated with human behaviour through changes in life-style, attitude or habit. Alternatives must be evaluated according to their cost, effectiveness or performance, and implementability. This evaluation may demonstrate certain objectives to be unattainable or impractical to achieve and therefore cause a re-evaluation of objectives.

This exercise demonstrates that not only is the environment in which the problem exists interactive, but also is the process or methodology by which the problem is solved interactive. In summary, recognition is necessary of (1) the interactive environments with interacting elements in which the problem residues, (2) the multiplicity of problems demanding statements of objectives, values, and priorities of problems, and (3) a wide spectrum of alternatives available to solve problems.

2. MAJOR OBJECTIVES FOR GREAT LAKES WATER QUALITY

As a result of our discussions, the Toronto panel has identified major objectives which we feel are most important in considering remedial measures:

A first priority should be to upgrade degraded waters in the Great Lakes, especially those which pose a public health hazard now, or will if present trends continue.

A second priority should be to maintain areas presently identified as having high water quality for public water supply, recreation and fish and wildlife habitat.

In all areas of the Great Lakes, preventative or remedial measures should be aimed at protecting the following values:

Human health. This includes aspects of water quality associated with both acute and chronic effects of toxins and pathogens, carcinogens, teratogens and mutagens.

Aesthetics and preservation of the integrity of aquatic and shoreland ecosystems against instability and failure. This includes eutrophication, alteration of chemical balances, toxicity to flora and fauna, sediments, sedimentation and alteration of benthic communities.

Factors affecting production in which water is an input. This includes production in the municipal (non-drinking), industrial, and agricultural sectors. Examples of water quality factors are the dissolved oxygen content and pH of industrial cooling waters, salinity of irrigation waters, etc.

3. IDENTIFICATION OF MOST SIGNIFICANT NON-POINT CONTRIBUTORS

The identification of the most significant non-point contributors was carried out by three subcommittees of the panel dealing primarily with urban, agricultural, and recreational sources. While a slightly different methodology was used in each case to identify priority problems, the results of each subcommittee were subsequently discussed by the entire panel and agreed upon. Three areas were identified as being of particular concern - urban storm runoff, agricultural land uses, and waste disposal.

A. URBAN STORM RUNOFF

The Urban Sources Sub-Committee (USS) provided a very complete analysis of urban contributions through a matrix based on the water quality objectives previously outlined. A brief summary of this rationale follows.

Water Quality Parameters

The major priority areas of (A) health, (B) aesthetics and conservation, and (C) production are particularly affected by certain water quality parameters. The water quality parameters considered are:

Trace inorganics (asbestos, etc.)	A
Trace organics (halo-organics, etc.)	A
Heavy metals (Ca, Hg, Pb, etc.)	A
Pathogens (bacteria, viruses, protozoans)	A
Radioactivity	A
Nutrients (P, N, etc.)	B
Oxygen demanding materials	B, C
Sediments and suspended solids	B, C
Salts	C

The adjoining letters indicate the areas of concern primarily associated with the various water quality parameters.

Land-Use Activities

The above water quality characteristics are affected by a variety of land use activities. The USS considered six groups of these land use activities. They are:

Urban Runoff	-	sewered (stormwater overflows) and non-sewered (runoff from construction sites, etc.) sources of urban runoff
Transportation	-	construction (roads, airports, pipelines, hydro rights-of-way)
	-	maintenance (roads, airports, pipelines, hydro rights-of-way)
Liquid, Solid and Deepwell Waste Disposal	-	residential solid wastes
	-	sewage sludge
	-	septic tank effluents
	-	liquid industrial wastes
	-	solid industrial wastes
Shoreline Landfilling		
Lakeshore and River Bank Erosion		
Dredgings Disposal		

Impact of Land-Use Activities on Water Quality Parameters

Since various land use activities impact on various water quality parameters, the USS developed a matrix with land use activities on column and water quality parameters on row. The numerical entries in the matrix on the following page indicate the relative impact of all considered land use activities on individual water quality parameters where 1 is the greatest impact and 2 is the secondary impact. No attempt was made to rank impact beyond the secondary effect. Check marks indicate either significant or potential impacts.

The water quality parameters are ordered in terms of importance from left to right (as affecting water uses A through C). An inspection of the matrix indicates that the land uses with the greatest impact are storm sewer overflows, road runoff, liquid industrial wastes, land- disposed sewage sludge, and land and water-disposed radioactive wastes.

B. AGRICULTURAL LAND USES

Agriculture is recognized by the panel as a major non-point contributor of nutrients, particularly phosphorous. Two factors are considered significant in the agricultural contribution:

The increasing intensity of general farm practices contributes phosphorus through sediment transport. Phosphorus applied on the farm is bound very quickly to clay particles, and its movement is closely linked to movement of the soil. This would suggest that sediment-producing activities such as continuous row cropping and cultivating close to streams can increase the magnitude of the problem. While acknowledging that over-use of phosphorus fertilizer does occasionally occur, this panel was unwilling to accept the stated figure of 1.6 times more fertilizer phosphorus than necessary being applied on average as accurate. The panelists' experience would suggest that this figure is too high, and that in any case, the high cost of fertilizer is reducing its over-use. The panel also points out that fertilization can result in faster establishment of plant cover, thereby reducing soil movement.

The direct contribution of nutrients to streams from livestock manure is primarily a problem from feedlot locations with manure storage close to streams. These feedlots are in reality small point sources of pollution, and should be dealt with on a site-specific basis. The effects of spreading manure on fields during the winter months were discussed, but the panel felt that present evidence was too inconclusive to consider this a serious problem.

Both of the above factors are likely to increase with changes in land use intensity in the future. The urbanizing influence, which at present is taking out of production the highest capability classes of land, is forcing farming activities onto less suitable farmland often with higher potential for sediment production.

WATER QUALITY OBJECTIVES

Dredging and Dredgings Disposal	Lakeshore and River Bank Erosion	Shoreline Landfilling	Liquid, Solid and Deepwell Waste Disposal					Transportation Maintenance					Urban Runoff			
			Solid Ind. Waste	Liq. Ind. Waste	Septic Tank Eff.	Sewage Sludge	Res. Solid Waste	Hydro Rights-of-way	Pipelines	Airports	Roads	Construction	Nonsewered (construction runoff, etc)	Sewered		
												[1]		[1]	Trace Inorganics (asbestos, etc)	A
potentially (pest., PCB's)				[1] V			PCB's V V	[2] V	[2] V	[2] V		[2] V		[2] V	Trace Organics	A
V				[1] V			minor V					Pb [2] Zn minor Ca orchards	construction on orchard lands	[2] V	Heavy Metals	A
					[2]	[2]								[1]	Pathogens	A
			[1 1] V V												Radioactivity	A
V	minor	minor			V	V	V			nitrogen deicing chemicals (urea)		minor	minor	[1] V	Nutrients	B
V														[1]	Oxygen Demanding Materials	B,C
V	[1] V	V					V					[1] unpaved rural road V	[1] V	[1] V	Sediments and Susp. Solids	B,C
				potential			some			urea V		[1]		[1] V	Salts	C

C. WASTE DISPOSAL

While contained in several issue papers, the general areas of waste disposal appeared to encompass a number of significant concerns. Since wastes are usually collected together for disposal and often concentrated for easier handling, the disposal methods often present potential sources of pollutants of significant magnitude. The following wastes were identified of particular note:

Sewage sludge presents problems, especially with regard to heavy metal contamination and the long-term effects of those pollutants on agricultural land used for sludge disposal. As well, the disposal of sewage sludge does not appear to be well controlled with the fate of significant amounts unaccounted for. If treated irresponsibly, sewage sludge could contribute to nutrient overloading of particular streams and ultimately of the lakes.

The methods of disposal for industrial wastes were viewed with skepticism amongst the panelists. While deepwell disposal appears to have virtually stopped in Ontario, a number of panelists expressed reservations about the environmental safety of this technique. There was also concern about the spread of pollutants through burning of toxic wastes, particularly with reference to PCB's. And finally, there is concern about accidental spillage of liquid wastes during transport with resultant environmental problems.

Although radioactive wastes were not covered in the issue papers, the panel felt that they have the potential of becoming a significant non-point pollution problem in the near future because of their persistence and increasing volume. In this context, radioactive wastes include mine wastes such as those at Elliot Lake, processing wastes such as at Port Granby, and nuclear wastes such as those produced by Pickering Generating Station. Since these waste have proven harmful effects, and since at present their long-term safe management is unclear, the panel questions the wisdom of any developments which would produce large quantities of radioactive wastes.

4. IDENTIFICATION OF GENERAL CAUSAL PROBLEMS

Throughout the problem identification stage, a number of factors repeatedly arose as being general causes or common elements of many of the more specific concerns. We offer our observations on these general problems in the hope that they will be helpful in formulating appropriate remedial responses.

A. LACK OF KNOWLEDGE

In a large number of cases, a lack of knowledge about the water quality effects of activities, either by the public or by the regulatory agencies, appears to be permitting or compounding problems. In instances where the discovery of the significance of a pollutant or its sources is relatively recent, this ignorance is perhaps understandable. As well, many members of the public become confused by the myriad of pollutants present in the Great Lakes and can

hardly be expected to be conversant with them all.

Nonetheless, it would not appear that the agencies responsible have had any great measure of success in raising general public awareness of water quality problems. The Ontario Agricultural Practices Survey, for example, shows a generally low level of concern about water pollution problems associated with agriculture, and indicates that 72 percent of farmers think the government should be providing more information. On the other hand, several of them not knowingly pollute.

In many other areas as well, while the problems may have been identified by the experts, they are not yet recognized by the people. Until this knowledge is disseminated, very little can happen in remedial measures.

B. CONFUSION OF GOVERNMENT RESPONSIBILITY

A major contributing factor in most non-point pollution problems is the lack of clarity of responsibility amongst government agencies for assessing and remedying complex problems. This is especially evident when control of the pollution problem is closely linked with a major void in sound environmental management by backing away from regional planning.

In almost every non-point pollution problem from agricultural practices to urban storm water, the governmental responsibility is unclear, divided, duplicated or unacknowledged. The associated legislative base seems to be in much the same state. A major effort is required to restore some semblance of logic to controlling agencies.

C. INDIVIDUAL RESPONSIBILITY

Since non-point pollution sources tend to be so widely dispersed, a sense of individual responsibility would appear to be a major factor in its control. At present, this sense of responsibility appears very weak.

For example, several panelists felt that most of the owners of the 30 percent malfunctioning septic tanks knew they were polluting, but were unwilling to repair them until forced to. This kind of attitude will have to change if control of non-point pollutants is to be seriously considered.

Several factors probably contribute to the lack of individual responsibility Firstly, the pollution generated by any one individual is usually small, and secondly, the vastness of the Great Lakes. In some cases, the pollutants may not be readily visible. And if a landowner is aware of pollution problems, there is generally little or no incentive for him to clean up, either in the form of penalties or positive features such as public recognition.

D. UNWILLINGNESS TO MAKE TRADE-OFFS

In some cases, the problem is recognized and the solution is known, but the groups involved are unwilling to make whatever trade-offs are required to implement the solution. In most cases, the trade-offs are straight economic costs. For example, municipalities do not want to bear the cost of storing sewage sludge, harbour commissions do not want the costs of proper dredge disposal, and nobody wants the costs of treating urban storm water.

But in other instances, the trade-offs may be less well defined. A major trade-off in the reduction in salt use on highways, for example, is with public safety and convenience.

5. OBSERVATIONS AND RECOMMENDATIONS

A. URBAN STORMWATER RUNOFF AND STORM SEWER OVERFLOWS

A great deal of study has been directed to defining the problem of storm sewer overflows and to studying the performance of overflow control measures. It is time that a cost effectiveness evaluation of these alternatives (such as in- and off-system storage, real-time control, outfall treatment, etc.) be conducted. Such an evaluation should be quickly followed by action in adopting the preferable alternative (s) for combating the pollution effects of storm sewer overflows.

Many actions may be taken at source to alter the quality of urban runoff, and many of these actions are simply common sense. Nevertheless, they seem to require restatement. Such remedial actions include the control of road de-icing salts, the rate control of pesticides and herbicides in the urban environment, catch basin cleaning, control of land use patterns, influencing lifestyle traits such as litter control and dog owner "poop-scooping", etc.

Control of urban land use may be used to effect reductions in both the peak and the volume of water pollutant contributions to the Great Lakes. Such source controls include the use of infiltration fields in grassed urban areas, porous pavements on parking lots, roof top storage, parking lot storage, yard swales, etc. The panel recommends that a comprehensive set of design standards for urban runoff quantity source control be implemented in cities tributary to the Great Lakes.

B. AGRICULTURAL LAND USES

It is recognized that it is existing farms close to watercourses that must be encouraged to implement measures to reduce sediment and nutrient loadings - but capital costs of any measures must be borne by the whole community rather than by the specific people in close proximity to the stream, as all Ontario will benefit from any measures for improvement and cost to any one operation might well interfere with its viability.

Any increase in the pollution contribution from intensive livestock operations close to streams should be limited by:

putting onus of assuring no pollution on persons establishing a new livestock operation

revisions to Agricultural Code of Practice to include water quality

The clean-up of existing intense livestock operations and manure storage close to streams is important, but will be difficult. This is one area in which the panel feels some form of public expenditure as incentives is justified. If these incentives are coupled with restrictions on operation or expansion of the feedlots, care should be taken to ensure that the restrictions are specific enough to affect only problem operations, and not the entire industry.

Workable conservation practices to reduce sediment inputs to water- courses, including such techniques as strip cropping, grassed waterways, and crop rotations have been well known for many years. While their use on a much more widespread basis is highly desirable, any controls on individual farm practices is a highly sensitive issue, and could provoke substantial farmer backlash. As a result, the panel recommends that the emphasis in this area should be placed on incentives, suggestions, and capital outlay rather than laws, regulations or controls. Since only a few areas within a watershed may be producing a major share of the sediment load, it is recommended that the incentives be highly specific to these problem areas.

A major education program, preferably sponsored by the Ontario Ministry of Agriculture and Food, is needed to inform farmers:

that they are polluting, and how

that this pollution often is wasting their money, i.e. by the loss of nutrients through manure losses

about appropriate remedial or preventative measures, and about any incentive programs to encourage acceptance of the measures.

There are large deficiencies in the present information, but enough is known to get the idea of what agriculture's problem is. Efforts should be continued to get a better "handle" on the problem - especially if PLUARG is going to make its suggestions stick.

C. WASTE DISPOSAL

Sewage Sludge

While sewage sludge disposal on land could potentially present problems with pathogens and heavy metals, it could also be an important source of agricultural fertilization if these problems can be over- come. Only one-third of Ontario's sewage sludge is presently land-disposed. Research on methods of purifying sludge to increase its acceptability is strongly recommended.

There is a willingness on the part of farmers to accept sludge and this could be increased and developed if farmers were educated on its value and analysis and if proper guidelines were adhered to. The source of sewage sludge should provide an analysis of sludge nutrient values and quality, as well as information on proper application techniques.

Improper storage of sewage sludge can cause pollution problems, either directly from the storage pit, or indirectly by encouraging spreading of sludge under poor conditions. The responsibility for storage of sludge should rest with the source (usually a municipality), rather than the disposal contractor or the farmer.

Investigations into the fate of all sewage sludge should be stepped up, particularly into incidents of improper or illegal spreading, and into the effectiveness of incineration in destroying all toxic materials. The experience of several of the panelists suggests that much stricter and better enforced regulations are necessary.

Liquid Industrial Wastes

The state of knowledge in the field of liquid industrial waste disposal on land is weak. It is apparent that much has yet to be understood about the transformation and movement of water pollutants as leachates from land-disposed wastes. The panel recommends that these factors be studied under conditions present in the Great Lakes Basin so that intelligent remedial measures may be proposed

Since precise knowledge of the transformation and movement of leachates may take time to surface, it is necessary that at least temporary action be taken to combat the existing or potential problem of land-disposed wastes. The panel therefore recommends that strict standards for the location and design of land disposal sites be developed and implemented. The standards should emphasize zero leachate movement or provision for leachate collection and treatment where this is not possible.

As the vast number of natural and synthetic substances employed by industry is ever increasing so is the threat to the environment. It is imperative that control of the use of these substances be exercised. The panel recommends that a program of approval of use of industrial substances be implemented with the onus on industry to demonstrate the lack of hazard involved in using these substances.

Radioactive Wastes

The panel has identified radioactive wastes as a major threat to Great Lakes water quality. This is another field where the state of knowledge is such that it is difficult to propose specific remedial action. However, the panel recommends that in light of the magnitude of potential problems associated with radioactive wastes, an extremely conservative approach to the management of these wastes is warranted. This implies extensive treatment or source control.

Private Waste Disposal Systems

Malfunctioning septic systems should be minimized by greater education of owners to show how proper waste disposal is in their own best interest, and by expanded inspection and abatement programs.

The installation of new septic systems should be subject to strict criteria to protect water quality, especially relating to the qualities of soils surrounding the tile bed.

Research is necessary to determine if economic methods of phosphorus removal within septic tanks could be developed.

Continued development and use of composting toilets and other techniques to minimize water use and prevent pollution problems should be encouraged.

Phosphorus in detergents or other materials not presently banned must be curtailed by legislation.

D. TRANSPORTATION

While the panel recognizes that environmental problems associated with road salt are primarily local rather than a Great Lakes problem, the increasing usage of this chemical is cause for concern. Continued research efforts to find an acceptable substitute and public education programs to encourage reduced usage are recommended.

A relatively few sites in a transportation system can be significant contributors of sediment to watercourses, especially during construction. The panel urges much better erosion control measures during the construction period. As well, the correction of eroding road cuts and ditches, especially along rural roads, is necessary to eliminate long-term contributors.

E. LAKESHORE AND RIVERBANK EROSION

The use of vegetative or natural means to control erosion should be encouraged, rather than high technology solutions which tend to create other problems.

The retention of floodplains and wetlands in their natural state as erosion protection features is strongly recommended. To accomplish this, the Conservation Authorities require stronger regulatory powers and better financing than at present.

The development of intensive activities such as harbours and shipping channels should be carefully assessed to determine and minimize their effect on erosion rates.

Downstream and head pond effects of flood control and hydroelectric dams should be considered in the planning of these projects to prevent erosion problems.

F. SHORELINE LANDFILLING

In general, the panel feels that shoreline landfilling should be discouraged. A much better assessment of the long-term effects of shoreline landfilling on erosion and sedimentation rates and the ecology of the littoral zone is required for any proposed projects. Any environmental assessment should strive to raise the public consciousness of the potentially harmful effects of landfilling.

The panel supports strongly the contention of the Ministry of Environment that any landfilling projects should meet strict quality criteria, and that disposal of polluted dredge spoil should be closely regulated.

The use of proper armouring to prevent erosion on shoreline landfill is essential, and the placement of this armouring before fill dumping should be strictly enforced.

G. RECREATION

While the source material indicated few major pollution problems with recreation other than those associated with septic tanks, the panel feels this analysis was too superficial to be considered fully reliable.

H. FORESTRY

In the management of Ontario's forests, there appears to be an inherent conflict of interest within the Ministry of Natural Resources between its role as a landowner producing w000d products and the need to protect the forests. Based on MNR's record to date, the panel recommends that serious consideration be given to splitting these responsibilities so that a separate group, i.e. the Ministry of Environment, has responsibility for long-term protection of the forest resource, as well as for water quality in logging and processing areas.

To minimize sediment production from forestry operations, the panel recognizes the importance of proper and speedy regeneration, and recommends greater efforts in this regard. The use of native species and mixed stands are sound ecological principles which should not be ignored.

Logging roads and access ways are recognized as major sediment sources. Careful location of roads, prompt seeding and restoration, and special care of stream crossings are recommended to minimize their impact.

Logging drives down waterways contribute to sedimentation and high oxygen demands, and interfere with other river users. The use of waterways to transport logs should be greatly restricted, or completely banned.

After years of effort, the pollution contribution of forest industries through point sources is still deplorable. New efforts, such as sliding scales of pollution "taxes", are urgently needed to encourage a speedy clean-up.

The development of new methods of agri-forestry, with intensive cultivation and use of pesticides and fertilizers should include assessment of this activity on water quality.

I. EXTRACTIVE INDUSTRIES

While surface mines tend to be closely controlled, underground mines are less visible and more loosely regulated. The potential pollution of surface and ground waters by mine wastes should be carefully monitored.

The panel feels strongly that the dilution of mineral processing pollution, such as by the super stack at INCO, is not an acceptable long-term solution.

The existing pits and quarries legislation is applied weakly and unevenly. Stronger steps are necessary to prevent sediment problems from working quarries, and to repair the long-standing problems of hundreds of abandoned pits and quarries.

6. GENERAL RECOMMENDATIONS

As well as the specific recommendations outlined above, the Toronto panel endorses a number of more general recommendations:

As far as possible, pollution problems should be controlled at their source rather than trying to remove them after they have escaped into the ecosystem.

Greater emphasis on recycling and re-use of toxic material, the use of closed production systems, and reducing demand for non-renewable resources and for water uses should be virgorously pursued.

As fas as possible, the costs of maintaining water quality during production should be included in the price of a product.

In the evaluation of any new activity, the onus should be on the proponent to prove that the proposed activity will not result in unacceptable levels of pollutants. The use of preventative concepts such as the Environmental Assessment Act should be encouraged for all significant new activities.

In some cases, the cost of clean-up of existing pollution sources will produce unacceptable social or economic consequences if the polluter is forced to bear the total costs. The panel recognizes that the beneficiaries of water quality restoration could reasonably be expected to bear part of the restoration costs. Since the water quality benefits are often spread over large numbers of the general public, the use of public funds to share part of the clean-up costs should be considered on a case by case basis.

There should be a major program of responsible public education sponsored by the IJC to inform citizens of the Great Lakes Basin about the types and relative magnitude of pollution problems, and about the individual and group actions that would be helpful in resolving these problems. Part of this program should be aimed at municipalities because of their involvement in land use planning, and their generally low level of awareness of pollution problems.

The legislative base for pollution control, as established by the Federal and Provincial governments, must be reviewed to eliminate overlap, inconsistencies and loopholes; to ensure equal treatment of pollution sources, whether point or non-point; and to enable lower levels of government to participate more fully in sound environmental management.

A central coordinating group with broad responsibilities for pollution control through both planning and remedial measures should be set up by agreement between the Federal and Provincial governments. This group could be formed as an expansion of existing inter-ministerial committees, but it could benefit from a high public profile to disseminate information, promote public discussion about Great Lakes issues, and perform independent environmental audits to monitor progress at all levels in restoring water quality.

In conjunction with this coordinating body and the legislative review, a clear assignment of responsibilities for various aspects of water quality must be made to various government agencies. As well as assigning responsibilities, this process must also ensure that the agencies named have sufficient authority, financial resources, and technical expertise to carry out their responsibilities effectively.

A continuing program of research and monitoring is necessary to more accurately assess the magnitude and significance of pollution from Canadian non-point sources. The Toronto panel found information to be lacking particularly in the agriculture, recreation, sewage sludge, radioactive waste, and liquid waste disposal areas, and recommends that priority be given to these areas in further research.

The PLUARG report to the IJC should contain a specific action plan for overcoming the significant problems identified. This action plan should include a proposed timetable for necessary legislative, incentive, or education activities, provisions for monitoring and feedback of results of these actions, and provision for periodic review of the action plan itself.

Altering or controlling land use activities for the purpose of non-point source pollution control will have repercussions in the socio-politico-economic environment. For example, impacts on urban land value and on agricultural production and production cost could be felt. The panel felt that these considerations were beyond the scope of its inquiry but cautions PLUARG against implementing policies for pollution control without regard for these considerations. However, in most cases, sound policies of conservation and materials usage would be complementary to the objectives of both environments.

Both point and non-point sources of water pollution contribute to the same problems. In the selection of remedial measures to overcome these problems, the panel urges that PLUARG not act unilaterally on non-point sources but rather weighs the relative significance of various sources prior to these decisions.

7. EVALUATION OF THE PANEL

OBSERVATIONS ON DIFFICULTIES

During the course of its three meetings, there were several areas in which the Toronto panel repeatedly experienced difficulties. For the most part, these difficulties were merely frustrating, but to some degree they did also influence the effectiveness of the panel.

The panel repeatedly experienced difficulty separating non-point pollution problems from point source problems. The distinction in many places seems to be an arbitrary one, and panel members had a tendency to wander into discussion of point sources as well. The suggestion was made that a similar public consultation process should take place on point source pollutants since these are more significant in magnitude, and since there is still considerable public confusion about their treatment.

The panelists had difficulty in separating purely local pollution problems from those problems of basin-wide significance. This is especially difficult when dealing with environmental problems which may be a current issue locally, such as sanitary landfill sites, and which seem very significant. Several of the panelists fear that we may be too reactive

in looking only at present Great Lakes problems and that local problems now may indicate future basin-wide problems.

In some of the subject areas, the panel felt that not enough hard data was available. While there was a large volume of material and the resource people provided were excellent, in some cases essential questions were left unanswered. One piece of information which would be particularly helpful on a more comprehensive basis is the relative contribution of various non-point sources vs. point sources. As well, more detailed data on the sources within a land use type would be of great help. Recent work in the U.S. for example, suggests that a small part (and predictable part) of a watershed contributes a large percentage of nutrient runoff through sediments. If remedial measures are to be aimed directly at the problem sources, every effort should be made to be as specific as possible in identifying sources.

The Toronto panel felt severely constrained by the lack of time available to delve into the subject properly. Besides the obvious difficulties in dealing with a large number of subject areas, there seems to be a settling-in period required for any new group before its members can express themselves freely. It is perhaps significant that our most productive group discussion occurred in the third meeting and many of the more basic topics could have been well aired in a fourth meeting.

The holding of our meetings in public rather than behind closed doors caused little difficulty. However, the hearing of public briefs could have been improved by better advertising and more advance warning for briefs, and by better terms of reference to focus the briefs particularly on our subject area.

8. SUMMARY OF PANEL EVALUATION FORMS

At the time of writing, only five panel evaluation forms were available. This summary highlights those points on which there seems to be close to general agreement.

In listing worthwhile things learned or done by the panel, most panelists recorded the value of interactions with other interest groups, and the exposure to technical interpretation on the nature and extent of pollution problems.

In rating their satisfaction with the panel on a scale of ten, respondents varied widely from 3.14 to 10, with an average of 6.5.

Most respondents identified good resource people as the factor most helpful at panel meetings. The use of small sub-groups was also mentioned as a helpful technique.

Factors which hindered the panel included three basic criticisms:

not enough time to review the subjects adequately

problems with the format and organization of the background material, and

lack of clear guidelines or objectives for the role of the panel.

Suggestions for future panels flowed largely from these criticisms, including recommendations for:
more time allocated for panel deliberations

better organization and presentation of background material greater interaction with technical resource people

clearer definition of the objectives and expected role of the panel

careful selection of panelists to try to ensure active participation, especially by bureaucrats and local politicians

more lead time and better direction for preparation of public briefs.

Individual panel evaluation sheets will be forwarded to PLUARG for more detailed information.

CANADIAN PUBLIC PARTICIPATION PANEL MEMBERS

Mr. Lino Grima
Toronto, Ontario

Mr. John S. Masham
Bramalea, Ontario

Mr. Ronald A. Reid
Georgetown, Ontario

Mr. William Tamblyn
Orono, Ontario

Mr. Gerald W. Brown
Newcastle, Ontario

Ms. Kari Dehli
Toronto, Ontario

Mr. Rick Morgan
Peterborough, Ontario

Mrs. Frank Eastman
Toronto, Ontario

Mr. Gord S. Mewhiney
Scarborough, Ontario

Mr. Del Riley
Toronto, Ontario

Dr. Barry J. Adams
Toronto, Ontario

Mr. Bruce Cooper
Belleville, Ontario

Mr. Walter Hood
Havelock, Ontario

Mr. Lee Davis
Barrie, Ontario

Ms. Linda Cardini
Toronto, Ontario

Mr. J. A. Moore
Hastings, Ontario

Mr. Wavel Ford
Norwood, Ontario

Mr. Wm. S. Kilmer
Mississauga, Ontario

Mr. William A. Jones
Toronto, Ontario

Mr. Gord Fancy
Georgetown, Ontario

Mr. Ivant Lorant
Toronto, Ontario

Mr. Anthony E. O'Donahue
Toronto, Ontario

Ms. Connie Rae
Toronto, Ontario


VANCOUVER
CHICAGO

REPORT OF THE ST. CATHARINES PANEL

JANUARY 1978

1. INTRODUCTION

Our panel is formed from representative people from both urban and rural areas of the Niagara Peninsula of Ontario. The urban areas are moderate in size. The rural areas include people from fruit growing farms and both cash crop and animal concerns. The representatives on our panel are concerned that pollution of the Great Lakes is occurring and support measures to reduce this pollution to a minimum consistent with the need to produce food to eat. We are agreed that pollution control measures should start at the source of contamination but recognize that interception techniques are also viable.

Desirable water uses for the Great Lakes include:

To provide continuous and usable drinking water.

To maintain food production.

To provide recreational facilities.

To provide commercial fishing facilities.

Our aims should be to prevent further deterioration of Lakes Erie and Ontario and to improve the present water quality of these lakes desirable water uses can be maintained.

There are some land uses that contribute to the impairment of Great Lakes water or intensify natural phenomenon such as erosion, sedimentation, or runoff. These are Shoreline Erosion, Recreational Uses, Landfilling, Riverbank Erosion, Forestry, Extracting Uses. In our areas, these activities do not constitute major concerns and generally are minor contributors to overall Great Lakes pollution although they can be serious in localized areas.

2. IDENTIFICATION OF SOURCES OF POLLUTANTS BY LAND USE

Our panel identified problem areas by land use and established the following as major concerns:

A. AGRICULTURAL LAND USE

Lack of facilities for manure storage is considered a problem that contributes to pollution in the Great Lakes.

The funds available for tile drainage schemes and design of these systems are areas of concern.

In the use of pesticides and herbicides as well as in the use of fertilizers, the problem of pollution is considered to result from the misuse of these farming chemicals. The lack of widespread education and research programs contribute to the pollution of the lakes. In the

case of manures and sewage sludges, the contribution to pollution also results from the misuse of these organic residues.

B. URBAN AREAS

The "first flush" from storm water systems was identified as a source of pollution as bad as sanitary wastes. It was found in urban areas that storm water ponds are being replaced by sewers which enables this pollution to reach the lakes rapidly and thereby create a problem in the lakes.

Dumping of contaminated snow was considered to be a problem leading to pollution of the lakes.

Denudation of land and the fact that these are left so for long periods of time is considered a major pollutional problem.

C. PRIVATE WASTE DISPOSAL SYSTEMS - SEPTIC TANK

It is considered that this type of system is quite applicable to isolated homes and to villages provided that the systems are properly installed. Our panel is concerned that monitoring is required and not being done.

Programs of inspection should be established and expedited. More policing of systems is required and maintenance (pumping out services) should be monitored. Certain types of systems are suitable for difficult soils such as mucks and clays.

E. TRANSPORTATION

It is considered that salt contamination is a serious pollutional problem and that heavy metal concentration on transportation corridors is an increasing cause for concern.

3. SOLUTIONS TO THE PROBLEMS

A. AGRICULTURE

Recommendation I

More and better financing should be provided in the form of loans and/or grants for farm animal waste storage and handling facilities.

Animal wastes may be incorporated into the soil in an average year for a period of approximately 45 days prior to June 1st . These can be spread on the surface of the soil until December 1st. Due to the variability of the weather and variations in the frost-free periods, as well as the type of crop that may be selected for any particular farm or year, a safety

factor is necessary. This should be in the order of 25%.

Storage volume therefore, should be provided for SIX MONTHS in most Instances. This applies to animal wastes (manures) that are solid or liquid in form.

Raw sewage sludges must be incorporated into the soil and can not be spread on the surface. Animal wastes sewage sludges and solid wastes must be disposed of to the land. There is no other way for final disposal of these wastes at this time.

The farmer must make the decision as to when sludges are put on the land, how they are put on the land and where they are put. Manure storage facilities will permit a proper decision to be made. If the farmer has a storage pit for farm wastes, these can be readily oversized to accept sewage sludges for blending and for incorporation into the soil. Rigid standards with a safety factor equivalent to that for pesticides on foods should be established for sewage sludges.

Storage facilities will permit a farmer to decide properly where, when and how to apply the manures. Pressures to dispose of the wastes may force a decision when the sludges cannot be handled or when spreading cannot be managed without causing pollution of surface waters.

Recommendation II

Farm storage and handling facilities should be oversized to accept sewage sludges and a grant or loan provided for this. In addition, analyses of sewage sludges for nutrients and heavy metals should be done quarterly and copies provided to the farmer for his planning.

Results that can be expected after implementation of these recommendations will include:

The public in general will benefit by having better water quality in the Great Lakes.

Runoff from barnyards can be better contained and its fertilizing value retained rather than sent to contribute to Great Lakes pollution.

Manure storage facilities provide a positive control of animal wastes at the source and give the nutrient returns to the farmer rather than to the Great Lakes.

Better timing of field application can be done if storage is available.

Better manure handling can result in general in better farm housekeeping with attendant reductions in contribution to Great Lakes pollution.

Recommendation III

Extension of the present tile drainage program is recommended to provide:

More funding.

More educational and research programs.

Proper plans for approval, final acceptance and inspection.

Extension of the loan amount to 90% of the cost of the work from 75%.

Farmers will tile a field for essentially three reasons:

To reduce the water table for better root growth and to make more good natural nutrients available.

To allow perched water that collects in puddles to drain in the spring and thereby permit earlier cultivation and seeding.

To provide an underdrain system to improve soil permeability.

In fields, where tile drains are installed, the fields become more porous and thereby increase infiltration and reduce surface runoff. In this process, a natural filtering action occurs which improves water quality. Tile drains remove gravitational water which can drown a plant by removing air from around the plant root zone. Plants use microscopic water which is water bound to the soil particle.

Tiling also reduces sheet erosion (erosion over the surface) which carries the greatest portion of sediment and nutrients over the soil to the watercourses. In the process of reducing surface runoff and therefore flooding, the "first flush" is reduced and the effect of this is to reduce the water and thus the pollutional load getting to the lakes.

A tile drainage program is in operation in Ontario; however, more funding is necessary and more education and research are essential to improve design, installation and materials of construction. Research should be undertaken to determine the potential of the program and to permit program planning. The program is almost self-liquidating and all funds are recovered over a ten year period. The loan limit is 75% now and should be raised.

Contractors generally design and build tile systems. These contractors are Provincially licensed and take courses; however, the preparation of proper plans for approval and inspection are "hit and miss" affairs. It would be advantageous to have a standard contract with a 12 months' warrantee, provisions for final design, preparation of plans, approvals all as part of the loan agreement.

Recommendation IV

Sod should be retained on the side slopes of municipal drains by redesigning side slopes to a 3:1 ratio which can be maintained by cutting and mowing. Chamfering the ends of municipal drains to match ditch side slopes will assist maintenance and reduce possible road hazards.

Currently, drains are cleaned by Gradalls or Drag Lines which remove the sod (and weeds), denude the soil and thereby increase erosion, sediments and nutrients in runoff. Cleaning of ditch bottoms without disturbing side slopes will reduce erosion.

Grass retardants are experimental with the danger of misuse present. Ditch cleaning and maintenance should be timed seasonally to minimize erosion.

Recommendation V

More facilities should be available for plant tissue analysis and soils analysis on a regular basis to optimize fertilizer and sludge application. Testing should be done more frequently and testing should be available to the urban gardener as well as the farmer.

Pesticides

The current system of licensing pesticides, the instructions for their use and their actual use is adequately controlled at this time.

New methods are being used including insect traps and improved application equipment to optimize the timing and dosage of pesticide applications.

Soil Testing

Fertilizer application must be optimized to limit excess use and pollution, not only from the lake aspects but from simple economics. No farmer or householder wants to waste money by using too much fertilizer.

Recommendation VI

No new programs or legislation should be instituted without reference to groups experienced in the field and particularly to those engaged in farming.

B. WOODLOTS

Recommendation VII

Ministry of Natural Resources should make trees available in smaller numbers to permit reforestation of smaller acreages.

Reforestation will reduce runoff, limit erosion and nutrient runoff to the watercourses.

C. DEEPWELL DISPOSAL AND INDUSTRIAL WASTES

Recommendation VIII

No deepwell disposal should be used under any circumstances.

Plans and procedures for the control of and disposal of toxic wastes should be approved as a part of the planning of the manufacturing process. We must dispose of our wastes preferably above ground and permanently so that we do not leave a legacy to our future sons and daughters of unsolved and unsolvable waste disposal problems.

Recommendation IX

The Ontario ENVIRONMENT ASSESSMENT ACT should be applied immediately to all industrial waste treatment and/or disposal schemes to ensure that the producer of the waste is fully responsible for its disposal in an environmentally acceptable manner.

The public should not have to hire experts and legal counsel to assure itself that proper planning has been carried out by a proponent of a scheme.

D. URBAN

Recommendation X

Where there are population concentrations using septic tank systems, more regular and frequent inspections should be carried out to ensure that basic guidelines for waste disposal are being adhered to.

In recreational areas, urban centres and rural localities, inspection should be undertaken frequently enough to ensure proper operation and maintenance.

Recommendation XI

On all construction sites and land under development, denuded land should be limited to land needed for servicing and actual lots should be developed as they are needed. Development plans should be regulated to ensure runoff and erosion control measures are planned, constructed and in operation before other work is commenced.

Recommendation XII

Detention basins should be strategically located in urban areas to contain runoff, reduce the "first flush" and remove sediment loads.

Recommendation XIII

The Ministry of Education should formulate a teaching resource guide on Great Lakes pollution and integrate it into the elementary and secondary school curricula. Components should include:

Simple (first hand) investigatory activities.

Research Projects.

A search for solutions.

The public must be better informed of the existing and potential threats posed to Great Lakes water quality. Realistic cost estimates for remedial measures with alternatives for funding must be included so that the public will be able to intelligently support remedial measures. In other words, the public must be presented with a clear relatively non-technical statement of the problems with cost-benefit analyses.

Recommendation XIV

A careful review of the packaging of consumer products is recommended to enable consumers to purchase in bulk; to reduce coverage; to use biodegradable materials; to promote recyclable packages.

E. TRANSPORTATION

Sediments

Remedial measures available to control and reduce pollution of this type, which is usually generated during construction of the transportation facility, are generally adequate.

The Environmental Assessment Act of Ontario will help greatly in this regard when it becomes fully operational.

Nutrients

Fertilizers are very seldom used on transportation corridors except during revegetation projects such as hydro-seeding. Application rates are low, the chemicals are usually absorbed into the soil, therefore pollution from this source is very minor to nil.

Insecticides

These are very seldom used on Transportation corridors. Mosquito Control Program is one of the few uses. Chemical used is biodegradable.

Herbicides

These are used extensively for weed and other vegetative growth control. Their use can be reduced with an increasing mowing or brushing program which would also be of benefit to wildlife and honey production.

Heavy Metals

Pollution from heavy metals and their derivatives could be an increasing cause for concern as a threat to Great Lakes Water Quality, but can be reduced by:

Continued conversion to non-leaded gasoline engines.

Use of corrosion resistant car bodies and components.

Discouraging street flushing in urban areas and recommending the use of the vacuum type street cleaners instead of the presently popular brush type.

Road Chemicals

The continued use of sodium chloride and calcium chloride for road de-icing will result in high levels of this contaminant relative to other sources moving to the Great Lakes.

The use of road salts is excessive; its use should be subject to greater control. Winter maintenance standard's driver habits and expectation need to be examined and adjusted.

It is believed that the "bare pavement" demand by the motoring public is more imagined than real.

Recommendation XV

It is recommended that:

Road winter maintenance standards, particularly on King's highways and regional roads should be reduced to:

Reduce the amount of salt used.

Increase the time interval required to achieve the bare pavement standard where this standard is desirable for safety and economic reasons.

Legislation to make the use of snow tires mandatory be implemented.

Legislation to encourage the manufacturer of motor vehicles to include a limited-slip differential be implemented.

Funds be made available from road user tax dollars for research to develop more efficient snow removal equipment so as to reduce the need for de-icing chemical and abrasives.

Provincial Ministry of Transportation and Communications should embark on a massive public education program to urge motorists to properly equip their vehicles and adjust their driving habits, to accept a lower standard of winter roads maintenance and to foster more use of public transportation to reduce the number of vehicles on the road and hence permit more efficient use of snow removal equipment and reduce the need for de-icing chemicals and abrasives.

Recommendation XVI

Immediate action should be taken to sort out the responsibilities of various governments and agencies vis-a-vis pollution control. An overall co-ordinating agency that would be able to set policy and implement recommendations for environmental quality is recommended.

WRITING COMMITTEE MEMBERS

Mr. David A. Parker, Chairman

Mr. C. George Spencer, P. Eng., Member

Mr. David H. Greenfield, P. Eng., Member

CANADIAN PUBLIC PARTICIPATION PANEL MEMBERS

Ms. Edith Fuller
Caledonia, Ontario

Mr. George McKibbon
Hamilton, Ontario

Mr. George Spencer
Brantford, Ontario

Mr. Norman E. Lickers
Hagersville, Ontario

Mr. Earl Siddall
Dunnville, Ontario

Mr. Bruce Bakewell
Caledonia, Ontario

Mr. Maxwell J. Ricker
Dunnville, Ontario

Mr. R. W. Yungblut
Fonthill, Ontario

Mr. David A. Parker
St. Catharines, Ontario

Mr. John H. Davidson
Stoney Creek, Ontario

Mr. Ken Robb
Fonthill, Ontario

Mr. G. J. Grawey
Port Colborne, Ontario

Ms. Jocelyn Johnston
Hamilton, Ontario

Ms. Muriel Beatty
Hamilton, Ontario

Mr. Fred Addis
Port Colborne, Ontario

Mr. David H. Greenfield
Burlington, Ontario

Mr. Joe Bakty
Hamilton, Ontario

Mr. Ron C. Moyer
Grimsby, Ontario

Mr. H.A. Staff
St. Catharines, Ontario

Mr. Don Alder
Fenwick, Ontario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WASHINGTON

REPORT OF THE KINGSTON PANEL

JANUARY 1978

1. OBJECTIVE

The panelists were instructed to consider the effects of non-point or diffuse sources of pollution that result from land use on the Great Lakes and their drainage basin. While the needs and wishes of the residents fo the Kingston Region were sought, problems and solutions for the entire basin were also to be considered.

This report summarizes the discussions which took place on November 15, 1977 as reported by the "Pesticide and Chemical" work group and by the "Sediments and Nutrients" work group. At the plenary session on December 8, 1977 the panelists identified the priorities that they attached to the problems on non-point source pollution.

2. PRIORITIES IN WATER USE

The panelists listed the principal uses of the waters into the following categories - aesthetic, drinking, swimming, pleasure boating, transportation, industrial, wildlife and agricultural uses. The drinking water category was selected unanimously as having the highest priority and recognized as the most restrictive specification for purity. In defining suitable quality the group felt that drinking water should have minimal quantities of toxic substances and chemicals so that it could be purified by simple treatment such as filtration and chlorination and be free of odour. By this definition, it should not be necessary to provide more advanced treatment such as carbon adsorption.

In the Kingston Region those households which are provided with municipal water pumped from Lake Ontario are being supplied by water of very high quality. However, major concerns were expressed for householders which are supplied by water from shallow wells and surface water from the drainage basin. In many cases water is contaminated by agricultural runoff, seepage from sub-standard septic tank systems and improper waste disposal by landfill operations.

A. LANDFILL OPERATIONS (Priority 1)

The principles of effective landfill management are well known, but good control is not always easy to achieve. Sites should be selected on the basis of the nature of the subsoil and how the materials which leach out can be controlled. The main concern of the Panel is the possibility of uncontrolled dumping of hazardous materials in landfill sites. If materials are soluble or otherwise not stable they should only be buried in suitable containers. Radioactive wastes, for example, should only be landfilled in permanent water tight containers in areas where access is restricted.

A major problem to be overcome is the dumping of acid and other chemical wastes on land by unscrupulous operators. Special control by the provincial and municipal authorities is urged to avoid contamination of nearby wells as the materials percolate into the ground water. By the time that the presence of the contaminant is detected in nearby wells, it is too late to institute control

measures and the condition may persist for a long time.

Special attention is needed for municipal sludges which are the product of conventional biological waste treatment systems. These sludges contain bacteria, nutrients and metals which require special precautions at sanitary landfill sites. When properly applied, such sludges can benefit the soil because of their organic content. The metals which they contain can be held in the soil in a form that is less available for absorption by crops. Technology for proper disposal does exist and expensive solutions are not required as prescribed application rates are employed.

B. FILLING OF WETLANDS (Priority 2)

The Panel recognizes the competition for shoreline and marshlands among municipalities, developers, owners and those interested in retaining wildlife habitat. Too often the proper channels for obtaining permits to fill marsh, swamp and shoreline areas are ignored and it becomes almost impossible to rescind a permit or remove the fill after the fact.

The panel recommends that a simple form of environmental assessment be carried out to determine if a permit should be given for filling or utilizing shoreline and wetlands, with the objective of ensuring that the proposed filling is compatible with overall planning activities, and that the interested parties are given adequate opportunity for input into the political process thereby reducing the number of privately-negotiated arrangements.

C. TOXIC MATERIALS AND TOXIC CONCENTRATIONS (Priority 3)

The work group recognized that describing a particular material as being toxic required the additional qualification of "in what concentration?" or "under what dosage conditions?". Many seemingly innocuous materials such as common salt if ingested in sufficient quantities can cause illness or death, while if used properly can be beneficial to the body. Drinking water and food contain quantities of materials that are recognized intuitively as being harmful, dangerous or toxic. If the "toxic" materials are present in small enough quantities it is quite safe to use them. Complete removal would be an undesirable goal for economic reasons.

The technology of analyzing trace quantities of materials has advanced rapidly recent years. Perhaps it has advanced more rapidly than research which would determine what the lethal concentrations are and what factors of safety should be applied to the exposure to prevent injury to health.

> The panel recommended that environmental regulatory agencies not react automatically to demands for complete elimination of all toxic materials without considering the benefits in continued use, the scientific criteria for determining the quality of the environment, the number of persons exposed to harmful effects or discomfort, and to the potential risks involved.

Rather, the Panel felt that the present research efforts should be redirected toward toxicology of food additives and water-borne chemicals.

Specifically, restrictions in the use of pesticides or toxic materials should not necessarily take the form of *a* ban which would result in non-detectable concentrations in drinking water, but rather establish permissible or desirable criteria that are unlikely to be detrimental to health or to the environment.

D. CONTROLLING STORM RUNOFF (Priority 4)

The effects of storm water runoff were of special concern to the Panel. During the first few minutes of a rain storm, large quantities of floating and settleable solids can enter the municipal sewer system. Unless special provisions have been made in the design of the sewer system and/or treatment plant, many of these solids will enter the watercourse directly. Advantage should be taken of the high solids concentration in the initial flush to ensure that it gets suitable treatment and segregation from the larger and relatively clean water which follows.

In the case of agricultural land which borders on a watercourse, storm runoff can carry soil particles which have an adverse effect on the benthos, and nutrients such as fertilizers. One practical solution is to create a 15-foot- wide buffer zone between the cultivated field and the watercourse. If the buffer zone were used for growing hay or left in a natural state, the transport of nutrients and solids could be effectively controlled. The creation of the buffer zone would reduce the productivity of the land and some form of compensation might be provided to the owner of the land. The panel recognizes the difficulty of establishing such a policy but, as a first approach, suggests having local conservation authorities pay rental on the buffer zone.

Although many farmers are good stewards of their land, others have little idea of their contribution to pollution problems and soil erosion. Contour plowing, suitable application rates of livestock wastes to the land, timed applications of fertilizers and pesticides, etc.* could be more widely practised at small additional cost.

It is recommended that the Ministry of Agriculture provide increased personal contact with farmers so that suitable conservation and farming techniques become more widely known and used.

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* As described in the "Evaluation of Remedial Measures to Control Nonpoint Sources of Water Pollution in the Great Lakes", PLUARG, October, 1977.

General construction practice leaves much to be desired in controlling erosion.

> The panel recommended that pre-construction planning be carried out on all land and industrial development to reduce erosion.

A strictly monitored program of tree removal, top soil conservation and use of buffer zones should be an integral part of obtaining provincial and municipal permits for new construction.

E. ROAD SALT (Priority 5)

Sodium chloride salt mixed with sand is used for the control of ice on roads and highways. Salt in the form of calcium chloride is also spread on unpaved roads as a dust suppressant. The outdoor storage and the application of salt is damaging to vegetation and wildlife when the major runoff occurs in the spring. In addition, outdoor salt storage depots contaminate ground water and frequently render well water non-potable.

While there are no obvious alternatives to the use of salt for ice control which are considered safe and economical:

> The panel recommends that municipalities and the Ministry of Communications and Transport use the optimum mixture of sand and salt along with application raters which will minimize chloride contamination of the waters in the Great Lakes Basin.

F. DISPOSAL OF WASTES FROM PLEASURE BOATS (Priority 6)

Persons are often observed to contravene the law by emptying hold tanks and residual gasoline-oil mixtures (heels) into the lakes and rivers. While the immediate solution may be increased surveillance and penalties, the long-term solution must lie in education of the public so that the conservation action becomes instinctive.

> It is recommended that regulatory and advisory agencies direct an increasing amount of their advertising toward the schools, where the greatest long-term benefit should result.

3. RECOMMENDATION ON COST-BENEFIT ASPECTS

Whenever the elimination of a risk is considered, the cost of improvement must be compared with the expected benefit. A very careful evaluation should be made to establish this cost to benefit relationship and to rank projects in order of merit.

This is an administrative problem that has no easy solutions, nor are any proposed by the panel. Too often those demanding improvement would be less enthusiastic if they alone had to pay all the costs. It is indeed tempting to obtain a local benefit paid for out of general revenues. The International Joint Commission is encouraged to examine the cost-benefit aspect of their recommendations and to emphasize that all costs are borne ultimately by the taxpayer and consumer. Only the clean-up of the effects of non-identifiable or non-assignable sources of pollution should be paid for out of general revenue.

Where the responsibility for a diffuse source of pollution can be assigned:

> The panel recommends that the polluter should pay for corrective action, provided that it is possible because of suitable economic climate brought about by marketing, income tax and tariff structures, which are mainly federal responsibilities, thereby making it possible to pass on the added costs to the ultimate consumer.

W. S. Cotton
Secretary

A. D. Misner
Chairman

4. A MINORITY REPORT

Based on work group 2 - Major Remedial Measures for Sedimentation and Nutrients.

CONCERNS

The need for limiting rain run-off for all types of land use activities.

The need for PLUARG to promote the public education and publicity about the problems of pollution of the Great Lakes.

REMEDIAL MEASURES TO CONTROL SEDIMENTATION AND NUTRIENTS

The group recognized the importance of controlling erosion and sedimentation from water run-off and airborne dust. This would prevent much of the phosphate eutrophication and considerably reduce the transport of chemical, metals, and pesticides into our rivers and lakes, and would also reduce the bacteria.

It is important to divert or limit rain run-off, and to start as soon as possible to apply the simplest, cheapest methods on a wider scale.

For all categories of land use most of the preventive measures involve conservation and "good housekeeping" practices. Also required is better planning, timing and design for many types of operations especially for construction and those that denude the land of vegetation. It also includes salting for snow removal.

The group recommended promoting the concept of controlling urban rain run-off form storm sewers and surfaces.

The Major Recommendations - to prevent or limit run-off and pollutants included that the following measures be adopted or promoted:

To minimize the removal of natural vegetation and denuding soil surfaces, and for as short a time as possible.

To cover the exposed surface quickly with absorbant cover, whether temporary or permanent, or by vegetation or mulch.

To grass culverts where possible.

To maintain along all watercourses and undisturbed buffer strip of natural vegetation.

To terrace sloping banks as required.

To require concise piling and proper location of piles of soils, manure, mine tailings, etc., away from ground and surface water.

Some methods of cover should be considered.

To promote wider adoption of permanent or temporary means to divert run-off, so as to limit and slow run-off and allow settling of the polluted sediments, from reaching watercourses.

The group recognized that capital and maintenance costs were involved, but the risks of continued pouring in of sediments and pollutants requires controls if lake water are not to deteriorate further.

Incentives and education may be involved particularly for farmers.

To increase such good housekeeping practices as more frequent cleaning of catchment basins and streets, and flushing of sewers.

Reducing such services to keep taxes down may indeed be false economy.

EDUCATION AND PUBLICITY

Our strongest recommendation was that PLUARG must promote and spend more money on effective ways of increasing public knowledge of and involvement in the problems and solutions for pollution of the Great Lakes. Information must be released in digestible form to media and the public.

This is an urgent high priority. It can influence the attitudes, and thereby the behaviours and public acceptance of the IJC recommendations that will be forthcoming. This will help promote political acceptance of the recommendations by the two governments.

Specific recommendations were made to improve agricultural education and management practices through great personal contact with field workers, an increased staff under the Ministry of Agriculture.

PERSONAL CONCERNS

Recreational and commercial fishing should be added to the list of water use priorities. I am concerned about the lost value of this important source of food, employment and recreational activity, and the danger to health. I also feel this has contributed to the high cost of an important protein source, fish.

Lead Pollution:

Bioassimilation and bioconcentration due to methylation has been demonstrated in marine fish, and is a potential "time bomb".

Thus, I urge that:

Priority be given to means of reducing airborne and run-off lead pollution, much of which is associated with sediments, and Construction of vehicles that require lead-free gas be promoted.

Submitted by:

Dr. Helen Henrikson

CANADIAN PUBLIC PARTICIPATION PANEL MEMBERS

Mr. Ralph E. Crysler
Toronto, Ontario

Mr. Richard Pratt
Ottawa, Ontario

Mr. Dave Harrison
Picton, Ontario

Prof. Don Misener
Picton, Ontario

Mr. Enrico Antognini
Picton, Ontario

Mr.Brian S.Shultz
Kingston, Ontario

Mr. Russell E. Johnson
Cornwall, Ontario

Mr. Alan W. Roy
Ottawa, Ontario

Mr.Bill S.Cotton
Kingston, Ontario

Mr. Jack Davis
Peterborough, Ontario

Ms. Mary Kaiser
Napanee, Ontario

Mr. William S. Lundy
Plainfield, Ontario

Mr. Ken Marisett
Picton, Ontario

Mr. Rick Kennedy
Kingston, Ontario

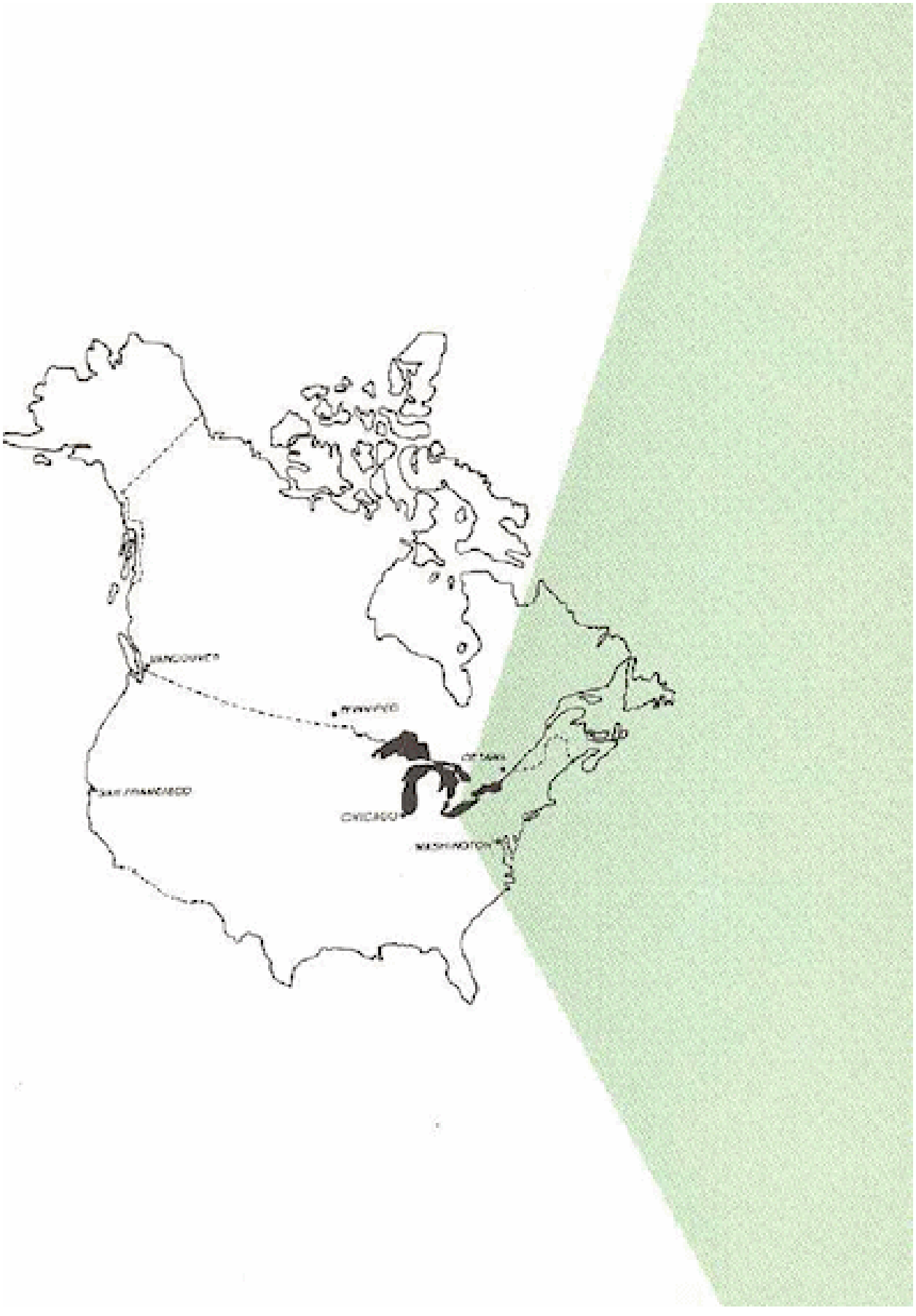
Mr. Paul Windatt
Picton, Ontario

Ms. Helen Henrikson
Kingston, Ontario

Ms. Mildred Hawkins-Walton
Wolfe Island, Ontario

Dr.J.G.Strong
Napanee, Ontario

Ms. Kathleen Leary
Ottawa, Ontario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REPORT OF THE SUDBURY PANEL

JANUARY 1978

1. INTRODUCTION

The Sudbury PLUARG Consultation Panel demonstrated a broad base of interest from both a geographic point of view and from the back-ground or organizational representation of its members. The area representatives covered from North Bay in the east, to Sault Ste. Marie in the west, south to Parry Sound and north to Sudbury.

On reflection it *is* interesting to note that the meetings of the panel were held during a time period highlighted with rather significant events on the economic scene of the area, and events which either directly or indirectly were related to pollution control and environmental hazards, i.e. the Sudbury Mining Complex work force reductions and the vastly accelerated uranium activity taking place in the Elliot Lake area. The sobering effects of these announcements were certainly a significant factor in tempering the recommendations of the panel.

Appended to this report are reports from Mr. John M. Bain, based on meetings with the Sault Ste. Marie representatives and Mr. Harry Marwood, of the Parry Sound area.

2. CONSIDERATION OF DESIRABLE WATER QUALITY IN THE GREAT LAKES

RECOMMENDATION 1

The panel resolved as follows:

> That the panel support measures necessary to control the levels of pollutant loadings in the Great Lakes water system. These levels should be controlled such that at the minimum, the present overall water quality of the Great Lakes system is maintained, with the provision that the known man-made effluents and emissions containing carcinogens and mutigens be very strictly controlled to reduce or eliminate such carcinogens and mutigens.

The panel also expressed considerable support for extensive testing of the water quality in the lakes and streams feeding into the Great Lakes. It was the panel's concern that the feeder system to the Great Lakes in the mid-north be inventoried for water quality in all of the feeder lakes to the Great Lakes so that future changes could be codified and monitored.

RECOMMENDATION 2

The panel supported the following six propositions for the entire Great Lakes Basin as general principles which the panel believes ought to be identified and adhered to:

Agriculture

That current practices be continued to study for high potential for groundwater degradation

- but any agricultural chemicals should be thoroughly tested for toxicity (which includes evaluation of new chemicals and environmental impact).

Urban

Stay urban expansion for a specified time period, by disallowing the use of prime agricultural land for urbanization and follow its effect on Great Lakes Water Quality.

Shipping

International ships are to follow current inland shipping regulations.

Industry

Follow regulations which are consistent throughout the basin.

Governments

Streamline legislation to be consistent throughout the basin.

Public Transit

That there should be every encouragement for the use of public transit.

RECOMMENDATION 3

Considerable concern was expressed by the panel, and it was agreed that the panel ought to recommend:

That whatever the recommendations emanating from PLUARG, steps be taken to assure that they be equal in form and effect on both sides of the border and that they deal with all pollutant sources.

RECOMMENDATION 4

The panel expressed great concern that the scientific data on water qualities be produced in terms that are meaningful and understandable to the general public.

For Example: The quantifying phrase parts per million (ppm) is only useful in understanding the degree of pollution in one body of water relative to another. This phrase does not provide any information about the danger or unacceptability of the concentration of a particular contaminant. Possibly a simplified code of water pollution levels could be created. The panel also gave consideration to the actual posting of information concerning the pollutant content of specific bodies of water.

RECOMMENDATION 5

As a general statement, the panel recommends:

That inasmuch as industrial development is a necessity in Northern Ontario, and that development is frequently based on resource industries, and since some degree of pollution from industrial development will necessarily follow resource development, that acceptable levels of pollution be established in designated areas of the Northern Ontario area and that these be strictly adhered to and enforced by both Provincial and Municipal authorities.

RECOMMENDATION 6

These recommendations eminated from workshops held by the panel and have been condensed considerably for purposes of the panel report.

Agriculture

More thorough testing of biodegradable pesticides is required.

Standards for the scientific application of fertilizers should be established through soil sampling at various stages of application.

OMAF develop and foster soil conservation programs.

Feedlot wastes should be contained and treated in the same vein as sanitary landfill and later reclaimed.

Proper drainage to minimize runoff.

Sanitary Landfill Sites

Manufacturers should be required to reduce packaging. Metals should be separated out before disposal.

Discussion

Manure collected in *ts should be left to compost for four years before being spread on soil.

Ground water must be monitored. Linking up feedlot wastes with municipal sewers was not considered. The manure compost should be tested for heavy metals before it is used for food production or limestone should be used on the soil to restrict the absorption of heavy metals.

Urban

Since the first flushing after a rainstorm is most serious, the first flush should be filtered en route and the rest of the rain water could by-pass the filtering route. The most serious sources of the pollution must be identified and controlled at the source.

There should be more restrictions on new chemicals put on the soil and far more information on the contents of consumer products should be available to the public.

Shoreline Landfilling

Clean fill only should be used. No garbage should be permitted in the fill material.

Deepwell Disposal

A more permanent and predictable technology must be found for the disposal of toxic industrial wastes.

Discussion

New technology to identify the most serious sources on non-point urban pollution must be developed.

Our creativity is outrunning our control. New chemicals are being created and marketed with little knowledge of their impact.

Certain materials, such as old transformers, should not be permitted in sanitary landfill sites.

Heavy metal content in asphalt is startling but can't be addressed because there is little knowledge of its behaviour.

The contents of many household products are toxic - carcenogenic. The government seems more willing to hide this information than to make it available.

Information should not be made available to the public until it is fully understood by scientists.

There are some levels of knowledge which should not go to the public.

Recreation/Forestry

No clear-cutting should be allowed in the Great Lakes Watershed because of erosion and siltation problems.

This group does not agree that pollution from recreation is minimal. If one considers the lead

pollution from driving associated with recreation, that alone is significant.

RECOMMENDATION 7

The panel recommends:

> That existing government agencies be assigned the task of monitoring and implementing remedies to maintain Great Lakes water quality, plus the panel's consensus that rather than creating new agencies the mandate of existing governmental structures be extended to more thoroughly protect the Great Lakes environment.
>
> For Example: It was noted that the function of Provincial Health Inspectors be extended so that their test procedure concerning Municipal and Residential effluent be expanded to include chemical analysis 4well as the present testing for Ascoli organisms. It was also felt that Municipal Health testing procedures for many thinly populated areas of Northern Ontario would be better served by local Municipal Health Inspection Departments, co-ordinated through a Regional or Provincial Health Inspection Branch.

RECOMMENDATION 8

Various members of the panel have expressed in the strongest possible terms that the assignment given to the panel was far too broad in nature to be dealt with appropriately in three brief meetings, and that the knowledge and information gained by panelists would best be utilized by establishing some longer term functions for the panel operation. In effect:

While panel participation has been exciting and informative, really, given the vast subject matter to be dealt with, panel members only had the opportunity to wet their appetite and identify in the most preliminary way their areas of concern.

RECOMMENDATION 9

The conundrum of handling information important to the public interest was frequently a theme of panel concern. On the one hand, the panel supports:

> A full and accurate disclosure of pollutant loading problems to the public, however, at the same time the panel cited many, many instances of premature, incomplete and inaccurate information concerning pollution problems being released to the public and frequently inflated by the news media.

RECOMMENDATION 10

Consensus was reached by the panel that the discussion in this report on remedies cannot in the time available be prepared in a manner which is specific but can only be generalized, Lo this end the panel supported in principle the recommendation as follows:

> That the panel supports measures necessary to control the levels of pollutant loadings in the Great Lakes water system. These levels should be controlled such that at the minimum, the present overall water quality of the Great Lakes system be maintained.

RECOMMENDATION 11

Following a paper on legislative review by Mr. Joe Castrilli, the panel expressed their concern:

> That jurisdiction conflicts between the Province, Federal Government, Municipalities and International laws be identified and clarified so that pollution solutions as they are identified will not be bogged down in legislative machinery.

3. A MINORITY REPORT

MANDATE OF PANEL

As Panel Members I feel we should react to the overwhelming task which we had been asked to undertake. The scale of the problem dealing with an entire basin, the complexity of the legislation, the diffused nature of the pollution and the scope of the remedial measures make it extremely difficult to absorb the material and make definitive recommendations. The exercise has been intelectually exciting and extremely enlightening but the short term nature of the mandate has made it extremely frustrating.

The panel should clearly state however, that it agrees with the concern over the level of pollutant loadings in the Great Lakes water system and the general intent to improve the water quality in the system.

STANDING PANEL

It is strongly recommended that the activities of the Panels be continued if at all possible. The Panels cannot be considered a representative public, however, they do articulate the views of concerned citizens. Continuing the Panels would allow time to:

> Generate more information concerning the facts of the nature of pollutants. The validity of proposed standards etc.
>
> Allow the time for the experimental remedial measures to prove themselves from a cost-benefit viewpoint.

THE ENVIRONMENTAL MANDATE

The work of the I.J.C. and its Panels should be directed to providing clear media tools for the expressions of concern and the illustrations of the affect of identified pollutants for the use of Provincial, State and Local government agencies for the dissemination of information and to assist them in establishing the need to monitor, control and test the impacts on man and his environment of our latest chemical inventions.

CONTROL OF PROBLEM AT ITS SOURCE

In general, it appears that remedial measures may not be the most appropriate means of dealing with the problem and that the philosophy of controlling the problem at its source should be stressed i.e. our creativity is outrunning our control. Testing of chemicals before the use of the product, banning household products which are dangerous to health and generally an attitude towards product design which takes into consideration the eventual disposal of the product and its impact on man and his environment, should replace our present ingenious methods of insuring that our environment becomes a pandora's box of surprises.

Submitted by: Mr. John M. Bain

4. A MINORITY REPORT

GENERAL NON-POINT POLLUTION

Society - the buying public, encouraged by manufacturers and suppliers, has created and encouraged the present practices of waste. This has depleted and polluted our natural resources to no credit of society and is in the name of "higher" standards of living.

As society has polluted, so they must pay in all ways. Subsidies are needed in all areas of pollution and the taxpayers and manufacturers must contribute NOW!

According to PLUARG papers on economic trends, there is a decrease in primary industries of agriculture, forestry and fishing and an increase in secondary - mining, manufacturing, construction, transportation and utilities; and I must also assume recreation. I would expect, therefore, that proportional emphasis must be put on pollution from these secondary concerns. However, there must be no shelving of effort towards control of pollutants from the primary industries.

Liquid waste disposal, both human and animal, is predicted to increase and naturally so. It can be controlled more effectively and reduced per capita. Toilets that use less water (1½ quarts versus 5 gallons), water meters and education on the use of water, similar to Ontario Hydro's publicity campaign on the use and abuse of electricity. The control of storm sewers by separation, lagoons, runoff design from paved areas which in their former natural state had water holding ability. Water re-use by manufacturing and irrigating on the land. Surface control, containment and use of water has been practised for a couple of centuries in England's canals.

Solid waste can be decreased. Fancy packaging for selling purposes alone, buying ten items when only one is needed and the bagging of pre-wrapped goods are only a few ways to control pollution and the unnecessary use of our natural resources, i.e. trees for paper and oil for plastics. Decreasing packaging requires a change in merchandising. The use of plastics in merchandising should be eliminated, except if absolutely essential. Returnables and re-cycling must be made mandatory. Garbage separation must, by law, be regulated so that waste can be re-used and so that dangerous items, e. g. fluorescent tubes, can be properly disposed of. Certain things, like mercury batteries, should require the return of the original before a new one can be purchased.

Land erosion by wind and water, both naturally and by irrigation, and the subsequent transportation of land use chemicals can be controlled by proper use - for example, with the planting of natural holding areas (trees). (As noted in Readers' Digest article of July, 1976.) This is needed also in areas where air transported pollutants initiate, such as the U.S. mid-west.

These planting programs should be carried on in an extensive, supervised way. There would be another beneficial effect from this planting on transportation corridors, where snow and ice loading on roads from the wind would be controlled and the resultant use of salt and sand decreased. Reduced water runoff from these corridors would be considerable.

The use of more efficient engines in cars should be made mandatory. The study of braking devices - disc brakes are more effective- and the materials used in these devices, should be made. Engine braking is perhaps more effective with diesel.

Land use should be for the benefit of all people and the windfall profits of developers should be controlled and curtailed, as these developments are one of the worst offenders in paving over land and concentrating runoff.

Administrations must set up a uniform guideline for water quality controls. Sources of atmospheric pollution of water must be identified, the people advised and the problems dealt with.

Submitted by:

Mr. Harry K. Marwood

CANADIAN PUBLIC PARTICIPATION PANEL MEMBERS

Mr. Jerome F. Morel
Parry Sound, Ontario

Mr. John M. Bain
Sault Ste. Marie, Ontario

Mr. Herb R. Akehurst
Sudbury, Ontario

Mr. Geoffrey Barnard
North Bay, Ontario

Mr. Donald Cooper
Little Current, Ontario

Mr. Max Beaumont
Bracebridge, Ontario

Mr. Harry K. Marwood
Parry Sound, Ontario

Chief James McGregor
Birch Island, Ontario

Mr. Robert Gower
North Bay, Ontario

Mr. Jack Bedggood
North Bay, Ontario

Mr. Frank Weir
Sault Ste. Marie, Ontario

Mr. Bob Lailey
Sault Ste. Marie, Ontario

Ms. Sue McKenzie
Kilworthy, Ontario

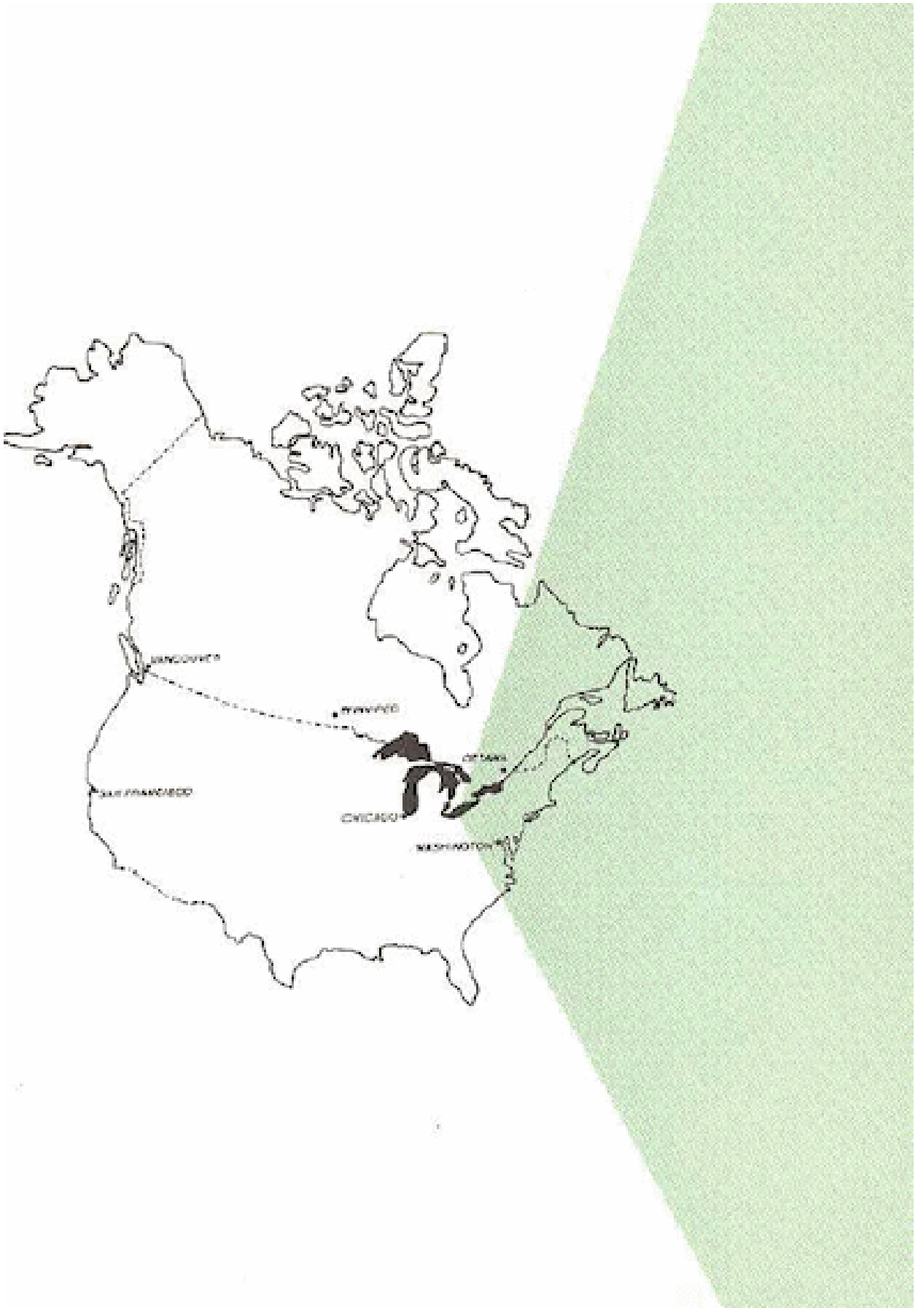
Mr. Austin Clipperton
Massey, Ontario

Mr. Jack Corbett
Sault Ste. Marie, Ontario

Mr. Bob Bateman
Sudbury, Ontario

Mr. Cameron Hopkins
Hanmer, Ontario

Mr. H. R.Butler
Coppercliffe, Ontario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REPORT OF THE THUNDER BAY PANEL

JANUARY 1978

1. INTRODUCTION

The response of the Thunder Bay panel to the PLUARG public participation process may be considerably different from most, if not all the other Ontario panels. By the very title of the Reference Croup, tile emphasis on "land use" would indicate that in the vast expanses of the Lake Superior region with low population densities that one would expect non-point source pollution from general land use activities to be minimal. If one classes pollution sources into point and non-point sources, the major problem of this region remains the large point source pollution associated with natural resource extraction, i.e. pulp and paper and mining. Although capital costs to minimize and/or eliminate point source pollution will be high, it is felt that as far as institutional priorities are concerned any government spending in this region should be directed at the resource industries. Minimizing discharges from these industries will have the most significant effect on water quality improvement for Lake Superior.

However, most of the issues discussed by the PLUARG group are of concern to this region and especially to the City of Thunder Bay, the one high density population centre of the region (50% of population of the entire Northwestern Ontario Region live within the city). It was generally felt by the panel group that with respect to most of the PLUARG issues that low cost, common sense type remedial actions should be encouraged. Such activities as tree/vegetation planting adjacent to waterways and riverbank/shoreline erosion controls should be encouraged and their importance should be identified to the public through a broad based educational program.

Of more general concern to the panel is the present and long term pollutant loading to Lake Superior from the long range atmospheric transport of air pollutants. It is clear that one of the beneficial actions that could be taken to improve Lake Superior water quality would be to minimize atmospheric discharge of pollutants.

> The panel recommends to PLUARG that all point source emitters be encouraged to utilize the best practicable technology to minimize discharges.

The people of this region are generally proud of living on the shores of one of the last remaining large "unpolluted" bodies of water. It was pointed out with some concern to the PLUARG staff at our first meeting that Thunder Bay on Lake Superior had been incorrectly labeled "eutrophic" when in fact the phosphate loading indicates that the region should be mesotrophic. In fact Lake Superior is the only one of the Great Lakes that does not show an "eutrophic region".

In general the panel endorses the "Conserver Society" ethic insofar as actually adhering to the principles of conservation would minimize non-point as well as source environmental contamination.

Functionally, the Thunder Bay panel divided into two groups to consider: a) the issues; and b) institutional concerns and our report will follow the same sub-division. Throughout our work, a common theme appeared to be that governmental responsibilities and jurisdiction needed to be better defined.

In addition there was concern that especially in this sparsely populated region (Lake Superior), standards and/or remedial measures adopted for the more populated southern regions of the Province would be inappropriate for this region.

2. DESIRABLE WATER QUALITY IN THE GREAT LAKES

In areas where development has caused the water quality to become less acceptable, remedial measures will be necessary to reduce non-point pollution sources as much as possible. Action in the forestry and agricultural areas, as well as acceptable levels of control in the urban areas, would be supported by the panel.

Since our Committee is to address the problem of pollution of the Great Lakes, any action taken on reducing the level of contaminants in Lake Superior will have an affect on remedial actions in the other lakes of the Great Lakes system. Therefore, every effort should be undertaken to reduce the level of pollutants where possible and where economically feasible.

Because the Great Lakes also serve as an international boundary, the roles and responsibilities of the various levels of government on both sides of the border with respect to regulations and abatement need to be more clearly defined (especially to the general public).

3. DISCUSSION OF ISSUES AND RECOMMENDATIONS*

The panel did not specifically identify an order of priority to the land use planning issues. An informal survey of panelists failed to indicate a consensus of priorities and it is felt that the reason for this is as stated earlier in this report, that while most of the non-point source pollutants as identified through the issues effect this region, the degree to which remedial action will improve Lake Superior water quality is small compared to the gains that can be made in point source pollution abatement.

Specifically in the Thunder Bay region, phosphorus loadings related to agricultural activities and non operating private sewage disposal systems and as well as erosion sedimentation could be considered priority issues.

What follows is a somewhat more detailed discussion of each issue with appropriate recommendations to PLUARG for action in some cases.

A. SHORELINE LANDFILLING

Our comments relate primarily to two major projects currently underway within the City of Thunder Bay, i.e. the Chippewa sludge disposal site and the new north ward marina, but the remarks would be similar for other dredging and landfill operations. Individuals who had concerns or involvement

* Based on report of Issues Sub-Group (Baarts, Zaremsky, McKay, Grootenboer, Hiner, Belluz, Kadzielawa).

with the above two projects indicated that they were satisfied that sufficient controls existed to protect the environment (if enforced). In specific, the panel recommends:

Dredging should be conducted under supervision.

Dredging should only be done to the necessary depth.

Dredging operations should occur at one specific time or the year rather than at a number of different times in order to reduce the effect of pollution. The dredging time should be co-ordinated so as not to affect spawning grounds or disturb wildlife.

The landfill site should be protected by an impervious barrier to ensure that the drainage of the fill and any resultant pollutants do not enter the lake or dispense inland. The containment area should be protected from the movement of ice. The material for the containment wall if removed from an area adjacent to a waterway should be removed in such a manner as to reduce spillage to waterways (or during transportation, to point of usage).

The method of dredging should be suction rather than by clamming, except in the case where waterlogged logs settle to the bottom and require removal by a clamming method.

Landfill operations for the purpose of adding land for a particular land use function (e.g. Marina) should be kept to a minimum.

B. TRANSPORTATION

In terms of the PLUARG priorities assessment, it was felt that transportation should be somewhat higher but it was recognized that it is somewhat difficult to separate the urban and transportation classifications. It is stressed to PLUARG, however, that the location of transportation networks very significantly effects urban development patterns.

With respect to utility corridors, (pipelines, electricity transmission lines):

It is recommended that wherever possible rights of way should be shared. The use of common corridors, the design of one corridor for multiple use (i.e. one corridor for both a 230 KV and 500 KV transmission line) should be considered to reduce the affect of pollution related to construction and maintenance of the right of way.

With respect to run off pollution from construction activities, it is clear that the construction period and the first post year period are the most critical And any remedial control should be used at this time.

The panel recommends to PLUARG that urea should be studied as an alternative to salt for road ice control. In doing this, however, the increased phosphate loading should be carefully monitored.

The panel questioned the PLUARG data on amounts of salt used on highways and pointed out that the figures quoted were substantially higher than the amounts used in Northwestern Ontario. Also questioned were the extremely high levels quoted for iron deposits along roadways in the transportation issue paper (Table 1).

C. PRIVATE WASTE DISPOSAL

With the information that 30% of private spetic tanks and fields are not functioning properly, surveys should be accelerated to determine the source of malfunction and specific actions recommended. An incentive to those having nonfunctioning systems could be the initiation of low cost loans or some financing arrangement with government in order to rectify this to non-point pollutant source.

The use of sewage digesters (compost toilets) should be considered as replacements for cottage and residential sewage disposal units, rather than the replacement of faulty septic tank systems. Cottagers'associations should strive to ensure that proper sewage treatment is used on their jurisdictions.

With the advertising of chemicals or yeasts to improve septic systems, the government should test such products in order to determine whether they are required and inform the public of their usefulness.

D. DEEPWELL DISPOSAL

It is felt by the panel that if industrial processes were brought up to current environmental standards that deepwell disposal practices would be unnecessary. The panel did discuss the possibility of mine town sewage disposal in abandoned mine shafts.

The panel also felt strongly in reaction to recent announcements that Northwestern Ontario should not become the "nuclear garbage dump for the south", as in the long term there could be serious environmental implications to the proposed deep rock storage of waste radioactive materials.

E. URBAN

Further studies should be undertaken to identify the implications of decentralized communities to such urban pollution problems as runoff, etc. In addition the panel feels strongly that the planning of transportation corridors should be an integral part of urban planning.

As stated earlier, it is felt that much could be done to minimize the release of contaminants during the construction phase. Many of the preventative actions that could be taken are low cost and,

> It is recommended that an educational program be directed at the municipal level to contractors, builders, municipal officials, etc., to solicit their cooperation.

In addition,

> The panel recommends that consideration be given to the establishment of equalization basins to prevent the rapid depositing of solids immediately after a major storm.

FORESTRY

Most of the cost effective measures that can be used to minimize runoff type contamination should be done as soon after harvesting as possible (first few months). In this regard the panel recommends:

> That trees be replanted as soon as possible since the first few months is the most critical period for pollution and erosion to occur.
>
> Contour, alternative strip and block cutting procedures should be employed.
>
> Tree reservations should be left along navigable waterways (a navigable waterway is defined as one navigable by canoe or heavier vessels).
>
> Narrower logging road rights of way (maximum 65 feet) should be used to minimize pollution. Special care should be taken at stream crossings.
>
> Attempts should be made to replant burnt areas as soon as possible.

With respect to spraying of forests with herbicides, etc. while most sprays used now readily break down in a few days it was indicated to the panel that 2-4-5-T is still being used in certain parts of Northwestern Ontario. If this is in fact the case,

> The panel recommends that the use of this particular material be terminated immediately.

G. EXTRACTIVE AREAS (MINING)

It is felt that gravel pits should not be located close to watercourse and that a sufficient buffer zone should be provided in order to reduce the effect of pollution entering into the Great Lakes. It is also felt that the Ontario Pits and Quarries Act should be enforced in Northern Ontario and that Crown Pits be made to meet similar regulations especially with regard to rehabilitation. Mineral resource extractions were not considered by the panel as they are felt to be point source.

H. AGRICULTURAL

With the small size of the agricultural community in Northwestern Ontario, it was felt that any action by farmers to reduce pollution would only have minimal affects on non-point pollutant loadings to Lake Superior. It is felt that the Ministry of Agriculture and Food should establish and promote an "Agricultural Code of Practice" and have the local representatives work with the farmers to reduce pollution. Farming trends should be toward the use of zero tillage, without excess use of fertilizers, pesticides, etc. The local Ministry of Agriculture and Food representative should work actively with the farm community to achieve the above objectives.

The use of sludge for farming operations as a source of fertilizer should be further investigated. The use of cooperative schemes with seasonal holding lagoons to utilize municipal sludge could also be studied.

It is felt by the panel that while remedial control measures in Northwestern Ontario would not be cost-effective, this may not be the case in the more concentrated agricultural districts of southern Ontario. The implications of any control measures to the ultimate costs of food should be explored.

I. SOLID WASTE AND SLUDGE DISPOSAL

Presently the most cost-effective and environmentally preferred way of solid waste and sludge disposal is land filling. It is generally felt that sufficient regulatory controls are presently in place to protect the environment if enforced. It is felt by the panel that although it may appear conceptually attractive, that the use of sludge for forest fertilization would not be cost- effective.

In the disposal of solid waste, it is the panel's general feeling that pilot recycling projects should be undertaken and recycling centres be located for this particular purpose. Due to the fact that 73% of refuse is burnable, methods of using this refuse in the incinerators to generate energy, or in the case of newspapers in making artificial firelogs, should be carefully studied. The "Watts from Waste" and "Hearst" projects should be monitored for more widespread applications.

Although it might require legislation plus a public relations program to get people to separate their burnable refuse from the recyclable materials in their garbage, the use of such incentives as deposits on glass bottles and cans should be investigated. The use of incinerators to burn refuse material could also be used to dry sludge. The environmental agencies should encourage minimal packaging of consumer products.

J. SHORELINE AND RIVERBANK EROSION

Locally it is felt that tree/vegetation planting should be encouraged along the Kam River and its tributaries to prevent erosion (and hence future harbour dredging). Reservations of not less than 250' from the flood-plain area should be encouraged (not necessarily trees).

It is the general feeling that some type of reserve along the shoreline of lakes be protected, except under specific control measures in such developed areas as cottage subdivisions. The fact that cottage development can occur without disturbing the tree vegetation to any great degree, the control of erosion from such proposed developments should be reviewed by provincial agencies such as the Ministry of Natural Resources, the Ministry of the Environment, and the Ministry of Health.

> It is recommended that stricter enforcement of forest operations is necessary in order to reduce the effect of pollution along lakeshores or riverbanks. There should also be a public relations program to give incentive to the people along watercourses to protect reserves from development.

K. RECREATION

Reaction to the recreation issue paper was that some of the recreation activities indicated on Tables 1 and 5 are not representative of Northwestern Ontario. For example, snowmobiling and cross-country skiing are showing low rates of growth which would not necessarily be the case here. The low levels of pollution given to the snowmobile do not seem to consider the noise and visual pollution aspects of such vehicles nor the damage done to forest plantations. It is felt that due to the low population density that pollution associated with recreational activities will be minimal. However, it is felt that periodic media "prevent pollution" messages should be used to educate the public.

The more widespread use of composting toilets in seasonal dwellings should be encouraged again through educational programs and pilot installations in provincial campgrounds.

L. ATMOSPHERIC TRANSPORT

As noted earlier the panel is concerned about the large man-made contribution to pollution loading to Lake Superior from atmospheric transport. In particular concern was expressed regarding Ontario Hydro's planned coal burning station at Marmion Lake near Atikokan.

> It is recommended that, upon motion duly made, seconded and carried it was resolved that this panel recommend that PLUARG ask the IJC to take a technical stand on the coal generating station at Marmion Lake.
>
> Industry should apply the best available technological measures to minimize emission of contaminants into the atmosphere.

It is also understood by this panel that another IJC Reference Group is looking into the long range atmospheric transport issue.

4. TIMETABLE FOR IMPLEMENTATION OF RECOMMENDATIONS

We have not specifically determined a timetable for implementation of remedial programs, although we stress that where pollution is presently at a high level, remedial action should be undertaken as soon as possible, once the source has been determined. As stated earlier any remedial actions resulting from PLUARG should be evaluated on a cost/benefit basis and also on a priority basis from a point/non-point pollution perspective.

5. INSTITUTIONAL RESPONSE*

It is evident that there is some overlapping in the various levels of government in their areas of responsibilities. In order to avoid duplication by various levels of government and their agencies, it was felt that some definition of roles should be undertaken.

FEDERAL GOVERNMENT

Should have direct fiscal activity limited to a catalyst role to stimulate national goals and be supportive of provincial programs.

THE PROVINCIAL GOVERNMENT

Should set priorities for environmental control and provide funding for prevention and remedial actions; coordinate and support municipalities in planning resources use and funding; and environmental control should be entirely the responsibility of the Ministry of the Environment.

THE MUNICIPAL GOVERNMENTS

Would set local guidelines based on local needs, public input and provincial priorities.

It is recommended that:

The Federal Government directs funds to the Provincial Ministry of the Environment who would be responsible for enforcing environmental laws.

An independent environmental research agency, federally funded, should be set up to use its expertise in choosing and in investigating environmental problems. It will report directly to the public in the same manner as the Economic Council of Canada.

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* Based on three reports by Institutional Response Sub-Group (Karam, Scott, Hanna, Mudra, Pupeza, Lalime)

6. RESPONSE TO IJC ISSUE PAPER -"THE INSTITUTIONAL RESPONSE: SUMMARY, DISCUSSION AND CONCLUSIONS

What follows is substantive comment on the above issue paper.

FEDERAL PROGRAMS

Fiscal Activity

Urban: CMHC is primarily a funding agency and should limit itself to that aspect except for certification from the Provincial Ministries that a subdivision plan complies with the regulations of the Ministries.

Treatment of stormwater is not a priority in this area. While stormwater may be a significant pollution source, it would be extremely expensive and perhaps unnecessary to demand such treatment across Canada.

Agriculture: Programs should be acceptable to Provincial Ministries.

Municipalities should have more say in setting their own priorities (DREE and ARDA).

Farm Credit Corporation (FCC) should get the approval of the Minitrv of the Environment before loans for building are approved. The FCC should be a lending agency only and should not have to provide expertise in evaluating environmental measures.

Jurisdictional or Regulatory Activity

Federal government should promote research to achieve national standards in conjunction with the Provinces.

Preventive Pollution Controls

The Federal Department of the Environment should have the authority to ban pesticides and fertilizers and all products dangerous to the environment.

Federal agencies, facilities, properties and departments should also be subject to Provincial rules and regulations regarding the environment. The Federal Government should be setting a good example, especially for the private sector.

Federal lands should be managed in a business-like manner and should be done so in conjunction with local and Provincial goals.

PROVINCIAL PROGRAMS

Provincial ministries, agencies, facilities and properties should be subject to Ministry of the Environment controls and regulations in the same way as industry.

Industrial solid waste operations should have adequate dumping sites approved by the Ministry of the Environment.

The Provincial Government should investigate the possibilities of packaging laws for consumer products to reduce the amount of waste.

More emphasis should be placed on water quality monitoring by the Provincial Government in agricultural areas and stricter laws invoked if required.

It is believed that the present controls on the farmer are more than adequate but additional educational programs should be mounted by the Ministry of Agriculture and Food.

It should be the responsibility of the Province to ensure that site rehabilitation be carried out on closure of mines and gravel pits.

Environmental agencies should be responsible for the environment and not be used as a funding agency. Funding agencies should have Ministry of Environment approval.

Many of the issues studied by PLUARG have been of interest to the various Conservation Authorities set up around the Province. More recently some of the remedial actions taken by the Authorities have been hampered due to funding restricitons by the Provincial government.

The panel recommends that the Authorities do not develop regulatory responsibilities.

The Conservation Authorities should be dedicated to conservation and not be directly involved in the regulation of environmental concerns as all projects must have the approval of the Ministry of the Environment. As an example, with the Neebing-McIntyre Diversion Flood Control Scheme presently in the planning stages in the City of Thunder Bay, the Lakehead Conservation Authority has its consultant considering the environmental impact of this proposal. The results of this study will then be reviewed by the Ontario Ministry of the Environment.

MUNICIPAL GOVERNMENT

All municipalities should have continuously updated Official Plans that show environmental guidelines and identify sensitive areas. They should require statements from developers showing how they will deal with the environmental guidelines in their development plans.

Municipalities should incorporate into design requirements, where feasible, measures to control storm runoff into streams (i.e. water draining onto grass surfaces rather than into the system, retention ponds, roof reservoirs, and parking lot retention areas). The intention is not to unnecessarily raise the cost of housing.

Preservation of top soil should be an over-all Provincial law rather than a municipal by-law passed by each city.

The Municipal Act should be amended to allow municipalities to pass by-laws related to solid waste to go beyond Provincial legislation if it so wishes, provided it not fall short of Provincial guidelines regarding the environment.

If farm operations pollute the waterways, the Ministry of the Environment should have authority to investigate the site, etc. and require rectification of any problems and the Municipality should not have to take over this responsibility as they may not have the expertise.

Because road de-icing is defined as a contaminent under the Ontario Environmental Protection Act, its use should be a Provincial responsibility.

Municipal actions and operations should be subject to Provincial legislation and guidelines in the same way as industry.

It is recommended that a review of the Mining Act, Pits and Quarries Act and Beach Protection Act be undertaken to make sure that their elimination from the Environmental Assessment Act is valid.

PUBLIC PARTICIPATION

Public hearings should be required for any major land use activity and local advisory groups should be encouraged. Increased use of advisory committees would provide an organization for better general public participation and eliminate the need for ad-hoc committees being formed for each separate development.

The public who can participate through hearings, the Environmental Protection Act process, political process and the Ombudsman, has sufficient opportunity to present his case. No extraordinary sponsorship through the courts should be provided.

Where citizens groups are prevented from using injunctive actions by agencies using discretionary powers, the reasons reflecting a particular decision should be made public.

7. SUMMARY

Although the Thunder Bay panel feels it has made substantive comment to PLUARG on the individual issues and also the question of institutional responsibility, we have had little or no time to consider in any detail remedial measures. In future endeavours of this type:

The panel recommends to IJC either less ambitious objectives or more time.

It is our understanding that at a future panel meeting to be held in the Spring '78 we will have a further opportunity to comment on the recommendations of PLUARG.

There is a general feeling among the Thunder Bay panel that the group would like to continue to exist, to be called together on a quarterly basis to comment publicly on environmental issues.

CANADIAN PUBLIC PARTICIPATION PANEL MEMBERS

Mr. Ken Tilson
Thunder Bay, Ontario

Mr. Koen Grootenboer
Murillo, Ontario

Mr. Roger Andrew
Thunder Bay, Ontario

Dr. Robert Rosehart
Thunder Bay, Ontario

Mr. Alex Pupeza
Thunder Bay, Ontario

Mr. Wally Zaremsky
Thunder Bay, Ontario

Mr. Don McKay
Thunder Bay. Ontario

Mr. Don Belluz
Thunder Bay, Ontario

Mr. D.W. Scott
Thunder Bay, Ontario

Mr. Richard Hiner
Atikokan, Ontario

Mr. Jerry Smith
Thunder Bay, Ontario

Ms. Lois Karam
Thunder Bay, Ontario

Mr. A. S. Kadzielawa
Red Rock, Ontario

Mr. Larry Baarts
Thunder Bay, Ontario

Ms. Christi Bannon
Thunder Bay, Ontario

Mr. Gary Mudra
Thunder Bay. Ontario

Mr. Jack Hanna
Thunder Bay, Ontario