

Issues and Policy Recommendations

*Matters and Factors for Consideration
by Alberta Environment in Issuing
Approvals, Preliminary Certificates,
Licences, and Transfers of Licensed Allocations*

Nose Creek Watershed



Prepared for the Nose Creek Watershed Partnership

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Waxwing Synthesis and Resolution Inc.

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Waxwing Synthesis & Resolution Inc.
Box 74096, RPO Strathcona
Calgary, AB T3H 3B6

Tel: (403) 217-1523
E-mail: waxwingsar@shaw.ca

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Introduction

A water management plan is being prepared for the Nose Creek watershed by the Nose Creek Watershed Partnership. Members of the Partnership are the City of Calgary, the City of Airdrie, the Municipal District of Rocky View #44, the Town of Crossfield, Ducks Unlimited, the Calgary Airport Authority, and the Bow River Basin Council. Alberta Environment provides technical advice and assistance, including collaboration with water quality monitoring.

The goal of the Partnership is to protect riparian areas and improve water quality in the watershed. The water management plan will help ensure sustainable water management and a healthy aquatic environment.

Under the Partnership's direction, information has been collected on the watershed and the influence of human activity, a *Watershed Health Report* was completed, an *Instream Flow Needs Scoping Study* was drafted, and opinions and advice were received from regulatory officials, agricultural producers, the general public, members of the urban development sector, and environmental groups.

It is anticipated that the water management plan will be completed in early 2006. The Partnership has identified a need to develop interim policy recommendations concerning the matters and factors Alberta Environment decision-makers could consider in deciding whether to issue approvals, preliminary certificates, and licences, and approve transfers of an allocation of water under a licence.

The Decision-Making System

Alberta Environment's system for making decisions on approvals, preliminary certificates, licences, and transfers of licensed allocations is summarized in Appendix B. The decision-making system covers a variety of issues including water quality, land reclamation, water diversions, and construction activity in rivers, streams, and other water bodies.

The principles that govern Alberta Environment's decision-making are described in a series of laws, regulations, policies, guidelines, and fact sheets. Key principles are:

- maintenance of existing conditions
- prevention of significant adverse effects on people and the environment
- minimization of the release of substances that could harm people or the environment
- minimization of flooding, erosion, and sedimentation
- protection of important animal species
- protection of instream needs
- adherence to design and construction standards and guidelines
- integrated management of resources
- every opportunity for the public to understand and provide advice on water management decisions
- few restrictions on what can be considered in making a decision
- exclusion of decisions that would not be in the public interest.

Issues

The Nose Creek watershed is important to its residents, the people who work and play there, and the business owners, administrators, and elected representatives responsible for managing the watershed's land, water, and infrastructure. The watershed, though, is intensively developed. This has led to significant alteration of the flow and quality of water in the creeks and damage to aquatic and riparian ecosystems. There are concerns that the environmental quality of the watershed will continue to deteriorate and that this deterioration will lead to greater impacts on people and the economy.

Through its technical work and consultation with the public, the Nose Creek Watershed Partnership has identified a variety of issues that need to be addressed to ensure sustainable water management and a healthy aquatic environment. These issues were reviewed and are summarized in Appendix C.¹

The issues in the watershed range from the impacts that have already affected water flow and quality to effective communication to the question of who should pay to improve conditions in the watershed. The issues are complex and connected.

Assessment of Issues

Issues relevant to Alberta Environment's licensing and approval decisions were examined to determine if they can currently be managed in a routine manner or if they require additional data or policy measures to be incorporated into normal decision-making. The details of the assessment are provided in Appendix D.

Virtually all issues affecting the Nose Creek watershed are relevant to Alberta Environment's decision-making on approvals, preliminary certificates, licences, and transfers of licensed allocations. More than 80% of the issues could be routinely handled, at least partially, by Alberta Environment using the policy measures it already has available.

Although Alberta Environment could make progress on the issues in the watershed by relying on what it is doing or is allowed to do, there are limits to its ability to effectively deal with the issues. For all but three of the 53 issues in the watershed, data gaps will need to be filled and/or additional policy measures implemented to complete the task of issue resolution.

Evaluation of Options

Options Currently Used by Alberta Environment

Alberta Environment already has several tools that are valuable for protecting and improving the Nose Creek watershed. These are:

- legal requirements for the authorization of water withdrawals, wastewater discharges, and activities affecting water bodies
- engineering standards and guidelines
- public notification of applications
- mandatory consideration of concerns about applications from those directly affected

- broad discretion to request and consider relevant information when reviewing an application
- terms and conditions in approvals, licences, etc. to control the adverse effects of water use, wastewater discharge, and construction activity, including maintaining minimum instream flows
- a “one-window” approval process
- a classification system for water bodies based on the sensitivity to impacts on fish
- designation of flood risk areas
- performance measures for the management of instream flows
- authority to deny applications that are not in the public interest
- authority to reserve unallocated water and specify how it can be allocated
- authority to allow transfers of licensed allocations and withhold up to 10% of the allocation to meet instream needs.

Other Options

There are a variety of options that have been identified that could enhance either Alberta Environment’s decision-making or the decision-making of municipalities, landowners, and others who have an influence over the management of the watershed. These options were screened to identify their strengths and weaknesses. The details of the evaluation are provided in Appendix D.

All the options considered could make a positive contribution to managing the Nose Creek watershed and improving its condition. Only eight of the 103 options have a limitation that would potentially make them inappropriate.

Analysis and Policy Recommendations

There are six areas where improvements are needed to strengthen decision-making. These are:

- integration of aquatic and riparian ecosystems
- watershed protection and improvement
- knowledge and awareness
- performance measures
- communication and consultation
- financial sustainability.

Integration of Aquatic and Riparian Ecosystems

It is an accepted principle in water management that there is “no clear line that separates water and land environments.”² What is ordinarily called the aquatic environment is directly linked to its adjacent riparian ecosystem, primarily through surface run-off and ground water. Neither the aquatic environment nor the riparian environment can be healthy unless the other is healthy as well.

The Alberta Government has recognized the interrelationship between water and land by defining a water body to include the floodplain that surrounds it.³ However, Alberta Environment’s decision-making on approvals, preliminary certificates, licences, and transfers of licensed allocations is focused almost exclusively on how a decision will affect the aquatic ecosystem.

To overcome this deficiency in the Nose Creek watershed, it will be necessary to define where the riparian ecosystem is and develop a mutually agreed and supported program for managing and protecting both the aquatic and riparian ecosystems.

Alberta Environment will not be able to do this alone. Its mandate for regulating water diversions, instream construction, wastewater discharge, and land reclamation does not give it all the authority necessary to effectively integrate aquatic and riparian needs.

Municipalities will be key players in successful aquatic-riparian integration. They have authority for regulating land use that complements and reinforces the mandate of Alberta Environment. Municipalities can control:⁴

- the landscaping of land or buildings
- the development of buildings on land that is
 - subject to flooding or subsidence
 - low lying, marshy, or unstable
 - adjacent to or within a specified distance of the bed and shore of any lake, river, stream or other body of water.

Municipalities can for a proposed subdivision obtain, without compensation, land for environmental and municipal reserve to protect the watershed.⁵ An environmental reserve can consist of:

- a swamp, gully, ravine, coulee or natural drainage course
- land that is subject to flooding or unstable
- a strip of land, not less than six meters in width, abutting the bed and shore of any body of water for the purpose of
 - preventing pollution or
 - providing public access to and beside the bed and shore.

A municipality may also purchase land and acquire control of land through donation or as an easement.

These powers are considerable. Concern has been raised, though, as to whether or not the six meter buffer is adequate to protect riparian and aquatic ecosystems.

Buffers serve a variety of purposes. They are designed to ease administrative and regulatory requirements while providing some protection for water bodies and the adjacent land. Although riparian buffers do not necessarily provide full ecosystem protection, it appears, based on current use of buffers, that six meters is not adequate for managing the land uses that occur in or adjacent to water bodies (Appendix E).

Recommendation 1: Alberta Environment, in consultation with the municipalities in the Nose Creek watershed, should designate the watershed's flood risk areas and, in those areas, allow new or modified land and water uses that will maintain or achieve a healthy riparian environment,⁶ will not increase flooding potential, will not result in flood damage or loss unanticipated by those using the land or water, and will not result in post-construction diversion of ground water.⁷

Recommendation 2: The Partnership should convene a panel of experts in riparian management to define the remainder of the riparian ecosystem beyond the flood risk areas.

Recommendation 3: The Partnership should request that Alberta Environment change its designation of water bodies in the watershed to Class C or higher to reflect the sensitivity of the watershed's aquatic and riparian environments and require that aquatic environment specifications and field assessments in the watershed include consideration of the riparian environment.

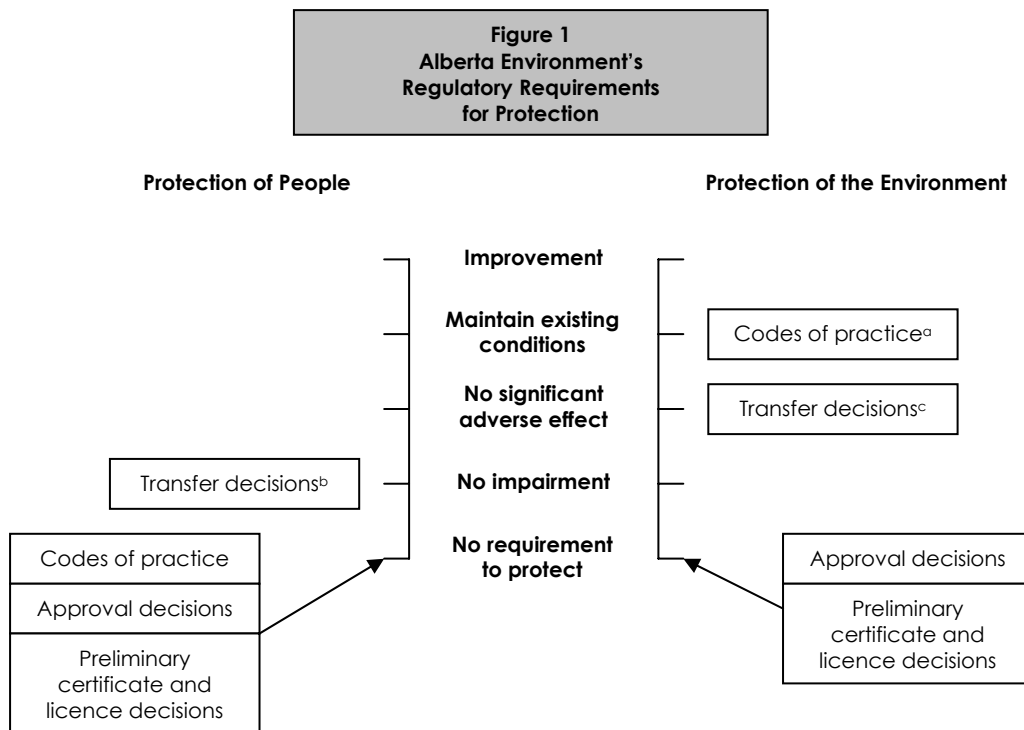
Recommendation 4: The Partnership, in consultation with the watershed's residents and landowners, regulatory agencies, and others, should recommend to the watershed's municipalities and Alberta Environment which additional regulatory changes are necessary to ensure that healthy riparian areas are maintained and that problems in other riparian areas are corrected.

Watershed Protection and Improvement

The Nose Creek Watershed Partnership has adopted as its mission to protect riparian areas and improve water quality in the Nose Creek watershed.

In most cases, Alberta Environment's regulatory requirements are not consistent with that goal (Figure 1). In most types of decisions, Alberta Environment is not required to ensure that people, their rights, and the environment are protected.

There is some protection when decisions on transfers of licensed allocations are made, but this is limited to no impairment of the rights of water users and no significant adverse effect on the aquatic environment. Only with codes of practice is there a requirement to maintain existing



a. Quantity and productive capacity of aquatic environment equivalent to what existed prior to construction.
 b. No impairment of the exercise of rights of other water users.
 c. No significant adverse effect on the aquatic environment.

conditions, with the requirement being restricted to the aquatic environment, that is, the stream and its bed and shores. None of Alberta Environment's decisions are required to improve conditions when improvement is needed.

Alberta Environment is also not allowed to include conditions in licences to protect preferred instream flows or limit maximum flows. This means that, unlike other jurisdictions in western North America, instream needs can not receive full legal protection and licensing decisions will only safeguard "basic water quality and instream flow needs."⁸

Recommendation 5: The Partnership should recommend that Alberta Environment adopt the goal of protecting riparian areas and improving water quality in the watershed (including the linkages between healthy riparian areas and good water quality).

Recommendation 6: When reviewing an application for an approval, licence, or transfer of licensed allocation, the members of the Partnership, where appropriate, should identify options and modifications to the proposed project that are needed to protect riparian areas and improve water quality in the watershed. Options and modifications should be sent to Alberta Environment with a request that, if the options and modifications are not adopted, a justification be provided.

Recommendation 7: The Partnership should recommend to Alberta Environment that the prohibition be removed on licence conditions to protect preferred flows or limit maximum flows.

Recommendation 8: Building on the work that has already been done, the Partnership, in cooperation with Alberta Environment and others, should conduct an aquatic and riparian environment assessment of the watershed.

Recommendation 9: Based on available information, including the aquatic and riparian environment assessment (if done), the Partnership should develop an action plan for protecting riparian areas and improving water quality in the watershed, including:

- a. zoning, regulating, or acquiring riparian buffers
- b. requiring aquatic and riparian health as a condition for subdivision approval
- c. revising application requirements, design and construction standards and guidelines, codes of practice, and approval and licence conditions so that the watershed's hydrology, water quality, and riparian areas are restored to acceptable levels
- d. enhancing efforts to increase the compatibility of riparian health and stockwatering and grazing along water bodies and in riparian areas.

Knowledge and Awareness

It will be difficult to implement the recommendations listed above and those listed below unless there is better knowledge and awareness of the condition of the watershed.

The Nose Creek watershed is a complex system, made all the more complex by past decisions that do not meet current objectives. Making effective decisions for complex systems requires:⁹

- **Sensitivity to initial conditions** – accurate definition of how things are and how they got to be that way
- **Coping with uncertainty:** - understanding where uncertainty exists and building in ways to pursue the probable while allowing room for the unpredictable

- **Understanding interactions:** - determining how people and the watershed will react in response to changes in policy and physical conditions
- **Eliminating randomness:** - explaining behavior that appears haphazard.

The factors that will be key to managing the watershed's complexity are:

- stormwater run-off from the urban portions of the watershed
- the source and influence of contaminants entering the water system
- the effectiveness, practicality, and economics of land and water management practices
- the need to protect ground water and riparian vegetation to ensure good streamflow during periods of low runoff.¹⁰

Recommendation 10: The Partnership should request that Alberta Environment determine the predevelopment storm drainage or natural flow of the watershed.¹¹

Recommendation 11: The Partnership, in cooperation with Alberta Environment, should estimate the natural water quality conditions in the watershed.

Recommendation 12: The Partnership should request that Alberta Environment determine the instream needs in the watershed using the methods proposed by Westhoff Engineering Resources, Inc.¹² or other method(s) more suitable to their decision-making needs.

Recommendation 13: The Partnership should document the effectiveness, practicality, and economics of management practices in terms of their ability to protect and improve flow, water quality, and riparian conditions in the watershed.

Recommendation 14: The Partnership should request that, until the sustainable ground water contribution to streamflow has been defined, Alberta Environment adopt the principle that, for all water diversions in the watershed, surface and ground water are linked unless proponents can conclusively demonstrate otherwise.

Performance Measures

Decision-making will not improve simply by collecting more information and understanding it better. People need ways of knowing if a decision is the right one and, after the decision is implemented, how right the decision actually was.

To accomplish this, people rely on performance measures. Often these performance measures are gut instincts, common sense, and commonly-held beliefs. However, in a complex watershed where decision-makers are accountable to the public, performance measures must be clear, credible, and effective.¹³

The system that Alberta Environment uses for decision-making in the Nose Creek watershed is currently based on the following performance measures:

- engineering standards and guidelines for design and construction of facilities
- general direction concerning the impact of construction on the aquatic environment
- criteria for management of instream needs¹⁴
- requirements for transfers of licensed allocations.

These performance measures are useful, but not sufficient for determining if decisions will meet the goal of protecting riparian areas and improving water quality.

The key questions not answered by the existing performance measures are:

- What is a healthy aquatic and riparian environment?
- What is sustainable water management?
- What is necessary to protect the Bow River and water uses dependent on the Western Headworks System?
- What is the public interest?¹⁵

Recommendation 15: The Partnership, in cooperation with Alberta Environment and others, should develop performance measures for a healthy aquatic and riparian environment, sustainable water management, protection of the Bow River and water uses dependent on the Western Headworks System, and the public interest.

The Public Interest

Defining the public interest begins with a basic definition:

the protection and promotion of a community's goals through rule-based resolution of conflict while respecting human rights.

Source: Bob Morrison, "Civilized Ill-Will, Self-Evident Rationality, Faith-Based Consent, and Selfless Authoritarianism: Definitions of Decision-Making," *Moving Beyond Now*, v. 1, no. 3 (July, 2004), p. 1

Recommendation 16: Using the performance measures, the Partnership should recommend changes to improve the decision-making effectiveness of those who make regulatory decisions for the watershed including:

- a. additional criteria that must be met before granting an approval, licence, or transfer of a licensed allocation
- b. conditions under which applications will not be accepted or approvals, licences, or transfers of licensed allocations will not be granted
- c. flow and water quality requirements for protecting riparian areas and improving water quality
- d. for existing facilities or works and existing alterations to the ecosystem,
 - modifications necessary to ensure that riparian areas are protected and water quality is improved to acceptable levels
 - measures to ensure that future activities (e.g., channelization, additional land development, site dewatering) do not reduce the effectiveness of existing facilities or works.

Communication and Consultation

For a regulatory decision-maker in Alberta Environment, the "greatest concern is being brought before the Environmental Appeal Board to justify a decision or brought before a judge for judicial review."¹⁶ The use of specific and realistic criteria such as engineering standards and other performance measures are important for avoiding these legal challenges. The other essential ingredient in reducing the risk of legal challenges and eliminating the opportunities for those challenges to succeed is fair and meaningful communication and consultation with proponents, municipalities, landowners, and other members of the public.¹⁷

The Alberta Government "is committed to ensuring that Albertans have every opportunity to understand and provide advice on water management decisions."¹⁸ However, in its regulatory public consultation, Alberta Environment relies on "selective benevolence," that is, "controlling public involvement and access to information according to the needs and comfort level of decision-makers."¹⁹ This includes:

- public notice customarily through newspaper ads

- waiver of public notice when, in the opinion of the decision-maker, a proposed project is routine or will result in minimal or no adverse effect on the environment or the legal rights of other water users
- discretionary and potentially restrictive and time-consuming rules for access to information
- non-existent or cursory participation in the referral processes used by municipalities in the watershed
- not being a member of the Partnership.

The consequence of this type of public consultation is that Alberta Environment does not develop its most potent safeguard against legal challenges: the opportunity for people to provide informed consent on a decision.

Recommendation 17: Alberta Environment should join the Nose Creek Watershed Partnership and become an active participant in the water management plan and in the referral and consultation process for municipal regulatory decisions.

Recommendation 18: The Partnership, in cooperation with Alberta Environment and others, should develop a communication and consultation plan for reviewing applications and proposals for the watershed that will:

- a. promote timely and informative identification and consideration of projects and concerns
- b. promote consistency among governments
- c. ensure that Albertans have every opportunity to understand and provide advice on water management decisions
- d. incorporate protection of riparian areas and improvement of water quality into decision-making.

Recommendation 19: The Partnership should request that Alberta Environment establish an information management system for the watershed that includes:

- a. current information and future projections on population, land use, water demand, and demand on assimilative capacity
- b. a registry of documents and information received or created by Alberta Environment in the administration of the *Environmental Protection and Enhancement Act* and *Water Act*.

Recommendation 20: The Partnership should invite Alberta Environment and other

Informed Consent

Informed consent is a decision-making process that provides each potentially affected person with every opportunity to provide advice on, understand, and voluntarily concur with a decision – before the decision is made. It is a process in which the decision-maker has the obligation to disclose all relevant information, including where ignorance exists, and to impartially consider the advice given by others. Those who could be affected by a decision, in return, have the responsibility to clearly define their self-interest, be honest, take advantage of the opportunities to participate in the decision-making process, and, in a competent and fair manner, advocate their views.

Informed consent is a staggering challenge because of the duties it imposes on those involved in a decision. Strict adherence to the ideal of informed consent on just the top-priority issues of governance would overwhelm people's resources, time, and ability to digest information.

More efficient methods of informed consent (e.g., elected representatives, political parties, interest groups, opinion polls) are used to make informed consent workable. These "short-cuts" are appropriate as long as they are adopted and maintained through informed consent.

Source: Bob Morrison, "Civilized Ill-Will, Self-Evident Rationality, Faith-Based Consent, and Selfless Authoritarianism: Definitions of Decision-Making," *Moving Beyond Now*, v. 1, no. 3 (July, 2004), p. 6

regulatory agencies with responsibility for aquatic and riparian areas to meet annually with the Partnership to present "state of the watershed" reports and the coming year's plans for monitoring, awareness, and enforcement.

Recommendation 21: The Partnership should request that Alberta Environment refer all applications and code of practice notices in or affecting the watershed to members of the Partnership for advice.

Recommendation 22: The Partnership should request that Alberta Environment circulate draft decisions on all applications and code of practice notices in or affecting the watershed to members of the Partnership for advice.

Recommendation 23: The Partnership, in cooperation with Alberta Environment, should develop a procedure through which approval, licensing, transfer, and code of practice decisions will comply with municipal plans and water management plans.

Recommendation 24: To ensure due diligence, Alberta Environment should refer the issue of bacterial contamination in the watershed to the regional health authority for advice and direction.

Financial Sustainability

Each of the recommendations presented here will require money, if only because they will, at least initially, demand more from Alberta Environment, members of the Partnership, and others whose financial resources are already stretched to the limit. Although not the only need, sufficient funding will be a key requirement for successfully protecting riparian areas and improving water quality in the watershed.

There are various ways to finance protection and improvement of the watershed including:

- general revenue
- borrowing
- federal and provincial grants
- revision of the Alberta Government's water-related cost-sharing programs
- donations²⁰
- revision of Alberta Environment's fees for licences and approval applications and the municipal fees for stormwater services²¹
- creation of fees for
 - watershed-specific stormwater discharges
 - licence applications to Alberta Environment
 - water diversion²²
 - the use of assimilative capacity²³
 - the restoration of unhealthy aquatic and riparian areas proposed for re-zoning
 - use of provincially-owned water management facilities²⁴
- fines and restitution provided through creative sentencing
- tradeable development and waste discharge credits.

Obtaining funding depends on two preconditions:

- providing a compelling case for the value that would be provided to the watershed
- obtaining the public's support.

The Partnership has the evidence of the importance of the watershed and its needs that should allow it to develop a sound rationale for the funding required.

Obtaining public support will be a challenge, but one that is not insurmountable. Talking in very general terms, there is probably a majority of people who will support expenditures on environmental issues if solid justification is provided for initiatives that will either benefit them or solve problems they consider important. It can be expected, though, that there will be a large minority of people who will have difficulty supporting environmental funding. This group will divide roughly equally into those who are opposed and those who find the issues too complex or uncertain for definitive answers.²⁵

Recommendation 25: The Partnership, in cooperation with Alberta Environment, should develop a budget for management and protection of the watershed.

Recommendation 26: The Partnership, in cooperation with Alberta Environment, should review current funding for protection and management of the watershed to determine if the financial obligations imposed on people are fair and if the funding is adequate.

Recommendation 27: The members of the Partnership will need to determine the most appropriate organizational structure (e.g., municipalities, non-profit society, drainage district) for managing funds.

Recommendation 28: The Partnership should, as necessary, acquire additional funding using the appropriate mix of sources such as general revenue, grants, donations, and fees.

Matters and Factors to Consider

The Nose Creek watershed is part of the South Saskatchewan River Basin (SSRB) and is administered by Alberta Environment according to, among other things, the provisions of the *South Saskatchewan River Basin Water Management Plan*. As currently written, the *Plan* includes the factors that must be considered by an Alberta Environment decision-maker when reviewing an application for a transfer of an allocation of water under a licence in the SSRB.

The factors included in the *Plan* and the criteria that accompany them were reviewed. Modifications were made to the South Saskatchewan factors and criteria and additional factors and criteria were developed to reflect conditions in the Nose Creek watershed. The modified and additional factors and criteria are shown in Table 1.

The key differences between Table 1 and what is included in the *Plan* are:

- Table 1 covers decisions on approvals, preliminary certificates, and licences as well as transfers of licensed allocations
- Two key terms have been changed to reflect the sensitivity of the Nose Creek watershed to further negative impacts. Specifically, the phrase “no significant adverse effect” has been changed to “no adverse effect” and the phrase “does not impair the exercise of rights [of water users]” has been changed to “no adverse effect on the rights [of water users].”
- The recommendations in this report have been, where appropriate, converted into factors and criteria.

Table 1. Factors that should be considered in deciding whether to issue an approval, preliminary certificate, or licence, or approve transfer of an allocation of water under a licence in the Nose Creek Watershed	
Based on Phase One of the South Saskatchewan River Basin Water Management Plan	
Factor	Criteria for approval
Existing, potential and cumulative effects on the aquatic environment and any applicable instream objective and/or water conservation objective	<ul style="list-style-type: none"> No adverse effect on the aquatic environment No adverse effect on existing instream objectives or water conservation objectives
Existing, potential and cumulative hydraulic, hydrological and hydrogeological effects	<ul style="list-style-type: none"> No adverse effect on hydraulic, hydrological, and hydrogeological conditions
Existing, potential and cumulative effects on household users, traditional agriculture users and other higher and lower priority licensees	<ul style="list-style-type: none"> No adverse effect on the rights of any household user, traditional agriculture user, or licensee unless the person has agreed that the adverse effect is acceptable
With respect to irrigation, the suitability of the land to which the allocation of water is to be transferred for irrigated agriculture	<ul style="list-style-type: none"> The land must be suitable for irrigated agriculture: Class 4 or better in accordance with the standards of Alberta Agriculture, Food and Rural Development
(for transfers and modification of licences and approvals) The historic volume, rate and timing of the diversion under the existing licence or approval	<ul style="list-style-type: none"> It must be demonstrated that the existing licence or approval is not or should not be suspended or cancelled under the provisions of the <i>Water Act</i> or the <i>Environmental Protection and Enhancement Act</i>
The volume, rate and timing of the diversion under a proposed approval or licence	<ul style="list-style-type: none"> No adverse effect on the aquatic environment No adverse effect on existing instream objectives or water conservation objectives No adverse effect on hydraulic, hydrological, and hydrogeological conditions No adverse effect on the rights of any household user, traditional agriculture user, or licensee unless the person has agreed that the adverse effect is acceptable
Location of the existing diversion and/or the proposed new diversion	<ul style="list-style-type: none"> The existing diversion and/or proposed diversion is/are in the correct location A change in location will not have an adverse effect on water users, the aquatic environment, instream objectives, and water conservation objectives
Water quality (including public health and safety and assimilative capacity)	<ul style="list-style-type: none"> No adverse effect on the aquatic environment No adverse effect on existing instream objectives or water conservation objectives No adverse effect on public health and safety or assimilative capacity
The linkages between surface and ground water and the effects or changes in the overall system of water use	<ul style="list-style-type: none"> No adverse effect on ground water quantity or quality Regulation of surface and ground water diversions that manages them in the same way unless conclusively demonstrated that surface and ground water are not linked
Existing, potential and cumulative effects on the operations of reservoirs or other water infrastructure	<ul style="list-style-type: none"> No adverse effect on operations unless operations can be satisfactorily adjusted to eliminate the effect
(for transfers and modification of licences and approvals) Conditions on the existing licence or approval	<ul style="list-style-type: none"> Where allowed by law, conditions will be revised to reflect the current needs of the watershed and protection of other water users There will be no adjustments to the current conditions on the portion of the licence or approval that is not affected, unless necessary to give effect to the decision or approval
<i>Master Agreement on Apportionment</i>	<ul style="list-style-type: none"> The terms of the <i>Apportionment Agreement</i> will be respected
Additional Factors and Criteria for the Nose Creek Watershed	
Flood risk areas	<ul style="list-style-type: none"> Allow land & water uses that will maintain or achieve a healthy riparian environment, not increase flooding potential, not result in flood damage or loss unanticipated by those using the land or water, and not result in post-construction diversion of ground water
Other riparian areas	<ul style="list-style-type: none"> Allow new or modified land & water uses that will maintain or achieve a healthy riparian environment, not increase flooding potential, and not result in post-construction diversion of ground water
Recommendations of the Nose Creek Watershed Partnership	<ul style="list-style-type: none"> Adopt the recommendations of the Partnership when those recommendations are in the public interest and compatible with sustainable water management
Instream needs	<ul style="list-style-type: none"> No adverse effect on meeting the limitations for maximum flow No adverse effect on implementation of policy for minimum & preferred instream flows
Options to protect riparian areas and improve water quality	<ul style="list-style-type: none"> Fair and informative evaluation of options suggested by the Partnership to protect riparian areas and improve water quality
Bow River & Western Headworks System	<ul style="list-style-type: none"> No adverse effect on Bow River or water uses dependent on Western Headworks System
Communication and consultation	<ul style="list-style-type: none"> Compliance with communication & consultation plan developed with the Partnership
Monitoring and enforcement	<ul style="list-style-type: none"> Adequate procedures and funding to ensure effective monitoring and enforcement
Management practices	<ul style="list-style-type: none"> Approval of management practices that have proven to be effective, practical, and financially and environmentally sustainable for the watershed
Sources: Alberta Environment, <i>South Saskatchewan River Basin Water Management Plan, Phase One, 2002</i> (http://www3.gov.ab.ca/env/water/regions/srb/PDF_documents/SSRB_Phase_One_Plan.pdf), p. 10 and the recommendations in this report. Criteria "provide the standards that are to be met in the consideration of the factors for which criteria are stated." (<i>Phase One</i> , p. 9)	

Recommendation 29: The Partnership should review and, if necessary, revise Table 1 and include it in the Nose Creek Water Management Plan. The Partnership should also recommend to the Bow Basin Advisory Committee that, in the appropriate form, Table 1 be included in Section B ("Authorizations") of the *South Saskatchewan River Basin Water Management Plan*.

Priorities

Implementing the recommendations will take time and effort. Priorities need to be established to maximize the efficiency and effectiveness of the Partnership's work.

In the near term, the Partnership's priorities should be based on four objectives:

- **Fill key data gaps.**

To be successful, the Partnership needs basic information on water supply, water quality, and riparian areas, specifically

- Predevelopment storm drainage or natural flow (Recommendation 10).
- Natural water quality conditions for the watershed (Recommendation 11).
- Definition of the riparian ecosystem outside flood risk areas (Recommendation 2).

- **Strengthen Alberta Environment's decision-making.**

Alberta Environment's objectives and capabilities do not match the needs of the Nose Creek watershed. The Partnership's task is to persuade Alberta Environment to enhance its decision-making by:

- Adopting the goal of protecting riparian areas and improving water quality in the watershed (Recommendation 5).
- Upgrading water bodies in the Nose Creek watershed to Class C or higher (Recommendation 3).
- Designating flood risk areas and allowing appropriate land and water uses (Recommendation 1).
- Documenting and, where necessary, revising its performance measures for the watershed so that its decisions achieve the public interest, a healthy aquatic and riparian environment, water management sustainability, and protection of the Bow River and Western Headworks water uses (Recommendation 15). This includes adding Nose Creek factors and criteria to the *South Saskatchewan River Basin Water Management Plan* (Recommendation 29).
- Referring the issue of bacterial contamination in the watershed to the regional health authority (Recommendation 24).

- **Improve the efficiency and effectiveness of the Partnership's work**

The Partnership provides the coordinating framework that is essential for a healthy watershed. To make coordination efficient and effective, the Partnership must ensure that protecting riparian areas and improving water quality in the watershed become routine aspects of decision-making. The members of the Partnership do not want to and should

not need to engage in time-consuming and unproductive “micro-management” to influence decision-making by Alberta Environment and other regulatory agencies.

Strengthening Alberta Environment's decision-making will significantly reduce the need for the Partnership to concern itself with day-to-day decisions. The Partnership will also need to proceed with two other initiatives:

- Develop an action plan for protecting riparian areas and improving water quality in the watershed (Recommendation 9).
- In cooperation with Alberta Environment and others, develop a communication and consultation plan for reviewing applications and proposals (Recommendation 18).

▪ **Promote financial sustainability**

Justifying and cultivating financing is fundamental to protecting riparian areas and improving water quality. The Partnership provides the best, if not the only way to assess and develop the multiple sources of revenue that will be needed to provide fair and effective funding for watershed protection and management.

The Partnership will need to:

- Develop a budget, review current funding, and, as necessary and appropriate, acquire additional revenue (Recommendations 25-28).

NOTES

- ¹ Over 350 issue statements were identified. The documents reviewed in identifying these issues were:
 - Cows and Fish (Alberta Riparian Habitat Management Program), *Riparian Health Assessment Community Report* [Nose Creek Watershed], Municipal District of Rocky View, 2001
 - Letter, Judy A. Ferguson, President, Urban Development Institute, to Tim Dietzler, M.D. of Rocky View No. 44, August 11, 2004
 - Madawaska Consulting, *Watershed Health Report: Health of the Nose Creek Watershed*, 2003
 - Nose Creek Watershed Partnership, Focus group questions, 2004
 - _____, "Focus Group Session #1, Regulatory Stakeholders," 2003
 - _____, "Focus Group Session #2, Environmental Group Stakeholders," 2004
 - _____, "Focus Group Session #3, Agricultural Producers," 2004
 - _____, "Focus Group Session #5, General Public," 2004
 - _____, "Objectives of public consultation," n.d.
 - _____ (& Alberta Environment), *Questions [for Alberta Environment] Regarding the Development of Water Management Plans*, 2003
 - "The Rationale for an Approved Water Management Plan For the Nose Creek Watershed" (draft), n.d.
 - Technical Committee, Nose Creek Watershed Partnership, *Nose Creek Water Management Plan, Phase 1: Draft Terms of Reference*, September, 2003
 - Urban Development Institute, *Nose Creek Water Management Plan: Public Consultation Process – Development Industry*, 2004
 - Westhoff Engineering Resources, Inc., *Nose Creek Basin Instream Flow Needs Scoping Study* (draft), Alberta Environment and the Nose Creek Watershed Partnership, 2004
 - _____, "Replies to Comment Sheets: Nose Creek Basin Instream Flow Needs Scoping Study (draft)," 2003
- ² Alberta Environment, *Facts and Information on Water in Alberta, Water for Life*, 2002 (<http://www.waterforlife.gov.ab.ca/docs/infobook.pdf>), p. 15
- ³ *Water Act*, Revised Statutes of Alberta (RSA) 2000, c. W-3 (<http://www.ap.gov.ab.ca/Documents/acts/W03.CFM>), s. 1(1)(ggg)
- ⁴ *Municipal Government Act*, RSA 2000, Chapter M-26 (http://www.ap.gov.ab.ca/documents/Acts/M26.cfm?firm_isbn=0779729692), 640 (4)(d) & (l)
- ⁵ *Municipal Government Act*, s. 661 and 664(1)
- ⁶ Riparian health is the proper functioning of the land adjacent to a water body. This includes ground water recharge, natural soil erosion and accumulation, and maintenance and enhancement of fish and wildlife habitat. In Alberta, the Cows and Fish Program is one group that conducts riparian health assessments (<http://www.cowsandfish.org/health.html>). Government agencies, consultants, universities, colleges, and non-profit organizations also do work in this area.
- ⁷ The draft flood risk mapping for Nose Creek is currently being reviewed by Alberta Environment.
- ⁸ Bob Morrison, "What Really Matters - Part 2: Long-Term, Short-Term, and Changed Water Rights," *Moving Beyond Now*, v.1, no. 2 (May, 2003), pp. 1-11. In the states and provinces that allow "natural state" licences or other instream water rights to be issued, the use of water for instream needs is governed by the first-in-time, first-in-right principle. For a good example of instream flow licensing, see the approach used in Colorado (<http://www.cwcb.state.co.us/isf/Programs/Instream.htm>).
- ⁹ Bob Morrison, "Can Chaos Theory Solve the Puzzles of Planning?" *Moving Beyond Now*, v. 1, no. 1 (August, 2002), pp. 13-15.
- ¹⁰ Ground water is connected to surface water in almost all situations. Monitoring of streams and rivers in the United States shows that, on average, just over 50% of streamflow comes from ground water. (Thomas C. Winter, et. al., *Ground Water and Surface Water: A Single Resource*, U.S. Geological Survey Circular 1139, pp. 12-13) It would not be unexpected to find that the contribution of ground water is much higher in the Nose Creek watershed since the watershed does not receive water from glaciers or mountain snowpack. The removal of vegetation appears to cause a reduction in streamflow during dry periods. (Alberta Environment, *Assessment of Vegetation Removal as a Water Management Option*, Pekisko-Stimson Water Management Study, 1987, p. 2.)
- ¹¹ Based on Westhoff Engineering Resources, Inc., *Nose Creek Basin Instream Flow Needs Scoping Study* (draft)
- ¹² *Ibid*, p. 26.
- ¹³ "What Really Matters," p. 7.
- ¹⁴ Alberta Environment, *Water Management Policy for the South Saskatchewan River Basin*, 1990, pp. 1-2.
- ¹⁵ The public interest is important because both the *Water Act* and the *Environmental Protection and Enhancement Act* use this as the criterion for denying applications for approvals and licences. See Appendix B, pp. 9 & 19.
- ¹⁶ Nose Creek Watershed Partnership (& Alberta Environment), *Questions [for Alberta Environment] Regarding the Development of Water Management Plans*, 2003, p. 1.
- ¹⁷ For a discussion of the value of public involvement (and performance measures) in relation to water rights decisions, see "What Really Matters," p. 1-11.

¹⁸ *Water Management Policy for the South Saskatchewan River Basin*, p. 3.

¹⁹ Bob Morrison, "Matching Management Style With Public Views: The Case of Alberta's Water Strategy," *Moving Beyond Now*, v. 1, no. 2 (May, 2003), p. 27.

²⁰ This could include something similar to Enmax Corporation's "Greenmax" charges where people voluntarily pay a monthly charge that is then used to purchase electricity generated by the wind. ("How Greenmax Works" (<http://www.enmax.ca/Energy/Residential/Greenmax/How+Greenmax+works.htm>)).

²¹ These revisions should reflect full-cost accounting including impacts on the environment and the monitoring and compliance system needed to ensure protection of people's rights and protection of the environment.

²² Alberta Environment is not allowed to charge for water use other than for water power. However, fees can be charged for a "material" or "thing" provided under the *Water Act* which would include the water being diverted.

²³ Alberta Environment is allowed to charge a fee for a "service" provided under the *Water Act*. One service would be the authorization to reduce the assimilative capacity of a water body by discharging contaminants into it or diverting water from it.

²⁴ Charging a fee for the use of provincially owned water management facilities would not directly benefit the Nose Creek watershed since there are no facilities of that nature in the watershed. However, it would free up money from general revenue and other sources that is currently used to build, operate, maintain, and rehabilitate those facilities.

²⁵ For example, a recent poll found that:

- When told that water charges "are not high enough to pay for ensuring the safety of drinking water sources such as underground streams or above-ground lakes," just under 60% of Canadians said they would be willing to pay more. (On average, those Albertans who were willing to pay would contribute \$1.05 per day.) However, 43% of the respondents either were unwilling to pay anything (19%) or were unable to answer the question (24%).

Respondents were then told that an additional 5¢ per day would "cover the cost of ensuring the safety" of drinking water sources, but not improve or expand water and sewage treatment facilities. Fifty-nine per cent of Canadians (63% in Alberta) said this was very reasonable. Another 24% felt this was somewhat reasonable.

- Fifty-three per cent of Canadians strongly agree that "Governments should offer financial incentives to farmers to replace farming activities next to environmentally sensitive streams with tree planting." Half of Albertans strongly agreed that they would be willing to pay \$2.00 per year in taxes "so that the government could offer these financial incentives to farmers to stop farming next to environmentally sensitive streams."
- Less than a quarter of Albertans (23%) feel they know all or most of what is needed to make "day-to-day" decisions about how to maintain a healthy environment. This was the lowest percentage among the provinces, 9% below the national average.
- Sixty-three per cent of Albertans strongly agree that provincial laws should be used to permanently protect natural areas from development. Forty-three per cent feel the same way about protecting prime agricultural land.
- Across Canada 36% of people (highest percentage) consider loss of natural areas ("like forests and wetlands") to be the greatest concern about urban sprawl while 19% rank loss of agricultural land as the top concern (tied for #2 overall).

(Enviroics International, *Public Opinion on Environmental Education, Urban Sprawl, and Water Issues*, Sustainability Network, 2002 (<http://www.sustain.web.ca/cbt/research%20-%20July%202002.pdf>), pp. 10, 14-15, 22-24 & 28-29)

Since the 2001 contamination of North Battleford's water supply, the Saskatchewan Government has been polling residents on their willingness to pay for improvements to drinking water supply. In term of being willing to pay higher water rates "to make my drinking water safe or to generally improve the drinking water quality," the percentage in agreement has remained steady (56-62%) (<http://www.executive.gov.sk.ca/polling.htm>).

In terms of water conservation, among those who returned workbooks for the *Water for Life* strategy, 65% supported charging a price for water used by industrial and agricultural operations (21% opposed, 14% not sure/no answer), while 48% supported charging a price for household use (34% opposed, 18% not sure/no answer). (Alberta Environment, "Results from Completed Workbooks: Data Tables," *Water for Life*, Sub-report No. 1, section b, 2002, p. 6. Percentages based on all returned Workbooks.)