

DFO Discussion Document
BC Water Act Modernization Technical Workshops

SUMMARY

BACKGROUND

- As part of the Living Water Smart: British Columbia's Water Plan, the Province of British Columbia (BC) is undertaking a process to modernize the BC *Water Act*. The *Water Act* is the primary law in BC for managing water resources and has a key role in the sustainability of BC's water resources.
- The four goals of WAM are to: 1) protect stream health and aquatic environments; 2) improve water governance arrangements; 3) introduce more flexibility and efficiency in the water allocation system; and 4) regulate groundwater use in priority areas and for large withdrawals.
- Fisheries and Oceans Canada (DFO) role in fresh water management is related mainly to the Department's authority to conserve, protect, and manage inland fisheries under the Federal *Fisheries Act* and to protect *Species at Risk Act* (SARA) listed aquatic species. DFO also has some responsibility under the *Canadian Environmental Assessment Act* that may be triggered by works in and about a stream or where a project (including water transfer) has trans-boundary or inter-provincial implications.
- DFO has been engaged by the Province to provide input into the Province's *Water Act* Modernization process. Policy Branch is coordinating a team of staff from Oceans, Habitat and Enhancement Branch (OHEB), Science, Justice, and Real Property to engage with B.C. on WAM policy development.
- Most recently, the Province invited DFO to provide input and technical advice through formal cross government dialogue at technical workshops, scheduled for June 22, 2010. In anticipation of these workshops, DFO staff has developed a single DFO response on the *Public Discussion Paper* to the Province (Attached).

ANALYSIS

- DFO's role in implementing federal legislation is not affected by any changes to the BC *Water Act*. However, the new *Water Act* offers an opportunity to harmonize Federal and Provincial legislation and could help to ensure that water flow for fish and fish habitat needs are met, stream health is protected, and critical habitat for SARA listed species is protected.
- Current federal legislation protects fish habitat, but does not provide explicit direction about restoring water flows for fish in over-subscribed systems.
- Overall, the draft *Public Discussion Paper* represents a positive step forward and reflects many of the discussions that DFO has had with the Province regarding water management.

DFO KEY INTERESTS

- *Water Act* definitions of sustainable limits and stream health should include considerations of critical habitat for aquatic species at risk, fish, and fish habitat.
- To protect stream health and aquatic environments, the Province will be using a standard setting method for low risk withdrawals and a detailed assessment method for high risk withdrawals. It would be in DFO's interest to ensure that legislated definitions of high risk withdrawals consider fish and fish habitat.
 - As a regulatory agency, the establishment of enforceable environmental flow standards as opposed to guidelines serves DFO's interests.

- In establishing either environmental flow standards or guidelines, it's in DFO's interest to ensure that temporal as well as water quality parameters are considered.
- The Province is proposing to include *Water Allocation Plans* in the renewed *Water Act*. *Water Allocation Plans* determine the amount of water available for allocation while ensuring that environmental objectives are met. DFO supports *Water Allocation Plans* that consider environmental flows for fish and fish habitat. Ideally, *Water Allocation Plans* would be required in priority areas and that decision makers must consider the plans once adopted.
- Currently, there is a regulatory gap or inconsistent application of Section 9 of the *Water Act* as it applies to the area between the “natural boundary” and the 1:5 year flood. Section 9 of the *Water Act* should be augmented and strengthened to specify that *works in and about a stream* include the riparian area beyond the high water mark. 1:5 year flood elevation.
- Improvements to the regulation of groundwater extraction and regulations respecting wells and well location particularly in areas where there is a hydraulic connection between aquifers and surface waters could be beneficial to fish and fish habitat. Where aquifers have hydraulic connectivity to fish bearing streams, surface and groundwater should be regulated as one resource and all withdrawal thresholds should be based on ensuring the maintenance of water flows for fish and fish habitat.

ANNEX 1 - PROVINCE OF BC PROPOSALS FOR CHANGE

The Province has proposed a set of eight principles and four goals, each with a set of key objectives for BC *Water Act* Modernization. The proposed principles to guide the *Water Act* policy development process are meant to respond to modern expectations, as well as promote stream health and water security. The proposed principles for *Water Act* modernization are:

1. B.C.'s water resources are used within sustainable limits.
2. First Nations social and cultural practices associated with water are respected and accommodated.
3. Science informs water resource management and decision making.
4. Water resource legislation, policy and decision making processes as well as management tools are integrated across all levels of government.
5. Rules and standards for water management are clearly defined, providing a predictable investment climate across the province.
6. Flexibility is provided to adapt to extreme conditions or unexpected events on a provincial, regional or issue-specific level.
7. Incentives are created for water conservation that consider the needs of users and investors.
8. Rights to use water come with responsibilities to be efficient and help protect stream health.

The four proposed goals and associated objectives for BC *Water Act* modernization are:

1. Protect stream health and aquatic environments
 - o Environmental flow needs are considered in all water allocation decisions to protect stream health;
 - o Watershed or aquifer-based water allocation plans include environmental flows and the water available for consumptive use; and
 - o Habitat and riparian area protection provisions are enhanced.
2. Improve water governance arrangements
 - o Governance roles and accountabilities are clarified in relation to the allocation of water and the protection of stream health (this includes roles for First Nations, industry, local communities and non-government organizations in planning and decision making);
 - o Governance arrangements are flexible and responsive to future needs and values; and
 - o Management is coordinated with neighbouring jurisdictions across all levels of government and those with a major interest in the watershed.
3. Introduce more flexibility and efficiency in the water allocation system
 - o The water allocation system emphasizes and encourages efficiencies in both water use and the administration of water as a natural resource;
 - o Water users and decision makers have flexibility to quickly adapt to changing environmental, economic and social conditions;
 - o The water allocation system integrates the management of groundwater and surface water resources where required in problem areas; and
 - o Water users conserve water during drought or when stream health is threatened.
4. Regulate ground water use in priority areas and for large withdrawals
 - o Groundwater extraction and use is regulated in priority (critical) areas and for all large withdrawals.

ANNEX 2 – DETAILED DFO RESPONSE TO BC’S PROPOSALS FOR CHANGE

#	Background and Questions	Question Type (Policy, Legislation, Implementation)	DFO Response
	<i>Goal 1: Protect stream health and aquatic environments</i>		<p><u>Background:</u> In order to better protect stream health and aquatic environments the following objectives are proposed for a modernized Water Act:</p> <ol style="list-style-type: none"> 1. Environmental flow needs are considered in all water allocation decisions to protect stream health; 2. Watershed or aquifer-based water allocation plans include environmental flows and the water available for consumer use; and 3. Habitat and riparian area protection provisions are enhanced.
	<p><u>Question:</u> What is your level of support for the objectives proposed?</p>	Legislation	<ul style="list-style-type: none"> • The BC <i>Water Act</i> is one law within an ensemble of environmental statutes and policies that protect stream health in BC. The BC <i>Water Act</i> could be a more effective tool for protecting stream health by ensuring adequate water flows (or environmental flows¹ through water allocation plans²), protecting habitat by regulating changes made in and about a stream, and reducing water quality impacts. • Overall goal and objectives are supported, subject to the inclusion of the concept of stream recovery and expanded scope to include aquatic ecosystems. <p>Strategic Rational</p> <ul style="list-style-type: none"> • This goal provides DFO with an opportunity to: <ul style="list-style-type: none"> • Further protect and recover fish and fish habitat and aquatic species at risk. • Harmonize the BC <i>Water Act</i> with the goals and objectives of both the federal <i>Fisheries Act</i> and the <i>Species at Risk Act</i>. • Establish consistent inter-jurisdictional outcomes for maintenance of stream and/or ecosystem health, by adopting similar definitions and approaches. Many of these are

¹ The Province defines an environmental flow as the amount of water required in a stream to meet certain objectives such as to protect fish, wildlife or other biological values. The Province maintains environmental flows for recreation, navigation and the dilution of permitted discharges such as effluent.

² The Province considers water allocation plans as water supply and demand studies conducted on a watershed basis that determine the amount of water that is still available for allocation and the amount the environment needs.

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			<p>already captured in DFO's Policy for the Management of Fish Habitat (No-Net-Loss) and Wild Salmon Policy (WSP).</p> <ul style="list-style-type: none"> • Avoid infringing on Aboriginal rights to fish and fisheries for food, social, and ceremonial (FSC) purposes with proposed changes to the <i>BC Water Act</i>, unless justifiable. • Proactively and more effectively address chronic water use challenges. • Sufficient flows of suitable quality at the right time of the year are elements of critical habitat for most fish and aquatic species at risk. • For species listed under the federal <i>Species at Risk Act</i> where water flows have been identified as a threat to their survival or recovery, restoration of water flows will become a DFO legal obligation. <p>Technical Advice</p> <ul style="list-style-type: none"> • Management of water to satisfy both human and natural ecosystem needs will remain problematic until there are clear, operational definitions of what satisfying "stream health" or "ecosystem health" entails. Associated tasks include: (a) provide a clear definition of the terms "stream health" and "ecosystem health" that are consistent with existing federal legal obligations; (b) identify the specific outcomes to be expected given successful maintenance of "healthy" streams and/or ecosystems; (c) identify sets of informative and affordable indicators (physical, chemical, biological...) for these outcomes; and (d) develop reference points or ranges around sets of indicators fashioned into a monitoring and evaluation framework to guide water management decisions that favour the long-term maintenance of stream health. Given that fish and other specified aquatic biota are afforded legal protection under Canada's <i>Fisheries Act</i> and <i>Species at Risk Act</i>, a focus on status and trends of these specific aquatic biota as "sentinels", and the condition of their habitat could provide a suite of indicators to effectively manage the quantity and quality of seasonal flows required to maintain or restore a specified state of "stream health". • Providing environmental flows that protect fish habitat would be a significant step towards accommodating First Nations FSC interests. However, First Nations may have other non-fishery related water interests that fit the Provincial description of <i>environmental flow</i>. The definition of <i>available flow</i> is defined under Final Agreements negotiated under the BC

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			<p>Treaty Process. In Final Agreements, the definition of <i>available flow</i> has considered <i>environmental flows</i>. For example, <i>available flow</i> has considered the volume of flow of water to ensure conservation of fish and stream habitats, continue navigability, and under water licences.</p> <ul style="list-style-type: none"> • To harmonize Federal (e.g. <i>Wild Salmon Policy</i>, <i>Sustainable Fisheries Framework</i>, and <i>Species at Risk Act</i>) and Provincial policy, DFO suggests that the Province use the following accepted DFO definition for <i>aquatic ecosystems</i>: <ul style="list-style-type: none"> • <i>An ecosystem is a system with a specific geographic location that includes all living organisms (humans, plants, animals, micro-organisms), the physical, chemical, and climatic environment, and the processes that control the dynamics of the system. The interaction of organisms in an ecosystem is dynamic and subject to internal and external disturbances. Therefore, the relationships of organisms in an ecosystem may change over time. While aquatic ecosystems may be separated by geographical barriers, as in the case of lakes, watersheds, or enclosed bays, aquatic ecosystems often blend into one another because of porous boundaries set by currents, features of the seafloor, or water masses. Aquatic ecosystems can also be nested inside larger ecosystems.</i> • To harmonize Provincial legislation and for consistency with the <i>Federal Fisheries Act</i>: <ul style="list-style-type: none"> ○ Adopt the definition of fish habitat from the <i>BC Fish Protection Act</i>: <ul style="list-style-type: none"> ▪ <i>"Fish habitat" means the areas in and about a stream, such as spawning grounds and nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes.</i> ○ The reference to food supply areas in this definition would include riparian (an objective within this goal) as riparian areas provide significant terrestrial invertebrate fish food sources as well as leaf litter which is a food source for aquatic invertebrates, another fish food source. ○ Stream health parameters, should include consideration of: <ul style="list-style-type: none"> ▪ Water quality, ▪ Water quantity, ▪ Physical structure (e.g., channel morphology, bank stability, riparian integrity,

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			<p>etc.)</p> <ul style="list-style-type: none"> Hydraulic connectivity between surface and subsurface water sources. Refined, existing assessment frameworks and methodologies that have been co-developed with the Province, such as the <i>BC Instream-flow Guidelines</i>, should be the basis for setting environmental flow standards. The Province should consider hydrologic processes as well as aquatic species habitat requirements when defining environmental <i>risk</i>. There is a need for flexibility to deal with regional differences in supply/demand ratios, differential risk and rapidly changing conditions. However, a common set of water supply/demand thresholds should be used throughout BC as reference points that when reached would trigger graduated water planning and management responses. Part 4 of the current <i>Water Act</i> allows the Minister, by order, to designate an area for the purpose of developing a water management plan to address conflicts between water users and instream flow requirements (e.g., Township of Langley). These plans define areas of conflict, set-up processes, and regulate. As part of this, concerns related to fish, fish habitat, SARA listed species, and other environmental matters should be considered. In oversubscribed systems, water allocation plans could also serve as stream health recovery plans. Drought response plans (where they are developed) could form distinct chapters/sections of the water allocation plan. As such, a drought plan would not supplant the need for a water allocation or management plan. Conversely, the absence of a water allocation plan should not supplant the requirement for a drought plan. The <i>BC Riparian Areas Regulation</i> applies above the 1:5 flood return period elevation, which can be a significant vertical and horizontal distance above the <i>natural boundary</i>. Presently, the common practice is to apply Section 9 of the <i>BC Water Act</i> only to specific works below the <i>natural boundary</i>. Numerous BC Environmental Appeal Board decisions have determined that the authorities of Section 9 apply above the <i>natural boundary</i>. As such, the practice of applying Section 9 only to the <i>natural boundary</i> results in a jurisdictional gap. It is unclear how Salmonid Enhancement Program (SEP) enhancement and restoration

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			projects would be considered as components of stream health. For example, the WSP identifies that in cases where enhancement is identified as a contributor to rebuilding salmon conservation units, that enhancement will be given a priority. The WSP also supports that there may be a need to restore habitats that are degraded.
<i>Objective 1: Environmental flows are considered in all water allocation decisions to protect stream health</i>			
2	<p><u>Background:</u> Two options are proposed for requiring the decision maker to consider environmental flows when making new water allocation decisions. The decision makers under the <i>Water Act</i> for water licences are the Comptroller of Water Rights and the Regional Water Manager.</p> <p>A. Environmental Flow Guidelines. In this option the environmental flow recommendations are guidelines, from which the decision maker may deviate in certain circumstances. Clear justification must be provided for any deviation and applicants could appeal decisions.</p>		

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	<p>OR</p> <p>B. Environmental Flow Standards. In this option the environmental flow recommendations become standards that the decision maker must adhere to with no exceptions.</p> <p><u>Questions:</u> Which option do you prefer, and why?</p> <p>Are there others?</p>	Legislation	<ul style="list-style-type: none"> Environmental flow standards should be <u>required</u> in all water allocation decisions, and be considered separately from industrial or recreational flow requirements. Ideally, environmental flow <u>standards</u> would be set for <u>low risk withdrawals</u> (e.g., domestic water and small irrigation) and <u>detailed assessment</u> would be required for <u>high risk applications</u> (e.g., waterworks or water power). Clearly define "stream health" and "ecosystem health" in terms of outcomes that ensure water management activities meet legal obligations under the federal <i>Fisheries Act</i> and <i>Species at Risk Act</i>.
<p><i>Objective 2: Watershed-based water allocation plans include environmental flow needs and the water available for consumptive use.</i></p>			
3	<p><i>Objective 2: Watershed-based water allocation plans include environmental flow needs and the water available for consumptive use.</i></p> <p><u>Background:</u> Options for including water allocation plans in the <i>Water Act</i>. Consideration must be given as to whether the development of water allocation plans could be optional or required, and</p>		

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	<p>determining the level of discretion decision makers have for the resulting plan's application.</p> <p>A. The development of water allocation plans is <u>optional</u>. – Developed at the discretion of the Regional Water Manager and could be based on increasing water demand and decreasing water supplies, changing environmental conditions, conflicts among users, or at the request of a water user community.</p> <p>OR</p> <p>B. The development of water allocation plans is <u>required</u>. – Plans may be developed province-wide, <i>or</i> – Criteria to determine priority areas may be developed, with priority areas requiring a plan, <i>or</i> – Plans may be ordered by the Comptroller of Water Rights.</p> <p>AND</p> <p>C. The decision maker <u>must consider the water allocation plan</u>. – Once adopted, decision makers must</p>		

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	<p>consider plans. Although the decision maker is not bound by the plan they would be required to explain reasons for any decisions that do not follow the plan's recommendations.</p> <p>OR</p> <p>D. The decision maker <u>must follow the water allocation plan.</u> – Once adopted, the plan must be followed with no exceptions by the decision maker.</p> <p><u>Questions:</u> Which options do you prefer and why?</p> <p>Are there others?</p> <p>Under what conditions should a water allocation plan be developed and how should it be applied?</p>	Legislation	<ul style="list-style-type: none"> Water allocation plans should be <u>required</u> and <u>adhered to</u> in <i>priority watersheds</i>.
<p><i>Objective 3: Habitat and riparian area protection provisions are enhanced.</i></p>			
4	<p><u>Background:</u> Options for protecting habitat and riparian areas.</p>		

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	<p>Option A: <u>Maintain</u> the requirement for an engineer's order to prohibit dumping of material into streams (reflects current situation).</p> <p>Option B: <u>Amend</u> the <i>Water Act</i> to include a prohibition against dumping of a wider range of debris and materials into streams, with a requirement for the person responsible for dumping to restore stream health.</p> <p><u>Question:</u> Which option do you prefer and why?</p> <p>Are there others?</p>	Legislative	<ul style="list-style-type: none"> • Amend Section 88 of the <i>Water Act</i> to include a prohibition against the deposit or dumping a wider range of debris and materials into streams and give the authority to require stream remediation. • Section 9 of the <i>Water Act</i> should also be augmented and strengthened to specify that <i>works in and about a stream</i> include the riparian area beyond the high water mark. Without either an amendment to Section 9 of the BC <i>Water Act</i> or consistent application of existing provisions, the area between the "natural boundary" and the 1:5 year flood elevation is a regulatory gap. To ensure stream health, the regulatory gap must be closed. • Source control should be the primary measure to manage pollution effects in fish bearing streams, as opposed to dilution potential.
Goal 2: Improve water governance arrangements			
5	<p><u>Background:</u> In order to improve BC's water governance arrangements the following</p>		<p>Water governance is a broad and complex concept that includes laws and regulations, agencies and institutions that are responsible for decision-making, and policies and procedures that are used to make decisions and manage water resources. Governance also</p>

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	<p>objectives are proposed for a modernized <i>Water Act</i>.</p> <ol style="list-style-type: none"> 1. Governance roles and accountabilities are clarified in relation to the allocation of water and the protection of stream health. <i>This includes roles for First Nations, industry, local communities and non-governmental organizations in planning and decision making.</i> 2. Governance arrangements are flexible and responsive to future needs and values. 3. Management is coordinated with neighbouring jurisdictions across all levels of government and those with a major interest in the watershed. <p><u>Question:</u> Indicate your level of support for the objectives proposed.</p>	Legislative	<p>includes the way that science, information, community and traditional knowledge inform laws, policies and decisions.</p> <p>Canada's Constitution sets out the roles of the provincial and federal government with respect to water management, fish and fish habitat protection, and stewardship. Water governance in BC is outlined primarily in the <i>Water Act</i> which, together with the <i>Water Protection Act</i>, determines that water resources are owned by the Crown.</p> <ul style="list-style-type: none"> • Overall objectives for improving water governance arrangements are supported.
6	<p><u>Background:</u></p> <p>Three approaches for water governance</p>		

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	<p>are raised for discussion; they reflect a wide spectrum of decision making responsibilities. At one end is the <i>centralized</i> approach; at the other end the <i>delegated</i> approach; and in between, the <i>shared</i> approach. In any approach the province would retain the ultimate responsibility for fulfilling the duty to consult with First Nations, although some procedural aspects of consultation may be shared. The appropriate scale of watershed, accountability and dispute resolution processes would need to be clear in any chosen approach....</p> <p>The institutions that make decisions in these approaches are different. In the <i>centralized</i> approach, the provincial government is the main decision making institution. In the <i>shared</i> approach, the province would share decision making responsibilities with a partner. In order to implement the <i>delegated</i> approach, new institutional arrangements would be required. A hybrid approach could also be enabled. In any approach, decision making would be bound by and reflect objectives and outcomes set at the federal and provincial level. Clear</p>		

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	<p>criteria would be used to make governance changes so that the resulting mandates of government and other entities are predictable and consistent throughout the province. Essentially, the areas of potential change in governance are to the institutions and the operational management functions....</p> <p><u>Questions:</u></p> <p>Which approach do you prefer, and why?</p> <p>Are there others?</p> <p>What scale of watershed is most appropriate for water planning and management (see <i>Resource 10.6</i>)?</p>	<p>Legislation / Policy</p> <p>Policy</p> <p>Implementation</p>	<ul style="list-style-type: none"> Any water governance arrangements must be able to ensure that fish and fish habitat needs are met in accordance with the Federal <i>Fisheries Act</i> and stream health is protected. The dispute resolution process required by any of the governance options should be outlined in the statute (or associated regulation) with final authority remaining with the Minister of Environment. To recognize processes that affect hydrology and aquatic ecosystems DFO manages fish and fish habitat at multiple scales or planning units that are dependent on the nature and scope of the issue. Water allocation planning units could be based on watersheds where naturalized hydrographs can be generated, bio-geo-climatic zones (or subzones), or well defined ecosystem zones. Where these proposed water allocation planning units coincide with geopolitical boundaries the latter might be used. The Province's four suggested aggregated priority areas for groundwater management (Okanagan Basin, Lower Mainland, Gulf Islands, and East Coast of Vancouver Island) presently overlook a number of areas that are high risk to fish and species at risk, e.g., the Merritt aquifer (and its associated watershed the Nicola). The Merritt aquifer is identified as a high priority aquifer system (#17) by the Province, is a high-risk fish habitat area (i.e., supports North Thompson coho stocks of significant conservation concern), and has experienced multiple fish/flow conflicts.

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	<p>What funding solutions might help to implement the approaches?</p> <p>What are the important considerations for accountability, transparency, and dispute resolution processes in any delegated or shared approach?</p> <p>What are the benefits and implications of sharing roles for water stewardship?</p> <p><i>Goal 3: Introduce more flexibility and</i></p>	<p>Policy / Implementation</p> <p>Policy / Implementation</p>	<ul style="list-style-type: none"> • By establishing clear accountabilities, increasing decision making transparency, and providing dispute resolution mechanisms as recommended, frequency of conflict and litigation will likely decrease. • DFO's role as a regulator remains the same regardless of the approach to watershed governance that the Province selects. • DFO participation in any governance model will depend on capacity and the ability of the approach to accommodate DFO regulatory interests and requirements. • DFO roles in planning processes anticipated under a new governance model could include: <ul style="list-style-type: none"> ▪ Provision of scientific advice for development of flow standards and thresholds; ▪ Information on fish requirements for water quality and quantity, habitat values, threats, risks and potential mitigation options; ▪ Information, inventory data, or monitoring, evaluation and assessment reports for aquatic species at risk and conservation unit status; and ▪ Interpretation of federal legislation, regulations, and policy. • DFO will not be accountable for monitoring and evaluation of the legislation, regulations, or policies of other orders of government. • BC <i>Water Act</i>, Part 4 Water Management Plans (previously described) could be a useful governance tool to address aquatic species at risk.

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	<i>efficiency in the water allocation system</i>		
7	<p><u>Background:</u> In order to introduce more flexibility and efficiency in the water allocation system the following objectives are proposed for a modernized <i>Water Act</i>:</p> <ol style="list-style-type: none"> 1. The water allocation system emphasizes and encourages efficiencies in both water use and the administration of water as a natural resource. 2. Water users and decision makers have flexibility to quickly adapt to changing environmental, economic and social conditions. 3. The water allocation system integrates the management of groundwater and surface water resources where required in problem areas. 4. Water users conserve water during drought or when stream health is threatened. <p><u>Question:</u> Indicate your level of support for the objectives proposed.</p>	Legislative	<ul style="list-style-type: none"> • BC's <i>Water Act</i> uses a 'first-in-time, first-in-right' (FITFIR) method of water allocation. FITFIR assigns higher priority (thereby higher value and security of licence) to water licences according to the date of precedence. • Government requires the flexibility to make changes to water allocation to respond to pressures on the environment, such as climate change. • Improved efficiency in water allocation could further ensure that fish and fish habitat needs are met and stream health is protected. • Current FITFIR method of water allocation does not support DFO's mandate or obligations to protect fish and fish habitat • Flexibility introduced into the decision-making process should be bounded by the underlying

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			principle that fish and SARA species requirements are to be met prior to water being reallocated or reapportioned for other purposes.
<i>Objective 1: The water allocation system emphasizes and encourages efficiencies in both water use and the administration of water as a natural resource.</i>			
8	<p><u>Background:</u></p> <p>Options to encourage water use efficiency:</p> <p>A. Government determines actual needs in relation to a proposed undertaking on the basis of efficient practices and works. If water is not being used in a beneficial way as authorized, then the potential for licence cancellation exists. Cancelled water rights may then be reallocated or retained for stream benefit.</p> <p>OR</p> <p>B. Codes for efficient infrastructure and practices in different sectors are</p>		

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	<p>developed, in partnership with the sector, and the modernized <i>Water Act</i> requires compliance with these codes.</p> <p>AND</p> <p>C. The use of incentives and economic instruments is enabled in a modernized <i>Water Act</i> to encourage water efficiency. For example:</p> <ul style="list-style-type: none"> • Penalties and bonuses; • Water rentals and pricing structures; <i>and</i> • Rebates for water reclamation and non-potable water use. <p>OR</p> <p>D. Review rules for the transfer and apportionments of existing water rights.</p> <p>Questions: Which options do you prefer, and why?</p> <p>Are there others?</p>	Legislative / Policy	<ul style="list-style-type: none"> • It is unclear as to how <i>efficiency</i> would be determined in the absence of metering or accurate monitoring of water use. Water use measuring and reporting should be undertaken by all users to ensure that systems are not oversubscribed, which could result in negative impacts to fish and fish habitat. • Currently, non-compliance with licenses and the <i>Water Act</i> has created challenges. To improve effectiveness at addressing fish and habitat, measures need to be in place to improve compliance. Mandatory metering and reporting may help promote voluntary compliance. • The new Act should allow for the use of both incentives and a review of rules regarding transfer and apportionments. The rules for transfer of an apportionment should be reviewed to take into account priority of use. Environmental flows should be established as a priority use. The rules for apportionment should also support all <i>Water Act</i> modernization principles. • The emphasis on efficient use of water by the user and the associated expectation that a licensee will ensure efficiency and be subject to compliance requirements or even economic

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			<p>incentives/penalties (e.g., water rental rates and pricing structure) has potential implications to SEP hatchery operations and restoration projects.</p> <ul style="list-style-type: none"> • Ground and surface waters are a vital element in many of the SEP operations, and Real Property and Technical Support (RPTS) hold DFO's water licences. As such, changes or reviews of water licences may have implications for both RPTS and SEP operations/resources. • One identified option is that government determines actual needs in relation to a proposed undertaking based on efficient practices and works. "Actual needs" should consider fish and fish habitat requirements. • A <i>priority of use approach</i> for water management with stream health and aquatic ecosystem protection being a high use priority will help to meet modernization Goal #1. • Any additional flows generated through efficiencies gained in systems where stream health is not currently being met, should be recovered as environmental flows.
9	<p><u>Background:</u></p> <p>Options to encourage administrative efficiency:</p> <p>E. Permitted uses would be defined and allowed under the Act in accordance with regulations applied in a <u>consistent</u> manner throughout the province.</p> <p>OR</p> <p>F. Permitted uses would be defined and allowed under the Act in accordance with regulations.</p>		

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	<p>Regulations might apply <u>differently</u> throughout the province based on risk or, if considered acceptable, defined and applied through a water allocation plan.</p> <p>AND</p> <p>G. <u>Voluntary</u> self-registration of the permitted use withdrawal.</p> <p>OR</p> <p>H. <u>Required</u> self-registration of the permitted use withdrawal.</p> <p><u>Questions:</u> Which options do you prefer, and why?</p> <p>Are there others?</p> <p>What considerations would help determine which water uses and extraction rates could qualify as a permitted use (no water licence required)?</p> <p>What controls are needed?</p> <p>How should permitted use status be</p>	<p>Legislation / Policy</p>	<ul style="list-style-type: none"> Any administrative processes that increase information for decision-making (ie: metering, monitoring, hydrometric data collection) would be extremely beneficial. <i>Permitted uses</i> in low <i>priority areas</i> is supported if the following conditions are in place: <ul style="list-style-type: none"> Province-wide risk-based regulations or standards, registration, monitoring and/or evaluation of all withdrawals or diversions, including <i>permitted uses</i>, to ensure that demand can be assessed and to prevent cumulative impacts from compromising stream health. No <i>permitted uses</i> in <i>priority</i> water systems (specifically in oversubscribed systems where there have been historic conflicts among users or fish/flow conflicts or in systems with SARA listed species where water flow has been identified as a threat to survival or recovery); and Permitted uses would be conditional and the conditions specified. Surface and groundwater should be regulated as one resource in areas where sufficient hydraulic connections likely exist between them to significantly influence recharge and/or flow rates.

#	Background and Questions	Question Type (Policy, Legislation, Implementation)	DFO Response
	protected?		
10	<p><u>Background:</u> Options to encourage administrative and water use efficiencies: To improve decision making times and enforcement, existing water licence holders and applicants may potentially be responsible for:</p> <p>I. Providing more detailed information about the proposed use and efficiency measures for licence applications or changes;</p> <p>J. Documenting potential environmental impacts and effects on other users in licence applications or changes;</p> <p>K. Seeking consent from, or undertaking consultation with, affected parties for licence applications or changes;</p> <p>L. Measuring and reporting actual water use when demonstrating compliance with licence conditions;</p> <p>M. Reporting well levels for regulated</p>		

#	Background and Questions	Question Type (Policy, Legislation, Implementation)	DFO Response
	<p>groundwater users;</p> <p>N. Self-registering wells, especially where groundwater is in direct hydraulic connection with surface water or in areas of known quantity concern; or</p> <p>O. ANY combination of the above.</p> <p><u>Questions:</u> Which options do you prefer, and why? Are there others?</p>	Policy / Implementation	
<p><i>Objective 2: Flexibility is provided to water users and decision makers to quickly adapt to changing environmental, economic and social conditions.</i></p>			
11	<p>Option to provide water users and decision makers the flexibility to adapt:</p> <p>A. Provide decision makers and licence holders with the ability to seek amendments of water licences' terms and conditions based on:</p> <ul style="list-style-type: none"> • New information about 		

#	Background and Questions	Question Type (Policy, Legislation, Implementation)	DFO Response
	<p>watershed issues, priorities or changes in supply (watershed, aquifer based) including addressing over-allocation and climate change impacts;</p> <ul style="list-style-type: none"> • The ability to use water differently e.g. bring more land into productivity, change land appurtenance or use, or to use water for a higher economic purpose; • Incentives to consolidate licences within a community/watershed to inspire collaborative or shared management of the resource; • Adverse impacts on aquifers or groundwater recharge zones; or • Monitoring information that shows stream health is deteriorating because of lack of water. <p><u>Question:</u> No question posed as only one option.</p>		
<p><i>Objective 3: The water allocation system integrates the management of groundwater and surface water resources where required in problem areas.</i></p>			

#	Background and Questions	Question Type (Policy, Legislation, Implementation)	DFO Response
12	<p><u>Background:</u></p> <p>Options for the water allocation system:</p> <p>A. First-in-time first-in-right – FITFIR</p> <ul style="list-style-type: none"> New surface water and groundwater, where it is regulated, are allocated based on a modified FITFIR approach. <p>B. Priority of use</p> <ul style="list-style-type: none"> New surface water in streams and groundwater, where it is regulated, is allocated based on priority of use determined either in the <i>Water Act</i> or with community involvement in the water allocation plan process. <p><u>Questions:</u> Which option do you prefer, and why?</p> <p>Are there others?</p>	Legislation / Policy	<ul style="list-style-type: none"> It is unclear where hatchery production would “rank” in terms of priority of use if the Province moves away from the FITFIR allocation model.
<p><i>Objective 4: Water users will be required to conserve water during drought or when stream health is threatened.</i></p>			

#	Background and Questions	Question Type (Policy, Legislation, Implementation)	DFO Response
13	<p><u>Background:</u> Options to address temporary water scarcity:</p> <p>A. Discretionary</p> <ul style="list-style-type: none"> The decision-maker determines the approach on a case-by-case basis, balancing the effects on water users with the required environmental outcome (similar to section 9 of the <i>Fish Protection Act</i>). <p>B. Sharing</p> <ul style="list-style-type: none"> All water users would reduce use on a proportional basis depending on the water supply forecast, for example, if the supply forecast shows less water than normal, then allocations would be reduced on a <i>pro rata</i> basis. This approach could be influenced by water use efficiency, creating an incentive to employ efficient practices. <p>C. Hierarchy of uses</p> <ul style="list-style-type: none"> A hierarchy of uses guides how water use is reduced, for 		

#	Background and Questions	Question Type (Policy, Legislation, Implementation)	DFO Response
	<p>example, human and stock watering needs would be satisfied before landscape irrigation.</p> <p>D. Priority date</p> <ul style="list-style-type: none"> This approach follows FITFIR, as contemplated by the current requirements of sections 15 and 88 of the <i>Water Act</i> but could be expanded to include the protection of ecosystem values. <p><u>Questions:</u> Which options do you prefer, and why?</p> <p>Are there others?</p>	Legislation / Policy	<ul style="list-style-type: none"> Water conservation needs to be encouraged at all times, and elevated in importance during drought or where stream health/user conflicts have been identified. Mandatory water management planning could be triggered by provincial analysis of risk (including establishment of formal thresholds for determining risks to stream health and ecology), local need, or a combination of the two.
14	<p><u>Background:</u> Options to address long-term water scarcity:</p> <p>E. Through a mandatory Water Management Planning process</p> <ul style="list-style-type: none"> In some cases the province may require a planning initiative to address long term water scarcity, such as a Water Management Plan provided for in Part 4 of the <i>Water Act</i>. 		

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	<p>F. At the request of water users or communities</p> <ul style="list-style-type: none"> Water licensees and other interested parties may develop a plan that addresses long term scarcity on a watershed basis and provides recommendations for supply and demand side changes to be made. Approved processes that include the wider community would need to be developed and followed. <p><u>Questions:</u> Which option do you prefer, and why?</p> <p>Are there others?</p>	Legislation / Policy	<ul style="list-style-type: none"> Long-term water scarcity needs to be addressed through a combination of regulatory tools, including water metering and drought management plans. Areas requiring drought management plans should be priorities for development of mandatory Water Allocation or Management Plans.
<p><i>Goal 4: Regulate Groundwater Extraction and Use</i></p>			
15	<p><u>Background:</u> Objective for regulating groundwater extraction and use.</p> <p>In addition to the objectives outlined in Goal Three the following groundwater specific objective is proposed for a</p>		

#	Background and Questions	Question Type (Policy, Legislation, Implementation)	DFO Response
	<p>modernized <i>Water Act</i>.</p> <p>1. Groundwater extraction and use is regulated in priority (critical) areas and for all large withdrawals.</p> <p><u>Question:</u> Indicate your level of support for the objective proposed.</p>	<p>Legislation</p>	<ul style="list-style-type: none"> • Many of BC's most productive sand and gravel aquifers are small and shallow. These aquifers are often adjacent to, and are in direct connection with fish bearing rivers and streams. These aquifers are also important contributors to fish and aquatic species habitats as they provide a stable flow of cool and clean water. This flow augmentation is particularly important when stream flows are low and at certain times in fish life histories (e.g., spawning and summer rearing). • Groundwater extraction and use in BC is not regulated and government's ability to control its use is limited. As a result, all orders of government and citizens are challenged to find methods that can manage conflicts among water users and deal with reductions in groundwater quantity or quality concerns. • Improvements to the regulation of groundwater extraction and regulations respecting wells and well location particularly in areas where there is a hydraulic connection between aquifers and surface waters could be beneficial to fish and fish habitat. • Considerable additional information is required for effective regulation of groundwater in BC. Essential information requirements include: aquifer mapping, the location of groundwater recharge areas relative to critical aquatic habitats, and hydro-geological information regarding implications of withdrawals for maintaining surface stream flows and temperatures at all times of the year. • Governments may need to enhance the Water Survey of Canada hydrometric monitoring network as water use and allocation planning is dependent upon good hydrometric data. Currently, available data is limited and generally not available in <i>real time</i>. • DFO facilities would require a transition time to transfer an existing use to a 'water right' if any retroactive regulation of existing groundwater resources (i.e., groundwater wells) is required; this would allow DFO time to put monitoring, reporting, protection, etc. programs into place and secure additional operational and maintenance funding.

#	Background and Questions	Question Type (Policy, Legislation, Implementation)	DFO Response
<i>Objective 1: Groundwater extraction and use is regulated in priority (critical) areas and for all large withdrawals.</i>			
16	<p><u>Background:</u> Options for determining the thresholds for large groundwater withdrawals:</p> <p>A. The threshold for large could be:</p> <ul style="list-style-type: none"> • 500 m3/day for wells drilled in unconsolidated, sand and gravel aquifers or if otherwise determined to be large by a Water Management Plan. • 100 m3/day for wells drilled into consolidated bedrock aquifers or if otherwise determined to be large by a Water Management Plan. <p>OR</p> <p>B. The threshold for large could be:</p> <ul style="list-style-type: none"> • 250 m3/day for wells drilled in unconsolidated, sand and gravel aquifers or if otherwise determined to be large by a Water Management Plan. 		

#	Background and Questions	Question Type (Policy, Legislation, Implementation)	DFO Response
	<ul style="list-style-type: none"> 100 m3/day for wells drilled into consolidated bedrock aquifers or if otherwise determined by a Water Management Plan. <p><u>Question:</u></p> <p>Which thresholds do you prefer, and why?</p> <p>Are there others?</p>	Legislation	<ul style="list-style-type: none"> Where aquifers have hydraulic connectivity to fish bearing streams, surface and groundwater should be regulated as one resource and all withdrawal thresholds should be based on ensuring the maintenance of water flows for fish and fish habitat.
17	<p><u>Background:</u> Options for determining priority areas to regulate groundwater extraction and use:</p> <p>All groundwater users will be regulated in priority areas except for small scale extraction and use of groundwater for domestic purposes (for example 2-3m3/day).</p> <p>A. Heavy groundwater extraction and use (rely on BC Aquifer Classification System);</p> <p>B. Area of known quantity concern e.g., declining groundwater level, conflicts with other groundwater users,</p>		

#	Background and Questions	Question Type (Policy, Legislation, Implementation)	DFO Response
	<p>aquifers or water resources impacted by salt water intrusion;</p> <p>C. Groundwater in direct hydraulic connection with surface water in areas of known quantity concern;</p> <p>D. Significant population that is reliant on groundwater for drinking water;</p> <p>E. Trans-boundary aquifers;</p> <p>F. Basins where surface water is at or near the allocation limit; or</p> <p>G. ANY combination of the above.</p> <p><u>Questions:</u> Which options do you prefer, and why?</p> <p>Are there others?</p>	<p>Legislation / Implementation</p>	<ul style="list-style-type: none"> • Priority areas for groundwater regulation should include aquifers in flow sensitive streams and should be reviewed and redefined based on identified criteria. • Groundwater's stable temperatures, nutrients, and year-round flow make it essential fish habitat. • Any water withdrawals from unconsolidated hydraulically connected aquifers can affect stream flows and associated fish habitat. • The potential for instream impacts from groundwater withdrawals is dependent on geology, well location, well capacity, and cumulative withdrawal. • While it is possible that the <i>Fisheries Act</i> could be used to protect groundwater essential to fish habitat it would be very difficult to prove that specific groundwater extractions or groundwater pollution caused damage to fish habitat. •