

Appendices

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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Appendix A

Background and Scope of Work

Background

Nose Creek is a tributary to the Bow River, arising just north of Crossfield and flowing into the Bow River just downstream of the Calgary Zoo. The eastern watershed boundary is just to the east of Deerfoot Trail and Highway 2. West Nose Creek is a major tributary that extends the western watershed boundary to about Bearspaw Road (Range Road 30).

The Nose Creek Watershed Partnership (Partnership) was created in 1998 by the City of Calgary, the City of Airdrie and the Municipal District of Rocky View #44. Alberta Environment has been involved with the Partnership to provide technical advice and assistance, including collaboration with water quality monitoring. By 2001 the Partnership broadened its partnership involvement to include the Town of Crossfield, Ducks Unlimited, the Calgary Airport Authority and the Bow River Basin Council.

The goal of the Partnership is to protect the riparian areas and to help improve and restore water quality in Nose Creek to its natural levels. All the partners involved are determined to rise above the differing obstacles affecting water quality and conservation and work together to achieve these important objectives. Its improvement strategy involves: learning about the quality of water throughout the watershed, identifying sources of contamination and initiating clean-up efforts and stewardship measures with all stakeholders, including individuals and community groups residing within the watershed.

In the late 1990s, the provincial government created a comprehensive new statute, the *Water Act*, to ensure sustainable water management and a healthy aquatic environment. Recognizing that effective and efficient water management planning is essential, Alberta Environment developed a document, *The Framework for Water Management Planning (Framework)*, to guide this planning. A major component of the Framework and a requirement of the *Water Act* is the *Strategy for the Protection of the Aquatic Environment (Strategy)*. The Strategy details the provincial government's commitment to maintaining, restoring or enhancing the condition of the aquatic environment.

In 2002, the need for a Nose Creek Water Management Plan (NCWMP) was identified through a consultative process between the Partnership and Alberta Environment. It was determined that, with the cumulative effects of increasing subdivision development, industrial growth, stormwater discharge, agricultural activities and channelization occurring within the Nose Creek Watershed, a water management plan would provide an essential decision-support tool to help ensure sustainable water management and a healthy aquatic environment.

In early 2003, the Partnership and Alberta Environment issued the Terms of Reference for developing the first phase of an authorized multi-phase NCWMP. One of the first steps in creating the NCWMP is the identification of Instream Flow Needs (IFNs) for the water courses in the Nose Creek Basin. An Instream Flow Needs Scoping Study was completed in July 2004, which provides an overview of existing methodologies for developing IFNs for fish habitat, recreation, water quality, riparian vegetation and channel structure, and recommends methods appropriate for the Nose Creek Basin.

It is now anticipated that the Water Management Plan will be completed in early 2006. However, the Nose Creek Partnership identified an urgent need to develop interim policy recommendations to address Objective #2 NOW as a basis to move the planning process forward. The issues and draft policy recommendations from this exercise will be communicated to the Councils of each municipality represented on the Partnership. Recommendations that would address Objective 2 of the Terms of Reference were seen to be of particular importance.

Scope of Work

The information contained in this report will be presented to the respective municipal councils represented on the Nose Creek Watershed Partnership for review and possible adoption. The report will identify specific issues of concern identified to date in the public input process and by the Technical Committee, plus draft policy recommendations addressing Objective #2 for potential inclusion in the completed Water Management Plan.

The following documents should be reviewed:

- *Water Management Plan Terms of Reference*
- *Instream Flow Needs Scoping Study*
- Public input sessions results to date
- *Watershed Health Report*

1. The consultant is expected to review the above and other relevant background material that will be of relevance in preparing the report. These documents could include Municipal, Federal and Provincial legislation, policy and guidelines, Municipal development plans, stormwater management reports and other relevant landuse and planning documents.
2. The consultant will use the above information along with recommendations from the Technical Committee and public input sessions to date to prepare a report that identifies issues and draft policy recommendations to address Objective #2 of the Water Management Plan Terms of Reference:
Objective: Specify the matters or factors that may be considered by Alberta Environment decision makers in deciding whether to issue an approval, preliminary certificate or licence, or approve a transfer of an allocation of water under a licence.

Rationale The NCWMP is a tactical, local-level planning initiative that will provide Alberta Environment decision makers with the relevant, context-specific considerations and information essential for effective water management. For example: issues to be addressed can include channelization of the watercourse, storm water works within the riparian area and the protection of the existing riparian areas.

Recommendations in the NCWMP can be used by any resource decision maker when their decision could impact water quantity and/or quality and the people or ecosystems that rely on water.

3. Included in the report should be an appendix of policies in other jurisdictions (Alberta and others as appropriate) that support the issues and draft policy recommendations identified for Nose Creek.

Appendix B

Alberta Environment's Policies, Principles, and Practice for Decisions on Approvals, Preliminary Certificates, Licences, and Transfers of Licensed Allocation

This appendix contains summaries of laws, regulations, policies, standards, and guidelines. It provides a general description of the decision-making system used and has no legislative sanction. Before taking any action, you should consult the original legislation, regulations, and other documents and seek the advice of legal counsel and, as appropriate, professional engineers and other experts in the management of land and water.

Context

Decisions on approvals, preliminary certificates, licences, and transfers of licensed allocations are governed by general and specific criteria. General principles and objectives are shown in Table B-1. Specific policies and principles are discussed in the sections that follow.

For water bodies in Alberta, withdrawal of water, discharge of wastewater, and activity within a water body are regulated by Alberta Environment. Using two pieces of legislation, the *Environmental Protection and Enhancement Act* (EPEA) and the *Water Act*, Alberta Environment makes decisions on whether or not to issue approvals, preliminary certificates, and licences and approve transfers of licensed allocations. For some activities, Alberta Environment uses codes of practice in lieu of issuing approvals.¹

With an approval under EPEA, Alberta Environment gives its permission for an activity to proceed that could affect, among other things, water quality. With an approval under the *Water Act*, Alberta Environment gives its permission for an activity that could affect a water body and its aquatic environment.²

A licence gives permission to divert or in some other way alter the location or flow of water. A preliminary certificate permits a water diversion project to be built and, if the conditions in the preliminary certificate are fulfilled, requires Alberta Environment to issue a licence. When approving a transfer of a licensed allocation, Alberta Environment gives permission for water to be diverted at a different location than was originally permitted.³

Approvals

Environmental Protection and Enhancement Act Approvals

In making a decision on an application for an EPEA approval, the Director must consider

- whether an environmental impact assessment report is required
- criteria in the regulations
- any applicable decision of the Energy and Utilities Board (EUB) or the Natural Resources Conservation Board (NRCB)

and may consider any evidence that was before the EUB or the NRCB in relation to an applicable decision.⁴

For an EPEA approval, an applicant must, among other things, submit information on:⁵

- the substances, the sources of the substances, and the amount of the substances that will be released into the environment as a result of the activity
- the justification for the release of the substances
- steps taken to reduce the amount of the substances released
- any impact, including surface disturbance, that may or will result from the activity
- confirmation of contingency plans to deal with any unforeseen release of substances to the environment
- the conservation and reclamation plan for "specified land" (which includes wells, industrial or municipal pipelines, telecommunication systems, transmission lines, roads, pits, and borrow excavations, but excludes residential subdivisions and agricultural operations)
- public consultation undertaken or proposed
- any other information required by the Director.

The "Director"

The *Environmental Protection and Enhancement Act* and the *Water Act* create a position of authority called the Director. This designation, though, is different from the way the term is normally used. As set out in those laws, the Director is the person who has been given the power to make a specific type of decision.

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Table B-1 General Provincial Principles and Objectives Relevant to the Nose Creek Watershed and Decisions on Approvals, Preliminary Certificates, Licences, and Transfers of Licensed Allocations	
Principles	<p>Sustainability</p> <ul style="list-style-type: none"> ▪ Renewable resources shall be managed to ensure their long-term viability and future use potential. (C) ▪ Decision-makers must recognize that there are limits to the available water supply. (S) ▪ Water resources must be managed within the capacity of individual watersheds. (S) ▪ Healthy aquatic ecosystems are vital to a high quality of life and must be preserved. (S) ▪ Ground water and surface water quality must be preserved in pursuing economic & community development. (S) ▪ The Alberta Government will continue to be a leader in drinking water quality and standards to ensure Albertans have safe, secure drinking water. (S) ▪ Water resources shall be developed to ensure that the optimum value for the resource is obtained and there will be a fair return to Albertans. (C) ▪ Albertans must become leaders at using water more effectively and efficiently and will use and reuse water wisely and responsibly. (S) <p>Integration and Multiple Benefits</p> <ul style="list-style-type: none"> ▪ Water shall be managed in a manner that addresses its interdependence with resources such as trees, minerals, wildlife, fish, range, public land, and plants and recognizes that the use of one resource can affect other users and resources. (C) ▪ Environmental decisions will take into account economic impacts and economic decisions will reflect environmental impacts. (C) ▪ Management of water resources shall ensure that a range of products and values are provided. (C) ▪ Decision-making will consider the full-range of environmental, social, health, and economic interests and values and integrate their management into an effective whole. (I) ▪ Decision-making will be based on understanding the potential consequences of choices. (I) ▪ The provision of access to water resources shall be ensured, including issuance of authorizations for use as well as physical access to the resource. (C) ▪ The "first-in-time, first-in-right" principle for granting and administering water allocations must be preserved. (S) <p>Effective Decision-Making</p> <ul style="list-style-type: none"> ▪ Decisions will be clear, understandable, fair, timely, based on the best available information, and responsive to changing circumstances. (C) ▪ Decision-making processes will be fair and will provide public access to relevant information. (I) ▪ Management will attempt to anticipate issues and needs and be adaptive, responding to experience, new information, shifts in social preference, technological innovations, and unexpected situations. (I) ▪ Knowledge of water supply and quality is the foundation for effective decision-making. (S) ▪ Decisions should be made after consultation with Albertans, giving particular attention to people and industry that are directly affected by the decision. (C) ▪ Those affected by decisions will be consulted before action is taken. Open communication will be supported. (I) ▪ Decision-making processes will strive for efficient use of time and financial resources. Decisions should contribute to achieving the government's goals and objectives. (I) ▪ All decision-making procedures will provide for the review and the early resolution of conflicts. (C) ▪ There will be more use of proactive analysis, environmental assessment, and audits to identify and remedy problems at the earliest stages. (C) ▪ Decision-makers will be accountable for their decisions. (I) ▪ Products and processes will be straightforward, not open to a wide range of interpretations. (I) <p>Roles and Rules</p> <ul style="list-style-type: none"> ▪ More responsibility will be placed on resource users for the consultation, planning, and monitoring of the management and use of water and other resources. (C) ▪ Citizens, communities, industry, and government must share responsibility for water management and work together to improve conditions within their local watershed. (S) ▪ The positive conduct of companies and organizations with a history of sound environmental compliance will be rewarded. (C) ▪ Penalties for non-compliance will be focused on those who do not meet environmental requirements. (C) ▪ Greater use will be made of clearer and stronger penalties and sanctions. (C) ▪ Compliance standards will be clearly set out and understood. (C)
<p>Sources: (C)= Alberta Government, <i>Alberta's Commitment to Sustainable Resource and Environmental Management</i>, 1999 (http://www3.gov.ab.ca/srd/info/sustainable.pdf), pp. 4-9</p> <p>(I) = Principles of integrated resource management in Alberta Environment, <i>Framework for Water Management Planning</i>, n.d. (http://www3.gov.ab.ca/env/water/Legislation/Framework.pdf), pp. 2-3 (Note: It is unclear if and how the other principles in the Framework influence Alberta Environment's decision-making on approvals, preliminary certificates, licences, and transfers.)</p> <p>(S) = Alberta Government, <i>Water for Life: Alberta's Strategy for Sustainability</i>, 2003 (http://www.waterforlife.gov.ab.ca/docs/strategyNov03.pdf), pp. 6-12, 18-19, & 21-22</p>	

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Table B-1 General Provincial Principles and Objectives Relevant to the Nose Creek Watershed and Decisions on Approvals, Preliminary Certificates, Licences, and Transfers of Licensed Allocations	
Objectives	<p>Within three years: (S)</p> <ul style="list-style-type: none"> ▪ A system to monitor and report actual water use. ▪ A system for monitoring and assessing aquatic ecosystems. ▪ Science-based methods for determining the ecological requirements for a healthy aquatic environment. ▪ Water conservation objectives for the South Saskatchewan River Basin. ▪ A wetland policy and supporting action plan to achieve sustainable wetlands. ▪ Determination of the full cost of providing water through Alberta's water management infrastructure. ▪ Determination of the true value of water in relation to the provincial economy. ▪ Evaluation and recommendations on the merit of economic instruments to meet water conservation and productivity objectives. ▪ A public awareness and education program on water conservation. <p>Within six years: (S)</p> <ul style="list-style-type: none"> ▪ Water management objectives and priorities for sustaining aquatic ecosystems and supporting sustainable economic development established through watershed plans. ▪ All sectors demonstrating best management practices and improving efficiency and productivity associated with water use. ▪ A provincial water information centre. ▪ Updated water quality programs to support watershed protection and planning. ▪ An initial assessment of the status of aquatic ecosystems. ▪ Watershed management plan for the Bow River watershed, including objectives for aquatic ecosystems. ▪ Support to watershed stewardship groups to improve the condition of local watersheds. ▪ Water conservation and productivity plans for all water-using sectors. ▪ Implementation of economic instruments, as necessary, to meet water conservation and productivity objectives. <p>Within ten years: (S)</p> <ul style="list-style-type: none"> ▪ Management and allocation of water to 1) support sustainable economic development and 2) sustain aquatic ecosystems and ensure their contribution to Alberta's natural capital and quality of life are maintained. ▪ Knowledge, tools, and motivation to implement actions to maintain or improve water resources. ▪ Completed flood risk maps. ▪ Understanding of the state of the quality and quantity of all surface water in major basins, ground water supply, and the state of Alberta's aquatic ecosystem. ▪ An adaptive management system for identifying issues, gathering information, developing and implementing action plans, and evaluating management actions. ▪ Implementation of regional water systems. ▪ A plan to manage Alberta's provincial and district water infrastructure for long-term sustainability. ▪ Maintenance and enhancement of aquatic ecosystems to ensure they meet established objectives. ▪ A monitoring program to ensure all sectors are achieving water conservation and productivity objectives. <p><i>Note: These are province-wide objectives. It is not known if Alberta Environment will have the resources, information, and intent to achieve these objectives for the Nose Creek watershed.</i></p>
<p>Sources: (C) = Alberta Government, <i>Alberta's Commitment to Sustainable Resource and Environmental Management</i>, 1999 (http://www3.gov.ab.ca/srd/info/sustainable.pdf), pp. 4-9</p> <p>(I) = Principles of integrated resource management in Alberta Environment, <i>Framework for Water Management Planning</i>, n.d. (http://www3.gov.ab.ca/env/water/Legislation/Framework.pdf), pp. 2-3 (Note: It is unclear if and how the other principles in the Framework influence Alberta Environment's decision-making.)</p> <p>(S) = Alberta Environment, <i>Water for Life: Alberta's Strategy for Sustainability</i>, 2003 (http://www.waterforlife.gov.ab.ca/docs/strategyNov03.pdf), pp. 6-12, 18-19, & 21-22</p>	

Guidelines provide criteria and specific requirements for some activities. Information requirements may be waived if the Director considers a requirement is not relevant or a waiver is appropriate.⁶

The Director's scope in reviewing an application is broad, although not unlimited, and includes:⁷

- proposed methods of minimizing the generation, use and release of substances and any available alternative technologies
- site suitability, including soils, air and water quality, ground water conditions, site drainage, water supply, and wastewater disposal alternatives
- the proposed monitoring programs to determine emissions and their effect on the environment
- proposed methods of management of the storage, treatment, and disposal of substances
- the adequacy of the quality and quantity of the potable water used in or produced by the activity
- proposed plans to complete the conservation and reclamation required
- the past performance of the applicant in ensuring environmental protection in respect of the activity.

Alberta Environment considers the review of an EPEA application to be a determination of whether "the general and overall impact on the environment of the activity is in accordance with the Act and the regulations."⁸

If it is in the public interest that a proposed activity not proceed, the Minister of Environment may order that an approval for the activity not be issued.⁹

Under the Minister of Environment's power to appoint inspectors, investigators, and analysts, inspectors from a local authority can be designated to conduct conservation and reclamation inquiries, issue reclamation certificates, and issue environmental protection orders for off-site adverse effects or substances that have left or escaped from the site.¹⁰

Stormwater

Storm drainage systems are required to be designed, constructed, operated, and maintained "to achieve under all normal and foreseeable operating conditions" substance release requirements. They must meet the standards and design requirements from Alberta Environment's *Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems* and any other standards and design requirements specified by the Director. The design must be approved by a professional engineer. Unless the Director requires it, pre-existing systems do not need to meet the standards and design requirements as they change.¹¹

The Director must be informed of any proposed extension or replacement of a portion of a storm drainage collection system. (Changes to the storage and disposal components of the system are not covered by this requirement.) There must be written confirmation from a professional engineer that increased flow associated with the extension or replacement is within the design capacity of both the existing collection system and the system providing treatment of the collected water. A statement must also be provided as to whether or not the design of the extension or replacement meets the standards (but not the design requirements) in the *Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems*. The Director may ask for any other information.¹²

The Director may allow an extension or replacement of a storm drainage system to proceed if it does not comply with the design standards set out in the *Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems*.¹³

Construction of an additional storm drainage treatment facility or a modification of a storm drainage treatment facility must be authorized by the Director. The requirements for the application include:¹⁴

- the location of discharge points
- the nature and extent of treatment of the storm drainage before discharge to the environment
- predevelopment and post-development storm drainage flow from the area served by the proposed facility

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- written confirmation from a professional engineer that the increased flow associated with the proposed facility is within the design capacity of the existing system
- any other information required by the Director.

Snow disposal can not occur at a site for more than one year unless the Director has been informed. The information provided to the Director must compare the design of the snow disposal site with the design guidelines in Alberta Environment's *Snow Disposal Guidelines*.¹⁵

Unless authorized by the Director, those responsible for a storm drainage system must not allow a substance to enter the system if it could impair the integrity of the storm drainage collection system, impair the operation or performance of a storm drainage treatment facility, or impair the quality of storm drainage.¹⁶

Stormwater management is required for all new developments and is expected to achieve:¹⁷

- minimization of potential downstream flooding and erosion
- prevention of adverse effects on the hydraulic capacity of watercourses through the development
- location of development above the 1 in 100 year flood level
- use of storage (detention or retention) to control run-off using the criteria of
 - maximum release rate equal to pre-development rate unless the outlet is adequate
 - capacity to handle a 1 in 25 year flood level unless the outlet is adequate and an increased release rate will not do any harm
- acceptable levels of
 - the potential risk of health hazards, loss of life, and property damage from flooding
 - the incidence of inconvenience from surface ponding and flooding
- integration and conformity with approved master drainage plans
- minimization of the impact (especially during construction) on
 - the ground water regime
 - increased erosion
 - increased sediment transport
- maintenance of natural stream geometry.

Water Act Approvals

Approvals are required under the *Water Act* for an activity in a water body. This includes drainage or infilling of a water body, erosion protection, and removal or destruction of trees and other vegetation within the bed and shores of a water body. An approval is not required for such things as:

- floating platforms,
- portable or seasonal boat launches and docks
- fences
- removal of beaver dams on the person's land
- household wells
- dugouts outside a watercourse, lake, or wetland
- filling in depressions that do not support an aquatic environment within a landowner's property if there is no impact on water bodies on the land or the water sources and flooding of neighboring land will not be caused
- landscaping outside a watercourse, lake, or wetland that will not have an adverse effect on the aquatic environment or alter the flow or volume of water on an adjacent parcel of land
- surface water diversion works used in confined feeding operations and manure storage facilities if the works are approved by the Natural Resources Conservation Board under the *Agricultural Operation Practices Act*, do not significantly alter the volume, quality, or rate of water, do not alter or affect a non-flowing water body, are not located on a fish-bearing water body, and are designed, planned, and certified by a professional engineer.¹⁸

A water body is broadly defined in the *Water Act* as "any location where water flows or is present, whether or not the flow or the presence of water is continuous, intermittent or occurs only during a flood, and

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includes but is not limited to wetlands and aquifers.” The more restrictive term watercourse is also used in the regulations. It means the channel and bed of a natural water body.¹⁹

In making a decision on an application for a *Water Act* approval, the Director must consider the relevant matters and factors in an approved water management plan. The Director may also consider

- existing, potential or cumulative
 - effects on the aquatic environment
 - hydraulic, hydrological and hydrogeological effects
 - effects on household users, licensees and traditional agriculture users that result or may result from the activity
- effects on public safety
- any other matters applicable to the approval that are relevant.

The Director may add any appropriate terms and conditions to the approval.²⁰

If a proposed activity is not in the public interest, the Minister of Environment may order that an approval application not be accepted or that an approval not be issued.²¹

Alberta Environment advocates that among the questions that need to be addressed in consideration of approvals are:²²

- Does the water body support a rare and unique ecosystem?
- Is the water body home to endangered species?
- Does the water body provide a range of wildlife habitat in terms of quality, quantity, and/or diversity?
- If the water body is destroyed or altered,
 - What impact will that have on downstream water users, neighboring lands, or the aquatic environment?
 - Will there be potential for flooding or erosion of lands in the future?
- Will the loss of the water body impact
 - Ground water wells or the local aquifer?
 - Operations of the farm or business with regard to possible drought in the future?

Under the *Water Act*, the Minister of Environment may, if there is or may be a risk to human life or property as a result of flooding, designate land as a flood risk area and specify the acceptable land uses in that area. Before making the designation, the Minister must consult with local municipalities and regional services commissions.²³

Codes of Practice

Alberta Environment's codes of practice are based on the following principles:²⁴

- Water must be managed sustainably.
- Water is a vital component of the environment.
- Water plays an essential role in a prosperous economy and balanced economic development.
- Water must be managed using an integrated approach with other natural resources.
- Water must be managed in consultation with the public.
- Water must be managed and conserved in a fair and efficient manner.

The codes of practice relevant to this report are three *Water Act* codes for outfall structures and crossings such as bridges and pipelines that pass over, through, or under a water body and an EPEA code for wastewater systems using lagoons.

The most significant features of these codes of practice are summarized in Table B-2.

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Table B-2

Codes of Practice

New Activity
Under Normal Conditions²⁵

Relevant to Water Management
in Nose Creek Watershed

	Outfall Structures	Pipelines & Telecommunication Lines	Watercourse Crossings	Wastewater Systems Using Lagoon
Law	<i>Water Act</i>	<i>Water Act</i> (This code of practice applies only to lines that go under a water body)	<i>Water Act</i> (This code of practice covers bridges, culverts, overhead pipelines, and telecommunications lines)	<i>Environmental Protection and Enhancement Act</i>
Class of Water Body	<ul style="list-style-type: none"> Two kilometers of Nose Creek upstream of its mouth is a Class C water body. Remainder of watershed is Class D. 	<ul style="list-style-type: none"> Two kilometers of Nose Creek upstream of its mouth is a Class C water body. Remainder of watershed is Class D. 	<ul style="list-style-type: none"> Two kilometers of Nose Creek upstream of its mouth is a Class C water body. Remainder of watershed is Class D. 	<ul style="list-style-type: none"> This code of practice does not use a classification system for water bodies.
Requirements	<ul style="list-style-type: none"> Compliance with code of practice Notification of Director 14 days before construction Compliance with <ul style="list-style-type: none"> construction methods & conditions specifications of engineer or engineering technologist and aquatic environment specialist contingency measures to be taken in the event of conditions that may cause adverse effects monitoring measures before, during, and after construction 	<ul style="list-style-type: none"> Compliance with code of practice Notification of Director 14 days before construction Compliance with <ul style="list-style-type: none"> construction methods & conditions specifications of engineer (pipeline) or owner's specifications (telecommunication line) contingency measures for potential problems resulting from adverse conditions or crossing method failure monitoring measures after construction 	<ul style="list-style-type: none"> Compliance with code of practice Notification of Director 14 days before construction Compliance with <ul style="list-style-type: none"> construction methods & conditions specifications of engineer or engineering technical specialist or (for unmapped water body 2 km upstream of mouth if no documentation of fish presence) owner's specifications, contingency measures for handling potential problems resulting from adverse conditions monitoring measures after construction 	<ul style="list-style-type: none"> Compliance with code of practice without affecting rights or obligations under other authorization(s) of Alberta Environment One-week notice of discharge to downstream landowners interested in the lagoon discharge No flooding of downstream lands or erosion of watercourses or land Operation by certified operator Land reclamation in accordance with standards and guidelines Monitoring <ul style="list-style-type: none"> Samples collected/analyzed using standard methods Monitoring of discharge quality/amount Ground water quality monitoring prior to & 1 year after the start of operation Ground water level monitoring Annual report on monitoring

SOURCES: Code of Practice for Outfall Structures on Water Bodies (http://www.ap.gov.ab.ca/documents/Regs/OUTFALL.cfm?frm_isbn=0779722965), Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body (<http://www.ap.gov.ab.ca/documents/codes/Pipeline.cfm>), Code of Practice for Watercourse Crossings, (<http://www.ap.gov.ab.ca/documents/codes/Crossing.cfm>), Code of Practice for Wastewater Systems Using a Wastewater Lagoon (http://www.ap.gov.ab.ca/documents/Regs/LAGOON.cfm?frm_isbn=0779723007), Guide to the Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body, Including Guidelines for Complying with the Code of Practice, 2001 (<http://www3.gov.ab.ca/env/water/Legislation/CoP/PipelineGuide.pdf>), Guide to the Code of Practice for Watercourse Crossings, Including Guidelines for Complying with the Code of Practice, 2001 (<http://www3.gov.ab.ca/env/water/Legislation/CoP/WatercourseGuide.pdf>), and Calgary Management Area Map (Water Act Codes of Practice), 2000 (<http://www3.gov.ab.ca/env/water/legislation/COP/maps/Calgary.pdf>)

	Outfall Structures	Pipelines & Telecommunication Lines	Watercourse Crossings	Wastewater Systems Using Lagoon
Requirements (continued)	<ul style="list-style-type: none"> •Nose Creek two km upstream of mouth: - no activity from May 1 to July 15 and September 16 to April 5 unless aquatic environment specialist determines that the work can be carried out while ensuring that the quantity and productive capacity of the aquatic environment will be equivalent to what existed before the work occurred 	<ul style="list-style-type: none"> •Nose Creek two km upstream of mouth: <ul style="list-style-type: none"> - specifications and recommendations of aquatic environment specialist <ul style="list-style-type: none"> ▫ are not required if using the trenchless method ▫ are required if using the isolation or open-cut method or if using other methods when those methods are not feasible - no activity from May 1 to July 15 and September 16 to April 5 unless aquatic environment specialist determines that the work can be carried out while ensuring that the quantity and productive capacity of the aquatic environment will be equivalent to what existed before the work occurred 	<ul style="list-style-type: none"> •Nose Creek two km upstream of mouth: <ul style="list-style-type: none"> - specifications and recommendations of an aquatic environment specialist <ul style="list-style-type: none"> ▫ are not required for a single span bridge or similar structure that does not result in a disturbance or alteration to the active channel of the water body ▫ are required if using a multi-span bridge, open bottom culvert or similar structure that does not significantly narrow the width of the active channel and that maintains the natural bed of the water body or, when those are not feasible, using other methods - no activity from May 1 to July 15 and September 16 to April 5 unless aquatic environment specialist determines that the work can be carried out while ensuring that the quantity and productive capacity of the aquatic environment will be equivalent to what existed before the work occurred 	<ul style="list-style-type: none"> •Discharge at designed frequency between April 1 and November 30 for maximum of three consecutive weeks
Director's Discretion	<ul style="list-style-type: none"> •Information requirements for notice •Timing of notice •No public notice of application required 	<ul style="list-style-type: none"> •Information requirements for notice •Timing of notice •No public notice of application required 	<ul style="list-style-type: none"> •Information requirements for notice •Timing of notice •No public notice of application required 	<ul style="list-style-type: none"> •Application requirements •Period of discharge •Methods of collecting/analyzing samples •Deviation from manner of disposal •No public notice of application required
Notice or Application Content	<ul style="list-style-type: none"> •Substances to be discharged •Construction methods and conditions and, where applicable, rationale for proposed method •Whether construction will incorporate specifications of aquatic environment specialist •Whether structures or measures are required to ensure that quantity and productive capacity of aquatic environment will be equivalent to what existed prior to construction 	<ul style="list-style-type: none"> •Construction methods and conditions and, where applicable, rationale for not using preferred method (if available) •Whether the works will incorporate specifications and recommendations of aquatic environment specialist •Whether physical or other measures are required to ensure that quantity and productive capacity of aquatic environment will be equivalent to what existed prior to construction (if available) 	<ul style="list-style-type: none"> •Construction methods and conditions and rationale for crossing method other than standard structure (any information that is available) •Whether works will incorporate specifications/recommendations of aquatic environment specialist •Whether technically feasible measures are required to ensure quantity/ productive capacity of aquatic environment equivalent to pre-construction situation (any information available) 	<ul style="list-style-type: none"> •Justification for cases where design requirements not met •Adequacy of route for transport of wastewater without flooding or erosion •Adequacy of system design

SOURCES: Code of Practice for Outfall Structures on Water Bodies (http://www.ap.gov.ab.ca/documents/Regs/OUTFALL.cfm?frm_isbn=0779722965), Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body (<http://www.ap.gov.ab.ca/documents/codes/Pipeline.cfm>), Code of Practice for Watercourse Crossings (<http://www.ap.gov.ab.ca/documents/codes/Crossing.cfm>), Code of Practice for Wastewater Systems Using a Wastewater Lagoon (http://www.ap.gov.ab.ca/documents/Regs/LAGOON.cfm?frm_isbn=0779723007), Guide to the Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body, Including Guidelines for Complying with the Code of Practice, 2001 (<http://www3.gov.ab.ca/env/water/Legislation/CoP/PipelineGuide.pdf>), Guide to the Code of Practice for Watercourse Crossings, Including Guidelines for Complying with the Code of Practice, 2001 (<http://www3.gov.ab.ca/env/water/Legislation/CoP/WatercourseGuide.pdf>), and Calgary Management Area Map (Water Act Codes of Practice), 2000 (<http://www3.gov.ab.ca/env/water/Legislation/COP/maps/Calgary.pdf>)

Alberta Environment: Policies, Principles, and Practice

	Outfall Structures	Pipelines & Telecommunication Lines	Watercourse Crossings	Wastewater Systems Using Lagoon
Key Standards	<ul style="list-style-type: none"> ▪ Upon completion <ul style="list-style-type: none"> - quantity and productive capacity of aquatic environment at and adjacent to site must be equivalent to what existed prior to construction - hydraulic, hydrologic, and hydrogeological characteristics of water body must be equivalent to what existed prior to construction ▪ Maintenance of flow of water past site ▪ Minimization of duration and amount of disturbance of bed and banks ▪ All measures possible to control erosion or sedimentation ▪ No harm to fish or fish eggs, no destruction of fish or fish eggs, and no harmful alteration, disruption or destruction of fish habitat ▪ No deposition in water body of substance or material that may have an adverse effect on aquatic environment 	<ul style="list-style-type: none"> ▪ Upon completion <ul style="list-style-type: none"> - quantity and productive capacity of aquatic environment at and adjacent to site must be equivalent to what existed prior to construction - hydraulic, hydrologic, and hydrogeological characteristics of water body must be similar to what existed prior to construction ▪ Maintenance of flow of water through and around crossing ▪ Minimization of duration and amount of disturbance of bed and banks ▪ Minimization of erosion and sedimentation ▪ Avoid harm to or destruction of fish or fish eggs and harmful alteration, disruption or destruction of fish habitat ▪ No impediment to fish migration ▪ No deposition in water body of deleterious substances and materials toxic to fish and other aquatic organisms 	<ul style="list-style-type: none"> ▪ Upon completion <ul style="list-style-type: none"> - where technically feasible, quantity and productive capacity of aquatic environment at and adjacent to site must be equivalent to what existed prior to construction ▪ No flood damage to property because of increased back-flooding ▪ Site selection must <ul style="list-style-type: none"> - avoid, or if not possible, minimize realignment of water body and disturbance of bed and banks - avoid, if possible, high gradient areas, unstable slopes and actively eroding banks, and bank seeps or springs ▪ No alteration of location of water body because of scour ▪ Maintenance of approximate slope of bed of water body ▪ Maintenance of flow of water at the crossing at all times ▪ Minimization of duration and amount of disturbance of bed and banks ▪ Minimization of erosion and sedimentation into the water body ▪ Avoid, or if not possible, minimize impairment of water body's water quality ▪ Avoid harm to or destruction of fish or fish eggs and harmful alteration, disruption, or destruction of fish habitat ▪ No impediment to upstream and downstream fish migration after construction ▪ Maintenance of fish migration – minimum requirement of ensuring water velocity at the crossing does not create a barrier more than 3 consecutive days at a 1 in 10 year recurrence interval ▪ No deposition of deleterious substances and materials toxic to fish and other aquatic organisms 	<ul style="list-style-type: none"> ▪ For wastewater irrigation, compliance with <i>Guidelines for Municipal Wastewater Irrigation</i> (crops) or authorization from Director (other vegetation) ▪ For sludge application to land, compliance with <i>Guidelines for the Application of Municipal Wastewater Sludges to Agricultural Lands</i> ▪ 30 m setback between land irrigated with wastewater and a watercourse, water well, public road, or railway line ▪ Other requirements regarding landowner and municipality consent, site suitability, application limits, and sampling.

SOURCES: Code of Practice for Outfall Structures on Water Bodies (http://www.ap.gov.ab.ca/documents/Regs/OUTFALL.cfm?frm_isbn=0779722965), Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body (<http://www.ap.gov.ab.ca/documents/codes/Pipeline.cfm>), Code of Practice for Watercourse Crossings, (<http://www.ap.gov.ab.ca/documents/codes/Crossing.cfm>), Code of Practice for Wastewater Systems Using a Wastewater Lagoon (http://www.ap.gov.ab.ca/documents/Regs/LAGOON.cfm?frm_isbn=0779723007), Guide to the Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body, Including Guidelines for Complying with the Code of Practice, 2001 (<http://www3.gov.ab.ca/env/water/Legislation/CoP/PipelineGuide.pdf>), Guide to the Code of Practice for Watercourse Crossings, Including Guidelines for Complying with the Code of Practice, 2001 (<http://www3.gov.ab.ca/env/water/Legislation/CoP/WatercourseGuide.pdf>), and Calgary Management Area Map (Water Act Codes of Practice), 2000 (<http://www3.gov.ab.ca/env/water/legislation/COP/maps/Calgary.pdf>)

	Outfall Structures	Pipelines & Telecommunication Lines	Watercourse Crossings	Wastewater Systems Using Lagoon
Key Standards (continued)	<ul style="list-style-type: none"> •No transfer of non-indigenous biota to the site •Debris disposal, cleanup and initial stabilization •Within one full growing season following completion, stabilization of all areas disturbed by construction that slope to the water body •Incorporation of specifications from aquatic environment specialist in engineer's specifications •Aquatic environment field assessment required when, in the opinion of the aquatic environment specialist, information is inadequate to comply with code of practice or where non-standard construction methods are to be used •Location of the pipe connecting to the outfall structure "shown through the width of the active floodplain of the water body" 	<ul style="list-style-type: none"> • No transfer of non-indigenous biota to the site • Debris disposal, cleanup and initial stabilization • Within one growing season, permanent stabilization of all disturbed areas in the crossing site sloping to the water body • Incorporation of specifications and recommendations of aquatic environment specialist • Incorporation of other specifications of owner or engineer considered appropriate • Aquatic environment field assessment when, in the opinion of the aquatic environment specialist, information does not exist to determine the quantity and productive capacity of aquatic environment at or adjacent to the site • Pipes carrying substance that causes or may cause adverse effect on aquatic environment must be installed below 1 in 100 scour depth. Other pipes below 1 in 50 year scour depth. 	<ul style="list-style-type: none"> •No transfer of non-indigenous biota to the site •Debris disposal, cleanup and initial stabilization •Within one full growing season, permanent stabilization of disturbed areas at the crossing sloping to the water body •Incorporation of specifications and recommendations of aquatic environment specialist •Aquatic environment field assessment when, in the opinion of the aquatic environment specialist, information does not exist to determine the quantity and productive capacity of the aquatic environment at or adjacent to the site and impact to fish, fish eggs, fish habitat, and fish migration •Culverts at or below level of water body 	

SOURCES:Code of Practice for Outfall Structures on Water Bodies (http://www.ap.gov.ab.ca/documents/Regs/OUTFALL.cfm?fm_isbn=0779722965), Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body (<http://www.ap.gov.ab.ca/documents/codes/Pipeline.cfm>), Code of Practice for Watercourse Crossings (<http://www.ap.gov.ab.ca/documents/codes/Crossing.cfm>), Code of Practice for Wastewater Systems Using a Wastewater Lagoon (http://www.ap.gov.ab.ca/documents/Regs/LAGOON.cfm?fm_isbn=0779723007), Guide to the Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body, Including Guidelines for Complying with the Code of Practice, 2001 (<http://www3.gov.ab.ca/env/water/Legislation/CoP/PipelineGuide.pdf>), Guide to the Code of Practice for Watercourse Crossings, Including Guidelines for Complying with the Code of Practice, 2001 (<http://www3.gov.ab.ca/env/water/Legislation/CoP/WatercourseGuide.pdf>), and Calgary Management Area Map (Water Act Codes of Practice), 2000 (<http://www3.gov.ab.ca/env/water/legislation/COP/maps/Calgary.pdf>)

Watercourse Crossings

A code of practice has been developed specifically for watercourse crossings.

A watercourse crossing is "a crossing or temporary crossing and any associated permanent or temporary structures that are or will be constructed to provide access over or through a water body." The code of practice covers structures and measures to isolate the location of the works, erosion protection structures, and sedimentation management structures. It does not cover, among other things:

- pipeline and telecommunication line crossings under the bed of a water body (covered by the *Code of Practice for Pipelines and Telecommunication Lines*)
- realignment of the channel of a water body beyond 20 meters upstream and downstream from the watercourse crossing or the diversion of water from the site of a watercourse crossing (requires an approval or licence under the *Water Act*)
- technically feasible structures outside the right of way of the crossing required to make the quantity and productive capacity of the aquatic environment at the crossing site equivalent to what existed prior to construction (requires an approval under the *Water Act*).

In a code of practice, the definition of a water body is restricted to "a water body with defined bed and banks, whether or not water is continuously present, but does not include fish bearing lakes." A wetland without a defined bed and banks would not be considered a water body under a code of practice.

An approval is not required for an ice bridge or snow fill crossing across streams such as Nose Creek and single-span bridges and other non-bridge crossings where

- the water body is in the White Area of the province and is not frequented by fish
- the hydraulic, hydrologic or hydrogeological characteristics of the water body are not altered at flood events below the 1 in 25 year flood event
- the size of a culvert used in a crossing is 1.5 meters or less in diameter
- there is no diversion of water from the water body and
- the installation of the crossing is not part of a causeway through a lake, slough, wetland or other similar water body.

Other watercourse crossings must meet the requirements of the *Code of Practice for Watercourse Crossings*.

Source: *Code of Practice for Watercourse Crossings* (http://www.ap.gov.ab.ca/documents/Regs/CROSSING.cfm?frm_isbn=0773292594), s. 1(2)(bb)-(cc) & 2, *Water (Ministerial) Regulation*, Alberta Regulation (AR) 205/98 (http://www.ap.gov.ab.ca/Documents/REGS/1998_205.CFM), s. 1(1)(ee), 2, 3(3)-(4), Schedule 1, clauses 1 & 2(c), & Schedule 2, and Alberta Environment, *Guide to the Code of Practice for Pipelines and Telecommunication Lines, Including Guidelines for Complying with the Code of Practice*, 2001 (<http://www3.gov.ab.ca/env/water/Leislation/CoP/PipelineGuide.pdf>), p. 5.

Water Act Codes of Practice

The *Water Act* codes of practice require compliance with construction methods and conditions, engineering specifications, and contingency and monitoring measures for the project. The project must be completed in a way that, in some cases, prevents and, in other cases, limits impacts on the water body. The expectation is that, upon completion, the "quantity and productive capacity" of the aquatic environment will be in a condition that is equivalent to what existed prior to construction.

In the codes of practice, the management of impacts on the aquatic environment is based on fish and fish habitat. The objective is to achieve no net loss of productive fish habitat. According to Alberta Environment, the definition of fish "encompasses the definition of fish under the federal *Fisheries Act*." However, in that law, the term fish does not limit which fish are to be protected whereas, in the codes of practice, fish are defined in a more restrictive way:

fish used for domestic, sport and commercial purposes, and fish of special concern, including but not limited to rare, endangered, threatened or vulnerable species.

The Alberta Government determines which fish are of special concern.²⁶

The degree of protection for a water body under the *Water Act* codes of practice is based on a classification system (Table B-3). The classification system ranks water bodies according to the sensitivity to

¹⁶ This appendix contains summaries of laws, regulations, policies, standards, and guidelines. It provides a general description of the decision-making system used and has no legislative sanction. Before taking any action, you should consult the original legislation, regulations, and other documents and seek the advice of legal counsel and, as appropriate, professional engineers and other experts in the management of land and water.

damage of the fish habitat in the water body. The two kilometer section of Nose Creek upstream of the confluence with the Bow River is in Class C (moderate sensitivity), while the remainder of the Nose Creek watershed is in Class D (low sensitivity).

For Class D water bodies, the level of environmental protection is less stringent. In particular, there are no periods of restricted activity during times when fish habitat is more susceptible to harm and, for watercourse crossings, pipelines, and telecommunication lines, there is no requirement for the involvement of aquatic environment specialists in planning and designing standard projects.

The *Water Act* codes of practice have requirements for:

- incorporating the specifications and (for water crossings) the recommendations of an aquatic environment specialist into the planning and design of a project
- conducting an aquatic environment field assessment when, in the opinion of an aquatic environment specialist, information is inadequate to comply with the code of practice.

An aquatic environment specialist would, of course, need to be consulted for either of these things to happen.

EPEA Code of Practice

The *Code of Practice for Wastewater Systems Using a Wastewater Lagoon* provides requirements for the design, construction, and operation of wastewater lagoons. It includes

- limits on when wastewater can be discharged from the lagoon
- the maximum duration of discharge
- requirements for monitoring of discharges and the local ground water and notice to downstream landowners of when a discharge will occur,
- prohibitions against downstream flooding and erosion
- setbacks for wastewater irrigation.

In the code of practice, specific provisions are not included for protecting the aquatic environment or for consultation with aquatic environment specialists. However, before allowing a lagoon to be constructed, Alberta Environment considers whether treated wastewater from a lagoon could impact the water body receiving the treated wastewater. Any requirements for evaluating the impact on the aquatic environment would be at the discretion of Alberta Environment.

Table B-3

**Classes of Water Bodies
for Codes of Practice**

The class of a water body is based on the "sensitivity" of fish habitats and their known distribution. The sensitivity for the class of water body is as follows:

Class A – highest sensitivity; habitat areas are sensitive enough to be damaged by any type of activity within the water body; known habitats in water body critical to the continued viability of a population of fish species in the area.

Class B – high sensitivity; habitat areas are sensitive enough to be potentially damaged by any type of activity within the water body; habitat areas important to continued viability of a population of fish species in the area.

Class C – moderate sensitivity; habitat areas are sensitive enough to be potentially damaged by unconfined or unrestricted activities within a water body; broadly distributed habitats supporting local fish species populations.

Class D – low sensitivity; fish species as defined under the code of practice not present.

Source: Alberta Environment, *Guide to the Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body, Including Guidelines for Complying with the Code of Practice*, 2001 (<http://www3.gov.ab.ca/env/water/Legislation/CoP/PipelineGuide.pdf>), p. 8

Licences

Licences are issued under the *Water Act* to allow the diversion and use of water. The term "diversion" covers a variety of activities including impoundment, storage, consumption, and removal of water.²⁷

Some diversions do not require a licence. These are:²⁸

- 6,250 m³/yr. of water (or a maximum specified in an approved water management plan) for "traditional agriculture use" (raising animals or applying pesticides to crops as part of a farm unit) by owners or occupiers of riparian land or land under which ground water exists if the diversion existed prior to January 1, 1999.
Note: Some people have applied for and received registrations that, like licences, provide legal protection within the priority system for traditional agriculture use. The deadline for applying for a registration has passed, but the process of administering registrations continues to be part of Alberta Environment's work. Although registrations are not within the scope of this project, a water management plan can include the matters and factors to be considered "in deciding whether to effect a registration." Whether the effecting of registrations continues has not been examined for this project.
- 1,250 m³/yr. of water for household purposes by owners or occupiers of riparian land or land under which ground water exists
- 1,250 m³/yr. of water for human consumption, sanitation, fire prevention, and other uses related to a camp
- a water well if water is diverted with a manual pump
- a dugout if water is naturally impounded in the dugout from surface water run-off, the dugout is not situated within a watercourse, lake, or wetland, the capacity of the dugout does not exceed 12,500 m³, and total diversion of water from the dugout does not exceed 6,250 m³/yr – unless otherwise specified in an approved water management plan.
- diversion of surface water for the purpose of operating an alternative watering system for livestock that are generally grazed
- diversion of saline groundwater
- diversion of water for the purpose of dewatering a sand and gravel site or construction site if the water is not used, the water is either retained on-site or diverted in its original quality to a water body hydraulically connected to the original source with no adverse effect on the aquatic environment or a household user, licensee or traditional agriculture user, and, for a construction site, there is no adverse effect on any land and the dewatering does not last longer than six months
- diversion of water for fire fighting.

As with decisions on *Water Act* approvals, in making a decision on an application for a licence, the Director must consider the relevant matters and factors in an approved water management plan. The Director may also consider²⁹

- existing, potential or cumulative
 - effects on the aquatic environment
 - hydraulic, hydrological and hydrogeological effects
 - effects on household users, licensees and traditional agriculture usersthat result or may result from the diversion of water, operation of works, and requirements for a rate of flow or water level
- effects on public safety
- the suitability of land for irrigation
- any other matters applicable to the licence that are relevant.

The Director may add any appropriate terms and conditions to the licence as long as they do not take away from any rights established by meeting the requirements of a preliminary certificate. Unlike in western U.S. states and most other western provinces, the Director is not required to protect existing water rights when issuing a licence. There is also no requirement to protect the aquatic environment.³⁰

In the South Saskatchewan River Basin (which includes the Nose Creek watershed), Alberta Environment has defined two levels of instream flow requirements:

18 This appendix contains summaries of laws, regulations, policies, standards, and guidelines. It provides a general description of the decision-making system used and has no legislative sanction. Before taking any action, you should consult the original legislation, regulations, and other documents and seek the advice of legal counsel and, as appropriate, professional engineers and other experts in the management of land and water.

- minimum flow to protect basic water quality and instream flow needs
- preferred flow to protect desirable instream flow needs.

During low runoff periods, instream flows “will occasionally drop below the preferred level” and, on regulated streams, “projects will be managed such that the instream flows drop to minimum levels only for short periods of time under drought conditions.”³¹

Licences issued in the South Saskatchewan Basin may contain conditions limiting the amount of water that may be diverted and used when necessary to maintain minimum instream flows.³²

In making licensing decisions on proposed diversions from springs or from sand and gravel deposits adjacent to a water body, Alberta Environment assumes that surface and ground water are connected and the diversion will be treated as a surface water diversion. If the applicant feels this assumption is incorrect, it is the applicant’s responsibility to demonstrate otherwise. For proposed diversions from wells in major water basins where restrictions are in place, Alberta Environment requires that the potential for a direct, short-term hydraulic connection with surface water be reviewed. If such a connection exists, the proposed diversion will be treated as a surface water diversion. In other situations, it is assumed that surface and ground water are not connected unless demonstrated otherwise.³³

If a proposed diversion is not in the public interest, the Minister of Environment may order that a licence application not be accepted or that a licence not be issued. The Director may also “close” an area or water body to further licence applications for a specified time if the Director believes that no further allocation of water should be made.³⁴

The Minister may also reserve unallocated water and can retain the reserved water in the water body and specify how and for what purposes the reserved water can be allocated. Unallocated water in the South Saskatchewan Basin has been reserved.³⁵

Transfers of Licensed Allocations

Applications can be made to transfer an allocation of water under a licence to another location. The Director may only consider a transfer application if the ability to transfer has been authorized and the allocation of water to be transferred is held under a licence in good standing. The ability to transfer has been authorized for the South Saskatchewan Basin.³⁶

If the application is in good order, the Director must conduct a public review of the proposed transfer and, in making a decision on the application, has the same matters and factors that may be considered when reviewing an application for a licence. In addition, the Director may consider the allocation of water that the licensee has historically diverted and the effects of the transfer on water conservation objectives.³⁷

Some Terms Related to Transfers

A **water conservation objective** is the amount and quality of water necessary for

- protection of a natural water body or its aquatic environment
- protection of tourism, recreational, transportation, or waste assimilation uses of water
- management of fish and wildlife.

A **licence in good standing** is not defined in the *Water Act*. A licence which has terms and conditions that have not been complied with is not in good standing. Licences that are suspended or cancelled or should be considered for suspension or cancellation are not considered to be in good standing. In the *Water Act*, there are a variety of reasons why a licence could be suspended or cancelled, including:

- failing or ceasing for three years to exercise the rights granted under the licence and having no reasonable prospect that those rights will be exercised in the future
- causing a significant adverse effect on the aquatic environment that was not reasonably foreseeable at the time the licence was issued.

Alberta Environment has provided some guidance to its decision-makers on factors to consider when determining if a licence is in good standing. This includes lack of use or non-use of water as a consideration in determining whether or not a licence is in good standing.

Source: *Water Act*, Revised Statutes of Alberta 2000, c. W-3 (<http://www.qp.gov.ab.ca/Documents/acts/W03.CFM>), s. 1(1)(hhh) & 55(1)-(2) and Alberta Environment, *Administrative Guideline for Transferring Water Allocations* (http://www3.gov.ab.ca/env/water/legislation/Guidelines/Transfer_Guidelines.pdf), August 26, 2003, pp. 4, 11, & 18-19.

A transfer may only be approved if:³⁸

- the volume of water allocated does not increase
- the transfer
 - does not impair the exercise of rights of other water users who have not agreed that the transfer may take place
 - will not cause a significant adverse effect on the aquatic environment.

The Director may withhold up to 10% of the allocation being transferred if doing so is in the public interest to protect the aquatic environment or to implement a water conservation objective. The withheld water could remain in the water body, be reserved, or be allocated to the Government in a licence that would be used to implement a water conservation objective.³⁹

Public Involvement

Alberta Environment considers the guarantee of public participation in decisions affecting the environment to be a cornerstone of EPEA. The public must be notified of an application under EPEA. The written concerns of those who are directly affected will be considered in a decision and directly affected people can appeal a decision. The public notice requirement can be waived if the Director considers the proposed activity "routine," that is, it "will result in a minimal or no adverse effect on the environment."⁴⁰

Under EPEA, when reviewing an approval application, the Director may ask for additional information from any source considered appropriate and can require the applicant to hold meetings in the area where the proposed activity is or will be carried out so that the public may obtain information from the applicant respecting the application.⁴¹

An EPEA application may be provided to a provincial interdepartmental referral committee for recommendations. The proposed decision may also be circulated to anyone the Director considers appropriate for comment.⁴²

The public notice requirements are similar under the *Water Act*. The applicant notifies the public of the application, the concerns of those who are directly affected must be considered in a decision, and directly affected people can appeal a decision. The public notice requirement can be waived if the Director believes the proposed activity or diversion of water will have "a minimal or no adverse effect" on the aquatic environment or on others with legal rights to use water.⁴³

Public notice of an application for an approval, licence, or transfer is ordinarily published in a local newspaper. The Director may require other forms of notification including providing the notice to local authorities or specific individuals.⁴⁴

In the South Saskatchewan Basin, the Alberta Government "is committed to ensuring that Albertans have every opportunity to understand and provide advice on water management decisions."⁴⁵

In terms of releasing information to the public under EPEA and the *Water Act*, Alberta Environment has requirements that it must meet and also has a fair amount of discretion. Some restrictions have been created that can limit the information available to the public and extend the time it takes to provide information. The Director is not required to apply most restrictions and the Minister of Environment may set aside any restrictions and release information in situations where the information is not related to an investigation or proceeding and would not reveal trade secrets, processes, and techniques that the Director has, upon request, approved as confidential. Alberta Environment can set up a registry for information that has been released to the public. A registry has been created so that documentation for approvals, licences, registrations, and permits issued under EPEA and the *Water Act* can be examined.⁴⁶

Education and Compliance

Alberta Environment has education and compliance programs that are province-wide. Key principles for the programs are:

- clear, enforceable legal requirements that are widely known within the “regulated community” and the public
- lawful, fair, consistent, and timely compliance assurance activity
- firm and fair enforcement using remediation, deterrence, and/or punishment based on a “polluter pays/resource restitution” philosophy
- where appropriate, recovery of Alberta Environment’s costs to bring the situation into compliance.

Priorities for compliance education are based on the need to increase compliance, the significance of the potential impact from non-compliance, and an ability to influence behavior. Performance that exceeds minimum requirements or substantially improves compliance will be acknowledged. The regulated community will be encouraged to develop their own methods, technology, practices, and other initiatives to assure compliance. Compulsory monitoring and reporting will be used when appropriate. An annual compliance assessment plan is prepared and enforcement measures are implemented based on a set of criteria.⁴⁷

Fees

EPEA requires a non-refundable fee for an approval application to be processed. Security or insurance can be required. The application fee is based on “the complexity of the activity and the level of service needed to review and process the application.” The fee is not charged to local authorities, the Government, or government agencies. Security may be required for specified activities to ensure compliance with an approval. The security can be used to fix problems caused by non-compliance with the approval or by adverse impacts on the environment.⁴⁸

Under the *Water Act*, a fee is charged for the issuance of licences. The Minister may also, by order, charge a fee for:

- applications and the issuance of approvals, preliminary certificates, licences, and other documents
- a hearing or review under the Act
- a service with respect to works or undertakings administered by the Minister
- a service, material, function, or thing provided under the Act.

In terms of water use, the Minister may only charge for water used for the production of power by a water power development.⁴⁹

Appendix C

Key Issues Nose Creek Watershed

Key Issues

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.¹ These issues are summarized below.

Key Issues	
KNOWLEDGE: What we know	Description
Water quality for irrigation	Based on existing information, bacteria levels in Nose Creek are acceptable for livestock watering, but there may be risks for irrigation in terms of contamination of raw produce because of bacteria levels and damage to soil permeability and sensitive crops (e.g., raspberries) because of salinity. ²
Water quality for recreation	Bacterial levels exceed Alberta's contact recreation guideline posing some health risk for those who swim and play in the water. ²
Water quality for aquatic ecosystems	High phosphorus levels in the water violated freshwater aquatic life guidelines. High phosphorus levels can lead to excessive algae and weed growth which, in turn, can affect oxygen concentrations creating problems for aquatic life and raise social concerns regarding recreational use and aesthetics. ²
Water quantity	As to water quantity, the Nose Creek watershed is a unique system that now sees water flow through more quickly and more intensely.
Riparian health	Along Nose Creek, 65% of selected riparian areas are unhealthy and 23% are healthy but with problems. Along West Nose Creek, 21% of selected riparian areas are unhealthy and 63% are healthy but with problems. ³
Riparian health: positive factors	The positive factors that are contributing the most to the health of riparian areas are 1) low presence of dead woody material, 2) the presence of fine materials (as opposed to gravels, cobbles, and boulders), 3) low rate of active lateral cutting of streambanks, and 4) fairly good vegetative cover in the floodplain.
Riparian health: negative factors	The most important problems in terms of riparian health are 1) exposure of bare soil and the resulting presence of invasive or undesirable plants, 2) altered streambanks, and 3) lack of shrubs and trees.
Riparian health: cause of problems	In terms of riparian health, the most important causes of problems are human activities, especially heavy use of riparian areas for livestock grazing and watering and activities associated with urban development (e.g., roads, paths and trails, recreational activity, stormwater outfalls).
Impacts of urban and industrial activity	Urban and industrial activity has led to increased channelization, dam-building, stormwater/wastewater discharge, and removal or deterioration of vegetation, negatively impacting streamflow, water quality, and riparian habitat in the watershed.
Impervious ground cover	The dominant characteristic of the urban landscape is the high degree of impervious ground cover. This can dramatically increase the rate and volume of runoff from rainfall or snowmelt. The fast moving water can carry more material off the land, increasing the amount of contaminants reaching the creek and downstream.
Agricultural water management	Grazing and agricultural management practices have more to do with water management than anything else.
Impacts of agricultural activities	Detrimental impacts of agriculture and ranching on rural drainage can result from the drainage of wetland areas or the conversion of riparian areas to pasture or cropland. The location of concentrated grazing and watering sites for livestock can contribute to erosion and contaminant loading to water bodies.
Impacts on the Bow River	Nose Creek flows into the Bow River upstream of an important fishery and water withdrawals for the Western Irrigation District (WID). The quantity and quality of flows in Nose Creek impact the Bow River and its uses.

Key Issues	
KNOWLEDGE: What we don't know	Description
Data on flow and water quality	Data on natural streamflow and water quality are of limited reliability because it is not possible to determine to what extent flow and quality conditions are affected by stormwater that is discharged into the creeks.
Data on environmental factors and recreation	The available information related to fisheries, riparian vegetation, recreation, and channel characteristics is very limited.
Instream flow methods	To calculate instream flow needs, the methods used by Alberta Environment (AENV) are designed for streams that, unlike Nose Creek and West Nose Creek, are affected by withdrawal of flow rather than the higher runoff rates and volumes from urban areas. ⁴
Relationship between surface and ground water	How should the relationship between ground water and surface water be managed?
Watershed data collection and analysis	How will a watershed approach to data collection and analysis work, e.g., where are the critical locations for monitoring flow?, what time interval should be used?, what level of accuracy is needed?
Significant human activities	We need to identify significant human activities that affect or in the future could affect flows and water quality in the watershed, e.g., existing approvals and water withdrawal licences, current applications for water withdrawal licences, agricultural activities that affect water flows, population projections, and current and proposed land uses.
Impact of water-related factors vs. "non-flow related issues"	The impact of "non-flow related issues" (e.g., land use, municipal planning) that affect water quality, riparian vegetation, and channel structure should be separated from the impact of flow and other water-related factors. What are the effects of different forms of development and what could be changed to protect or improve watershed health?
Access to water and land	How does the provision of access to water and land increase or reduce the negative consequences for the watershed?
Management practices: effectiveness	How effective are management practices for protecting the watershed?
Management practices: practicality and economics	Are management practices for protecting the watershed practical or economical?
Developability	What is developable land? What does developability mean?
Social and economic value	What is the social and economic value of protecting the watershed?
Acceptable amount of damage	Is there an acceptable amount of damage to the watershed? What are the specific targets?

Key Issues

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GOALS	Description
Support and balance for all aspects of the water system	There needs to be support and balance for all aspects of the water system (including the natural infrastructure of aquatic, riparian, and upland areas) and human use of the environment, taking into account the economic, social, and ecological impacts.
Stewardship and everyday actions	Stewardship and everyday actions need to be broader, e.g., what people pour down storm sewers, incremental and cumulative aspects, how to make urban living less harmful to the water system.
Fair, sustainable water allocation strategy	How can we ensure a fair, sustainable water allocation strategy that will meet water conservation objectives?
Planning	Planning should be collaborative, flexible, fair, and encouraging of innovation.
OPPORTUNITIES AND OBSTACLES	Description
The whole picture	The Nose Creek watershed has already been impacted by the regulatory decisions in place. A lot of the time when making new decisions, it is difficult to take in the whole picture for consideration.
Resources and attention to issues	Resources are tight. The Alberta Government is now working with Codes of Practice. As a result, they are not looking at some issues as closely as they used to.
Appeals and judicial reviews	In its regulatory decision-making, AENV's greatest concern is being brought before the Environmental Appeal Board to justify a decision or brought before a judge for judicial review.
Strong scientific data	AENV needs strong scientific data, very well documented reasons why the development can't go ahead.
The value of science	Science-based answers are needed, but science can be inconclusive and takes time.
Consideration of information	A decision-maker with AENV will use all information available to make a decision. Anyone could influence a decision on an application by submitting their own information. The Director would have to consider it the same as any other information.
Matters and factors to consider	What matters or factors should be considered by AENV decision makers in deciding whether to issue an approval, preliminary certificate or licence, or approve a transfer of an allocation of water under a licence?
Common understanding	How do we ensure elected officials, administrators, land and water managers, the scientific community, and the general public have a common understanding of the problems and the available information?
Effective communication	How should effective communication be promoted among agencies responsible for water management, stakeholders, and the residents of the watershed in order to maximize the opportunity for mutually acceptable solutions?
Public involvement	One of AENV's most important principles of effective water management planning is the involvement of all stakeholders. It is critical that all parties are at the table and buy-in to the final recommendations.
Consensus and diversity	How should the people of the Nose Creek watershed develop consensus while enabling a diversity of knowledge, interests, and values to be considered and addressed?
Disagreeing with a decision	How can local jurisdictions have recourse and a fair hearing if they do not concur with a decision?

Key Issues	
OPPORTUNITIES AND OBSTACLES (continued)	Description
Adequacy of existing laws	Are existing laws (e.g., <i>Water Act</i> , <i>Environmental Protection and Enhancement Act</i> , <i>Municipal Government Act</i> , <i>local by-laws</i>) adequate to ensure protection for water users, landowners, and the environment?
Consistency among governments	The governments involved have not all been speaking from the same page. Consistency between governments – each one is dealing with different requirements. Performance expectations vary between government, private sector, and different industries.
Municipal regulation	Should municipalities develop their own regulations or rely on provincial and federal standards?
Timing of plans and decisions	Plans and decisions are made years before other stakeholders are involved.
Future demand	While Nose Creek is currently subjected to a number of uses, it is anticipated that future development will increase demands. Allocations will need to be closely monitored and it is expected that licence transfers may be necessitated by limited supply.
Alberta Environment's role in planning	If within a Region, AENV is having difficulty with particular decisions and believes advice from a plan would assist with those decisions then they may be a significant player in a plan.
Voluntary vs. mandatory practices	Should management practices for protecting the watershed be voluntary or mandatory?
Role of education	What is the role of education in encouraging people to do the right thing?.
Rewarding doing the right thing	How do you acknowledge and reward people for doing the right thing, including those who have already been contributing to ecologically sound management?
When people don't follow the rules	What should be done when people won't follow the rules?
Who should pay?	Who should pay for improvements to protection of the watershed?

NOTES
Appendix B

- ¹ *Water (Ministerial) Regulation*, Alberta Regulation (AR) 205/98 (http://www.ap.gov.ab.ca/Documents/REGS/1998_205.CFM), s. 2 & 3.
- ² Alberta Environment, "Environmental Protection and Enhancement Act" (fact sheet) (<http://www3.gov.ab.ca/env/protenf/approvals/factsheets/enhanact.html>) and *Water Act*, Revised Statutes of Alberta (RSA) 2000, c. W-3 (<http://www.ap.gov.ab.ca/Documents/acts/W03.CFM>), s. 1(1)(b), 36, & 38.
- ³ *Water Act*, s. 1(1)(b), 49, 51, 68, & 82 and Alberta Environment, "Approvals and Licences," (fact sheet) (<http://www3.gov.ab.ca/env/water/Legislation/FactSheets/GeneralInfo.pdf>).
- ⁴ *Environmental Protection and Enhancement Act*, RSA 2000, c. E-12 (http://www.ap.gov.ab.ca/documents/Acts/E12.cfm?fm_isbn=0779718771), s. 43-45 & 68(4) and *Agricultural Operation Practices Act*, RSA 2000, c. A-7 ([http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/acts8699?opendocument](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/acts8699?opendocument)), s. 1(b.5).
- ⁵ *Approvals and Registrations Procedure Regulation* (http://www.ap.gov.ab.ca/Documents/REGS/1993_113.CFM), AR 113/93, s. 3(1), *Environmental Protection and Enhancement Act*, s. 134(f), and *Conservation and Reclamation Regulation*, AR 115/93 (http://www.ap.gov.ab.ca/documents/Regs/1993_115.cfm?fm_isbn=077972707X), s. 1(t) & 2.
- ⁶ *Approvals and Registrations Procedure Regulation*, s. 3(2) and Alberta Environment, "Approval Process" (fact sheet) (<http://www3.gov.ab.ca/env/protenf/approvals/factsheets/approv.html>). One of the guidelines that provide criteria to aid decision-making is the *Surface Water Quality Guidelines for Use in Alberta* (Alberta Environment, Environmental Assurance Division, Science and Standards Branch, 1999 (<http://www3.gov.ab.ca/env/protenf/publications/SurfWtrQual-Nov99.pdf>)).
- ⁷ *Approvals and Registrations Procedure Regulation*, s. 6.
- ⁸ "Approval Process" (fact sheet).
- ⁹ *Environmental Protection and Enhancement Act*, s. 64(1).
- ¹⁰ *Environmental Protection and Enhancement Act*, s. 25(3), 136, 138, and 141, and *Conservation and Reclamation Regulation*, s. 4(1).
- ¹¹ *Wastewater and Storm Drainage Regulation*, AR 119/93 (http://www.ap.gov.ab.ca/documents/Regs/1993_119.cfm?fm_isbn=0779727231), s. 4, 5, & 5.1.
- ¹² *Environmental Protection and Enhancement Act*, s. 1(III) and *Wastewater and Storm Drainage Regulation*, s. 1(o)-(q), 4, 5, 5.1, & 6.
- ¹³ *Wastewater and Storm Drainage Regulation*, s. 6(3).
- ¹⁴ *Wastewater and Storm Drainage Regulation*, s. 6.1. A storm drainage treatment facility is "any structure or thing used for the physical, chemical or biological treatment of storm drainage, and includes any of the storage or management facilities which buffer the effects of the peak runoff" (s. 1(a)).
- ¹⁵ *Ibid.*, s. 6.2.
- ¹⁶ *Ibid.*, s. 7(1).
- ¹⁷ Alberta Environment, "Additional Information on Approvals and Licences" (fact sheet) (<http://www3.gov.ab.ca/env/water/Legislation/FactSheets/AdditionalInfo.pdf>), p. 7.
- ¹⁸ "Approvals and Licences" (fact sheet), *Agricultural Operation Practices Act*, s. 1(b), (b.52), & (b.6) & 13-15, Alberta Environment, *Administrative Guide for Approvals to Protect Surface Water Bodies Under the Water Act*, 2001 (http://www3.gov.ab.ca/env/water/Legislation/Approvals_Licences/ApprovalsAdminGuide.pdf), p. 7, and *Water (Ministerial) Regulation*, Schedule 1.
- ¹⁹ *Water Act*, s. 1(1)(ggg). Some licensed irrigation works are not considered water bodies under the *Act*. Under the *Water (Ministerial) Regulation*, a watercourse is defined as "a river, brook, stream or other natural water channel and the bed along which this flows." (s. 1(1)(dd)) There are additional variations in terminology used for other situations. In the *Water Act* codes of practice, a water body is defined as "a water body with defined bed and banks, whether or not water is continuously present, but does not include fish bearing lakes." (See, for example, *Code of Practice for Watercourse Crossings* (http://www.ap.gov.ab.ca/documents/Regs/CROSSING.cfm?fm_isbn=0773292594), s. 1(2)(bb)) For EPEA, the definition of watercourse is, for a natural watercourse, restricted to the bed and shore, but also includes "a canal, ditch, reservoir or other man-made surface feature." (*Environmental Protection and Enhancement Act*, s. 1(yyy)).
- ²⁰ *Water Act*, s. 38(2)-(3).
- ²¹ *Ibid.*, s. 34(1)-(2).
- ²² *Administrative Guide for Approvals to Protect Surface Water Bodies Under the Water Act*, p. 6.
- ²³ *Water Act*, s. 1(1)(ee) & 96.
- ²⁴ Alberta Environment, *Guide to the Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body, Including Guidelines for Complying with the Code of Practice*, 2001 (<http://www3.gov.ab.ca/env/water/Legislation/CoP/PipelineGuide.pdf>), p. 3.
- ²⁵ "Normal conditions" means a situation that is not an emergency. During an emergency, most requirements and standards are suspended until the emergency is over. In the codes of practice described here, an emergency, when

defined, is "a situation where there is an imminent risk to the aquatic environment, public health or safety, or an imminent risk of structural failure." (*Code of Practice for Watercourse Crossings*, s. 1(2)(g)) This definition of an emergency is different from the generally more reactive and restrictive descriptions of an emergency in the legislation which are:

- "an immediate and significant adverse effect on the aquatic environment, human health, property or public safety" (*Water Act*, s. 105(1)(b))
- "an immediate and significant [impairment of or damage to the environment, human health or safety or property]" (*Environmental Protection and Enhancement Act*, s. 1(b) and, for example, 114(1)(b) and s. 151).

In its guidance to those who would construct works, Alberta Environment has broadened the meaning of emergency, describing it as "equipment failures, adverse weather, flooding, spills, etc." (See for example *Guide to the Code of Practice for Watercourse Crossings*, p. 26)

- ²⁶ *Guide to the Code of Practice for Pipelines and Telecommunication Lines*, p. 4, *Fisheries Act, Revised Statutes of Canada* (RSC) 1985, c. F-14 (<http://laws.justice.gc.ca/en/F-14/text.html>), s. 2, Alberta Environment, *Guide to the Code of Practice for Watercourse Crossings, Including Guidelines for Complying with the Code of Practice*, 2001 (<http://www3.gov.ab.ca/env/water/Legislation/CoP/WatercourseGuide.pdf>), p.5, and *Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body* (<http://www.ap.gov.ab.ca/documents/codes/Pipeline.cfm>), s. 1(2)(f). The same definition of fish is used in other *Water Act* codes of practice (*Code of Practice for Watercourse Crossings*, s. 1(2)(i) and *Code of Practice for Outfall Structures on Water Bodies* (http://www.ap.gov.ab.ca/documents/Regs/OUTFALL.cfm?fm_isbn=0779722965), s. 1(2)(e)). The guides to the codes of practice substitute the terms "sustenance" and "recreational" for "domestic" and "sport." For a list of fish of special concern, see <http://www3.gov.ab.ca/srd/fw/fishing/fishstat.html>.
- ²⁷ *Water Act*, s. 1(1)(m).
- ²⁸ *Ibid.*, s. 1(1)(x), 11(3)(iv), 19(1), 21, & 73, "Water Allocation" (fact sheet) (<http://www3.gov.ab.ca/env/water/Legislation/FactSheets/WaterAllocation.html>), and *Water (Ministerial) Regulation*, Schedule 3, s. 1.
- ²⁹ *Water Act*, s. 51(4).
- ³⁰ *Ibid.*, s. 51(1) & (3) & 68 and 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.
- ³¹ Alberta Environment, *Water Management Policy for the South Saskatchewan River Basin*, 1990, pp. 1-2.
- ³² *South Saskatchewan Basin Water Allocation Regulation*, AR 307/91 (http://www.ap.gov.ab.ca/documents/Regs/1991_307.cfm?fm_isbn=077326258X), s. 7(1). This regulation also *limits the purposes for which water may be allocated*, in particular, prohibiting licences for water in its natural state for uses such as conservation, recreation, fish and wildlife, tourism, waste assimilation, and protection of a water body and its aquatic environment (s. 3-6 and *Water Resources Act*, RSA 1980, s. 11(1)(b) & (d)). Except for restrictions on the amount of water that can be licensed for irrigation, these limitations have been nullified (*Water Act*, s. 172(3)).
- ³³ Alberta Environment, "Policy on Water Diversions from Sands and Gravels Adjacent to a Water Body, and from Springs," November 16, 1995 and Alberta Environment, "Administrative Policy on Water Diversions from Wells Located in Restricted Water Basins," November 4, 1997.
- ³⁴ *Water Act*, s. 34(1) & 53.
- ³⁵ *Ibid.*, s. 35(1)-(3) and *South Saskatchewan Basin Water Allocation Regulation*, s. 2.
- ³⁶ *Water Act*, s. 81(7) and Alberta Environment, *Phase One: Water Allocation Transfers*, South Saskatchewan River Basin Water Management Plan, 2002, p. 8.
- ³⁷ *Water Act*, s. 81(6) & 82(5).
- ³⁸ *Water Act*, s. 82(3).
- ³⁹ *Ibid.*, s. 51(2) & 83.
- ⁴⁰ *Environmental Protection and Enhancement Act*, s. 72(1) & (3)(b), 73(1), & 91, *Environmental Protection and Enhancement (Miscellaneous) Regulation*, AR 118/93 (http://www.ap.gov.ab.ca/documents/Regs/1993_118.cfm?fm_isbn=0779723309), s. 1(1)(a), "Environmental Protection and Enhancement Act" (fact sheet), and "Approval Process" (fact sheet).
- ⁴¹ *Approvals and Registrations Procedure Regulation*, s. 5.
- ⁴² *Ibid.*, s. 1(e), 7, and 8 and *Environmental Protection and Enhancement Act*, s. 10(2).
- ⁴³ *Water Act*, s. 108, 109, & 115.
- ⁴⁴ *Water (Ministerial) Regulation*, s. 13(1) and *Environmental Protection and Enhancement (Miscellaneous) Regulation*, s. 2(1).
- ⁴⁵ *Water Management Policy for the South Saskatchewan River Basin*, p. 3.
- ⁴⁶ *Environmental Protection and Enhancement Act*, s. 35 and *Water (Ministerial) Regulation*, s. 15-17. The registry mentioned is the "Authorization / Approval Viewer" (<http://www3.gov.ab.ca/env/water/ApprovalViewer.html>).
- ⁴⁷ Alberta Environment, *Compliance Assurance Principles*, 2000 (http://www3.gov.ab.ca/env/protenf/documents/CAP_Final_2000.pdf), pp. 5, 7-9, & 11-19.
- ⁴⁸ "Approval Process" (fact sheet).
- ⁴⁹ *Water Act*, s. 168 and "Approvals and Licences" (fact sheet).

