

IN THE MATTER OF

The Lakes and Rivers Improvement Act.

AND IN THE MATTER OF

An application of Dave Colonico for approval of construction of a culvert crossing over Drapers Creek on Part Lot 1, Concession XI, former Township of Pelham, City of Welland, in the Regional Municipality of Niagara.

REPORT TO THE MINISTER OF NATURAL RESOURCES

Pursuant to the appointment of your predecessor, the Honourable *C.I.* (Bud) Wildman dated the 28th day of October, 1992, the undersigned has held a hearing under the Lakes and Rivers Improvement Act (the "Act") as to whether the proposed refusal of the application for the approval of the construction of the culvert crossing is fair, sound and reasonably necessary for the purposes of the Act. The hearing was held in the Town of Pelham on March 15, 1993.

At the hearing, Stuart R. Davidson appeared on behalf of the Ministry of Natural Resources ("MNR"). The applicant was represented by Ed Russell of Russell Associates. No landowners or other interested persons attended the hearing or sought to be added as parties.

Prior to the commencement of the hearing, it was agreed by the parties that MNR would have carriage of the hearing, the subject matter of which was a

proposed culvert crossing of Drapers Creek. The application is for access to a proposed two-story commercial and residential structure off South Pelham Regional Road (liS.Pelham"). A recent change in zoning granted by the City of Welland would be in keeping with the proposed structure.

Mr. Colonico's property is located at the northwest corner of the intersection of S. Pelham, being Regional Road 30, and Sumbler Road ("Sumbler"). S. Pelham runs north south and is the major artery. Sumbler runs east west and is a residential road.

Drapers Creek enters at the northwest limit of Mr. Colonico's property. Running almost due east along the northern boundary, it makes a ninety degree turn approximately fifty feet from the road limit of S. Pelham and continues almost due south along the eastern boundary. There is currently access to the property off Sumbler, but none off S. Pelham.

The branch of Drapers Creek which runs through Mr. Colonico's property is downstream of several smaller tributaries and wetlands. **In** turn, this branch joins another tributary downstream before draining into the Welland River.

MNR Evidence

Three witnesses were called by MNR.

Evidence of Glen Alan Birch

Glen Alan Birch, Senior Area Technician for the Ministry, has been with MNR since 1972 when it was known as the Department of Lands and Forests. He described the branch of Drapers Creek draining an area of two square kilometres, which meanders back and forth along the west side of S. Pelham south of Sumbler, at times with the appearance of a ditch. The land between Sumbler and Foss Road, being the next road to the north, is described as marshy. South of Sumbler and west of S. Pelham there are eight to ten residential properties.

Exhibit 3A, being fifteen photographs marked 1 to 15, taken by Les Pataky and identified later in the hearing as having been taken on June 2, 1992, were described. Photograph 1, taken from the mid point of the north end of the Colonico property, south of the creek, bearing southwest, looks across the property at an existing shed. Photograph 2 is taken from the same location, but facing west, shows the north boundary of the property with the creek marked by a change in foliage. The channel appears narrow and steep, although no description was given. Photographs 3 and 4 are taken from the north boundary looking northward to the gas bar and garden centre greenhouses. Photographs 5, 6 and 7, taken just south of 3 and 4, also look northward to the gas bar and greenhouses with the creek visible, defined by virtue of the surrounding vegetation. Photograph 5 shows a steep clay bank. There appears to be

little vegetation on the north bank of the creek. In photographs 6 and 7, the creek is noted by the longer grassy vegetation, although the banks of the creek are largely not visible. Photograph 8 at the northeast corner of the Colonico Property looking south along S. Pelham, shows the corner of the creek, whose vegetative cover is sufficiently thick that the width and depth of the creek are not apparent. Photograph 9 show the creek bottom at the northeast corner. While the photograph appears to be taken while straddling the creek, the direction of the camera is not certain. The creek bottom is rocky in places and has a mud bottom in others. It meanders and has few exposed banks, with vegetative covering extending right down to the creek bottom and overhanging in many places. The banks appear shallow at this point in the creek and there is water in the creek bed. Photograph 10 is taken from the northeast corner of the property looking across the Colonico home. Photograph 11 is taken from the southeast corner of Sumbler and S. Pelham looking north along the west side of Mr. Colonico's property. S. Pelham drops off gradually to the stream bed which is surrounded by mature trees. There is no indication from the Site Servicing and Grading Plan (Ex. 3 and Ex. 5) (the "Site Servicing Plan") that this area would be affected by either the proposed culvert or proposed redevelopment. Photograph 12 is taken from the same location looking southward. The embankment slopes from the road gradually, with a more marked drop next to the creek. The creek bed is visible

and contains water. Tall grasses growing down into the creek bed on either side and mature trees within several feet are visible on the west side of the creek. Crossing over the creek are several driveways with culverts over the creek bed. Three such driveways are clearly visible, with more appearing in the distance. Photograph 13 is taken from Sumbler looking east to S. Pelham, approximately eighty feet from the intersection. The embankment slopes to a grassy ditch. Photograph 14 is taken from the same location looking west along Sumbler. The embankment slopes to the ditch along the road to the first driveway. On the other side of the ditch, the land is level and is mowed. Photograph 15 is taken from the same location looking north over Mr. Colonico's property and shows a level grassed area with trees on the perimeter.

The area is described as flat along the creek with very little gradient. Just north of the Colonico property, the land is very swampy. The land along Sumbler is grassy, with some development in the form of residential properties with driveways.

The enlarged copy of the Ontario Base Map of the Watershed of Drapers Creek (Ex. 2) ("Enlarged Watershed Map") shows ten culvert crossings along the east side of S. Pelham between Sumbler and Thorold Road, being the next road south, just north of which Drapers Creek crosses under S. Pelham to the east side. Two of these culvert crossings, being the fourth and fifth moving south, were replaced within the last year by the Regional Municipality of Niagara (the "Regional Municipality"). The

Municipality applied for the permits to replace and upgrade existing culvert crossings by substituting the round culverts for arches with flat bottoms. This design provides greater capacity for the flow of water and is more accommodating of a driveway.

Mr. Colonico filed an Application for a Work Permit (ex. 4) (the "Application") for a culvert crossing of Drapers Creek for a new, permanent, continuous culvert crossing with a fill embankment, having a height of four feet, a width of six feet and a length of fifty feet. The proposed time for commencement of construction is the spring of 1993. R.V. Anderson Associates Limited acted as Mr. Colonico's agent at this stage of matters, and correspondence was handled care of Peter Baker.

The report entitled "Stormwater Management Study-Colonico Development" (Ex. 5) (the "Stormwater Management Study") indicates that the City of Welland (the "City") has approved in principle the re-zoning of the property from residential to local commercial. Calculations have been performed in the study to compare pre-development peak runoff rates after a 1:5 year storm event with the post-development runoff rate in accordance with the Niagara Region of MNR requirements. The study notes that the corresponding criteria for the City and MNR is the one in two year event, but suggests that a variable peak discharge rate for both the one in two and one in five year storm is not practical for such a small lot and recommends that the one in five year criteria be accepted. The pre-development peak flow rate for the one

in five year storm is determined to be 9.8 litres/second.

The design of the storm is a synthesis of the one in two year and one in five year storm. Calculations were made for a three hour duration five minute time step "Keifer and Chu" distribution to arrive at run-off rates and storage volume data for the site. Of the total area of the property, estimated at 2000 square metres, 1125 metres will be developed, having either paving or structure and therefore requiring storm water management. Using the pre-development coefficient standard for grassed area of .25, and the post development coefficient standard for roof and paved areas of .95, calculations were made indicating that 11.6 cubic metres of storage would be required to limit the post development runoff to the pre-development level of 9.8 litres/second.

The study indicates that the Site Servicing Plan is designed to meet the storage and release criteria. Four catch basins are located on the plan. Calculations for storage for the paved area is calculated to be 8.35 cubic metres based on the capacity of three of the basins, when added to a 12 inch pipe between the catch basins 1 and 2, a 15 inch pipe between catch basins 2 and 3 and ponding in the landscape contour at catch basins 1 and 2. Storage capacity for the building area is calculated as 3.25 cubic metres based upon the ponding capacity of the swale surrounding catch basin 4. This storage capacity directly corresponds to calculations for storage

requirements for the paved and building areas respectively.

Release rates for catch basins 1, 2 and 4 total 9.8 litres per second, based on areas outlined. Outlet control sizes for catch basins 1, 2 and 4 were calculated through an orifice equation. It should be noted that for purposes of all calculations, catch basin 3 is included in catch basin 2.

In early 1991, Mr. Colonico had made an application for re-zoning of the site. MNR expressed concern for the vegetative buffer zone around the watercourse of Drapers Creek as it crossed the property and flowed south between the proposed development and S. Pelham. According to Mr. Birch, the Storm Water Management Study did address, at least in part, the concerns of MNR concerning these vegetative buffers. However, the proposal includes a culvert crossing located approximately at the middle of the property on the east side along S. Pelham.

There were several meetings between representatives of the Regional Municipality, the City, Mr. Colonico, Mr. Anderson, the Niagara Region Conservation Authority (the "Conservation Authority") and representatives of MNR at which the concerns regarding flows were discussed. The matter was left that based upon up to date calculations, all of the concerned bodies, being the Regional Municipality, the City and the Conservation Authority would be contacted. The outcome was that there were no concerns expressed by either level of municipality. However, Mr. Birch stated that,

as far as he knew, no permit had been issued by the Conservation Authority to date. Resulting from the meeting was additional backwater analysis based upon the HEC2 model, which was sent by R.V. Anderson Associates Limited to MNR on June 2, 1992 (ex. 10) (the "HEC2 Model Calculations").

MNR expressed two concerns with the application. First, upon examination by an MNR zone engineer, the HEC2 Model Calculations showed increased flood levels upstream which would affect riparian rights. Secondly, there is already access to the property from Sumbler which makes additional access unnecessary. Mr. Colonico was given the opportunity to change his proposal so that the culvert crossing would not be necessary, but he elected to remain with the original application.

Mr. Birch stated that the Colonico property differed from those to the south in that those properties south of Sumbler which had received permission to construct new culvert crossings had existing culvert crossings and no alternative access to the properties existed. The Colonico property involved construction of a new culvert crossing and alternative access did exist by the construction of a crossing off Sumbler which did not involve disturbing the creek.

Under cross-examination Mr. Birch stated that he had attended a number of meetings with Mr. Colonico and his representative, but other than a review of the

Application, had done no other investigation. Mr. Birch did not agree with the suggestion that Drapers Creek looks like a roadside ditch, stating that during the summer of 1992, it had been wet.

As a general rule, where culverts have been replaced, the replacement of round culverts has been done with flat bottomed oval culverts. Mr. Russell pointed out that the culvert proposed by Mr. Colonico would be of the same oval flat bottomed type currently required by MNR in its replacements.

Mr. Birch indicated that the status of the matter with the Conservation Authority is that the outcome is dependent on the disposition of the Application with MNR. Mr. Russell suggested that if MNR were to give a permit for the culvert crossing, the Conservation Authority permit would likely follow. Mr. Birch agreed that this was the case.

Concerning the work on the culvert crossing, Mr. Birch agreed that the removal and replacement of a culvert would entail greater disturbance than the installation of a new crossing. As to whether the culverts which have been replaced downstream have had an impact on the stream adjacent to the Colonico property, Mr. Birch stated that he did not know. Such determinations were the responsibility of the engineer.

Under re-direct examination, Mr. Birch clarified that the procedure for

Conservation Authority approval involves a board hearing, the outcome of which cannot be certain. Any dealings by an applicant such as Mr. Colonico would be through the conservation authority staff, which would make recommendations to the board, but do not make final decisions.

Evidence of Anne Robina Yagi

Anne Robina Yagi was the next witness for the Ministry, being the area biologist for the Niagara Region. Ms. Yagi provides biological expertise to a team of resource people. Her responsibilities are to identify concerns regarding fisheries and wildlife. Ms. Yagi has three years experience as a fisheries enhancement officer, having worked on stream rehabilitation, stream habitat assessment work and inventories of lakes and streams. Prior to that she was a contract biologist for 4 years dealing with fish and wildlife concerns. Ms. Yagi has given evidence at hearings, including in Provincial Court. Ms. Yagi was accepted at the inquiry as an expert witness for fisheries and wildlife habitat, with no objections or challenges.

Referring to Guidelines on the Use of "Vegetative Buffer Zones" to Protect Fish Habitat in an Urban Environment (Ex. 7) (the "Guidelines on the Use of Vegetative Buffer Zones"), Ms. Yagi stated that these guidelines help the Ministry in the protection of shorelines and streams from urban development. The purpose of the

Guidelines on the Use of Vegetative Buffer Zones is set out at page 1, being:

to identify the benefits provided by a 'Vegetative Buffer Zone' along lakes and streams for the protection of fish and fish habitat; and

to identify design standards for the establishment of a 'Vegetative Buffer Zone'.

For purposes of the Guidelines, a 'Vegetative Buffer Zone' is defined as:

a permanent setback established along the shoreline or stream bank which remains or is to be returned to a self sustaining vegetative state.

Ms. Yagi explained that a properly buffered zone would provide protection to the stream and its function as fish habitat in several ways. Trees, shrubs and grass are a natural means by which encroachment into the creek can be prevented from urbanization. Creeks are subject to dumping of garbage and rocks, which can affect the quality and quantity of water and flows. Dense vegetation can prevent access to the stream, thereby protecting the natural functions of the stream and its surroundings.

The vegetative buffer zone controls sedimentation and erosion and filters the sheet flow of rain waters from the site. Sheet flow was explained as a non point source of flows with no defined channel. Sheet flow is a cause of sedimentation, the

introduction of sediments into the stream from the adjacent land, which causes problems for fish. This type of erosion can be controlled where there is an adequate vegetative buffer.

Adequate vegetation provides shade which prevents cooling of the water. Certain species of fish are very sensitive to water temperatures. Notwithstanding that the creek looks like a roadside ditch, it has measurable flows for part of the year and is connected to the Welland River. Certain species have been found seasonally during the year. Northern pike utilize the creek for spawning runs in March. The waters of the creek warm faster in spring than do larger bodies of water. The fish migrate to sheltered areas for spawning. The young remain in the creek until periods of increased flows at which time they swim out of the creek. Ms. Yagi acknowledged that Drapers Creek could run dry during dry summers. This is not regarded as a problem as species which utilize this habitat have evolved to the point where they are tolerant of low-oxygen conditions. They will remain in stagnant pools within the stream until a storm flushes the stream.

The vegetative buffer provides a food source through leaves and insects which inhabit the vegetation. The vegetation itself offers protection to the fish from predators.

Asked to assess the vegetative buffer zone provided on the Colonico

property adjacent to Drapers Creek, Ms. Yagi stated that there are trees, some of which are mature and in excess of ten feet high, and grassy vegetation along the banks. There is very little shrub cover. Ms. Yagi stated that for the stream environment to be ideal, she would like to see greater vegetative cover. However, there are a few fish species which do rely on the stream as it currently exists.

The short term effects of the proposed culvert crossing would see increased sedimentation and erosion from grading along the creek. There would also be the associated loss of riparian vegetation which would effect the quality of water in the stream. The long-term effects would be caused by cars using the crossing. Grease and oil would accumulate on paved surfaces and would flush into the creek during a storm as would any sand or salt used in wintertime. The impact on the creek would be greater than a residential crossing due to the commercial nature of the development.

The impact on the stream would be dependent on the stage and life cycle of the species involved. However, gills could be clogged and eggs and fry could be adversely affected. Invertebrates located on the stream bed would be smothered with sediment resulting in a decrease of available food in the stream.

Under cross-examination, Ms. Yagi was asked whether she was familiar with the terms of the Application, in particular the fact that while some trees were

proposed to be removed others would be planted. Ms. Yagi agreed that if the trees were transplanted, the amount of shade would not change. Ms. Yagi agreed that the proposed culvert would also offer shade, although it would not be considered multi-purpose or of the best type. Mr. Russell suggested that the path of Drapers Creek had been moved at some time in the past to flow along the road. Ms. Yagi stated that she was unaware of the purpose of the move. Ms. Yagi was unable to characterize the quality of vegetative buffer downstream or to speak to the existence of one as her examination was limited to the Colonico property.

Asked if the excavation of the stream bed and installation of the culvert crossing were to be done at a time when the creek was dry, Ms. Yagi agreed that the impact on fisheries habitat would be minimal. In addition to Northern Pike spawning, the creek provides habitat to other minnows year around, including central mud shiners. Ms. Yagi agreed that the habitat was for small species of up to four inches which are not sports fish but are used for bait.

Asked whether she was aware that the Application proposed more dense ground cover and vegetation than existed on the property to minimize siltation, Ms. Yagi agreed that retention of soils through dense ground cover would minimize sedimentation.

Asked whether the fry in the creek were present for some time, Ms. Yagi indicated that they were recurring. Mr. Russell asked whether this was so despite sand and salt from S. Pelham, which is adjacent, or oil from the gas bar. Ms. Yagi stated that she did not know as she was unaware of how the road or the gas bar drained. Mr. Russell questioned whether the amount of sediment from the proposed parking lot could be minimized through the use of filter bags and rip rap. Ms. Yagi did not know the impact of their use.

Ms. Yagi was unaware of any spills in the area. Records and data do not indicate spills or sedimentation, nor have any specific studies been done involving the Colonico property.

In reply, Ms. Yagi stated that her concerns regarding preservation of the existing vegetative buffer would increase if there was little or no vegetative buffer along the creek to the south. If this were the only buffer, the impact of any intrusion into the stream bed would be worse.

Referring to the Enlarged Watershed Map (ex. 2), showing the location of the adjacent gas bar and the course of the creek, Mr. Davidson asked whether there was a crossing of the creek. Ms. Yagi stated that access to the gas bar does not involve crossing the creek, and therefore the impact on the creek is not comparable to the proposed crossing on the Colonico property.

Evidence of Lesley Andrew Pataky

Lesley Andrew Pataky was called to give evidence on behalf of MNR.

Mr. Pataky has been employed by MNR in his current capacity as zone engineer for its southern region for the last nine months. He is responsible for the delivery of engineering support for the region. Prior to this he had been the acting regional engineer for the central region of MNR for one year. From 1980 to 1991, Mr. Pataky had been a watershed planning engineer for MNR where he was responsible for municipal plan review, floodplain mapping, fill and construction regulations and water management studies. Based upon his experience in a number of projects on floodline mapping, channelling of watercourses and experience with hydrology and hydraulics, Mr. Pataky was qualified as an expert witness in the fields of civil engineering and flood water management with no objections or qualifications.

Referring to section 1 of the Act, Mr. Pataky read the definition of a "dam",

1. In this Act,
 - (a) "dam" means a dam or other work forwarding, holding back or diverting water;

In his opinion, a culvert forwards water during normal flows and holds back water

during times of flooding, thereby meeting both definitions of the Act.

In response to the Application filed in December, 1991, and to subsequent meetings and correspondence, Mr. Pataky visited the site on June 11, 1992 and took the photographs described by Mr. Birch. In a letter dated June 18, 1992 (Ex. 9) Mr. Pataky responded to the position taken by Mr. Colonico that the application of a zero increase in water level criteria is not reasonable and permission to grant other culvert crossings south of the Colonico property was apparently provided with lower standards. Portions of the letter are reproduced, commencing at the third paragraph of page one:

The hydraulic calculations by R.V. Anderson Associates Ltd. indicate the proposed culvert will increase upstream flood levels up to 0.2 metres under the 2 year to 100 year flood levels. The Site Servicing and Grading Plan (Drawing A2) delineates the extent of flooding on your property but does not show off-site impacts.

I inspected the site on June 11, 1991. Photographs were taken to document conditions in the vicinity of the culvert proposal. The weather was warm and sunny, but the creek still had a good base flow. The topography in vicinity of the proposed crossing was relatively flat which implies the extent of flooding is sensitive to small increases in water level. In my opinion, the proposed culvert will increase both the frequency and magnitude of flooding on Regional Road No. 38 (South Pelham Road) and on other adjacent privately owned land to the north.

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The last paragraph of page two and top of page three:

Your work permit application for a crossing of Draper's Creek must be considered in light of the purposes of the Lakes and Rivers Improvement Act. Specifically, Section 2 of the Act provides for:

- (a) the preservation and equitable exercise of public rights in or over such waters;
- (b) protection of the interests of the riparian owners;
- (c) the use, management and protection of the fish, wildlife and other natural resources dependent on such waters;
- (d) the preservation of the natural amenities of such waters and on the shores and banks thereof; and
- (e) ensuring the suitability of the location and nature of the improvements in such waters, including their efficient and safe maintenance and operation and having regard to matters referred to in clauses (a), (b), (c) and (d), their operation in a reasonable manner.

It would appear your application is in conflict with the purposes of the Act. In addition, access to the site can be provided off Sumbler Road, which brings into question the necessity of a second access or the appropriateness of the proposed land use.

Referring to "Guidelines and Criteria for Approvals under the Lakes and Rivers Improvement Act" (Ex. 11) ("Guidelines and Criteria for Approvals"), which gives applicants an understanding of issues and offers guidance to staff concerning standards to be applied, Mr. Pataky stated that the Guidelines and Criteria for

Approvals were followed in the review of the Application.

Asked to describe his concerns, Mr. Pataky stated that the Site Servicing Plan did not show a cross section of the proposed culvert, which is to be a corrugated metal arch measuring 4 feet by 6 feet. The calculations of R.V. Anderson Associates Ltd. concerning flood levels show increases in the 2 to 100 year storms, the latter being the regulatory flood, of .2 metres or 8 inches north of the crossing which dissipates upstream. Mr. Pataky stated that there is a potential impact on S. Pelham. This would have an effect on private property and public access. There is no detailed site plan of the upstream effects. Secondly, the post development flood levels for the 1 in 100 year storm immediately upstream indicate an eight inch increase over the predicted 1 in 100 year flood levels prior to development. This eight inch increase occurs at cross-section 31.81, which is located immediately north of the proposed culvert.

Paragraph 4.2 of the Guidelines and Criteria for Approvals outlines the standard:

4.2 Upstream Lands and Waters

4.2.1 Flooding and Erosion

- (1) A dam shall not cause flooding or erosion on land located upstream owned by others and upon which the applicant does not have the legal right to flood both permanently and periodically up to the flood level, above that which would occur under existing conditions, as a result of the location, design, construction and/or operation of the dam.

Mr. Pataky explained that the way the culvert is designed, it would cause flooding upstream on land not owned by Mr. Colonico. If he were to obtain the consent of landowners upstream, part of the concerns could be met. However, the matter of flooding on public roads would remain.

Mr. Pataky stated that if culverts are a dam which can cause flooding, the legislation requires that the existing water levels be compared with the proposed levels. From an environmental engineering point of view, it would be best to not proceed at all as there would be temporary siltation and removal of long-term habitat. However, if there were no other access, it could be done in a manner which would minimize impacts.

Consideration for the southern culverts would differ as they were replacement culverts which did not involve removal of riparian or vegetative habitat. Furthermore, it would be unfair to impose exacting requirements where the culverts are the sole means of access.

Relevant considerations in determining whether to replace a culvert are first, whether there is alternative access as multiple access leaves an impact, secondly, if there is no alternative, whether the resulting hydraulic capacity would be greater than

the existing capacity and thirdly, whether proposed construction techniques would mitigate the impact.

Mr. Pataky stated that future replacements would not increase flood levels if the culvert is larger than the existing one and is not raised, thereby meeting the requirements of paragraph 4.2. However, the Application would increase flood levels on adjacent lands as well as on public roads.

Referring to the HEC2 Model Calculations used to calculate flood levels, Mr. Pataky stated that data for input had been provided by the Conservation Authority, to which R.V. Anderson Associates Ltd. added information and modified certain parameters. However, as shown on the Niagara Region Conservation Authority Flood Risk Map of Drapers Creek (Ex. 14)(the "NRCA Flood Risk Map), the floodlines extend to S. Pelham and lands upstream.

Under cross-examination, if the water were dammed at the proposed Colonico culvert, Mr. Pataky stated that there would not be less water downstream as a steady state has been assumed. The impact of the flooding on volume would change with time. However, the storage capacity on the Colonico lands is believed to have a negligible impact downstream. **In** keeping with the Guidelines and Criteria. for Approvals, storage capacity is not used to determine the impacts downstream.

Referring to the NRCA Flood Risk Map, it was suggested that S. Pelham

shows overtopping prior to any proposed construction, with the 1 in 100 year storm being the regulatory storm on which the flood plain mapping was done. Asked whether the effect of the proposed culvert would be minimized because of this overtopping, Mr. Pataky stated that currently eight inches of flooding occurs during all storms. The effect of the proposed culvert would be to have greater flooding which would occur more frequently.

The HEC2 Model Calculations indicate that all flows come through or around the proposed culvert (in weir flow). During the 1 in 100 year storm, the proposed culvert results in an increase of eight inches of flood depth upstream so that beyond the normally occurring flooding on S. Pelham of approximately one inch, there could be up to ten inches of flooding based on the computer model calculations, according to Mr. Pataky. It was suggested that the model was only indicative of flood levels to the extent of overtopping the road. Mr. Pataky disagreed, stating that the consultant for Mr. Colonico submitted hydraulic calculations which indicated a reasonable calculation of the difference of water levels.

Mr. Russell, referring to the NRCA Flood Risk Map (Ex. 14) the HEC2 Modelling Calculations with Cross-sections (Ex. 10) and the Site Servicing Plan (Ex. 5) stated that the 1 in 100 year flood line of 598.10 feet is below the elevation of the pavement of S. Pelham, being 598.93 feet, which is located immediately west of where

the inlet for the proposed culvert would occur. Mr. Pataky suggested that this was "one spot elevation". He was asked whether the pavement rises to which he responded that he did not know, but thought that it drops. He stated that the location of the inlet was a location of greater flooding.

Under re-direct examination, Mr. Pataky stated that his opinion is based upon the site plans, drawings and calculations provided and site visits, having relied on the material filed with the Application and not on independent assessment provided by MNR. Mr. Pataky stated that it was his information that S. Pelham would overtop in a 1 in 100 year storm. Also, the adjacent land, including the gas bar and green houses would flood. He suggested that the ditch can back up along the road, so that water could reach the other side of the road. Asked if the proposed culvert were not allowed, would the gas bar flood, Mr. Pataky stated that he assumed not, but doesn't have sufficient information.

Evidence of Dave Colonico

Mr. Colonico is the owner of the property upon which the culvert crossing is proposed. He has been a resident in the community for 27 years. His parents own the house on the adjacent property.

Asked to recall instances of spring run-off and flooding, he stated that during March and April, the waters of Drapers Creek run high, but have never overtopped the road. Although there have been instances of flooding over the last 25 years, it has never impacted on his property. The greater impact is experienced at the intersection of Sumbler and S. Pelham at the culvert which crosses under Sumbler. However, even with flood conditions, it has not affected the property, nor has there been a recent flood on Sumbler. During the summer the creek often runs dry.

Mr. Colónico stated that refusal of his Application would have a great impact on his proposed development. Access to a commercial development from the major thoroughfare rather than a residential road would enhance its value. He has spent a great deal of time and money on re-zoning as well as on experts to attempt to meet the concerns of MNR. The City has no objections to the plan and is willing to access the property from S. Pelham. The Conservation Authority would be willing to grant a permit if MNR would grant approval, so that the only resistance is with MNR.

Mr. Colónico stated that he is willing to lessen the impact of the culvert through additional landscaping and moving of trees rather than cutting. The effect of more trees, shrubs and ground cover than currently exist would serve to improve riparian conditions.

No neighbours are objecting to access from Sumbler. He stated that the

proposed development is in keeping with the requirements of the City, including curbs, drainage and parking. The proposal would not survive without access off S. Pelham. The gas bar next door has applied to develop a mall which makes the proposed access essential.

The proposal is in keeping with the current zoning, which is commercial and residential after a change in zoning granted by the City. If forced to sell the property without the proposed culvert, Mr. Colonico stated that he would receive considerably less money.

Under cross-examination, Mr. Colonico stated that he is a high school music teacher and agreed that he has no expertise in storm water management, although he does live in the area.

The opinion that the proposed development would not be commercially viable with access only from Sumbler is based upon personal experience that it is easier to enter a commercial property from a highway. Asked how there would be access if S. Pelham were flooded, Mr. Colonico stated that one could drive around. Asked about his intent in developing the property, Mr. Colonico stated that he wanted to put up a plaza. Mr. Davidson suggested that it was to make money, with which there was a certain amount of risk involved.

Referring to the lack of objections from neighbours, Mr. Colonico agreed

that he did not ask the gas bar if it would object to flooding. Mr. Davidson referred to the three options which had been put forward by MNR. It was suggested that Mr. Colonico obtain signed consents of adjacent landowners, which he did not do. It was suggested that he accept the entrance off Sumbler, which he did not do. It was suggested that he build a bridge over the creek, which Mr. Colonico stated would be too expensive. Mr. Davidson suggested that Mr. Colonico was unwilling to do any of the three things which would facilitate his development, two with the approval of the Ministry and one which would not involve approval.

Mr. Davidson suggested that, in light of the possible effect of a 1 in 100 year storm on landowners upstream, it would make sense to ask for their consent to proceed. Mr. Colonico stated that he didn't know whether they would consent, especially if he wants to develop his property. He suggested that the extent of possible flooding would need to be known. Mr. Colonico stated that he would not object in a similar situation as long as his buildings are not affected. However, Mr. Davidson reiterated that Mr. Colonico did not know the outcome because he never spoke with his neighbour.

Mr. Colonico stated that he has not obtained approval of the Conservation Authority. He agreed that he had had dis'cussions with staff.

Mr. Davidson suggested that staff could not grant approvals, but could make recommendations only.

Under re-direct examination, Mr. Colonico stated that he was in possession of a letter from the Conservation Authority which set out that it would have no objections to the development if certain conditions could be met. Mr. Colonico agreed that neighbours within 500 metres were consulted regarding the proposed rezoning and that all issues were addressed. All neighbours were aware of potential flooding, which was raised at a meeting.

Evidence of Peter Graeme Baker

Mr. Baker was called to give evidence on behalf of Mr. Colonico. He obtained his civil engineering degree from McGill University in 1981. He has worked as a consultant with R.V. Anderson Associates Limited on municipal matters related to water, sewers and irrigation. He has had exposure to hydraulic basic pipe flows through use of the HEC2 model.

In the fall of 1991 he did the Stormwater Management Study while in close contact with MNR. He had contact with Bob Lewis from MNR on September 5, 1991, September 17, 1991 and October 9, 1991, meeting at the latter's office. His task

involved meeting the requirements of MNR, the Regional Municipality, the Conservation Authority and the storm water management requirements of the City, which proved difficult to do.

After his meeting with Mr. Lewis on September 5, 1991, Mr. Baker reviewed the options and determined that it would be best to accommodate the sheet flow from the proposed parking surface through use of the existing vegetative buffer. This was in conflict with the requirements of the City which would not allow the amount of run-off after development to exceed the run-off during pre-development.

After two more meetings, the proposal was changed to include an infiltration trench at the rear running off the roof through a catch basin to filter water. To satisfy the concerns of the City in pipe storage was provided, having two more outlets within the vegetative buffer. The Vegetative Plan at page 9 of the Stormwater Management Study was included at Mr. Lewis' suggestion to compensate for what was lost; the species are also those recommended by Mr. Lewis.

On March 2, 1992, Mr. Birch of the local MNR office was pleased with the proposal and the matter was passed on to the regional office in Aurora for comments. At that time, Mr. Baker had assumed that the Application would be approved. Mr. Baker referred to the Notice of Grounds, (Ex. 12) dated March 2, 1993,

which sets out as follows:

...the Minister intends to rely on the following grounds:

1. The proposed dam would directly and indirectly result in the flooding of land of upstream riparian owners.
2. The proposed dam will directly and indirectly have an adverse impact on the use, management and perpetuation of fish, dependent on the waters of Drapers Creek by removing the mature trees and other vegetative matter which provides shading to Drapers Creek; and thus sustains the stream water temperature, and acts as a vegetative buffer between the proposed development and Drapers Creek which reduce pollutants in the storm water runoff from entering the watercourse.
3. The proposed dam will directly and indirectly have an adverse impact on the use, management and perpetuation of fish during its construction.

Dealing with the third ground first, Mr. Baker stated that a barrier of geotextile fabric had been proposed to be installed between the development and the creek, which allows water but not soil to penetrate. Furthermore, construction was proposed for summer months when flows would be minimal.

Dealing with the up and downstream flooding, the Conservation Authority provided the basic HEC2 model to which data for the proposed changes was added. In the initial model, there are nine culverts downstream, being 20 metres apart. They are identical and the data was copied and placed at the location for the Colonico property.

However, the figures using data from downstream were not accepted. At a meeting with MNR, the City, the Regional Municipality and the Conservation Authority, the use of a larger culvert, being four feet high and eight feet in width, known as a "box culvert", were examined. Mr. Colonico and his representatives were told of the "zero impact upstream" requirement for any proposed culvert. Up to the time of the meeting, Mr. Baker stated that he had thought the impact of the culvert would be minimal upstream. However, it was clear that even minimal increases would not be accepted. The solutions discussed under the evidence of Mr. Colonico were discussed at the meeting. The construction of a bridge over the creek is beyond the monetary scope of the development. No one at the meeting came up with any engineered solutions and so no further solutions were explored. For example, no one addressed the issue of why there was no flood plain mapping beyond the property.

The Plan of Topographical Survey of Part of Lot 1, Concession XI, Township of Pelham, certified on June 24, 1991, by Matthews, Cameron, Cahill & Heywood Ltd. (Ex. 13) (the "Plan of Topographic Survey"), sets out spot elevations throughout the Colonico property along with 10 feet to the north, the mid-line of S. Pelham and the mid-line of Sumbler. The regulatory flood line has been imposed on the plan as has the top of bank.

Mr. Baker stated that the elevation of the 1 in 100 year storm is 598.54

feet in the vicinity of the proposed culvert. He submitted that any flows which reached more than this would overflow. Referring to the Site Servicing Plan and the HEC2 Modelling Calculations data for cross-section 31.6, the post development elevation for the site immediately below the proposed culvert would be 182.31 metres or 598.13 feet.

Mr. Baker drew two red lines on the Plan of Topographical Survey a distance of 20 feet apart, the lines being 5 feet in length. He stated that the impact of a culvert crossing would be the equivalent of affecting 100 square feet, so that any impact on S. Pelham or the gas bar would affect a comparable area of 100 square feet. He submitted that this should be regarded as minimal. Once water goes over the road, the HEC2 analysis is no longer valid, as the watershed mapping does not extend to the other side.

The HEC2 model shows an increase in elevation at the place just north of the proposed culvert installation of 20 cm, at cross section 31.810, representing an increase in flood levels for the 1 in 100 year storm of eight inches. At the northwest corner of the property, next to the gas bar, being cross-section 31.900, the change in flood levels would be 2.3 cm. or 1 inch. Being under the impression that a minimal increase would be acceptable, Mr. Baker is of the opinion that the requirement had been met. The level of flooding increases for the 1 in 100 year storm does not, in his

estimation, present a significant flooding threat for either the road or the neighbour.

In conclusion, Mr. Baker stated that the suggested solution of a bridge would not allow sufficient property on which to build the proposed parking lot, which makes the solution impractical.

Under cross-examination Mr. Baker agreed that the Plan of Topographic Survey was not part of the original application. He agreed, but stated that many of the spot elevations appear on the Site and Servicing Plan. The figures in the survey are based on the existing benchmark, being the known geodetic elevation, which has been translated to elevations.

Asked what the relationship is between the Plan of Topographic Survey and the N.R.CA. Flood Risk Map (Ex. 14), Mr. Baker stated that the topographic survey has greater detail and accuracy, as the measurements were taken at closer intervals.

Regarding his evidence that there would be no additional flooding on the adjoining property based upon the Plan of Topographic Survey, it was suggested that the gas bar could be subject to other sources of flooding. Mr. Baker was asked the utility of the N.R.CA. Flood Risk Map and stated that within the survey area, the Plan of Topographic Survey is more accurate.

Referring to the statement that there is currently no flooding on the gas bar property, but post development the gas bar was likely to be subject to 100 square feet of flooding, Mr. Davidson asked whether this would meet the requirements of paragraph 4.2.1. of the Guidelines and Criteria for Approvals of no increases beyond existing levels. Referring to the failure of Mr. Colónico to obtain permission from adjacent landowners, Mr. Davidson suggested that MNR was being blamed for the inability of Mr. Colónico to meet the guidelines or obtain the necessary consent of neighbours.

Mr. Baker stated that the gas bar was not approached for consent, as all neighbours would have to consent as well. It would involve detailed and expensive legal work which Mr. Baker stated he was not certain would be sufficient for MNR. There was no precedent for such consents and MNR could not advise as to their reliability. Another issue was whether the cost of obtaining such consents would exceed the damages due to flooding.

Referring to the initial discussions with the City, Mr. Davidson asked whether the discussions with Mr. Lewis were regarding an application for re-zoning under the Planning Act and not the Lakes and Rivers Improvement Act. Mr. Baker responded that the initial discussions concerned the Planning Act, and dealt with the

parking lot in general. The issue of the HEC2 model came up at a later date, after the application had been submitted.

Referring to the construction fabric to trap solids during construction, Mr. Baker agreed that it would be in place during construction and is not permanent. Mr. Baker agreed that the crossing is within an existing stream bed. He stated that a straw base would be laid to dam the creek during construction and would act as a filter.

Mr. Baker was asked whether he could predict when there would be a low rain period during the summer, with the possibility of a wet summer or a flash flood. Mr. Baker responded that installation of a culvert takes one day and could be scheduled accordingly.

Asked whether he had a copy of the Guidelines and Criteria for Approvals, Mr. Baker stated that he had a copy in his office. Referring to clause 4.1(2) at page BS, which states,

4.1 Design Flood Magnitude

- (2) The design flood level upstream of a dam for the design floods listed in subsection (1) above shall not cause flooding, either directly or indirectly by backwater effect, above that which would occur under existing conditions at the site on lands owned by others upstream...

The paragraph goes on to refer to the exception in clause (3), which provides where legal authority has been obtained to cause flooding upstream or downstream.

Mr. Baker stated that he did not see anything which stated zero increase.

Referring to the HEC2 calculations, with the increase in flooding at the northeast corner of one inch for the 1 in 50 year storm, Mr. Baker stated that he thought it was sufficiently insignificant to not warrant additional attention.

Mr. Davidson stated that MNR estimates the impact at the culvert to be 8 inches, and the question is how this would impact properties upstream.

In re-direct examination, Mr. Baker was asked whether the zero tolerance for development on streams applies to all development or only to new development.

Mr. Baker replied that the position taken by MNR is with respect to new development, but he does not know whether it is specifically stated in the guideline.

Concerning the opportunities to receive additional floodwaters downstream, Mr. Baker stated that in his opinion the bottleneck occurs where Drapers Creek crosses under S. Pelham at Thorold Road, which has an 18 inch culvert. Between the place where this branch of Drapers Creek crosses Foss Road, which is the next intersection north of Sumbler, to where it crosses under S. Pelham just above Thorold, there is a drop of two feet. On the way, with eight or nine 18 inch culvert crossings, the impact on flooding on S. Pelham would be hard to predict as the hydraulics are complex. If the 18 inch culvert crossing under S. Pelham at Thorold were improved, it would improve the situation downstream by alleviating the bottleneck.

Evidence of Edward David Russell

Mr. Russell has been an architect for 35 years, having obtained his Ph.D. from Cornell University. Mr. Russell provided his evidence by way of a statement.

Referring to the Notice of Grounds (Ex. 12), reproduced in part above, Mr. Russell stated that he disagrees that the proposed culvert would impact on flooding of properties upstream. Evidence in support of this is the HEC2 Modelling Calculations which would have an impact of three centimetres 50 metres upstream. He submitted that the proposed vegetative buffer, in addition to the relocation of existing trees and whose number will be augmented with nursery stock, will provide a sufficient vegetative buffer to prevent siltation and erosion. He submitted that the impact on fish can be mitigated by the undertaking of Mr. Colonico to install the culvert crossing on a dry day when the creek has run dry. By employing a quality contractor and supervisor of public works, with the installation of the properly selected vegetation, the impact would be minimal.

The culvert crossing is very important to the viability of the proposed commercial development. Any flooding which may occur is insignificant, with greater impact predicted during flood conditions at the crossing under Thorold Road. The impact on riparian rights will involve the flooding of farm lands. Much time and money has been lost in pursuing this endeavour. There is a separate standard applied to residential culvert crossings which have been replaced on S. Pelham. Finally, the

denial of access off the highway restricts access to the proposed commercial development, which would see the commercial aspect fail, the value of the property decline and does not afford the highest and best use of the property.

In total, \$82,500 has been spent for on and off site capital expenses, which is indicative of the value placed on this proposed development.

Mr. Russell submitted that the MNR standard of zero impact is not possible to meet. Mr. Russell submitted that demonstrated diminished impact on the stream would suffice. At all times, Mr. Colonico has remained receptive to alternative suggestions. It is his position that if the approval is not granted, much time and money will be lost.

Under cross-examination, Mr. Russell stated that the existing access to the property off Sumbler is visible from S. Pelham when driving from the south.

Asked if the perceived unfairness is due to the fact that no other applications for culvert crossings have been denied, Mr. Russell indicated that this was the reason.

Under re-direct examination, Mr. Russell submitted that the nature of the property is economic, not having to do with forests and fish. It was purchased with the belief that it was able to be developed. The highest and best use of the property is that of commercial. All agencies involved have agreed with this assessment and have

indicated that they would grant necessary approvals once permission from the Ministry has been obtained. This permission should be granted on the basis that the small impact of the increased flooding of the 1 in 100 year storm is not significant.

Submissions

Mr. Davidson submitted that the proposed culvert crossing is a dam, within the meaning of the Act. He submitted that the refusal is fair, sound and reasonably necessary. The reasonableness test is determined by MNR to achieve the purposes of the Act. The refusal is reasonably necessary to protect the fisheries. Based on the evidence of Ms. Yagi, it is submitted that fish are present in Drapers Creek. The management and perpetuation of fish stock is dependent on the habitat provided by the stream.. Coupled with this is the reasonable necessity of protecting the vegetative buffer, which provides shade and filtering to prevent sedimentation and introduction of toxic material such as oil and salt. This buffer would be pierced by the proposed crossing. Cars will drive over it, which provides new opportunities for toxic material to spill into the creek. The impact of the period of construction, when the habitat and stream function will be disrupted also makes the refusal reasonably necessary.

Mr. Davidson submitted that riparian owners upstream will rely on

government agencies to protect against impact of flooding on their property. MNR, with its expertise in flood management, has demonstrated through the evidence of Mr. Pataky, but using the calculations of the applicant, that there will be eight inches of flooding on the adjoining property as a result of the proposed crossing.

It is not for Mr. Colonico to determine whether or not the impact of his proposed culvert crossing is significant. It was open to Mr. Colonico to ensure that adjacent owners were aware of the impact and obtain their consents. When MNR makes its determination, it will be based not only on the impact to Mr. Colonico, but on others who may be adversely affected by granting of permission.

Mr. Colonico currently has access which is visible from the main road. There is no evidence of adverse economic impact through the use of exclusive access via Sumbler.

For these reasons, the refusal of MNR to grant permission is reasonable and fair for purposes of the Act, in Mr. Davidson's submission. Mr. Colonico has other options, which were not pursued. With either alternative access or alternatively consent of the neighbours in which case the fisheries matters could be worked out as between himself and the Ministry. Having done neither, Mr. Colonico is seeking to adversely impact on the environment of others, which should not be found to be reasonable.

Mr. Russell stated that the degree of reasonableness should be considered. The zero option, in his submission, is not reasonable if there is no flexibility regarding the government mandate. Taking this to its logical conclusion, all development would stop.

Mr. Russell submitted that Mr. Colonico has reasonably complied with all of the requirements put forth by the Ministry, which was not refuted through the evidence of MNR. The dam could be constructed with little or no impact to fish, ensuring that any runoff would be filtered. The resultant development would provide shade and temperature control to fish habitat, so that there can be no finding of impact due to runoff or loss of habitat.

Mr. Russell submitted that every attempt has been made to find an answer to the zero option position of MNR notwithstanding that Mr. Colonico was never advised that this test existed.

Mr. Russell concluded by stating that if Mr. Colonico's attempts to reasonably comply with the purposes of the Act are not accepted, it would create hardship for him. The result for the community would be no development as opposed to one of the highest and best use.

Findings of Fact

There was no dispute at the inquiry that the proposed culvert crossing is a "dam" within the meaning of section 1 of the Act. The HECZ Model Calculations, which compare existing flood levels to those after installation of the proposed culvert crossing reveal increased flood levels during the 1:2, 1:5, 1:10, 1:20, 1:50 and 1:100 year storms at cross-sections 31.820 and 31.900. This is indicative of a "dam or other work ... holding back ... water."

Concerning the issue of vegetative buffer along watercourses, there is no doubt that its preservation is necessary and of utmost importance to ensure that the function it serves is the protection of fish and fish habitat. It should be noted that watercourses do not flow along routes that are convenient to human inhabitation. Roads in surveyed townships in Southern Ontario, on the other hand, have typically been constructed to run along north-south and east-west axis, corresponding to Lots and Concessions provided for in the original surveys. Clearly, it would be impossible to prevent all crossings over watercourses to ensure protection of habitat. However, the path of the watercourses as they intersect with roads, can create the appearance of unfairness in determining who may obtain a crossing and who may not, as contemplated by an application under the Act. The guidelines set by MNR to limit crossings to such instances where there is no alternative access is indicative of the

attempt to define where the boundaries of intrusion may fairly be set.

In the case of the Colónico property the appearance of unfairness arises due to the course of Drapers Creek. North of Sumbler it flows well back of the road, so that commercial development which appears to be slated for this stretch of road may develop uninhibited. However, on the Colónico property the course of the creek moves alongside the road so that access will necessarily involve the creek.

The question of intrusion into the buffer zone is addressed in MNR's Guidelines on the Use of Vegetative Buffer Zones (Ex.7). At pages 25 and 26, low intensity uses, small scale structures and buildings being accessories to recreation and essential services linkages, being roads, pipelines, electrical lines and the like in large scale developments will be acceptable under certain conditions, provided that disruption to the vegetative buffer zone is minimal and construction is done when it is likely to have the least amount of impact on the watercourse.

The Colónico Application, although not part of a large scale development, represents the beginning of a commercial strip along S. Pelham Road commencing immediately north of Sumbler with the proposed Colónico development, the gas bar and the garden centre. I am satisfied that the nature of the proposed culvert crossing can be classified as an essential service linkage owing to its frontage on S. Pelham. While direct access onto S. Pelham may not be entirely necessary, two access routes

appear to be essential to a commercial development along this major highway, as evidenced by the two access routes to the adjacent gas bar and garden centre.

Therefore, I am satisfied that the culvert crossing is necessary to provide an essential service linkage to the proposed development on the Colónico property.

Evidence presented by Ms. Yagi has satisfied me that the stretch of Drapers Creek involved in the Application is utilized by fish fry and minnows which are important for the purpose of providing food for larger species of sport fish. With respect to habitat, the evidence presented at the inquiry supports the finding that the stretch of Drapers Creek which runs through the Colónico property and to the south has experienced heavy intrusion by man. Indeed, the Colónico Application would provide enhanced habitat along the stream bank to that which currently exists. As stated by Ms. Yagi, there are fewer trees and no shrubs, being less than ideal for the functions of a vegetative buffer zone. There currently exists no mechanism whereby a landowner along a riparian zone can be forced to upgrade the vegetative buffer zone on his property, in the absence of a proposed intrusion into the zone.

Conditions for permitted uses in the vegetative buffer zone have conditions attached, as outlined on page 26 of the Guidelines on the Use of Vegetative Buffer Zones, (Ex. 7), with protection during the construction phase discussed at pages 26 through 28. The manner of proceeding is not unlike that proposed by the Colónico

Application. There are three aspects to this. The first is the identification of the buffer zone, ensuring that it is cordoned off. Evidence presented by Mr. Baker has satisfied me that all possible steps would be taken to minimize and prevent disruption of the buffer zone not directly affected by the proposed construction. Second, special care is needed to ensure that trees on the edge of the buffer zone are not damaged. While the Colonico property is not a forest, ten trees which would be affected by construction are marked on the Site Servicing Plan and are slated for removal. Oral evidence at the inquiry was that they would be transplanted and augmented. Although there was no evidence that care would be taken to prevent compaction of soil around unaffected trees, I am satisfied that this was not an issue as the number of trees was not great and all those exposed to harm would be moved. The time of construction was similarly set for a dry day in summer. Third, erosion control mechanisms are to be installed prior to the commencement of construction to prevent excessive movement of soils and after construction to ensure stability and proper drainage. Through the use of laying down straw, targeting the area affected and immediate planting, the potential effect on the creek and buffer zone has been reduced as reasonably as circumstances will permit if such intrusion were allowed.

Although the construction of a culvert crossing would result in increased oil and salt flushing into the creek, through the evidence of Ms. Yagi, I am satisfied

that the type of fry and minnows which currently utilize these waters are sufficiently hardy .to tolerate such conditions. Indeed, these conditions are likely to persist to the south of Thorold Road north of which there are no fewer than nine existing residential culvert crossings. Furthermore, the creek runs sufficiently close to S. Pelham to resemble a roadside ditch.

I am satisfied that access by way of a culvert crossing provides an essential service linkage from the Colónico property to S. Pelham. The stretch of Drapers Creek which runs parallel to S. Pelham performs functions which are important for the use, management and protection of fish and as such are dependent on these waters. However, proposed the manner of construction is designed to have minimal impact on the stream and not unduly impact on the fish fry and minnows found to utilize these waters.

The criteria for the protection of the interests of riparian owners allows an exception for the zero impact on upstream (or downstream) flood water levels. At pages B8 and B of the Guidelines for Criteria and Approvals (Ex. 11)

4. CRITERIA TO BE USED FOR ASSESSMENT OF DESIGN FLOOD

4.1 Design Flood Magnitude

(2) Upstream Design Flood Level

- (i) The design flood level upstream of a dam for the design floods listed in subsection (1) above shall not cause flooding, either directly or indirectly by

backwater effect, above that which would occur under existing conditions at the site on lands owned by others upstream except where subsection (3)(i) below is applicable....

(3) Exceptions Modifying~ Criteria

The following exceptions will, modify the criteria listed in subsection (1) and (2) above:

- (i) Where legal authority has been obtained to cause flooding on upstream and/or downstream land and property due to dam (in form of a flood easement, right or zoning, lease or acquisition of property subject to flooding, or legal agreement to compensate for any flood damage caused by dam) the owner may use;
 - (a) a smaller design flood flow than listed in the table in subsection (1) above corresponding to the resulting lowered risk of flood damage downstream; and/or
 - (b) a higher upstream design flood level than that permitted in subsection (2) above for the design floods listed in subsection (1) above, corresponding to the upstream flood level that is authorized.

Not discussed at the inquiry are the specific references to culverts, set out at pages B9, and B17 to B19. Relevant passages are reproduced.

4.1 (3)

- (ii) Bridges, Culverts and Causeways

For private and public bridges; culverts and causeways, Ministry of Transportation and Communications (MTC) design flood flow criteria shall be used as listed in section 9 on Page B17.

9. GUIDELINES AND CRITERIA FOR ASSESSMENT OF BRIDGES, CULVERTS, CAUSEWAYS AND DOCKS

9.1 Structures Requiring Approval

- (1) A private bridge, culvert or causeway on a lake or river shall require approval where it acts as a dam by holding back or forwarding water either temporarily or permanently and where it:
- (i) will cause flooding and/or erosion on lands of other and does not meet the design flood flow criteria in this section

9.2 Design Flood Magnitude

(1) [A table is contained in the document which sets out road classifications, total span of the bridge or culvert under normal design floods and use of the regional flood for watersheds over 1 square kilometre.]

- (2) The normal design floods listed in subsection (1) above are for average condition only, and should be modified if necessary, as follows:

(Hi) Use of Regional Flood

Design to Regional Flood criteria is to be considered if, under Regional Flood conditions, a facility designed to normal criteria would

(a) materially increase flood damage to buildings over that which would occur under existing conditions at the site,

or

(b) increase backwater which would materially reduce the area of developable land upstream, provided that building development is expected within 20 years.

In all cases the probable benefit (tangible and intangible) should be commensurate with the added cost of the facility, and should be discussed with the municipality and with the landowners adversely affected.

Referring to the evidence given at the inquiry, the effect of the proposed culvert crossing on downstream properties is shown by the HEC2 Model Calculations to be negligible. Upstream, the effects of the proposed culvert crossing are observed to be marginal at cross-sections taken off of the Colonico property.

Cross-sections 32 and 33 show a marginal drop in projected flood levels for the 1:100 year storm, being .02 and .01 metres respectively. Cross-sections 34 and 35 show a marginal increase, both being .01 metres for the 1:100 year storm. Cross-section 36 shows no change for any type of storm.

The projected increased flood levels of concern, both for purposes of actual potential flooding and from the point of view of adjacent landowners, occur at cross-sections 31.810 and 31.900, located at the northeastern and northwestern limit of the Colonico property. The N.R.C.A. Flood Risk Map indicates that three quarters of the Colonico property is located within the flood plain, excepting the southwest quarter where a proposed commercial and residential development would be constructed. The flood plain mapping indicates that S. Pelham is within the floodplain along the length

of the Colonico property and beyond, although the extent of this is not shown on the map.

The gas bar immediately to the north is on an island of higher land which is above the floodplain. The mapping indicates that the flood plain limit crosses S. Pelham adjacent to the southern end of the gas bar and runs northward along the west side of S. Pelham. At the garden centre the floodplain commences running northwest, with a portion running through the buildings and greenhouses. A long narrow finger of floodplain extends between the parking lot and S. Pelham ending before the northern entrance to the garden centre off S. Pelham. The southern entrance is fully within the floodplain.

Cross-sections 31.810 and 31.900 clearly indicate that the effect of a 1:100 year storm will impact on the land immediately adjacent to the creek. The argument of Mr. Baker that no more than 100 square feet will be affected is irrelevant. Similarly, the Plan of Topographic Survey (Ex. 13) is not conclusive evidence of the potential impact and depths of flooding will not be felt on S. Pelham or the lands to the north. Floodplain mapping is not solely dependent on elevationS at a particular location. The direction and velocity of flow, the contour of the land, the relative stability and permeability of the soils or structures such as roads will also have an

impact on the levels of flooding.

The impact of projected flooding is as likely to be felt on adjacent lands as it is on the Colonico property as evidenced by the NRCA Flood Risk Map. The solution proposed to this situation is simple. By obtaining agreements from adjacent landowners, whether it be for a flooding easement or for compensation, Mr. Colonico could obtain the necessary permission from MNR. By not doing so, he is asking MNR to give permission to flood lands owned by others. If it is a matter of a small degree of flooding, as Mr. Baker suggests, adjacent landowners should readily be persuaded of the merits of entering into an agreement. Clearly, all of the commercial developments along S. Pelham could benefit from the development of a commercial strip north of Sumbler.

The requirement for agreement of adjacent landowners is contained at page B8 of the Guidelines and Criteria for Approvals which was published in 1977. It was suggested on behalf of Mr. Colonico that there is no precedent for such agreement. However, there was no corroborating evidence that such agreements have not been relied upon in other cases. It is impossible to pre-determine what the result might be when it was clear from the evidence that the adjacent landowners were not consulted.

Recommendation

Based upon the evidence and submissions made at the inquiry, and the findings of fact set out above, I am satisfied that the Application would not adversely affect the purposes of clauses 2(c) and 2(d) of the **Act**, namely that the Application for the construction of a culvert crossing would not adversely affect the use, management and protection of fish and fish habitat along the affected portion of Drapers Creek.

The impact of the proposed culvert crossing on South Pelham Road immediately east of the Colonico property is measurable, but not determinative. The concerns of MNR were not focused on this issue. I have made no findings that flood levels on South Pelham Road would make the road unpassable to emergency vehicles during a regional storm.

There will be measurable flooding of eight inches on land located immediately north of the Colonico property, and the fact is that Mr. Colonico did not consult with the adjacent landowners to obtain the legal right to flood such lands, although he was repeatedly instructed by MNR to do so.

Based upon the potential impact on riparian landowners and the fact that Mr. Colonico did not seek their approval but rather sought permission from MNR to affect the land of others, I recommend that the Application be refused on the basis

that such refusal is fair, sound and necessary for the protection of riparian landowners located upstream from the proposed culvert crossing.

DATED this 16th day of August, 1993.

Original signed by L. Kamerman

INQUIRY OFFICER