REPORT ON PUBLIC HEARINGS

PEMBINA VALLEY WATER COOPERATIVE INC.

PEMBINA VALLEY REGIONAL WATER SUPPLY PROPOSAL

MAY, 1994

MANITOBA CLEAN ENVIRONMENT COMMISSION

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EXECUTIVE SUMMARY

In April of 1993, the Minister of Environment requested that the Clean Environment Commission convene public hearings on a proposal submitted by the Pembina Valley Water Cooperative Inc. (PVWC) for the development of a coordinated water supply system for the Pembina Triangle region of Manitoba. The proposal was designed to provide a solution to water supply shortages in the area, resulting from population growth and the emergence of a significant manufacturing sector in the region.

The Cooperative's original proposal included plans to increase water removal from the Red River, and to purchase treated Assiniboine River water from the City of Portage la Prairie. A pipeline system would also be developed to provide for delivery of the water throughout the region.

Following some 40 hours of hearings in Portage La Prairie, Russell, and Altona, the Commission suspended the proceedings pending receipt of additional information form the PVWC and the Department of Natural Resources, and the Sustainable Development Coordination Unit.

The Cooperative subsequently amended its proposal to accommodate a shorter planning horizon, and to eliminate the purchase of treated water originating from the Assiniboine River. The amended proposal included adjustments to the planned removal of water from the Red River, and introduced several changes to the manner in which the Stephenfield Reservoir is utilized as a water supply source in the area.

The Commission convened hearings on the Cooperative's amended proposal in March of 1994.

Following the hearing, the Commission recommended that a licence be issued to the Pembina Valley Water Cooperative Inc. for the development of a water supply system for the Pembina Triangle, as described in the amended proposed. The Commission's recommendation for licensing included provisions for the protection of stream crossings, fisheries resources, and the Stephenfield Provincial Park. In addition, the Commission recommended that the licence be conditional upon the development by the Cooperative, of a comprehensive water conservation plan and implementation strategy. The Commission also provided the government with a series of Observations based on the evidence received at the hearings. These included comments related to water conservation, the use and management of the Winkler Aquifer, and the need to ensure that provincial water policies developed in

Manitoba be within the guidelines of sustainable development, and be consistent with the terms and conditions of related legislation, specifically the Water Rights Act.

PREFACE

This report contains a summation of the evidence presented at the public hearings convened by the Manitoba Clean Environment Commission to hear evidence on a proposal for licensing under The Environment Act, filed by the Pembina Valley Water Cooperative Inc., for the development of a regional water supply system for the region of Manitoba known as the *Pembina Triangle*.

A detailed account of the evidence presented to the Commission is contained in the Verbatim Transcript of the hearing which is available for review at the offices of the Clean Environment Commission and at designated *Public Registry* locations. A list of the exhibits filed at the hearing can be found in "Appendix A" of this report.

PROJECT HISTORY

The Pembina Valley Water Cooperative Inc. (PVWC), the project proponent, is a legally incorporated entity under the Manitoba Cooperatives Act, and comprises seven Rural Municipalities and eight towns in the Pembina Triangle area of Southern Manitoba.

Several years of low surface runoff in the 1980s and droughts in 1988-1989 heightened an awareness of long standing water supply constraints experienced in the region. The Cooperative is mandated to develop and implement a regional water supply system based upon the results of a report prepared by the *Pembina Valley Water Task Force*. The water supply project developed, and submitted by the Cooperative for licensing under the Environment Act, was designed to provide an assured supply of potable water to meet the long-term needs of the towns, villages and rural residents of the Pembina Triangle.

The original proposal, developed by the Cooperative in 1992, called for withdrawal of water from the Red River and for the diversion of water via a proposed canal from the Assiniboine River to the Boyne River. An Environmental Impact Statement (EIS) for the project was prepared by Dillon Consulting Engineers Ltd., and the Clean Environment Commission was called upon to convene a public hearing on the proposal. Prior to the opening of the hearing, public expressions of concern over the manner in which Assiniboine River water was to be diverted caused the proponent to modify the proposal. The modified proposal altered the plan so that Assiniboine River water would be withdrawn and treated at Portage La Prairie, and then transported south via underground pipeline. This revision to the original plan eliminated the need for an open canal to the Boyne River, and also eliminated the need to construct a water treatment plant at the Stephenfield Reservoir. An Addendum to the original EIS, based on the revised proposal, was submitted to Manitoba Environment in February of 1993. The Commission was instructed to proceed with the scheduling of a public hearing on the PVWC's amended proposal.

Following some 40 hours of hearing in Portage La Prairie, Russell and Altona, the Commission panel reviewing the proposal determined that the material being received was not sufficient to allow the panel to reach a conclusion. On June 29, 1993 the Minister of Environment was advised in writing by the Chairman that the panel was suspending the hearings pending the filing of additional information by the PVWC, the Department of Natural Resources, and the Manitoba Sustainable Development Coordination Unit.

The Commission panel provided an outline of the areas where additional information was required. In summary, these included:

- a request to the Department of Natural Resources that a "water budget" be provided detailing instream flows and water withdrawals along the Assiniboine River from the Manitoba-Saskatchewan border to the confluence with the Red River, and that information be supplied which would demonstrate the link between the Water Rights Act and the newly adopted Provincial *Water Policies*;

- a request that the Sustainable Development Coordination Unit provide an assessment as to how the PVWC proposal reflected the "principles and guidelines of sustainable development";

- a request that the PVWC submit all outstanding deficiency information as detailed by Manitoba Environment, comment on the relationship between the proposal and the "principles and guidelines of sustainable development", provide an authoritative review of population projections for the Pembina Triangle, cost estimates for wastewater treatment, and a review of all water supply options considered.

During the months that followed the hearing suspension, the PVWC re-examined the proposal and made a determination to amend the project. The revised proposal eliminated that portion of the project related to water withdrawal from the Assiniboine River, and concentrated entirely on plans to withdraw water from the Red River, and from the Stephenfield Reservoir.

The public hearing that had been suspended in June of 1993 was reconvened in March of 1994 to consider the amended proposal.

ENVIRONMENTAL REVIEW PROCESS

Under The Environment Act (1988), all proposals submitted to Manitoba Environment for licensing are advertised in the local and Provincial press to ensure that the public is aware of planned development projects, and to provide an opportunity for concerns to be identified prior to decisions being taken related to licensing. Project specific details, and documents related to the potential

environmental impacts of specific proposals, are placed in the *Public Registry* in order facilitate access to relevant information.

Where a significant level of public concern respecting a specific proposal has been identified, the Minister of Environment may call for a public hearing to be conducted by the Manitoba Clean Environment Commission. Under these circumstances, hearings are convened by the Commission on the basis of instructions received from the Environment Minister. The Commission reviews the information presented at the hearings and prepares a report to the Minister containing advice and recommendations. The Minister considers this advice in determining whether or not an Environment Act licence should be issued for a specific proposal. The Minister is not under any obligation to adopt the Commission's recommendations. However, under the Environment Act , the Minister must provide written reasons as to why specific recommendations were not acted upon, and these must be placed in the *Public Registry*.

The Commission comprises a Chairperson and a minimum of 10 part time members. The part time members are appointed by Order in Council for a designated term. The members represent a wide variety of occupations and reside in different regions of the province. The panel members identified for a specific hearing are selected from the Commission members.

PUBLIC HEARING (PVWC)
PEMBINA VALLEY WATER COOPERATIVE INC.
REGIONAL WATER SUPPLY PROPOSAL

On February 3, 1994, the Environment Minister instructed the Clean Environment Commission to resume the hearing to consider an amended proposal submitted by the Pembina Valley Water Cooperative (PVWC) for the development of a regional water supply system for the Pembina Triangle. (The hearings on the original proposal, held in Portage la Prairie, Russell, and Altona in June of 1993, had been suspended to permit the filing of additional information deemed by the Commission to be necessary to evaluate the proposal.) The Minister's instructions, which included an amendment to the Commission's original *Terms of Reference*, requested that only the amended proposal, as submitted by the PVWC, be considered during the hearing.

The hearing on the amended PVWC proposal was held in the Winnipeg Convention Centre, Winnipeg, MB, March 7 - 10, 1994 and at the Carman and District Hall, Carman, MB, March

14 -18, 1994. Notice of the hearing was widely advertised in the local press, and direct notice of the re-convened hearing was forwarded to those who had participated in the process prior to the hearing suspension.

The Commission panel members included Ed Gramiak, of Winnipeg, Heather Morden, of McCreary, and Barrie Webster, of Winnipeg. (Arnie Barr, of Portage la Prairie, had participated in the portion of the hearing prior to the suspension, but was not available to continue serving on the panel when the hearing resumed.) The Panel was chaired by Commission Chairman, Dale Stewart.

Commission staff in attendance included, Rory Grewar, Secretary to the Commission, Jim Potton, Senior Professional Officer, and Pat Goran, Secretary to the Chairman.

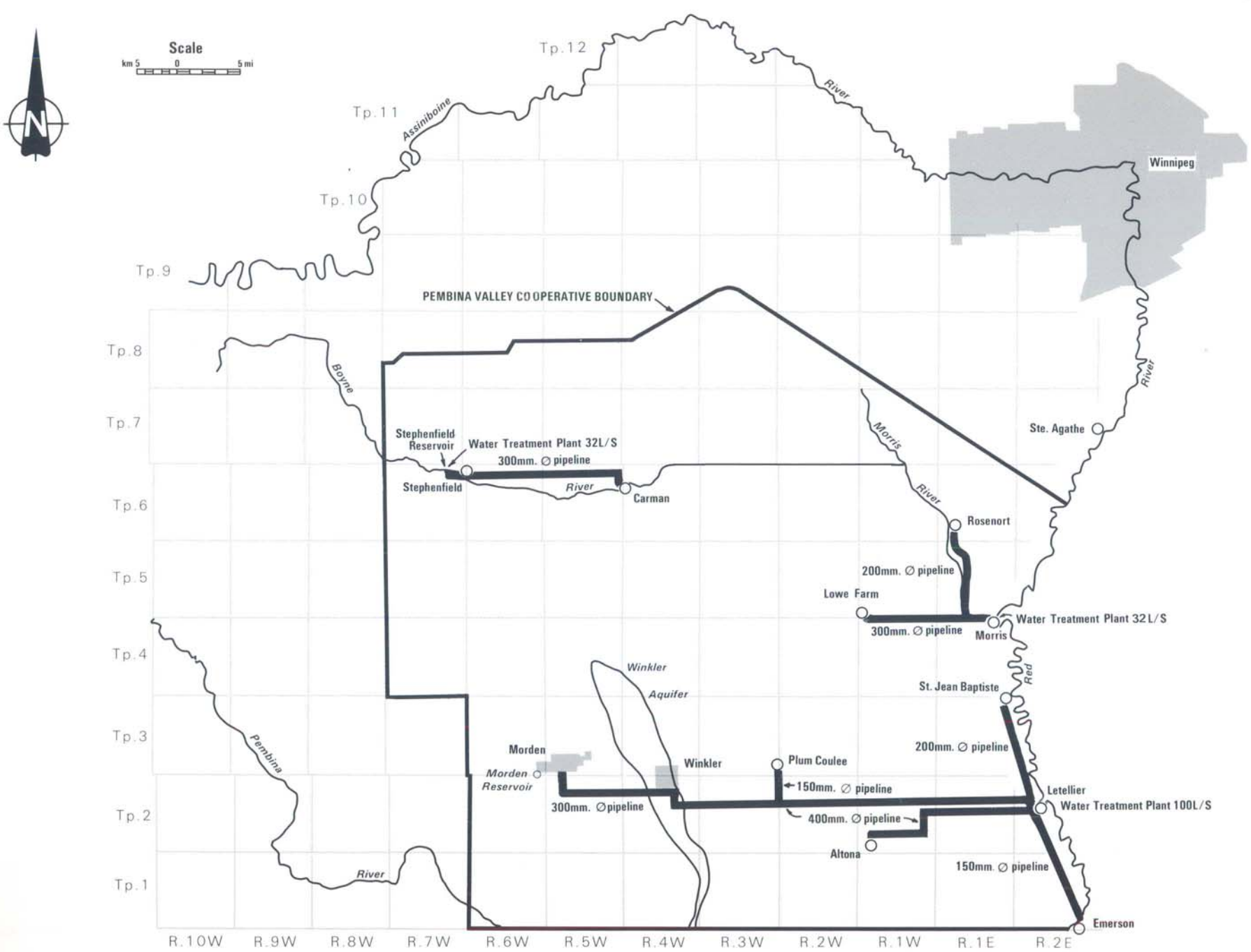
EVIDENCE SUMMARY

As outlined previously in this report, the Pembina Valley Water Cooperative's water supply proposal for the Pembina Triangle region had been amended during the interim between the suspension of the hearing in 1993 and the reconvening in 1994. The amended proposal altered the sources of water for the system, and included changes to the water treatment centres. In addition, the planning horizons for the project were adjusted. The following discussion focuses primarily on the evidence submitted that relates to the amended proposal. The study area for the proposal, along with a schematic of the project installations are shown in **Figure #1.**

MANITOBA ENVIRONMENT

Manitoba Environment provided information on the role undertaken by the Department in the environmental assessment process for the Pembina Valley Regional Water Supply proposal, and indicated that the process had been administered in accordance with the requirements of the Environment Act.

The Department explained to the Commission that the original proposal had been received from the Cooperative in October, 1991. The proposal had been advertised, and distributed to the Interdepartmental Planning Board and a Federal/Provincial Technical Advisory Committee (TAC) for review and comment.



PEMBINA VALLEY REGIONAL WATER SUPPLY PROPOSAL

Figure 1

A number of concerns respecting the proposal were identified by the TAC and the general public. These included concerns regarding the population projections upon which the project was based, the lack of information on the sustainability of the water resources in the region, the impacts of the project on fish and wildlife habitat, the potential loss of water supply for downstream users, and the apparent lack of information related to water conservation.

Manitoba Environment reported that in response to these, and other concerns, the Environment Minister requested that the Clean Environment Commission convene public hearings to review the Pembina Valley Water Cooperative's proposal.

The concerns identified by the TAC and the public were included in the *Environmental Impact Assessment Guidelines* prepared by Manitoba Environment for use by the PVWC in the preparation of an environmental impact statement on the project. These *Guidelines* were completed in July, 1992, and the final *Environmental Impact Statement* (EIS) was filed by the Cooperative in December, 1992.

It was reported by Manitoba Environment that review of the EIS by the public and the TAC had given rise to additional concerns. In response to these concerns, a subsequent *Addendum* was prepared by the Cooperative which modified the original proposal. The Department commented that it was at this point that a second letter of instruction was prepared by the Environment Minister requesting that the Commission hearing convene to review the project in terms of the *Addendum* that had been received by Manitoba Environment.

The Manitoba Environment representative outlined the Department's participation in the Commission hearings of June, 1993 up until the point of the suspension of those hearings on June 29th.

Amended PVWC Proposal

Manitoba Environment summarized the information respecting the amended proposal which had been received by the Department following the suspension of the hearing. The Department advised the Commission that the information related to deficiencies in the PVWC's original documentation, as identified in correspondence from the Department to the Cooperative, had been received by the Department and had been placed in the *Public Registry*. The Department's representative further advised the Commission that following a thorough review of the material submitted, Manitoba

Environment was in a position to indicate their satisfaction with the documentation provided by the PVWC respecting the proposal under review. Manitoba Environment also advised that all other information items requested by the Commission at the time of the hearing suspension in June of 1993 had been filed in the appropriate Public Registries.

Manitoba Environment informed the Commission that in a letter to the Minister of Environment, dated December 16, 1993, the Cooperative had advised the Minister of their decision to alter the proposal by eliminating that portion of the project respecting the diversion of water from the Assiniboine River. The Department advised the Commission that the amended proposal, detailed in a document titled Pembina Valley Water Cooperative Inc. Amendment to the Proposal, had been reviewed by the interdepartmental Technical Advisory Committee, and been placed in the Public Registries.

PEMBINA VALLEY WATER COOPERATIVE INC.

The Commission was informed that the Pembina Valley Water Cooperative is a legally incorporated entity with representative membership from seven Rural Municipalities and eight towns in southern Manitoba.

The Cooperative stated that the proposal to develop and operate a comprehensive domestic water supply system for the Pembina Triangle region was initiated in 1988. It was explained that the need for the project was based upon the recognition that the existing water supplies in the Pembina Valley were insufficient to meet projected demands, particularly during periods of drought, and that the lack of water was a constraint to regional growth and development. It was reported that over the years, the concept had gone through a series of consultative processes, various revisions, and had arrived as an application for licensing under the Environment Act as a Class 3 development project.

The PVWC proposal was described as an initiative aimed at providing a secure supply of water for domestic, industrial, and on-farm use in the Pembina Triangle. The project, as presented to the Commission, would comprise several separate components which together form part of a comprehensive water supply system for the region. A major component of the system involves the removal of additional volumes of water from the Red River at Morris, and at Letellier, along with changes to the water treatment capabilities at these locations. The Cooperative indicated that under the plan, water withdrawal from the Red River would increase from the current 0.057 m^3/s (metres cubed per second) (2 cubic feet per second) to a maximum of 0.142 m^3/s (5 cfs) by the year 2011, as

population and demand within the service area expanded. This maximum level of withdrawal was reported to represent a flow reduction on the Red River by approximately 5% under minimum flow conditions. The Cooperative suggested that the resulting impact of this flow reduction on downstream users of the resource would be insignificant. In addition, the Cooperative indicated that it would apply appropriate fish protection measures to minimize the impact of the water intake mechanisms on fish populations in the Red River.

Changes to the water withdrawal rates along the Red River were reported to necessitate changes to the water treatment infrastructure in Morris and Letellier. The PVWC explained that the proposal included plans to replace the treatment plant at Morris with an enlarged facility. The new plant would be designed with the capacity to treat up to 32 litres/second (L/s), a significant increase from the 12 L/s of the existing facility. The water treatment plant at Letellier would also be enlarged from a 32 L/s facility to one capable of treating up to 100 L/s. Once treated, it was reported that the water from the two plants would be transported to the various users through a pipeline network consisting of existing and newly installed lines.

The PVWC provided a detailed outline of the primary and secondary pipelines that would be developed in order to ensure water distribution throughout the project area. It was explained that water withdrawn and treated at Morris would be piped North through a 200 mm pipeline to Rosenort, and West along a 300 mm line to Lowe Farm. Water withdrawn and treated at Letellier would be distributed via 400 mm lines to Altona, Plum Coulee and Winkler, and onto Morden through a 300 mm line. A 150 mm line would distribute water south from Letellier to Emerson, and North via a 200 mm pipeline to St. Jean Baptiste. The distribution network would include a series of secondary lines that would be used to supply water to smaller communities and individual users. Details related to the specific routes for the various lines were presented, along with descriptions of the methods that would be used to ensure that the installation of these lines would not cause adverse environmental impacts. It was stated that all new pipelines would be installed in already disturbed rights-of-way, and that the "Recommended Fish Protection Procedures for Stream Crossings in Manitoba" (Department of Natural Resources) would be utilized to ensure the protection of waterways throughout the project area. The Cooperative suggested that the impacts of the pipeline installations would be insignificant.

Another major component of the PVWC proposal involved plans for the removal of approximately 0.031 m^3/s (1.1 cfs) of water from the Boyne River at the Stephenfield Reservoir. The PVWC presented details at the hearing related to this aspect of the proposal, indicating that the water removed from the Reservoir would be delivered eastward along a newly installed 300 mm pipeline to

Carman and the Rural Municipality of Dufferin. As in the case of the pipelines originating from the Red River, precautions would be taken to ensure that the Boyne River pipeline was installed so as to minimize any potential environmental impacts.

The PVWC indicated that the proposal would significantly reduce in-stream winter flows in the Boyne River between the Stephenfield Reservoir and the Town of Carman. This reduction in flow would necessitate a change in the allocation of water along the Boyne River. It was proposed that the existing water rights licences held by the Rural Municipality of Dufferin and the Town of Carman would be transferred to the PVWC. In addition, access to the pipeline would be provided to individual users along the Boyne River to further reduce the demands placed on this waterway. Fish loss in the Boyne River, due to the reduction in winter flow rates was considered to be minimal and not significant.

The Boyne River component of the PVWC plan also included the construction of a water treatment facility adjacent to the Stephenfield Reservoir, with a treatment capacity of 32 L/s. This plant would replace the current water treatment plant in the town of Carman. The treatment plant would be located on the south shore of the Reservoir adjacent to the Stephenfield Provincial Park, with access either through the Park or by way of a new access road. The water intake line would extend North from the plant into the deepest part of the reservoir, near the spillway. The Cooperative indicated that it would apply appropriate fish protection measures to minimize the impact of the water intake mechanisms on fish populations in the Reservoir.

Evidence was presented by the Cooperative regarding population projections for the project area. It was suggested that the Pembina Triangle region could expect a reasonable growth in population over the 20 year planning horizon developed for the project. The current population of the area was reported to be 38,773 (1991) with an expected increase to approximately 49,000 by the year 2011. The Cooperative suggested that this growth in population would be due in part to the existence of a secure water supply system in the region.

The Pembina Valley Water Cooperative (PVWC) provided the Commission with information related to the water conservation initiatives that the Cooperative would be involved in as part of the water supply system proposal. It was reported that an eight point water conservation strategy had been developed by the Pembina Valley Task Force in 1989. The strategy included measures to reduce water consumption in the region through various means, including water recycling and reuse, drought period rationing, runoff management, water use monitoring programs, and,

conservation education initiatives. Of particular emphasis was the Cooperative's commitment to the use of water pricing mechanisms to influence water conservation. The PVWC suggested that a strong water conservation ethic existed among the areas residents, and that the Cooperative would strive to maintain and enhance this predisposition to use water efficiently.

The PVWC reported that water from the Winkler Aquifer was being used for domestic supply in the region, and also for limited irrigation purposes. The Cooperative stated that the rate of withdrawal from the aquifer was occurring at approximately three times its natural recharge rate. It was suggested that this "mining" of the aquifer would eventually become a serious problem, with the possibility of saltwater intrusion and increased dissolved solids reducing the water quality in the aquifer and possibly rendering it unfit for use. The PVWC stated that although the use of the aquifer was important to local communities and individual residences, it was critical that the aquifer be provided with an opportunity to stabilize. The Cooperative recommended that the aquifer should be used only to its sustainable level. It was stated that the Pembina Valley water supply system, as proposed by the PVWC, would have a positive impact on the aquifer by reducing the demands placed on this local water source.

In closing, the Cooperative indicated to the Commission that their proposal for the development of a water supply system for the Pembina Triangle was technically feasible, economically desirable, socially acceptable, and in harmony with the sustainable development policies of the Province of Manitoba. Furthermore, the Cooperative suggested that the environmental concerns which the proposal may have raised were insignificant.

DEPARTMENT OF NATURAL RESOURCES

The Department of Natural Resources appeared before the Commission to outline the water management issues related to the PVWC proposal. The presentation concentrated primarily on three main areas of concern; namely, the Red River, the Winkler Aquifer, and the Boyne River.

Regarding allocation of water from the Red River, the Department stated that 0.057 m^3/s (2 cfs) of water is currently removed from the River by the existing Morris and Letellier water treatment plants. Under the PVWC proposal, a 0.085 m^3/s (3 cfs) reduction in flow North of Morris would be experienced, due to increased water withdrawal at these two sites. The Department advised that this increased withdrawal would represent a 1% reduction in average annual downstream flows,

and a 5% reduction in minimum flow rates. It was the opinion of the Department that the impact of this reduction on downstream users would be insignificant.

A representative from the Fisheries Branch of the Department commented on the need to ensure that adequate measures were taken to ensure the protection of the fish in the River through the proper installation of water intake lines and fish screens. In addition, the Branch representative stressed the need to ensure the correct setting of pump velocities on all water intake lines.

Regarding the Winkler Aquifer, the Department stated that although the aquifer is relatively large in size, with storage capacity in excess of 240,000 Dam^3 (cubic decametres) (1 Dam^3 = 1000m^3) (170,000 acre feet), its sustainable annual volume is limited to approximately 395 Dam^3 (300 acre feet). It was explained that this was due to the fact that the aquifer is overlain by impermeable material, with a limited number of permeable areas through which water is able to recharge the aquifer.

It was explained that the aquifer was currently being used to supply water for domestic and agricultural use, including irrigation, at a rate approaching three times its natural ability to recharge. Natural Resources staff stated that although the water level in the aquifer has increased in recent years as a result of higher than average levels of precipitation, it has been declining at a relatively constant rate since the early 1970s, lowering its historic level by some 3.5 m (12 feet).

The Department indicated that the possible intrusion of brackish water, pulled upward into the fresh water supply by excessive pumping, is a cause of concern. This brackish water under these circumstances could eventually render the fresh water the aquifer unfit for use.

The Department indicated that the PVWC proposal could have a positive impact on the Winkler Aquifer, as it would introduce an alternate source of water for the area and thus reduce the demands placed upon the aquifer. It was the position of Natural Resources that stabilizing the aquifer at its existing level was necessary.

The Boyne River was identified as the source of water for the proposed Stephenfield Reservoir treatment plant, which would service the Town of Carman and the Rural Municipality of Dufferin. The Department advised that the 32 L/s (1.1 cfs) of water required for the Stephenfield plant would reduce the flows along the Boyne River. It was the position of the Department that this level of withdrawal would allow for maintenance of minimum flows along the Boyne River throughout the winter months. The Commission was advised that a number of private residences along the Boyne

River between the Stephenfield Reservoir and Town of Carman remove water directly from the River for private use. It was suggested that access to the PVWC pipeline might be an appropriate approach to take in order to meet the needs of these users.

The Commission was further informed that because all available water from the Boyne River was currently allocated, the existing Water Rights Licences held by the Rural Municipality and the Town of Carman would have to be reallocated to the PVWC in order to provide the Cooperative with access to the water required for the Stephenfield plant. The Department indicated that this would be possible, providing an agreement could be negotiated between the PVWC and the existing licence holders.

With regard to the protection of the fisheries resource in the Boyne River, the Department advised that the minimum flows that would be maintained in the River, following the installation of the PVWC treatment plant at the Stephenfield Reservoir would provide sufficient protection for fish habitat. It was further stated that impacts on the fishery within the Reservoir could be mitigated by proper design and construction of the pump intakes.

Responding to questions on the Water Rights Act, Natural Resources representatives stated that the existing legislation required some modification in order to be seen as compatible with recently approved Provincial water policies. In addition, the Department indicated that while monitoring water use was not considered to be a problem, the ability to enforce the terms and conditions of licences and ensure compliance is constrained by limited staff resources.

SUSTAINABLE DEVELOPMENT COORDINATION UNIT

The Sustainable Development Coordination Unit provided comments respecting the PVWC proposal and the principles and guidelines of sustainable development.

The Unit provided comments on the evolution and general philosophy of sustainable development. They stated that to be environmentally sustainable, a project must not negatively impact the capacity of the environment to maintain the productivity and diversity of the environment in which the project is proposed to operate. The Unit referenced the work of the Manitoba Round Table on Environment and Economy and outlined the principles and guidelines of sustainable development as articulated by that body.

The Unit stated that they did not envisage the sustainable development principles as a mechanism for project evaluation. Rather, it was the position of the Unit that sustainable development principles should be applied primarily during the initial design stages of a project.

The Unit's conclusion regarding their assessment of the PVWC proposal was that it could be considered within the "boundaries of sustainability" for the principles and guidelines of sustainable development.

ISSUES AND CONCERNS RAISED BY THE PUBLIC

The public hearings respecting the PVWC proposal involved a cross section of the public. Along with municipal and community representatives, a number of private citizens from Winnipeg and many rural communities made presentations at both the Winnipeg and Carman sessions of the proceedings.

The following discussion represents a summation of the issues and concerns raised by the public.

Population Projections

Questions regarding the accuracy of the population projections were raised by a number of the participants during the first phase of the hearing, with many taking the position that a re-calculation of the projections by an independent source would be appropriate. Of particular concern were the projections based on an anticipated migration to the region from Mexico, and South and Central America. In addition, the value or accuracy of long term population projections was questioned.

Water Conservation

Throughout the hearing process, the need for water conservation programs and initiatives for the region were raised by the public. Specific issues raised included the need for water pricing policies which would discourage excessive water use (the "increasing block rate" pricing structure was often suggested), and municipal bylaws restricting water use in times of water shortages; the need to implement codes requiring the installation of water saving devices; and, the need to monitor actual water consumption. The importance of applying "demand side" management principles to all water supply operations was often stressed. Many participants stated that a proper water pricing policy

strategy such as the "increasing block rate" structure was the most important component of a successful water conservation program.

A number of participants suggested that there was no coordinated water conservation effort in the Pembina Triangle, and that some areas and several communities had not demonstrated a commitment to conserving water resources. At the same time, the Commission heard representations from several of the municipal jurisdictions suggesting that various water conservation initiatives were underway in the region. At least one community representative stated that they had not experienced a water shortage when many of the other communities had, and consequently did not practice water conservation.

The need for a coordinated effort to deal with water conservation issues on a provincial scale, including the City of Winnipeg, was recommended by several participants.

Project Alternatives

Conservation of existing water supply sources was often suggested as a possible alternative to, or modification of, the current PVWC proposal.

A number of participants suggested the need for continued emphasis on the development and use of "on-farm" impoundments and regional water retention reservoirs to retain all available water that could be accumulated through natural runoff.

A majority of the presenters representing municipal jurisdictions at the hearing stated that various options to the current proposal had been examined over many years, and that the current plan to develop a comprehensive water supply and delivery system was considered the most appropriate. It was the consensus among these municipal jurisdictions that the project was a good one in terms of providing a safe and secure water supply at reasonable cost with minimal environmental impacts

Environmental Impacts

A large number of the participants stated that the PVWC proposal would have minimal negative impact on the environment and that a greater potential impact remained if the project did not proceed. As example, the continued withdrawal of water from the Winkler Aquifer, at a rate almost three times greater than its natural recharge rate, was identified as a serious environmental problem

which would persist if another source of water, such as that outlined in the PVWC proposal, was not introduced to the region.

Other issues raised respecting the Winkler Aquifer included a general concern over the continued use of the aquifer for irrigation purposes, along with concern related to the changing water quality within the aquifer due to salinization and increased suspended solids.

A number of participants stated that there would be an impact from the development on the fish population and fisheries habitat in the Boyne River if winter flows could not be maintained. The potential impact of the proposed water treatment plant on Stephenfield Provincial Park was also raised, with concerns expressed regarding the potential for noise and dust pollution during the construction and subsequent operation of the plant.

No adverse environmental impacts to the Red River, as a result of the increased water withdrawal, were identified in public presentations.

Environmental Impact Mitigation

Some participants emphasized the need to ensure that minimum instream flows along the Boyne River were maintained during the winter months, in order to protect the fishery resource in the River.

Several participants suggested the need to conserve the Winkler Aquifer by reducing or eliminating the use of the Aquifer as a source of irrigation water. The suggestion made was that the Aquifer should be permitted to recharge to its natural, and sustainable levels.

Monitoring

Many of the participants suggested that metering and monitoring of water use was essential, and that existing unlicenced water removal should be discontinued. Some participants also stated that more detailed monitoring of the Winkler Aquifer was required.

Human Health and Economic Impacts

The provision of a secure potable water supply for the region was stated by some to have a positive impact on human health. Many of the participants suggested that the development was required for prosperity and continued economic growth in the Pembina Triangle and was essential in order to offer a reasonable and expected "quality of life" in the region.

A suggestion was made at the hearing that "wet industries" (industries utilizing large volumes of water) were being encouraged to locate within the region. In response, several municipal officials advised that the wet industries within the area, such as CanAmera Foods Ltd. in Altona, had either begun operations as small scale industries that later expanded, or were established in the region before water shortages became a concern. It was declared that none of the Cooperative's participant towns or municipalities were actively trying to attract new "wet industries" to the area.

Water Policy, Licensing, Regulations, & Enforcement.

A concern over the use of water for irrigation and the need for domestic water to be identified as a priority water use, both in legislation and by practice, was discussed by a number of participants. The need for better enforcement of existing regulations was an issue to others.

With respect to the transfer of existing water rights licences from municipal jurisdictions to the PVWC, the municipalities holding the licences stated that they did not view this as a potential problem.

The need for planning in the Assiniboine River basin was raised by a number of participants. Several of those making presentations raised concerns about the 0.57 m^3/s (20 cfs) water reserve being retained on the Assiniboine River by the PVWC.

DISCUSSION AND CONCLUSIONS

Following a review of the evidence presented at the public hearings, the panel reached the following conclusions related to the regional water supply system proposal submitted by the Pembina Valley Water Cooperative Inc.:

• The residents of the Pembina Valley and the Red River Valley (Pembina Triangle area) of Manitoba require a stable and secure supply of potable water.

• The predicted population growth, potential industrial development and the future quality of life in the Pembina Triangle area would require the provision of adequate domestic water supplies.

• The development of a potable water supply system for the Pembina Triangle area should be environmentally sound and should meet the principles of sustainable development.

• A water supply system for the Pembina Valley should be consistent with Manitoba Water Policies.

Terms of Reference for the hearing relative to the Pembina Valley Cooperative's proposal was provided to the panel by the Environment Minister. The panel evaluated the proponent's proposal, and other evidence presented at the hearing, using these ***Terms*** (shown in bold *italics*).

The need for the proposed regional water supply proposal in terms of (i) current populations in the study region and feasible development projections (ii) a water conservation strategy for the study region, and (iii) alternatives considered to accomplish the goals established by the proponent (Pembina Valley Water Cooperative)

(i) Population Projections

Concern regarding the validity of the population projections for the region, and the feasibility of the development based upon those estimates, was one of the issues that prompted the suspension of the hearing. The panel requested a re-evaluation of the population projections be submitted prior to the reconvening of the hearing.

The panel was satisfied with the revised population projections which were submitted by the proponent following an independent assessment of the methodology used in developing the estimates. These revised projections suggested a population increase in the region from 38,773 (1991) to an estimated 48,696 in the year 2011. Water supply development based on these revised estimates was thought by the panel to be realistic.

(ii) Water Conservation Strategy

Water conservation plans and activities became a primary focus of the panel discussions. The need for the residents of the region to wisely manage the existing surface and ground water resources of the Pembina Valley was determined to be of utmost importance.

The panel recognized that the eight point water conservation plan presented by the proponent contained a number of worthy conservation initiatives. The proposed options and actions identified by the Water Conservation Subcommittee in the 1990 "Pembina Valley Water Task Force Report" sets the stage for the development of a comprehensive regional plan. Although some elements of the plan, such as water conservation education, the retention of useful water infrastructure, recycling, reuse, water pricing, and the important role of Municipal jurisdictions as regulators, were noted, the panel noted that an integrated regional water conservation plan had not yet been put into place.

The panel agreed that the use of water pricing was a very important aspect of any plan to ensure water conservation by residents of the region. The water pricing structure proposed by the PVWC is intended, primarily, to cover the costs associated with the operation and ongoing maintenance of the supply system. The panel concluded that consideration should be given to adopting pricing policies which encourage conservation. The "increasing block rate" approach, as outlined in the Pembina Valley Water Task Force Report, might be given consideration in this regard.

(iii) Alternatives Considered

The Panel concluded that the discussion on the alternative water supply options considered during the development of the proposal by the PVWC fully considered both the local and regional sources of water supply and that the terms of reference had been adequately addressed.

The panel agreed with the assessment by the proponent that the alternative local water supply sources including the proposed Treherne dam, Roseisle dam, and Roseisle Creek dam on the Boyne

River as well as the proposed impoundment on Shannon Creek, Thornhill Creek, Deadhorse Creek and the 11 small escarpment reservoirs were costly water supply alternatives for the available yield.

The panel further agreed that the alternate water supply sources considered, including the Pembina River, ground water east of the Red River, and the Red River with a weir, were not preferred options because of concerns relating to the dependability of supply, environmental damage, and cost factors.

The project related activities including those that would be part of the site preparation for construction, construction, operation, maintenance and the final disposition of all components of the project

The panel agreed, for the most part, that the project would be an acceptable project within the region, and that no special "out of the ordinary" provisions would be required during the construction phases. Examples of the issues identified by the Technical Advisory Committee members, included, Department of Highways concerns about approvals to use the right-of-ways for pipeline placement and the special vegetation maintenance that might be required on the disturbed areas for up to five years following pipeline installation.

The potential environmental impacts of the project on the biophysical environment, human health, present and currently planned resource, land and water use, including impacts to terrestrial and aquatic ecosystems

A number of potential environmental impacts were discussed by the panel. These related to pipeline locations, excessive water removal from the Winkler Aquifer, stream crossings, alteration to Boyne River flows, and the impact of the proposed treatment plant on the Stephenfield Provincial Park.

The panel expressed concern regarding the over utilization (mining) of the Winkler Aquifer at a rate estimated to be three times its natural recharge rate. Included in these discussions were concerns related to salinization of the aquifer due to the migration of high salt content water into the aquifer from lower levels, and higher levels of dissolved solids due to migration of brackish water. The use of high quality Aquifer water for irrigation was seen to be an inappropriate use of the aquifer. The lack of a comprehensive measuring system for water taken from the Aquifer was also identified as a concern. Monitoring of the Aquifer has increased over the past several years; however, the panel

agreed that the degree of monitoring was not as extensive as it needed to be. Stabilization of the Winkler Aquifer at the existing water level was thought to be essential; however, the panel expressed concern that the proposal did not address provisions to restore the aquifer to its natural and sustainable level.

The panel considered the option of locating the Stephenfield Reservoir Treatment Plant on the north side of the Reservoir, in order to eliminate the need for a crossing of the Boyne River in an area with steep banks, and concluded that this approach would warrant further examination by the PVWC.

The panel was concerned about the possible noise and visual impacts of the water treatment plant on the Stephenfield Provincial Park. The panel concluded that the access road to the facility would have to be located and constructed in such a way as to minimize the potential impacts on the Park and its users.

Since the primary fisheries habitat along the Boyne River was within the Stephenfield Reservoir, the panel concluded that the thoughts put forward by the Department of Fisheries and Oceans (DFO) and the Department of Natural Resources (DNR) regarding low velocity water intake pumps, care in the location of the intake, and fish screens to prevent the loss of fish, were appropriate considerations. The maintenance of in-stream flow during the winter to prevent the loss of fisheries habitat in the stretch of the Boyne between the reservoir and Carman had some merit (even though such habitat was limited). The panel was interested in the fact that although the proponent identified that both the 1.1 cfs (32 L/s) in the proposed pipeline and the 2.5 cfs (73 L/s winter in-stream flow were not possible, the Department of Natural Resources, upon re-evaluation, had indicated that a lower in-stream flow, 2 cfs (58 L/s), could be maintained. This would not only maintain the fisheries habitat, but would also allow the existing in-stream residential users of the water to maintain access to the Boyne, should they choose to do so.

The panel thought that the idea of accessing the proposed water treatment plant via the access and circulation roads within the Stephenfield Provincial Park would be unwise, and concluded that other access options would have less impact on the Park. The panel recognized the concern for security, noise management, and the maintenance of visual qualities in the construction and maintenance of the plant.

Regarding the Red River portion of the system, the panel agreed that the environmental impacts were negligible.

The social, cultural, human health and economic impacts directly related to the environmental effects of the project

The panel felt that little social, cultural, human health and economic impacts would be directly related to the environmental effects of the project. Cultural, particularly archaeological, impacts were not known; however, the panel was comfortable with the assurance that any potential archaeological impacts would be investigated and mitigated. The panel concluded that continued overuse of the Winkler Aquifer would have significant environmental effects. Discontinuation of the use of the Aquifer for irrigation purposes might have only localized economic impact if alternative sources of irrigation water could be provided from runoff retention.

The effects of the general influx of workers, equipment and materials on affected residents, land and resources

The panel concluded that no evidence had been presented that identified any significant affect on the residents, land, and resources due to the effects of the influx of workers, equipment and materials required during the construction phase that could not be mitigated.

The adequacy of measures proposed to mitigate adverse environmental impacts resulting from the project and, where appropriate, to compensate for residual adverse effects

A number of potential environmental impacts were discussed by the panel including Winkler aquifer, pipeline locations, impacts on fish habitat, and the impact of the proposed treatment plant on the Stephenfield Provincial Park.

The panel agreed, that the environmental impacts of continuing to "mine" water from the Winkler aquifer were significant. As stated above, salinization due to the migration of high salt content water into the aquifer from lower levels, and higher levels of dissolved solids due to migration of brackish water, were the prime environmental concerns to the panel. Although any such impacts were reported to be mitigatable by stabilizing the aquifer at its existing level and withdrawing only its sustained yield on an annual basis, the panel members concluded that management of water supply and use within the Pembina Valley region in a fashion that would facilitate aquifer recharge would be the required strategy.

Regarding the impacts of pipeline installation, the panel agreed that technology was available to safeguard the environment during pipeline construction. However, the panel felt an alternative pipeline location might be appropriate. The panel recognized that utilizing existing road allowances and road right-of-ways for pipeline locations would help to minimize impacts due to construction access by confining the activity to existing disturbed areas.

With respect to the impact on fish and fish habitat and the proposed mitigation, the panel concluded that with application of the Department of Natural Resources Stream Crossing Guidelines, as well as by following the recommendations of the Department of Fisheries and Oceans with respect to the location of the intake pipes, pump velocity, and the placement of protective screens, the potential impact on fish habitat could be mitigated. Ensuring a 2 cfs (58 L/s winter flow in the Boyne River (between the Stephenfield Reservoir and the Town of Carman) would also mitigate habitat loss.

The adequacy of proposed plans and procedures for the transportation, handling and disposal of dangerous goods and hazardous materials and for response to environmental accidents and emergencies

The panel concluded that no extraordinary activities were anticipated that would produce dangerous goods and hazardous materials. The normal approved and regulated handling and disposal practices ought to be sufficient to safeguard against environmental accidents and emergencies that could occur should dangerous or hazardous waste be present during construction or operation of the system.

Any proposed mechanisms for monitoring of the environmental impacts of the projects once constructed and any subsequent research that may be considered necessary

The panel concluded that metering of all domestic water use and more comprehensive monitoring of the Winkler aquifer would be necessary. In addition the panel noted that unlicenced use of water was not well documented and that compliance monitoring and enforcement of existing licenced water users was lacking.

Clean Environment Commission Recommendations shall incorporate, consider and directly reflect, where appropriate, Manitoba's sustainable development principles into the planned development.

The panel concluded that the incorporation of sustainable development principles into this project would be a meaningful undertaking. It was noted that the PVWC suggested that the project met the requirements of sustainable development without relating directly to specific sustainable development principles or guidelines. The panel, in seeking some insights into the philosophy of sustainable development, was eager to receive the Sustainable Development Coordination Unit's assessment of the project. While the Unit was able to advise that the project fell generally within the bounds of sustainability, the panel felt that the assessment provided by the Unit was only very general in its application.

Although the panel agreed with the Sustainable Development Coordination Unit's recommendation that the sustainable development principles be incorporated into the early stages of planning for all developments, the panel was of the opinion that the same principles should also be applicable as a project assessment tool and quality assurance mechanism.

The Clean Environment Commission Recommendations shall incorporate, consider and directly reflect, where appropriate, Manitoba's water policies established under the Land and Water Strategy.

In the early phase of the PVWC hearing (prior to hearing suspension), the Water Policy "What You Told Us" document was identified by the Manitoba Government as the "source" document to be used in the assessment of the project against the Water Policies. During the second phase (reconvening of the hearings) the Manitoba Government released its follow-up document to the "What You Told Us", titled Applying Manitoba's Water Policies.

Although this document was not received as evidence, the public release of this water policy application document was regarded by the panel as a framework with which to examine the proposed project against the existing water management practices, as well as the Water Rights Act . The panel determined that a number of the water policies had relevance to the Pembina Valley Water Cooperative project and that it addressed some of the concerns discussed by the panel. This includes such concerns as metering of use and monitoring water supplies, enforcement, promoting and applying water

conservation measures, monitoring changes in aquifer level and ground water quality, and ensuring that effective legislation is in place.

As an example, a concern addressed in the water applications document was that, under water rights licensing, domestic use is the highest priority use. In practice, however, the priority between water licences is based upon "first in time - first in right". The need for this practice to be reconciled is identified under the Use and Allocation policy application of the document Applying Manitoba's Water Policies. Because of the lack of consistency between the water legislation, the water management practices, and the water applications document, the Manitoba Government should embark on an action plan to apply the policies as identified in the water applications document.

In summary, regarding the examination of the project against the water policies, the panel concluded that the PVWC proposal was consistent with the Water Policies and the water applications document. Development of an action plan by the Government of Manitoba to set priorities to formally deal with appropriate water policy applications, commencing with the PVWC proposal, would be timely.

In the letter dated February 3, 1994 from the Minister of Environment to the Chairman of the Clean Environment Commission the Minister advised ***The project involving withdrawal of water from the Assiniboine River has now been deleted from the proposal; I do not require the Commission to consider this project in deliberating upon the amended proposal.***

Even though the Assinibione River was not to be part of the panel deliberations on the PVWC proposal, a number of concerns and comments were expressed.

The public clearly stated a desire to be consulted respecting allocation and licencing of water withdrawal from the Assiniboine River.

The panel concluded that the possible future use of water from the Assiniboine by the PVWC remains controversial. The panel agreed that the use and management of the water from the Assiniboine River should be addressed by the Assiniboine River Advisory Board.

OBSERVATIONS

The following observations contain general comments to government which do not form part of the Commission's specific recommendations respecting the licence application submitted by the Pembina Valley Water Cooperative Inc. They are presented here as matters of concern which the Commission believes warrant consideration and, in several cases, government action.

1. The panel observed during this hearing, as with others, a widespread interest in water conservation. The panel draws to the attention of the government the urgency for the development and implementation of a provincial water conservation strategy which would ensure the efficient use of water in Manitoba. This strategy should include regulatory provisions which would ensure the conservation of Manitoba's water resources.

2. The panel observed that the Winkler Aquifer has been over-utilized in recent years, and that it is currently being "mined" at three times its annual yield capacity. The panel suggests that an action plan be developed and implemented by December, 1996 which would ensure that the aquifer is stabilized and allowed to recharge to its natural and sustainable levels. Withdrawal of water from the Winkler Aquifer for the purposes of crop irrigation should be terminated by December, 1996.

3. The panel noted that there were difficulties in reconciling the Provincial *Water Policies*, as outlined in the Land and Water Strategies documents, with the Water Rights Act. Clarification and updating of legislation is needed, including a plan and resources to ensure monitoring and compliance, in order to reconcile the application of these two policy instruments.

4. There is a public recognition of the need to adopt land and water practices which will ensure the protection of soil and water resources, including the provision of drought and flood protection measures.

RECOMMENDATIONS

The panel recommends that an Environment Act Licence be issued to the Pembina Valley Water Cooperative Inc. (PVWC) for the development of a water supply system for the region of Manitoba known as the Pembina Triangle, as proposed, subject to the following:

1. A comprehensive water conservation plan, along with an implementation strategy, shall be developed by the Pembina Valley Water Cooperative which shall incorporate the components detailed in A Water Supply Strategy for the Pembina Valley, as prepared by the Pembina Valley Water Task Force. This plan, and its implementation strategy, should be structured in order to ensure the most efficient use of the water supplied by the PVWC. This shall involve the Cooperative's securing written agreements from all those purchasing water from the system that the plan's components will be respected and implemented. The completed plan shall be submitted to Manitoba Environment for review and comment by December, 1994, and placed in the *Public Registry* to ensure public access to the plan.

2. The proposed water treatment plant at the Stephenfield Reservoir shall be sited to ensure that the value of the Stephenfield Provincial Park will not be denigrated in any way, and that there will be minimal impact related to noise pollution either during the construction phases or the subsequent operation of the plant. A separate road shall be constructed to ensure that traffic associated with the plant's construction and operation will not move through the Stephenfield Provincial Park.

3. The location of all water supply pipelines shall be established in such a way as to minimize the potential environmental impact of their installation. Department of Natural Resources "Recommended Fish Protection Procedures for Stream Crossings in Manitoba" shall be followed, and the licensee shall be required to verify through the Department of Natural Resources that these procedures have been followed.

4. Potential impacts to the fisheries resource shall be mitigated through measures prescribed by the Fisheries Branch of Manitoba Natural Resources. These shall include, but not be limited to, measures respecting the installation of water intakes, fish protection screens, and pump velocities.

APPENDIX A: LIST OF EXHIBITS

1. Letters, dated February 3, 1992 and April 7, 1993 (with attachment) from **Hon. J. Glen Cummings**, Minister of Environment, Province of Manitoba, to Dale Stewart, Chairman, Manitoba Clean Environment Commission.

2. Opening Submission to the Clean Environment Commission on The Pembina Valley Regional Water Supply Proposal. Submitted Dan McNaughton, **Manitoba Environment**.

3. Environment Act Proposal Form - "Pembina Valley Regional Water Supply Proposal" (File # 3269.00) Submitted by Dan McNaughton, **Manitoba Environment**.

   Pembina Valley Regional Water Supply Proposal - Draft Environmental Impact Statement, October 1991. Pembina Valley Water Cooperative. Submitted by Dan McNaughton, **Manitoba Environment**.

4. Correspondence, including a copy of the newspaper advertisement for the Pembina Valley Regional Water Supply Proposal, cover letter of the circulation of the Proposal to the Technical Advisory Committee (TAC). Submitted by Dan McNaughton, **Manitoba Environment**.

5. Correspondence, including responses to the Pembina Valley Regional Water Supply Proposal from members of the Technical Advisory Committee (TAC), Municipal Governments, Non-Government Organizations, and Individuals. Submitted by Dan McNaughton, **Manitoba Environment**.

6. Documents, including *Draft Guidelines for the Preparation of the Finalized Environmental Impact Statement for the Proposed Pembina Valley Regional Water Supply Proposal*; Comments on the *Draft Guidelines* as received from the Technical Advisory Committee, and; Notes on the public scoping workshops. Submitted by Dan McNaughton, **Manitoba Environment**.

7. Final Guidelines for the Preparation of an Environmental Impact Statement for the Pembina Valley Regional Water Supply Proposal. Manitoba Environment, July,31, 1992. Submitted by Dan McNaughton, **Manitoba Environment**.

8. Environmental Impact Statement for the Pembina Valley Regional Potable Water Supply Proposal. Pembina Valley Water Cooperative Inc. (Dillon Consulting Engineers) December, 1992. Submitted by Dan McNaughton, **Manitoba Environment**.

9. Notice of Environmental Impact Statement - Pembina Valley Water Supply System. Submitted by Dan McNaughton, **Manitoba Environment**.

   Distribution List - Environmental Impact Statement: Pembina Valley Water Supply Proposal. Submitted by Dan McNaughton, **Manitoba Environment**.

10. Environmental Impact Statement for the Pembina Valley Regional Potable Water Supply Proposal - Addendum. Pembina Valley Water Cooperative Inc. (Dillon Consulting Engineers) February, 1993. Submitted by Dan McNaughton, **Manitoba Environment**.

11. Letter, dated February 8, 1993, from Larry Strachan, Director, Environmental Approvals, Manitoba Environment, to Sam Schellenberg, Project Manager, Pembina Valley Water Cooperative Inc., accepting *Addendum*. Submitted by Dan McNaughton, **Manitoba Environment**.

12. Correspondence, including a copy of the newspaper advertisement requesting public comment on the *Environmental Impact Statement* and *Addendum*, and a copy of the letter of transmittal of the *Environmental Impact Statement* and *Addendum* to the Technical Advisory Committee (TAC). Submitted by Dan McNaughton, **Manitoba Environment**.

13. Correspondence, including responses to the *Environmental Impact Statement* and *Addendum* Proposal from members of the Technical Advisory Committee (TAC), Municipal Governments, Non-Government Organizations, and Individuals. Submitted by Dan McNaughton, **Manitoba Environment**.

14. Letter (with attachment), dated March 4, 1993 from Larry Strachan, P.Eng., Director, Environmental Approvals, Manitoba Environment, to Sam Schellenberg, Project Manager, Pembina Valley Water Cooperative Inc.

    Response Additional Information Request - Environmental Impact Statement for the Pembina Valley Regional Water Supply Proposal. Pembina Valley Water Cooperative (Dillon Consulting Engineers), March, 1993. Submitted by Dan McNaughton, **Manitoba Environment**.

15. Letter, dated March 29, 1993 (with attachment "Environmental Assessment Discussion Paper"). Submitted by Dan McNaughton, **Manitoba Environment**.

    Letters, dated April 13, 1993 from Larry Strachan, Director , Environmental Approvals, Manitoba Environment to Technical Advisory Committee (TAC members). Submitted by Dan McNaughton, **Manitoba Environment**.

16. Project Review Summary. Submitted by Dan McNaughton, **Manitoba Environment**.

17. A Water Supply Strategy for the Pembina Valley. Pembina Valley Water Task Force, December, 1990. Submitted by Dan McNaughton, **Manitoba Environment**.

18. Towards A Sustainable Development Strategy for Manitobans. Manitoba Round Table on Environment and Economy, undated. Submitted by Dan McNaughton, **Manitoba Environment**.

19. Land & Water Strategy (A Summary of Public Input) - What You Told Us. Manitoba Sustainable Development Coordination Unit, November, 1989. Submitted by Dan McNaughton, **Manitoba Environment**.

20. Memorandum, dated June 9, 1993 From Donald Leitch, Executive Council, Government of Manitoba to Robert D. Sopuck, Sustainable Development Coordination Unit. Submitted by Dan McNaughton, **Manitoba Environment**.

21. Assiniboine River Flow Enhancement: Shellmouth Reservoir Water Supply Study. Manitoba Regional Division, Prairie Farm Rehabilitation Agency (PFRA) & Water Resources Branch, Manitoba Natural Resources, August, 1992. Submitted by Dan McNaughton, **Manitoba Environment**.

22. Minutes, Pembina Valley Water Cooperative Technical Advisory Committee - Meeting dated December 18, 1991. Submitted by Dan McNaughton, **Manitoba Environment**.

23. Presentation to the Clean Environment Commission - Proposed Pembina Valley Water Supply Project. Pembina Valley Water Cooperative Inc. Submitted by Sam Schellenberg, **Pembina Valley Water Cooperative Inc.**

24. "Developments in Manitoba's Settlement Patterns". Greg Mason Research Associates Inc., March, 1993. Submitted by Sam Schellenberg, **Pembina Valley Water Cooperative Inc.**

25. Recommended Fish Protection Procedures for Stream Crossings in Manitoba. Fisheries Branch, Manitoba Natural Resources. Submitted by Sam Schellenberg, **Pembina Valley Water Cooperative Inc.**

26. Regional Water Supply Conceptual Planning Study - Phase 2 Progress Report. City of Winnipeg Waterworks, Waste & Disposal Dept., Wardrop Engineering Inc., TetrEs Consultants Inc., and CHM Hill Ltd., June 1992. Submitted by Sam Schellenberg, **Pembina Valley Water Cooperative Inc.**

27. Manitoba Natural Resources Presentation to the Clean Environment Commission: Pembina Valley Regional Water Supply Project and Related Resource Management Issues. June, 1993. Submitted by Ray Bodnaruk, **Manitoba Natural Resources**.

28. Slide Projections - I. Manitoba Natural Resources. Submitted by Ray Bodnaruk, **Manitoba Natural Resources**.

29. Slide Projections -II. Manitoba Natural Resources. Submitted by Dave Sexton, **Manitoba Natural Resources**.

30. Slide Projections -Part III (Water Management Issues of the Pembina Valley Water Cooperative Proposal). Manitoba Natural Resources. Submitted by Rick Bowering, **Manitoba Natural Resources**.

31. Slide Projections -VI (DNR Position/Summary). Manitoba Natural Resources. Submitted by Ray Bodnaruk, **Manitoba Natural Resources**.

32. Measurement's Chart (Reference slide 98). Submitted by Sam Schellenberg, **Pembina Valley Water Cooperative**.

33. Letter, dated December 3, 1991 from Henry Wiebe, Co-Chairman, and Rick Martel, Co-Chairman, Pembina Valley Water Cooperative to L.J. Whitney, Director, Water Resources Branch, Manitoba Natural Resources. Submitted by Sam Schellenberg, **Pembina Valley Water Cooperative**.

34. Brief, untitled, submitted by **Robert Hudson** and **Dorothy Hudson**.

35. Brief, "The Town of Carman - Pembina Valley Regional Water Supply Proposal", submitted by R. Rinn, **Town of Carman**.

36. Brief, "Presentation Paper to the Hearings on the Assiniboine River Diversion to the Manitoba Clean Environment Commission", submitted by **Helen Christoffersen**.

37. Brief, "National Farmers Union Submission to the Manitoba Clean Environment Commission on The Pembina Valley Regional Water Supply Proposal, Portage La Prairie, Manitoba, June 16, 1993", submitted by Chris Tait, **National Farmers Union**.

38. Brief, "Presentation to the Clean Environment Commission regarding the Pembina Valley Water Cooperative", submitted by Clare Tarr, **Village of MacGregor**.

39. Brief, "Presentation to the Clean Environment Commission regarding the Pembina Valley Water Cooperative", submitted by Clare Tarr, **MacGregor and District Chamber of Commerce**.

40. Brief, untitled, submitted by John Marshall, **R.M. of MacDonald**.

41. Brief, untitled, submitted by Joe Legault and A.C. Carriere, **R.M. of Cartier**.

42. Brief, untitled, submitted by **Bert Rutbeek**.

43. Evaluation of the Westlake Regional Water Supply Proposal. Manitoba Water Services Board and I. D. Engineering Canada Inc. June 21, 1990. Submitted by Ray Bodnaruk, **Manitoba Natural Resources**

44. Brief, "Presentation to the Manitoba Clean Environment Commission Re: Pembina Valley Regional Water Supply Proposal" , submitted by Tam McEwen and Percy Phillips, **Portage and District Chamber of Commerce**.

45. Brief, "Presentation to the Manitoba Clean Environment Commission Re: Pembina Valley Water Coop's Proposal", submitted by **Percy Phillips**.

46. Brief, untitled, submitted by **Loren Jordan**.

47. Brief, untitled, submitted by Brian Schwartz, **Rural Municipality of Thompson**.

48. Brief, "Pembina Valley Water Supply System Proposal File No. 3269.00" submitted by Colin McArthur, **R.M. of Portage la Prairie**.

49. Slide Projection, submitted by Colin McArthur, **R.M. of Portage la Prairie**.

50. Photograph(Copy). Submitted by Ed Connery, **Connery's Riverdale Farms**.

51. Letter, dated June 22, 1993 from T.A. Young, General Manager, Peak Vegetable Sales, to Ed Connery, Connery's Riverdale Farms. Submitted by Ed Connery, **Connery's Riverdale Farms**.

52. Memorandum, dated January 22, 1993 (with attachment) from A.G. Maslowski, Engineering Technologist, Surface Water Management, Manitoba Natural Resources to J. E. Smithson, Water Supply & Conservation Engineer, Surface Water Management, Manitoba Natural Resources. Submitted by Ed Connery, **Connery's Riverdale Farms**.

53. Response to Question - G. Mohr, Tetres Consultants, dated June 22, 1993. Submitted by **Manitoba Natural Resources**

54. Charts, "Annual Flows on the Qu'Appelle River", submitted by Ray Bodnaruk, **Manitoba Natural Resources**.

55. Brief, "Clean Environment Commission Hearings - Russell, Manitoba June 23, 1993", submitted by Alvin Zimmer and Gene Nerbas, **R.M. of Shellmouth**.

56. Maps (2), untitled, submitted by Alvin Zimmer and Gene Nerbas, **R.M. of Shellmouth**.

57. Brief, "Presentation from The Town of Roblin in response to The Pembina Valley Regional Water Supply Proposal", submitted by Betty Nykoforuk, **Town of Roblin**.

58. Brief, untitled, submitted by Marvin Mohr, **R.M. of Shell River**.

59. Brief, untitled, submitted by Lynn Spurway, **Shellmouth-Assiniboine Valley Economic Development Group**.

60. Brief, "Submission to Manitoba Clean Environment Commission Re: Pembina Valley Regional Water Supply Proposal, submitted by Bill Russell, **Town of Russell**.

61. Brief, untitled, submitted by Bob Witty and Dennis Trinder, **R.M. of Russell**.

62. Brief, untitled, submitted by **Lila Bily**

63. Chart (Survey Results 1959), untitled, submitted by **W. Wileman**.

64. Brief, "Town of Altona Presentation to Clean Environment Commission on the Pembina Valley Regional Water Supply Proposal", submitted by Al Schmidt, **Town of Altona**.

65. Brief, untitled, submitted by Rita Chopke, **St. Jean Baptiste Chamber of Commerce and Development Group**.

66. Brief, untitled, submitted by **W. Latter**.

67. Letter, dated June 29, 1993 from Dale Stewart, Chairman, Manitoba Clean Environment Commission, to the Honourable J. Glen Cummings, Minister of Environment. Submitted by the **Clean Environment Commission**

68. Letter, dated July 14, 1993 (with attachment), from Dale Stewart, Chairman, Manitoba Clean Environment Commission, to Sam Schellenberg, Project Manager, Pembina Valley Water Cooperative. Submitted by the **Clean Environment Commission**

69. Letter, dated June 29, 1993 (with attachment), from Dale Stewart, Chairman, Manitoba Clean Environment Commission, to Umendra Mital, Deputy Minister, Manitoba Natural Resources. Submitted by the **Clean Environment Commission**

70. Letter, dated July 14, 1993 (with attachment), from Dale Stewart, Chairman, Manitoba Clean Environment Commission, to R. Sopuck, Executive Director, Sustainable Development Coordination Unit. Submitted by the **Clean Environment Commission**

71. Letter, dated July 14, 1993 (with attachment), from Dale Stewart, Chairman, Manitoba Clean Environment Commission, to Norm Brandson, Deputy Minister, Manitoba Environment. Submitted by the **Clean Environment Commission**

72. Letter, dated August 9, 1993, from Norman Brandson, Deputy Minister, Manitoba Environment, to Dale Stewart, Chairman, Manitoba Clean Environment Commission. Submitted by the **Clean Environment Commission**

73. Letter, dated September 15, 1993 (with attachments), from Sam Schellenberg, Project Manager, Pembina Valley Water Cooperative, to Dale Stewart, Chairman, Manitoba Clean Environment Commission. Submitted, on behalf of the **Pembina Valley Water Cooperative**,by the Clean Environment Commission

74. Comments on Population Projections for Pembina Valley Water Cooperative Inc. Shiva S. Halli, Department of Sociology, University of Manitoba. Submitted, on behalf of the **Pembina Valley Water Cooperative**,by the Clean Environment Commission

75. The Development of Storage on the Manitoba Escarpment South of the Boyne River For Municipal Water Supplies: The Local Sources Option. Submitted, on behalf of the **Pembina Valley Water Cooperative**,by the Clean Environment Commission

76. Pembina Valley Water Cooperative Response to Manitoba Environment's Discussion Paper of March 25, 1993. M.M. Dillon Limited, September, 1993. Submitted, on behalf of the **Pembina Valley Water Cooperative**,by the Clean Environment Commission

77. Letter, dated December 13, 1993 (with attachment), from Robert Sopuck, Executive Director, Sustainable Development Coordination Unit, to Dale Stewart, Chairman, Manitoba Clean Environment Commission. Submitted by the **Clean Environment Commission**

78. Clean Environment Commission Hearing Presentation: Pembina Valley Water Cooperative Proposal. Robert Sopuck, Sustainable Development Coordination Unit, October, 1993. Submitted, on behalf of the **Sustainable Development Coordination Unit**, by the Clean Environment Commission

79. Letter, dated December 20, 1993, from Norman Brandson, Deputy Minister, Manitoba Environment, to Dale Stewart, Chairman, Manitoba Clean Environment Commission. Submitted by the **Clean Environment Commission**

80. Letter, dated January 10, 1994 (with attachment), from David Tomasson, Deputy Minister, Manitoba Natural Resources, to Dale Stewart, Chairman, Manitoba Clean Environment Commission. Submitted by the **Clean Environment Commission**

81. Manitoba Natural Resources Response to Clean Environment Commission Request for Further Information. December 1993. Submitted, on behalf of **Manitoba Natural Resources**, by the Clean Environment Commission

82. Letter, dated February 3, 1994 (with attachments), from Hon. J. Glen Cummings, Minister of Environment, to Dale Stewart, Chairman, Manitoba Clean Environment Commission. Submitted by the **Clean Environment Commission**

83. Letter, dated December 16, 1993, from John Krahn, Co-Chairman and Rick Martel, Co-Chairman, Pembina Valley Water Cooperative. Submitted by the **Clean Environment Commission**

84. Pembina Valley Water Cooperative Inc. Amendment to the Proposal and to the Environmental Impact Statement. January, 1994. Submitted by the **Clean Environment Commission**.

85. Manitoba Environment, Environmental Management Division, Environmental Approvals Branch Submission to The Clean Environment Commission Hearing on the Pembina Valley Regional Water Supply Proposal. Submitted by Dan McNaughton, **Manitoba Environment**

86. Correspondence, including: (i) notifications to Public Registries and TAC members of additional information concerning Pembina Valley Water Supply Proposal; (ii) responses to a request for comments on the additional information; and, (iii) letter confirming Manitoba Environments satisfaction with filed information. Submitted by Dan McNaughton, **Manitoba Environment**.

87. Memorandum, dated December 16, 1993, placing additional information in the Public Registries. Submitted by Dan McNaughton, **Manitoba Environment**

88. Correspondence, including: (i) notification of alteration to Proposal; (ii) letter to Pembina Valley water Cooperative accepting the alteration; (iii) notification to the Public Registries and TAC members; and, (iv) TAC responses. Submitted by Dan McNaughton, **Manitoba Environment**.

89. Pembina Valley Water Cooperative Inc. Presentation to the Clean Environment Commission: Proposed Pembina Valley Water Supply Project. Sam Schellenberg, Pembina Valley Water Cooperative Inc. Submitted by Sam Schellenberg, **Pembina Valley Water Cooperative**

90. Water Management Issues of the Amended PVWC Proposal: Presentation to the Clean Environment Commission. Rick Bowering, March, 1994. Submitted by **Manitoba Natural Resources**.

91. Brief, "Submission to the Clean Environment Commission: The Pembina Valley Water Cooperative Amended Proposal (January, 1994)", submitted by **Tim Sale**

92. Correspondence, dated April 3, 1992, from L. J. Whitney, Director, Water Resources Branch, Manitoba Natural Resources, to "...irrigators granted one year *Water Rights Licences* and irrigators whose licences had expired...". Submitted by Rick Bowering, **Manitoba Natural Resources**

93. Table, dated March 2, 1994, "Water Rights Licensing Along Boyne River: Reservations, Licences, Authorizations, and Unallocated Applications", submitted by Rick Bowering, **Manitoba Natural Resources**

94. Brief, untitled, submitted by **L. Clubb and Jean Sourisseau**.

95. Brief, "Presentation to Clean Environment Commission on Pembina Valley Regional Water Supply Proposal, March, 1994", submitted by Mike Shkolny, Waterworks, Waste and Disposal Dept., **City of Winnipeg.**

96. Brief, "Submission to the Manitoba Clean Environment Commission/Pembina Valley Water Cooperative Inc. Proposal", dated March 7, 1994. Submitted by L. E. Strijack, Counsel for **The City of Winnipeg**.

97. Correspondence, dated March 4, 1994 (with attachment), from Steve Yoshino, Director, Waterworks, Waste and Disposal Dept., City of Winnipeg to Dale Stewart, Chairman, Manitoba Clean Environment Commission. Submitted by Mike Shkolny, Waterworks, Waste and Disposal Dept., **City of Winnipeg**.

98. Brief, "Representation on the Pembina Valley Water Supply Proposal", submitted **Ron Dalmyn**.

99. Map (with notes), untitled, submitted by Sam Schellenberg, **Pembina Valley Water Cooperative Inc.**

100. Graphs (various), "Additional Information regarding the Amended PVWC Proposal - Boyne River Winter Flows: Presentation to the Clean Environment Commission, submitted by Rick Bowering, **Manitoba Natural Resources**

101. Brief, untitled, submitted by Dan Thiessen, **Rural Municipality of Morris.**

102. Brief, untitled, submitted by John A. Bartley, **Rural Municipality of Roland**

103. Brief, untitled, submitted by Randall Pappel, **Rural Municipality of Rhineland.**

104. Brief, "Pembina Valley Water Cooperative Project: Stephenfield Area Treatment Plant and Related Lines, submitted by Dennis Doerksen, **Rural Municipality of Dufferin**

105. Brief, untitled, submitted by Ron Delaquis, **Carman and Community Development Corporation**

106. Brief, untitled, submitted by Bob McKenzie, **Town of Carman**

107. Brief, "Brief Presented to Clean Environment Commission Re: Pembina Valley Water Cooperative, submitted by Bryan Heindrichs, **Rural Municipality of Montcalm**

108. Brief (with attachments), untitled, submitted by **Robert H. Hudson & Dorothy I. Hudson**

109. Brief, untitled, submitted by Ernie B. Krahn, T**own of Morden**

110. Brief, untitled, submitted by Brian Schwartz, **Rural Municipality of Thompson**

111. Brief, "Town of Altona Presentation to Clean Environment Commission on the Pembina Valley Regional Water Supply Proposal, March 15th, 1994", submitted by Al Schmidt, **Town of Altona**

112. Closing Remarks, submitted by Dan McNaughton, **Manitoba Environment**

113. Closing Remarks, submitted by Sam Schellenberg, **Pembina Valley Water Cooperative**