


DAUPHIN LAKE BASIN



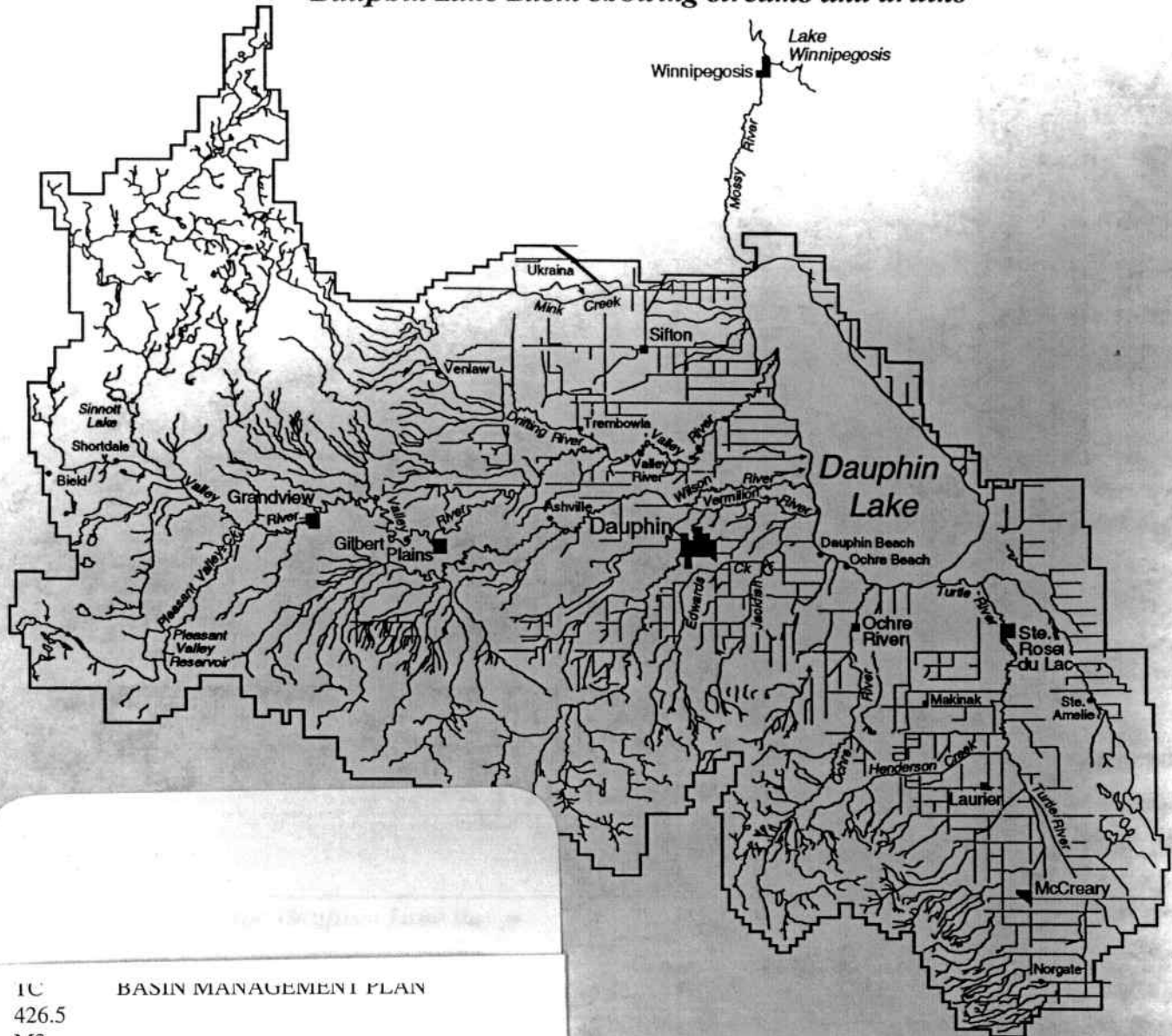
BASIN MANAGEMENT PLAN



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Dauphin Lake Basin Advisory Board
December, 1992

Dauphin Lake Basin showing streams and drains



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The Honourable Harry J. Enns
Minister of Natural Resources

Dear Mr. Enns:

Almost three years ago, we set out to determine what we could do to reclaim Dauphin Lake and its basin from the environmental destruction we had leveled on it over the past century. We examined existing literature and reports. We compared notes among ourselves. We asked the opinions of government people, friends and neighbours. We quizzed the members of the 48 agencies which are represented by each of us on the Board and we held six open houses and information meetings to ask the opinion of the basin residents.

The 1989 report, "Dauphin Lake, Opportunities for Restoration", which was prepared by the Technical Advisory Group led by the Department of Natural Resources, set out two major goals for the Advisory Board to consider. These were to halt the deterioration of Dauphin Lake and the basin so that their amenities may endure for future generations. The Board wholeheartedly endorses these goals. It sounds like a pretty tall order, but with your government's approval and support, we know it can be done!

We believe this management plan is the best place to start – the first step on a long journey. It presents our vision for the future of the Dauphin Lake Basin, say, in 20 or 50 years. In this plan are initiatives, projects and policies that we feel are needed in the near future to achieve our long term goals.

We hope that this management plan for our basin is accepted by your department as well as other key departments, in particular those responsible for the environment, rural development and agriculture. With support from these departments as well as the Cabinet, sustainable development of Dauphin Lake and its basin will be successfully realized.

The Board appreciates the support the Manitoba Government has provided during the last three years by supplying technical services from its various departments and branches, the funding through the Special Conservation Fund of the Manitoba Lotteries Foundation from the Department of Natural Resources, the financial and technical support for the development of the Awareness Centre and the local coordinator, his office and staff.

We look forward to your commitment and leadership in implementing this integrated resource development program for the Dauphin Lake Basin.



Fred Taylor

Fred Taylor, Chairperson
Dauphin Lake Basin Advisory Board
Dauphin, December 1992

The Dauphin Lake Basin Advisory Board

On November 23, 1989 the Honourable Harry Enns, Minister of Natural Resources, announced his intent to initiate a Dauphin Lake Basin Enhancement Program to halt the deterioration of Dauphin Lake. Representatives for an advisory board were sought from 59 agencies, interest groups and local levels of government so that basin residents could play a decision-making role in the program. A public meeting was held in Dauphin on December 5, 1989 to establish the Dauphin Lake Basin Advisory Board. A background report, "Dauphin Lake, Opportunities for Restoration" was distributed at this meeting.

This report was prepared by the Technical Advisory Group (TAG) which consisted of 20 professionals from federal and provincial government departments and Ducks Unlimited. The TAG was chaired by the coordinator who is employed by the Manitoba Department of Natural Resources in Dauphin. TAG has and will continue to serve the Board as a resource.

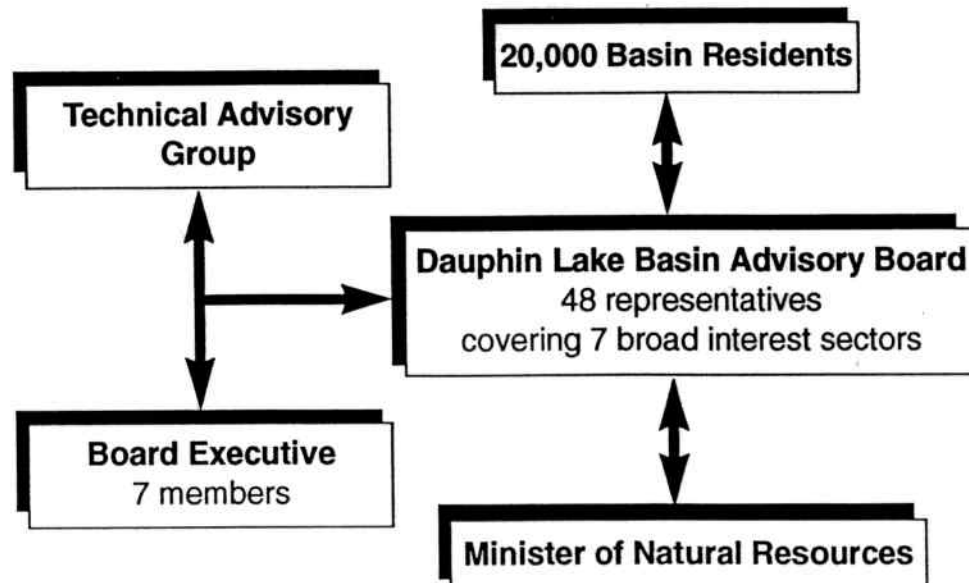
Terms of Reference:

The Dauphin Lake Basin Advisory Board was provided with the following terms of reference by the Honourable Harry Enns.

1. The Advisory Board shall work together with the various resource owners, users and managers as a team to formulate and coordinate the implementation of a basin management plan that will work toward enhancement of the entire Dauphin Lake Basin.
2. The Advisory Board shall provide advice and guidance to the Minister on a variety of pilot and demonstration projects which would be proposed by various organizations.
3. The Advisory Board shall disseminate factual and educational information to local residents on the problems and opportunities in the basin.
4. The Advisory Board shall solicit and synthesize local input on basin issues.

The Advisory Board elected an Executive on February 7, 1990. The Executive elected a chairperson, Fred Taylor, and a vice-chairperson, Martin Bidzinski on that date. The members of the founding Dauphin Lake Basin Advisory Board and the groups they represented are listed on the back page. The membership list also identifies the original Executive members.

Organizational Structure



What is the Advisory Board's Vision?

Management Plan Purposes

The first priority of the Board is to set in motion initiatives designed to stop the deterioration of Dauphin Lake. The most severe resource management problems that lead to this deterioration will be attacked initially. Once progress is underway in this area, further enhancement of the condition of Dauphin Lake can begin. The Board believes that with a comprehensive basin-wide plan, we can enhance both Dauphin Lake and its basin thereby contributing to the sustainable development of our region and the Province.

The Board feels that to be successful this plan must:

- *Initiate an educational process that will inform all basin residents of the processes presently degrading the basin and identify the opportunities available to halt and, if possible, reverse those processes.*
- *Incorporate the aspirations of the basin residents regarding the environment that they and their children would like to live in, not leave.*
- *Establish a viable and ongoing format whereby basin residents can formulate and contribute their opinions, viewpoints and local experiences regarding the basin's natural resources.*
- *Recognize the inter-relationship of the various resource issues and identify resource management programs that return compounded benefits to the basin's ecosystem and economy.*
- *Provide an evaluation of program success for the basin residents and for the government.*

Management Plan Initiatives

The Dauphin Lake Basin Management Plan identifies potential initiatives in five distinct categories:

• **Education**

1. Basin Awareness
2. Basin Research

The success of initiatives in the Education category will likely determine the overall success of the entire basin resource management plan.

• **Flood Control and Lake Level Regulation**

1. Flood Control Management
2. Dauphin Lake Regulation

The initiatives in the Flood Control and Lake Level Regulation category deal with high profile issues and concerns of all citizens associated with Dauphin Lake.

• **Recreation and Tourism**

1. Outdoor Recreation and Tourism Development
2. Lake Access

The initiatives in the Recreation and Tourism category will try to promote appropriate development and use of land and water which will enhance and support an integrated and diversified sustainable economy.

• **Sediment and Nutrient Load Reduction**

1. Sediment Monitoring
2. Surface Water Quality Monitoring
3. Farmland Erosion Control and On-Farm Runoff
4. Stream Riparian Zones
5. Shoreline Erosion Control
6. Velocity Control Structures
7. Effluent Disposal
8. Sensitive Land Management
9. Edwards Creek Sedimentation Reduction
10. Detention Reservoirs and Erosion Control Works
11. Waste Disposal Sites

The initiatives in the Sediment and Nutrient Load Reduction category deal with the key environmental degradation problems in our basin.

• **Habitat Development**

1. Fish Habitat Enhancement
2. Marsh Development

The success of the above initiatives will dictate the magnitude, allocation, and timing of resources devoted to initiatives in the Habitat Development category.

The December, 1989 booklet "*Opportunities for Restoration*" identified four key issues relating to Dauphin Lake: (*• lake regulation • siltation • water quality • fisheries*). The initiatives presented in detail on the following pages by the Board should be considered as the starting point for reclaiming Dauphin Lake and its basin. Most importantly, these initiatives, or any others suggested, will be successful only if basin residents and all relevant regulatory agencies participate and cooperate to the fullest extent.

Manitoba's Sustainable Development Strategy

The Board concurs with the general philosophy and approach adopted by the Manitoba Round Table on Environment and Economy in its Sustainable Development Strategy. Premier Gary Filmon, who chairs the Manitoba Round Table, considers that this strategy is based on the fundamental belief that we cannot continue to develop economically unless we also protect the environment. In the Dauphin Lake Basin, sustainable development means utilizing the resources of the basin to create jobs and wealth today while sustaining the ability of the Dauphin Lake and its watershed to provide for future needs.

In addition, sustainable development means the provision of a high quality of life for basin residents and its guests, to enjoy the amenities of Dauphin Lake and its surrounding basin for outdoor recreation, fish and wildlife and a beautiful place simply to enjoy in harmony with food production and economy activity.

The Board also recognizes that the Dauphin Lake Basin is a part of the whole of Manitoba and Canada, and in this respect, the Board, representing a wide array of interests in the basin, is further applying the principles and guidelines of the provincial sustainable development initiatives to its own planning and activities. These are listed as follows:

Principles

- *Integration of environmental and economic decisions*
- *Stewardship*
- *Shared responsibility*
- *Prevention*
- *Conservation*
- *Recycling*
- *Enhancement*
- *Rehabilitation and reclamation*
- *Scientific and technologic innovation*
- *Global responsibility*

Guidelines

- *Efficient use of resources*
- *Public participation*
- *Understanding and respect*
- *Access to adequate information*
- *Integrated decision-making*
- *Substitution*

Sustainable development will mean that difficult decisions have to be made in the years ahead. Alternative courses of action, including the status quo, have to be carefully considered in terms of their benefits and costs, which parties are affected and who should bear the costs. A balance must be retained between those who benefit from proposed programs and those who bear the costs of change. The present state of the basin has evolved over a long period of time and cannot be quickly reversed. Certain actions, insignificant and invisible as an individual occurrence, can have large impacts when repeated over time by many individuals. Reducing off-site damages can cost the individual household, farm, firm or settlement dearly, or lead to increased risk.

The Board's vision and Manitoba's Sustainable Development Strategy must be in harmony for the successful implementation of the initiatives in this management plan.

Education Initiatives

Dauphin Lake Basin covers a large and diverse geographical area. Only a handful of people can claim to be familiar with all of it. Many of the basin's resource issues are complex and the resources are integrally linked. A successful education and consultation effort is key to the protection of our wealth of resources.

There is also a need to obtain more information about the resources and resource issues in the basin. The Board will be encouraging research in these areas by establishing initiatives to allow resource professionals to gather and analyze additional information on our resources.

Basin Awareness

- *Distribute resource information, resource development plans, considerations, costs.*
- *Increase knowledge regarding basin environment, issues, responsibilities, and opportunities.*
- *Obtain local input in managing, planning and developing our basin's resources.*
- *Promote greater basin awareness, for both the Dauphin Lake Basin and other basins in Manitoba, thereby creating a better understanding, cooperation and support for basin development.*

The first two steps in problem solving are to identify the problem, then to understand it. Although we seem to know what the resource management problems of the basin are, the understanding of those problems may not be entirely clear. The Board has initiated a two-way basin awareness process to distribute information to basin residents on developments within the basin, as well as to obtain input from the population on issues. While professional assistance in the resource planning process is necessary, it is important that planners be open to the basin population who can provide a historical perspective and also relate aspirations for the future of the basin. Through this interaction, a mutually acceptable vision may be developed.

In 1990, the Board began a program of providing basin residents with the opportunity to learn more about the principles and practices of resource conservation and development. A trailer was donated from the Manitoba Department of Highways and Transportation and has been developed to become the Dauphin Lake Basin Awareness Centre. This mobile

facility has been refurbished and is being equipped with basin resource and conservation education information.

Funding for this project was provided by a grant of \$7,500 from the Department of Natural Resources through the Special Conservation Fund of the Manitoba Lotteries Foundation. Another grant of \$27,000 was obtained from the Environmental Sustainability Initiatives Program funded through PFRA. The Honourable Harry Enns, Minister of Natural Resources, made available several thousand dollars in funding. Technical help in preparing the displays was provided by Natural Resources staff.

Basin residents play a major role in developing the Awareness Centre. The basin youth have just completed the designing and painting of an environmental mural on the centre's exterior. This type of local activity will no doubt ensure the future of this initiative.

The centre travels around the basin visiting the various festivals and fairs and other social gatherings and events each year. Appearance dates and locations are advertised on a regular basis. The content of the displays and distribution materials is updated and changed as new issues arise and as new information becomes available.

The Board is committed to Basin Awareness as a high priority initiative, and anticipates continued cooperation and support from federal and provincial agencies for ongoing and future programs under this initiative.

Basin Research

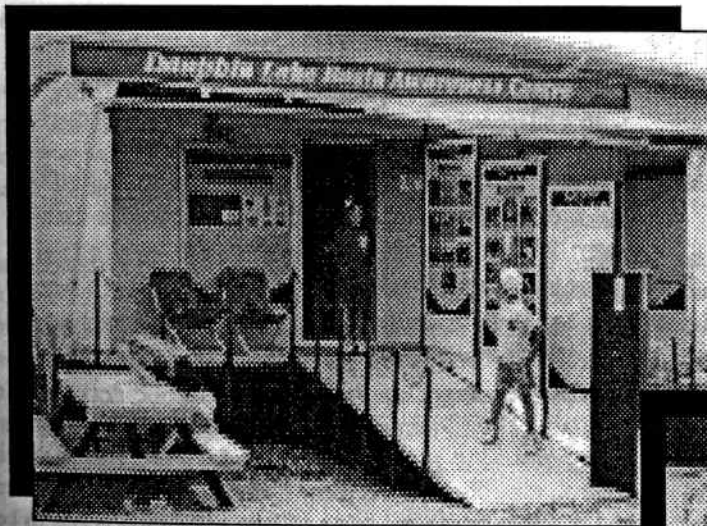
- *Acquire better knowledge of basin resources.*
- *Increase research activity and study into basin resources and problems.*
- *Develop a better data base on the basin.*

We have considerable knowledge and documentation regarding the magnitude of the deterioration problem of Dauphin Lake and its basin; however we still have much to learn. The more knowledge we can obtain on basin resources and its problems, the more successful our plan will be.

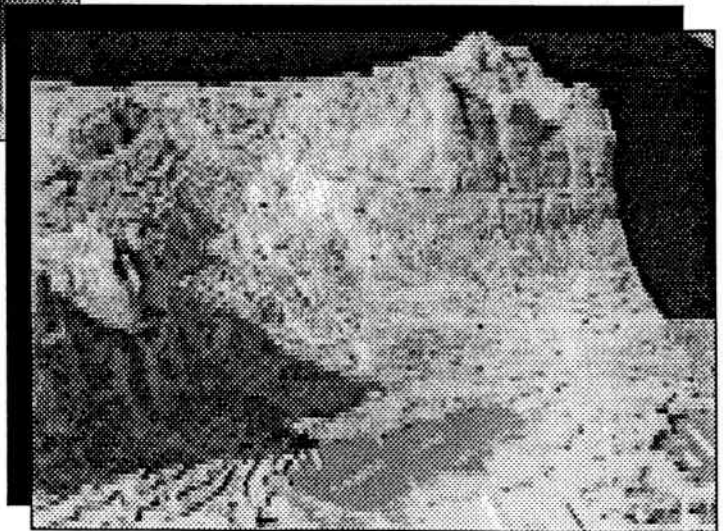
The Board believes that it should participate in preparing research proposals to utilize funding opportunities from private and public sources and to ensure that this research is appropriate to basin needs. The basin's diverse geography and compact size provides an ideal model for research.

This initiative could also provide bursaries for students conducting research within the basin. These bursaries would be available to students in any of Manitoba's institutions of higher learning. Ideally, five would be issued each year, one in each of the following Sciences: Agricultural, Biological, Earth, Physical and Social. The amount of the bursaries will depend on the support received from local individuals, businesses, interested groups and the various levels of government. The Board Executive could be the main body responsible for selecting the bursary recipients.

Basin research represents a vital component of the Management Plan, and is referenced to in many of the initiatives within this document. The Board seeks the continued cooperation and support of all levels of government toward ongoing and future research activity.



The Dauphin Lake Basin Awareness Centre provides some of the educational initiatives by taking information on the progress of basin restoration efforts to basin residents. This offers an opportunity for local input in the management, planning and development of our basin's resources.



Flood Control and Lake Level Regulation Initiatives

Dauphin Lake water levels have been controversial since the beginning of economic development in the basin. Extreme water levels are undesirable. But to arrive at a balanced and acceptable water level range, the Board believes that the highest priority initiatives are flood control and lake regulation and that they should be considered in conjunction with each other.

The Board recommends that an intensive study be considered to evaluate the costs and benefits of these two initiatives which are prime components of the Basin Management Plan.

Flood Control Management

- *Provide sustained resource utilization adjacent to Dauphin Lake.*
- *Stabilize and improve agricultural production.*
- *Stabilize Dauphin Lake shorelines.*
- *Increase wildlife habitat.*
- *Improve recreational development.*

The upper limit of the current trial range of Dauphin Lake level regulation is 854.8 ft. ASL.

Between 1966 and 1990 the level exceeded 856 ft. eleven times. In both 1974 and 1979 levels exceeded 858 ft. causing excessive flooding in many locations and threatening economic sustainability and human habitat.

An exceptional rainstorm in July, 1991 filled to capacity the streams feeding the lake and brought the upper limit of the lake to 855.15 ft.

When lake levels exceed the regulated limit, low-lying areas are subject to flooding, either from high water or wind set-up. An increased ability to handle outflow at such times could eliminate some flooding in the lower agricultural lands. An increase in outflow capacity could also possibly allow for operation of higher levels of the lake at less risk to flooding, thereby enhancing other resource interests.

One solution to this flooding problem could be the construction of a high-level, emergency overflow channel linking Dauphin Lake to Lake Winnipegosis, addressing and assuring the historical water needs of downstream interests. The option of enlarging the Mossey River channel is considered inappropriate by the Board, due to its impact on fishermen, farmsteads and transportation.

The Board feels that the full benefit of the Management Plan will only be realized under some form of flood control. The Board proposes that an intensive study be conducted to evaluate the costs and benefits of flood control management including the overflow channel concept.

Dauphin Lake Regulation

- *Establish a consensus on a long-term regulation plan, in conjunction with flood control.*
- *Improve the understanding of the Dauphin Lake regulation issue by basin residents.*

The regulation of the Dauphin Lake level has impacts on various resource users. The pros and cons of higher regulation versus lower regulation are well documented.

The first step toward dealing with the issue of Dauphin Lake regulation was taken in August, 1990 when the upper operating elevation was raised 0.5 feet to 854.8 feet. This higher operating level is experimental and should be assessed as to its effectiveness and economic value.

Following heavy precipitation in June, 1990 and July, 1991 with consequent higher lake levels, questionnaires were distributed to the public by the Board. Responses to the questionnaires will assist the Board in pin-pointing flood sensitive areas and future lake level regulation.

There is a need for more information to be gathered and analyzed regarding the regulation. The present regulation of Dauphin Lake needs to be thoroughly assessed in order to establish desired levels for various seasons in the year. Acceptable ranges for lake levels must be defined. In addition the Dauphin Lake regulation issue must incorporate the proposal brought forward under flood control, regarding the overflow channel. That is, the present and possible future operation of lake regulation needs to be evaluated and compared to a lake regulation in conjunction with a flood control overflow channel.

Again, the Board feels that the full benefit of this Management Plan will only be realized by addressing the Dauphin Lake regulation /flood control management. The Board proposes an intensive study be considered to evaluate the costs and benefits of lake regulation in conjunction with flood control.

Recreation and Tourism Initiatives

Our natural, cultural and heritage resources are the source of many jobs and economic opportunities in recreational and tourism activities.

The Dauphin Lake Basin contains numerous lands and sites used for recreation and tourism. Their use is extremely varied. Some are dedicated to preservation of ecosystems while others include recreational sites, heritage sites and cultural sites.

The Board believes that an integrated approach to protection, development and use should be observed using multiple land use and integrated land use principles. The initiatives in this section are only a beginning to a long range plan of using and developing our natural, cultural and heritage resources in an environmentally sound, sustainable and compatible manner.

Outdoor Recreation and Tourism Development

- *Increase interest in use of natural, cultural and heritage resources for recreational and tourism.*
- *Enhance and support an integrated and diversified sustainable economy.*
- *Rehabilitate and restore lands and sites that can make a significant contribution to our natural environment, economy, culture and heritage.*

The Dauphin Lake Basin is blessed with many varied sites and areas rich in fascinating cultural and historic heritage as well as an abundance of natural resources and a healthy environment. But recent development in the basin has not allowed the full potential of some of our natural resources to be utilized. Problems such as fish decline, poor water quality, undesirable lake levels and erosion and siltation all have had a negative effect on the development of outdoor recreation and tourism.

The integrated application of initiatives listed elsewhere in this management plan will contribute to the effort of halting the ever increasing deterioration of the natural resources and land base throughout the Dauphin Lake Basin. Once this deterioration is slowed to a manageable rate, efforts can be focused on enhancing the basin's natural, cultural and heritage resources.

Some of the basin's existing natural resources are found within the Riding Mountain National Park, the Duck Mountain Provincial Natural Park, the Duck Mountain Provincial Forest and within Dauphin Lake and along its shores.

The basin's cultural resources developed to date include the Cross of Freedom at Valley River, the replica of the famous grotto at Lourdes, France in Ste. Rose du Lac on the Turtle River and the Selo Ukraina site on the north escarpment of Riding Mountain south of Dauphin.

Heritage resources identified and being developed within the basin include such sites as the Watson Grossley Museum at Grandview, the Fort Dauphin Museum at Dauphin and the Negrych Pioneer Farmstead at Venlaw beside the Drifting River north of Gilbert Plains.

Outdoor recreation within the basin can be found on the waters of Dauphin Lake, at the Provincial Rainbow Beach Recreational Park and the Dauphin Golf and Country Club at Dauphin Lake, at the Mount Agassiz Ski Resort on the eastern slopes of Riding Mountain National Park near McCreary, at the Gilbert Plains Golf and Country Club at Gilbert Plains beside the Valley River and at the numerous lakes, streams and wooded areas within the basin's parks and forested areas. Basin streams offer great potential for recreational and tourism development.

Recreation and Tourism Initiatives cont'd

Tourism and outdoor recreation opportunities exist within the basin for everyone at the present time. But many more opportunities exist for development. Future developments and enhancement of the existing resources are needed to bring economic benefits to the basin and sustain our natural, cultural and heritage resources.

Lake Access

- *Improve the opportunities for public recreational use of Dauphin Lake.*
- *Enhance and support an integrated and diversified tourism industry.*

Dauphin Lake and its shores provide recreation and tourism opportunities in many ways. Fishing (winter and summer), water sports such as windsurfing, waterskiing and sailing as well as waterfowl hunting and photography are but some of the activities in the area. Cottage development along the shoreline boosts the recreational use of the lake.

The Board believes that improving access to Dauphin Lake will increase economic returns to the basin through additional recreational expenditures and increased tourism. The Provincial Rainbow Beach Recreational Park is a prime example of a recreational site that would be enhanced by better access to the water for its visitors. Additional public beaches, campground facilities and cottage development would be encouraged from this initiative.

In 1990, the Board received a grant of \$2,000 from the Department of Natural Resources through the Special Conservation Fund of the Manitoba Lotteries Foundation. These monies were used along with local funds to restore lake access for private cottagers at Oako Beach impacted by the Edwards Creek delta.

Sediment and Nutrient Load Reduction Initiatives

The best way to deal with excessive sediment and nutrient loading of Dauphin Lake is to prevent the removal of soil and nutrients from their place of origin, such as waterways, escarpments, farmlands and urban communities.

The implementation of the initiatives discussed in this section will result in direct and ongoing benefits to Dauphin Lake, the land and the waterway systems in the basin. The Board will support and encourage participation in these initiatives with key players such as the Rural Municipalities, Turtle River Watershed Conservation District, and local Farming For Tomorrow groups such as the Intermountain Soil Conservation Group and the Ste. Rose Ag. Rep. District Soil Conservation Group.

Sediment Monitoring

- *Improve understanding of the Dauphin Lake sedimentation problem.*
- *Determine acceptable level or rate of sedimentation.*
- *Identify major sediment sources and associated pollutants.*
- *Identification of sediment sources will guide other initiatives in the management plan which allow for sediment and nutrient load reduction.*

The broad purpose of all monitoring is to gather data which assists to document the current situation, evaluate basin resources, target remedial programs, plan judicious resource development and to evaluate program success.

Erosion and resulting sedimentation is a natural process in the Dauphin Lake Basin. This process has been accelerated by development. We have alarming documentation regarding the sedimentation rate of Dauphin Lake. What proportion arises from farmlands, parklands, streambanks? How is this sedimentation related to water quality in Dauphin Lake? In order to tackle these problems one should identify the sources of the sediment and be able to show others where they are. Department of Natural Resources staff began this task in 1990. So far, the major critical areas have not been fully determined. These major source areas need to be further defined over the next few years.

In addition, once the determination is made on source, a further determination can be made on how much influence or control we can have on that source.

Knowing the source and the amount of control or influence on that source will allow the Board to determine the acceptable level or rate for the sedimentation process.

We cannot expect to completely eliminate sedimentation processes in the basin. Initial focus of effort should be on major sediment source areas, to reduce the current rate of Dauphin Lake sedimentation as quickly as possible.

Surface Water Quality Monitoring

- *Improve understanding of Dauphin Lake water quality and factors influencing it.*
- *Identify nutrient sources and other pollutants to guide initiatives contained within the management plan aimed at enhancing water quality in Dauphin Lake and its tributaries.*

In 1990, staff from the Department of Environment began two water quality monitoring initiatives in the basin. The purpose of these initiatives is to determine the quality of surface water in the basin and to identify influencing factors i.e. how does actual water quality compare to acceptable levels, what proportion of the existing degradation is related to agricultural, urban and other sources. Once these factors have been identified they will assist in determining potential solutions and their costs.

The first initiative involves monitoring a wide range of pollutants. The second focuses on monitoring nutrients including those associated with sediments which are the primary cause of water quality degradation in the basin.

Sediment and Nutrient Load Reduction Initiatives cont'd

To date the monitoring program has collected considerable information on water quality. Further monitoring is anticipated to at least 1995 and will provide more conclusive data on factors affecting water quality. The Board supports these monitoring efforts and recommends their continuation.

Farmland Erosion Control and On-Farm Runoff

- *Reduce nutrient and sediment loads delivered from farmlands to the basin's waterway system and to Dauphin Lake.*
- *Minimize precipitation runoff from farmlands to reduce water volumes entering streams and to enhance agricultural production.*

Approximately 60 percent of the Dauphin Lake Basin is managed for agriculture. Some of the sediment and nutrients entering Dauphin Lake can be attributed to erosion and runoff from farmlands. In the monitoring initiatives described previously, more data is required to determine the extent to which agricultural land is a contributing factor. Conservation practices which reduce the susceptibility to water and wind erosion and improve utilization of natural precipitation can have a dual benefit; that of maintaining and enhancing farmland productivity as well as reducing the nutrient and sediment loads delivered to Dauphin Lake via its waterway system. These are key objectives in achieving sustainable development in the Dauphin Lake Basin.

Many farmers are already practising good soil management in the basin. The practice of black summerfallow is becoming uncommon and farmers are minimizing spring and fall tillage to reduce erosion by retaining crop residues. Agricultural programs such as Farming For Tomorrow need to be retained and expanded. These programs encourage the use of soil and water conservation practices such as grassing waterways, stabilizing gullies, establishing shelterbelts, conservation tillage, buffer strips, green manure and cover crops, crop residue management, and backflood irrigation. There is a continuing need to

indicate to farmers how good conservation practice actually can contribute to farm incomes by enhancing crop yields and reducing machine operation costs.

Farmlands and farm operations which are shown to be major contributors to sediment and nutrient buildup should be targeted for conservation programs and/or remedial measures. Incentives such as cost-sharing arrangements and technical assistance could be a component in an implementation plan.

Stream Riparian Zones

- *Establish and maintain a functional waterway system which is erosion resistant and protected from nutrients, sediment and other water quality contaminants originating from adjacent lands.*
- *Reduce sediment and nutrients contributed to waterways from surrounding environments by establishing vegetation buffer zones.*
- *Provide habitat for both land and water - based wildlife.*

The riparian zone is that strip of land and associated vegetation next to streams and drains. Vegetation such as trees, shrubs and grasses serve to stabilize streambanks from the erosional forces of free-flowing water. This zone further functions as a buffer between the water and the surrounding landscape. It provides food and cover for birds and animals and shades and cools the water thereby enhancing the fish habitat. The presence of these strips of vegetation also has the effect of reducing wind erosion on the adjacent farmland and trapping eroded field sediments.

The Board intends to protect and develop riparian zones throughout the basin. A plan for developing and managing these zones should be established. This would include an inventory of the basin's riparian areas and the identification of priority sites. Proposals for cost-shared projects with private landowners, such as plantings, could be considered, along with conservation easements and caveats to protect functional riparian zones. Demonstration sites may be developed.

Shoreline Erosion Control

- *Provide for Dauphin Lake shoreline erosion control so as to stabilize shorelines while providing wildlife, recreation and amenity benefits.*

The Board has become aware of a serious erosion problem along the southern shoreline of Dauphin Lake near the Turtle River outlet. The impact of this erosion on the turbidity of the lake and its ecosystem is not known. The Board believes that a study of this erosion area and others to be identified is needed. This study would provide a basic understanding of the shoreline processes and the various cost-effective options to provide erosion control.

An opportunity may exist with this initiative to carry out a demonstration project for shoreline erosion control.

Velocity Control Structures

- *Reduce channel and bank erosion and thereby reduce downstream sedimentation.*
- *Possible reduction in downstream peak flows, depending on the timing of flow peaks of tributary streams on a system wide basis.*

The steep slopes of the Riding Mountain escarpment contain rivers and streams that have gradients so high that extreme flow velocities are created.

The two main factors influencing channel and bank erosion are the susceptibility of the channel and bank soil to erosion and water flow velocity. Although soil structure cannot normally be altered, flow velocity can be influenced. In areas where channels or banks are particularly susceptible to erosion, such as alluvial fan areas and the escarpment in the Riding Mountain National Park, flow velocities can be reduced by control structures which reduce overall channel gradients. Four such structures have been built on Wilson Creek within the alluvial fan near the park. These structures have been effective in arresting upstream erosion.

The Board believes that under this initiative an inventory of aggrading (depositing) and degrading (eroding) channels within the basin should be prepared and sites for additional velocity control structures should be identified and developed. These could range in size from small on-farm structures to larger structures located on tributary streams.

All parties having jurisdiction over drainage must plan and work cooperatively in drainage system management. This would result in a better controlled runoff of drainage waters by reducing velocity and providing retention areas.

Some success has been demonstrated by municipal and provincial agencies in reducing flow velocities and erosion by designing culverts so as to reduce overall channel gradients and thus velocities and discharges.

Effluent Disposal

- *Provide for improved water quality by utilizing effluent irrigation as an alternate means for emptying municipal sewage lagoons.*
- *Enhance agricultural production by utilizing lagoons as an irrigation water supply source.*

Approximately half of the basin residents are served by municipal sewage systems which use wastewater treatment lagoons. Lagoons are usually emptied by drainage into rivers and streams immediately after spring breakup and again in the fall to provide for winter storage. These effluent discharges are a source of dissolved nutrients that contribute to the degradation of water quality in Dauphin Lake.

The Board recommends that effluent irrigation projects be evaluated as an alternative to the practice of discharging effluent into basin streams. Lagoon effluent is a source of nutrient rich irrigation water and should be considered an under utilized water supply resource for agriculture. The nearby Town of Roblin utilizes effluent irrigation to empty its lagoons, and this practice is quite common throughout Saskatchewan and Alberta. Careful environmental monitoring would be required.

Sediment and Nutrient Load Reduction Initiatives cont'd

Sensitive Land Management

- *Reduce degradation of environmentally sensitive areas through the provision of natural protection.*
- *Reduce damages suffered during stressful climatic occurrences (droughts, floods, storms).*
- *Increase support for agricultural diversification.*
- *Increase and improve wildlife habitat.*

Environmentally sensitive lands when unprotected are prone to damage during unusual or extreme weather conditions. Environmentally sensitive land within the basin should be identified. Recommendations for protection could be developed through a rating scale based on categories of use. For example, marginally productive agricultural land or land that is prone to erosion, flooding or salinization would be rated for a use that is compatible with the long term protection of the land and the sustainable development of the basin. On private land, incentive programs, to alter the use of these sensitive areas could be a consideration. Land converted to preferred uses could be protected by legal agreements such as conservation easements or caveats.

This initiative would also seek changes in land assessment, relating to positive conservation changes.

The Board believes that this initiative is essential to maximize the benefit of the Management Plan. More cooperation among jurisdictions responsible for and/or affecting land management is a necessary requirement, including a working partnership with Riding Mountain National Park.

Edwards Creek Sedimentation Reduction

- *Reduce sediment delivered to Dauphin Lake by Edwards Creek.*

Sediment from Edwards Creek is severely limiting recreational use of the lake and cottage area near Oako and Dauphin beaches. The delta at the mouth of Edwards Creek is continuing to expand into Dauphin Lake. Twenty-three percent of the total sediment load into Dauphin Lake has been estimated as the long term average that Edwards Creek supplies to Dauphin Lake.

Almost the entire sediment load comes from the shale escarpment in the headwaters within Riding Mountain National Park as well as from the channel bottom as it down-cuts into the alluvial deposits.

The Board recommends under this initiative that methods of restoring sediment trapping potential on Edwards Creek and other options for reducing the sediment load contributions be examined. One possibility has already been investigated. Diverting the outlet of Edwards Creek into a sediment trap located in a low area north of the existing outlet appears to be technically feasible but expensive and only a short term solution. Other options that can be considered are headwater retention reservoirs and bank stabilization works in Edwards Creek Drain.

As with the previous initiative the Board believes that a working partnership with the Riding Mountain National Park authorities is necessary so that a co-operative effort can be established to deal with the severe erosion and resulting sediment loads from the escarpment areas.

Detention Reservoirs and Erosion Control Works

- *Reduce magnitude of downstream runoff peaks and subsequent reduction of channel erosion, flooding and lake siltation.*
- *Prolong streamflows.*
- *Improve channel aquatic environment.*

The objective of developing runoff detention reservoirs and erosion control works is to detain the runoff, particularly upstream of erosion sites and during large runoff events. Runoff detention reservoirs fill during large runoff events and then drain once the peak flow has subsided. The reservoirs are designed to contain water for less than one week thereby minimizing the impact on vegetation in the temporary reservoir area.

The Board supports the utilization of detention reservoirs. Two such structures have been built on Bald Hill Creek in the Wilson Creek watershed within the Riding Mountain National Park. Erosion control works within the alluvial fan deposits along the escarpment are also needed in many areas in the basin.

Some potential detention sites have been identified within the basin. They include a site on Crawford Creek below the Riding Mountain escarpment, a site on Mink Creek near PTH #10 and several sites on the Ochre River above the escarpment within Riding Mountain National Park. The development of these and other sites requires additional studies and investigations which, if positive, could lead to the establishment of agreements with landowners and Riding Mountain National Park authorities. Land exchange possibilities should be explored with federal and provincial authorities.

Waste Disposal Sites

- *Reduce the amount of hazardous wastes entering basin disposal sites.*
- *Protect surface water and groundwater from dangerous chemicals that leech out from disposal sites years later.*

Concern has been expressed to the Board regarding possible contamination of the ecosystem within the basin from abandoned and current waste disposal sites.

Organizations have been recently created due to concerns regarding waste management procedures. The Association for a Clean Rural Environment (ACRE), works to provide farmers with an efficient and low cost method of safe pesticide container disposal. Manitoba farmers, including basin residents, have responded overwhelmingly to ACRE's program. The Board fully supports this program and any other programs, such as recycling, that the governments (local, provincial, federal) develop in the future to deal with the management of solid wastes such as dry cell batteries, battery acid, chlorine, heavy metals and oil.

This initiative also includes the Board's desire to have the provincial government establish a monitoring program for abandoned waste disposal sites so that dangerous toxic wastes do not escape the sites and contaminate the water and land resources in the basin. The abandoned Town of Dauphin land fill site on the north side of town beside the Vermillion River is one such site that has been mentioned as a possible source of contamination.

Habitat Development Initiatives

The initiatives in this section focus on the development of various aspects of fish and wildlife habitat in the basin.

Fish Habitat Enhancement

- *Improve fish spawning success.*
- *Improve Dauphin Lake fishery.*
- *Improve environment for aquatic life.*

The restoration, development and preservation of fish habitat is important to the Dauphin Lake fishery as well as for recreational fishing and tourism. Many of the initiatives being considered in the previous section, dealing with Sedimentation and Nutrient Load Reduction will also help protect and restore fish habitat.

Steps have already been taken under this initiative. In 1990, the Honourable Harry Enns, Minister of Natural Resources, allocated approximately \$10,000 to the construction of pool and riffle structures on Edwards Creek. Structures were also built on the Wilson River and on Mink Creek. The purpose of these structures is to improve fish spawning success. Significantly improved spawning success along these streams has already been recorded.

The Board fully supports the development of plans by all agencies to enhance fish habitat in most of the major streams in the basin.

Marsh Development

- *Improve land and aquatic wildlife habitat.*
- *Protect important natural sediment and nutrient traps.*

Dauphin Lake marshes form the transition zone between the agricultural land base and the lake. Much of this area is suitable and utilized for grazing and forage production as well as being important to waterfowl. Marshes are also very important for other ecological reasons, including foraging habitat for fish, sediment entrapment and nutrient removal.

The Board supports this initiative which would focus on improving and preserving marsh environments in the basin, beginning with the Turtle River Marsh, the Valley River Marsh and the Wilson River Marsh.

The Turtle River Marsh is a candidate Manitoba Heritage Marsh. In 1990, the Turtle River Marsh Task Force Advisory Committee and the Turtle River Marsh Technical Committee were established with the objective of establishing a development plan for Turtle River Marsh. These groups comprise representatives from local residents, private agencies, Turtle River Watershed Conservation District, municipalities and the provincial government. This cooperative venture is endorsed by the Board.

Implementing the Management Plan

The Dauphin Lake Basin Management Plan has been developed as a result of a cooperative effort involving the Dauphin Lake Basin Advisory Board, the basin residents, the basin landowners, the federal government and various Manitoba government departments, particularly Natural Resources, Agriculture, Environment and Rural Development, with Natural Resources assuming the lead role as coordinator. Implementing the Plan will likewise require a cooperative effort on behalf of these and additional participants such as the federal government and non-government organizations. It is only through a cooperative and coordinated effort that the Plan will succeed in meeting its objectives.

The Plan outlines important resource concerns and identifies initiatives to address those concerns. Several of the initiatives, such as the Monitoring and Basin Awareness initiatives, have already been put into place as a result of cooperation and financial assistance from various government departments. There is a need for continued support for these initiatives. Progress on conservation initiatives, such as Farmland Erosion Control and On-Farm Runoff, is under way through such programs as Farming For Tomorrow. The Basin Management Plan proposes to

supplement conservation programming on agricultural lands. Other initiatives such as Flood Control and Lake Regulation are identified as high priority, and as such, make reference to benefit/cost studies and associated information requirements. As flood control and lake regulation are key elements in the Plan's ultimate success, a thorough analysis of all the alternatives (i.e. physical, environmental and economic studies) is essential to guide resource use and investment decisions. This will ensure consistency with the principles and guidelines of Sustainable Development and the Manitoba Round Table vision for the Province.

All possible avenues for funding should be sought, including the federal government under programs such as Canada's Green Plan.

The Board is committed to the idea of Dauphin Lake Basin enhancement and sustainable development and believes that the Management Plan can produce the desired results. The Board requests that the Government of Manitoba give approval to the Dauphin Lake Basin Management Plan and provide support for both continued and new future action programs.

4 Step Process



THE FOUNDING

DAUPHIN LAKE BASIN ADVISORY BOARD – 1990

Rural Municipalities & LGD's

R. M. of Dauphin
R. M. of Ethelbert
R. M. of Gilbert Plains
R. M. of Grandview
R. M. of Lawrence
R. M. of McCreary
R. M. of Mossey River
R. M. of Ochre River
R. M. of Ste. Rose

Towns/Villages

Town of Dauphin
Village of Gilbert Plains
Town of Grandview
Village of McCreary
Village of Ste. Rose du Lac
Village of Winnipegosis

Organizations

Christensen Beach Cottage Committee
Crescent Cove Cottage Committee
Dauphin Agricultural Society
Dauphin Beach Cottage Committee
Dauphin Chamber of Commerce
Dauphin Fish & Wildlife Association
Dauphin Ochre School Division
Dauphin Opportunity Centre
Duck Mountain Forest Centre
East Parkland Development Committee
Intermountain Naturalist Society
Intermountain School Division #36
Intermountain Sport Fishing Enhancement
Keystone Agricultural Producers
Laguna Beach Cottage Committee
Lake Dauphin Commercial Fisherman's Association
Northwest Metis Council
Oako Beach Cottage Committee
Ochre Beach Cottage Committee
Parkland Sports Council
Parkland Wildlife Advisory Board
Riding Mountain Biosphere Reserve
Riding Mountain Regional Liaison Committee
Rural Lake Dauphin Flood Committee
Ste. Rose Planning District
Stoney Point Cottage Committee
Turtle River Agricultural Committee
Turtle River Marsh Task Force
Turtle River School Division
Turtle River Watershed Conservation District
Union of Manitoba Municipalities
Watchdogs for Wildlife
Westlake Wildlife Association

Representative

*Ernie Bayduza *Executive*
Terry Shewchuk
Mike Huska
Sydney Puchailo
Terry Smith
Lawrence Kischook
Ken Pascal (alt. Ben Bornn)
Ben Kardoes (alt. Roland Thompson)
Jim Ives (alt. Dwight Hopfner)

Representative

*Martin Bidzinski *Executive Vice-Chairperson*
Lloyd Beckley
Alfred Dressler
Norman Shingleton
Frank Parent (alt. Rene L. Maillard)
Brian Johanneson

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Gordon McColm
Don White (alt. Brian Damsgaard)
Earl Yack
Lorne Shindak
Bill Smilski (alt. Marvin Zwarich)
Mike Belinsky
Myles Haverluck
Lorne Day
Henry Sikora
Adrian Baker
John Ross
Gary Armstrong (alt. Wayne Brezden)
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Ben Kardoes
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Herman Schroeder
Ernie Tucker
Barry Durston (alt. Dean Allan)
Allan Armstrong
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*Fred Taylor *Executive Chairperson*
* *Board Executive Member*

