



POLIS Project on Ecological Governance

**watersustainabilityproject**



University  
of Victoria

GORDON AND BETTY  
**MOORE**  
FOUNDATION

## **WWF- Canada and the University of Victoria's POLIS Project on Ecological Governance present a forum on Environmental Flow Needs in British Columbia**

**February 1-2, 2016**

**Morris J. Wosk Centre for Dialogue, 580 West Hastings, Room 320**

### **Forum Purpose**

The broad purpose of the forum is to explore what is needed to implement an effective, world-class regime for the management of environmental flows in British Columbia. This forum brings together representatives from many different sectors that share a common interest in the management of water and aquatic ecosystems. The management of Environmental Flow Needs (EFN) is one aspect of the new, *Water Sustainability Act* (Bill 18 – 2014), which is currently being implemented through a variety of policies and regulations.

### **Forum Objectives**

1. Ensure all participants have an appreciation of global efforts to improve the management of water and aquatic resources, and the attributes of world-class governance arrangements for the management of environmental flows.
2. Identify and examine the challenges and opportunities for the management of environmental flows in British Columbia, from various perspectives, including the introduction of the *Water Sustainability Act*.
3. Identify key elements of an effective, world-class regime for the management of environmental flows in British Columbia.
4. Determine recommended actions that could be taken—together or individually—by Government, First Nations, stakeholders, non-governmental organizations, communities or others to establish such a management regime.

### **Scope of Discussion**

This forum draws on work already completed by governments, First Nations, academics, stakeholders and non-government organizations to understand effective governance of water and aquatic ecosystems. The intent of this forum is to pool existing knowledge and information, introduce new perspectives and ideas as needed, and work towards a shared understanding of needs and priorities for improved management of environmental flows in B.C. The outcomes of this event are expected to inform additional study, further dialogue, engagement with decision makers, and efforts by various parties to improve the management regime over time.

This forum is not intended as:

- A comprehensive review of all sections of the *Water Sustainability Act*;
- The examination of any specific authorizations for water use in B.C.;
- An exploration of the technical methodologies for the assessment of environmental flows; or,
- A venue for formal consultation with First Nations.

*This forum is funded by the Gordon and Betty Moore Foundation*

## Speaker Summary

### **Forum Co-Chairs**

#### **Elizabeth Hendriks**

##### **Vice President, Freshwater, WWF-Canada**



Elizabeth Hendriks is a policy expert with over ten years of experience working nationally and internationally. It was her work in Ecuador that inspired her to work within Canada to advocate for the sustainable management of Canada's communities and resources.

Following her undergraduate work at Dalhousie University her graduate work at the University of Waterloo led to several publications including in the book, "Making the Most of the Water We Have: The Soft Path Approach to Water Management" and the industry magazine Water Canada. As a consultant, she led the creation of the first national database for water policy ([www.waterpolicy.ca](http://www.waterpolicy.ca)) and was invited by the US State Department to explore in depth, water issues in the United States. Prior to working at WWF – Canada, Elizabeth worked at the

POLIS Water Sustainability Project as the Water Policy and Governance Coordinator and as a Waterlution Associate hosting multi-disciplinary workshops on water issues across the country.

#### **Oliver M. Brandes, BA(H), Dip.RNS, M.Econ., JD**

##### **Co-Director & WSP Lead, POLIS Project on Ecological Governance; Senior Research Associate, Centre for Global Studies, University of Victoria**



Oliver M. Brandes is an economist and lawyer by training and a trans-disciplinarian by design. He serves as co-director of the POLIS Project on Ecological Governance at the University of Victoria's Centre for Global Studies and leads the POLIS Water Sustainability Project, where his work focuses on water sustainability, sound resource management, public policy development, and ecologically based legal and institutional reform. Oliver is an adjunct professor at the University of Victoria Faculty of Law and School of Public Administration. He is a founding member of the Forum for

Leadership on Water (FLOW), which he currently co-chairs, and B.C.'s Convening for Action on Vancouver Island (CAVI) Leadership Team. He has affiliations at the University of Waterloo, Brock University, and the University of Manitoba. In 2012, he co-developed and delivered B.C.'s first Water Law course at the University of Victoria Faculty of Law. In 2009, he helped lead the writing of the book *Making the Most of the Water We Have: The Soft Path Approach to Water Management*, which brought together the results of the first-ever international water soft path study in a comprehensive edited book.

## Keynote Speaker

### **Brian Richter**

#### **Chief Scientist for the Global Water Program, The Nature Conservancy**



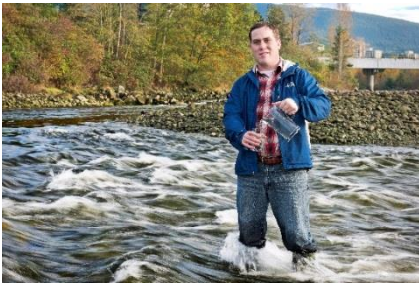
Brian Richter has been a global leader in water science and conservation for more than 25 years. He is the Chief Scientist for the Global Water Program of The Nature Conservancy, an international conservation organization, where he promotes sustainable water use and management with governments, corporations, and local communities. He is also the President of Sustainable Waters, a global water education organization. Brian has consulted on more than 120 water projects worldwide. He serves as a water advisor to some of the world's largest corporations, investment banks, and the United Nations, and has testified before the U.S. Congress on multiple occasions. He also teaches a course on Water Sustainability at the University of Virginia.

Brian has developed numerous scientific tools and methods to support river protection and restoration efforts, including the *Indicators of Hydrologic Alteration* software that is being used by water managers and scientists worldwide. Brian was featured in a BBC documentary with David Attenborough on "How Many People Can Live on Planet Earth?" He has published many scientific papers on the importance of ecologically sustainable water management in international science journals, and co-authored a book with Sandra Postel entitled *Rivers for Life: Managing Water for People and Nature* (Island Press, 2003). His new book, *Chasing Water: A Guide for Moving from Scarcity to Sustainability*, was published by Island Press in June 2014.

## Presenters

### **James Casey**

#### **Specialist, Freshwater Conservation, WWF-Canada**



Personally convinced that the largest challenge for future generations will be developing a way to prosper on a finite planet, James has joined the growing ranks of people seeking solutions to our emerging water crisis. He is particularly interested in the importance of freshwater resources for the health of our rivers. James has completed a Master's degree in International Studies at the University of Northern British Columbia with a focus on the management of international transboundary rivers around the world. Closer to home, James has worked in WWF's Prince Rupert and Vancouver offices, encouraging community engagement in marine planning processes.

### **Deborah Curran**

#### **Hakai Professor in Environmental Law and Sustainability, University of Victoria**



Deborah Curran is the Hakai Professor in Environmental Law and Sustainability at the University of Victoria's Faculty of Law. She teaches courses relating to land and water law (municipal, real estate, the environmental law clinic and water law), and facilitates a unique field course in the Central Coast of BC at the Hakai Beach Institute on Calvert Island. As a Program Director with the Environmental Law Centre at UVic, Deborah works with students on environmental law projects for community organizations and First Nations across the province. For the past five years she has provided input into the development of the *Water Sustainability Act*, and has written and presented widely on its potential.

## **Todd Hatfield, Ph.D., R.P.Bio.**

### **Biological Consultant, Ecofish Research**



Todd Hatfield is a biological consultant, focussing on development and application of rigorous scientific methods and decision-making techniques to the resolution of natural resource management issues and environmental conflicts. He provides detailed ecological analysis and leads groups through complex natural resource management decisions. Todd has facilitated technical committees as part of multi-stakeholder structured decision making processes for water allocation in the Lower Athabasca, Campbell, Peace, Capilano and Seymour rivers; he has coordinated National Recovery Teams for species at risk; and he facilitated technical committees for BC Fish and Wildlife Compensation Program during development of strategic plans and action plans for Coastal, Columbia and Peace regions.

He has worked on numerous projects related to water management, fisheries conservation, and impact assessment, and he has developed management plans and guidelines for industry and government related to many different development types. Todd has been a member of the Freshwater Fishes Sub-committee of COSEWIC since January 2010.

## **Matt Kennedy, M.Sc., R.P.Bio**

### **Vice President, Environment, Innergex Renewable Energy Inc.**



Matt Kennedy joined Innergex in 2011. He is responsible for managing all environmental issues pertaining to Innergex's activities in British Columbia and Western North America, such as permitting for new projects, overseeing projects under construction, and monitoring of facilities in operation, and establishing and maintaining relationships with various stakeholders.

Prior to joining Innergex, Mr. Kennedy worked as Development Manager and Environmental Manager at Canadian Hydro Developers, Inc. from 2005 to 2010. Before entering the renewable energy sector, Mr. Kennedy was a consulting aquatic biologist for 10 years working throughout Canada and internationally.

## **Deana Machin**

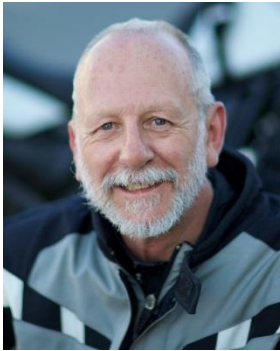
### **Strategic Development Manager, First Nations Fisheries Council**

Deana Machin is the Strategic Development Manager at the First Nations Fisheries Council of British Columbia. She received a Bachelor of Science in Biology and a Master of Business Administration from the University of British Columbia. Deana has been active in the field of First Nations fisheries management and policy for 15 years, and her experience includes serving as the Fisheries Manager for the Okanagan Nation Alliance and as an Associate Manager for the Fraser Basin Council. She is a member of the Okanagan Nation and grew up spending summers on Okanagan Lake in Vernon, BC which has evolved into strong values about the role of First Nations in resource management, watershed protection and promoting collaborative management approaches to fisheries management.



## **James S. Mattison, MRM, P.Eng.**

### **Independent Water Resource Consultant**



Jim Mattison is an independent consultant offering services to industry, government and the non-profit sector in the policy and practice of management and regulation of the use and development of natural resources.

He is a professional engineer and senior natural resources expert with 33 years of experience, including 25 years within the British Columbia Ministry of Environment. He has expertise in the resolution of resource management disputes, land and water policy, environmental assessment, water and energy projects, climate change adaptation, and an understanding of global, regional and basin scale water resource use issues.

Mr. Mattison spent 10 years as Comptroller of Water Rights and four years as Assistant Deputy Minister in the Ministry of Environment. He also served on the Mackenzie Basin Water Board and the Columbia River Treaty Permanent Engineering Board. He is currently a member of the Board of Directors of the BC Water and Waste Association (Past-President) and is a member of the BC Environmental Appeal Board.

## **Denise Mullen**

### **Director, Environment and Sustainability, Business Council of British Columbia**



Denise has 29 years' experience in the natural resource management sector. She has worked extensively with all levels of government, other stakeholders and First Nations in the development of policy, legislation, and the review and permitting of major projects. She is an accomplished policy analyst, researcher, writer, project manager and administrator. Denise understands that relationships are key to success and is committed to continuous learning.

In her current position with the Business Council she leads the development of policy positions across a range of natural systems that intersect with business development, facilitates conversations among members about issues that matter to them, keeps abreast of emerging topics and concerns (provincial, national and international), builds and maintains relationships with all levels of government, Council members and NGOs, prepares issue papers and conducts research, as well as supports the work of other Council Committees including energy and aboriginal.

## **Jen Turner**

### **Senior Policy Advisor, Water Protection and Sustainability Branch, Ministry of Environment**



Jen Turner is a senior policy advisor with the Water Protection and Sustainability Branch, in the Ministry of Environment in Victoria. Since starting with the Branch in 2011, Jen has worked on a number of program areas including drought and climate change, and related to the *Water Sustainability Act*, environmental flows, groundwater management and hydraulic connectivity, stakeholder engagement, and communications and staff training. Prior to this, Jen worked on climate change adaptation and strategic policy in other areas of the Ministry. Jen has a Master's of Science from the University of Guelph. Prior to moving to BC, she lived in the Yukon, working on climate change mitigation and adaptation, sustainable transportation and waste management with the City of Whitehorse, Yukon College and the Federal Government.

## **Ted Van der Gulik**

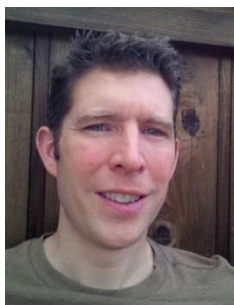
### **President, Partnership for Water Sustainability in BC**



Prior to his retirement in 2014, Ted worked for the Ministry of Agriculture for 35 years specializing in irrigation, water management and water resources planning. During his career Ted built an international reputation for his leading edge work in agricultural water management. This was demonstrated as a recipient of the International Irrigation Association's 2000 Crawford Reid Memorial Award. Ted was awarded the Premiers Legacy award in 2014 for the many initiatives and models that he spearheaded while with the province. He currently is president of the Partnership for Water Sustainability in BC, a not for profit society established to help implement a Water Sustainability plan for the province.

## **Ted White**

### **Manager of Water Strategies and Conservation, Water Protection and Sustainability Branch, Ministry of Environment**



Ted White is the Manager of Water Strategies and Conservation for the Water Protection and Sustainability Branch in the Ministry of Environment. Ted has been working with the Ministry on different Water files, including water use planning, forestry and water quality, and water policy since 1994. Ted was part of the team that developed Living Water Smart: BC's Water Plan and has been part of the *Water Sustainability Act* Project since its inception.

## **Howie Wright**

### **Program Manager, Okanagan Nation Alliance Fisheries Department**

Howie Wright is the Program Manager with the Okanagan Nation Alliance Fisheries Department. He is from the Gitksan Nation near Hazelton, B.C. He has been working with the ONA since 2002 and oversees a staff of 40 and provides oversight on the scientific and policy/program direction on the ONA fisheries program. He has a Masters of Science in Resource Management and Environmental Studies program with the Institute for Resources and Environmental Studies at the University of British Columbia and is a member of the Canadian Okanagan Basin Technical Working Group.



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## Forum on Environmental Flow Needs Agenda

Morris J. Wosk Centre for Dialogue, 580 West Hastings, Room 320

**Monday, February 1<sup>st</sup>, 2016**

8:30 *Light refreshments available*

9:00 **Opening**

- Opening prayer / First Nations welcome Debra Sparrow, Musqueam Indian Band
- Welcome and introductory comments (Forum Co-Chairs: Oliver Brandes, POLIS; Elizabeth Hendriks, WWF-Canada)
- Participant introductions (All)
- Review and confirmation of workshop objectives and agenda (Julian Griggs, Facilitator)
- Housekeeping, as needed

9:20 **Toward Improved Governance of Water and Aquatic Ecosystems**

Introduction

9:20 Presentation: *From Science to Implementation: World-Class Approaches for Protecting Environmental Flow*, Brian Richter, The Nature Conservancy

9:40 Presentation: *Attributes of 'World-Class Governance'*, Deb Curran, University of Victoria

10:00 Commentary: Deana Machin, First Nations Fisheries Council

10:05 Questions, discussion (All)

10:30 Refreshment Break

10:50 **Understanding Context: Environmental Flow Needs in British Columbia**

Introduction

10:55 Presentation of Forum Discussion Paper: Jim Mattison, Independent Water Resource Consultant

11:15 Panel:

Provincial Government: Ted White, Ministry of Environment

First Nations: Howie Wright, Okanagan Nation Alliance

Questions, discussion (All)

11:50 Commentary: Oliver Brandes, POLIS; Elizabeth Hendriks, WWF-Canada

12:00 Lunch Break

1:00 **Understanding Trade-Offs**

Presentation: *Value trade-offs and decision processes associated with the application of the EFN policy*, Todd Hatfield, Ecofish Research

Questions, discussion

1:30 **Sectoral Perspectives: Challenges and Opportunities**

Interactive Panel:

- NGO: James Casey, WWF-Canada
- Energy Industry: Matt Kennedy, Innergex Renewable Energy Inc.
- Business: Denise Mullen, Business Council of British Columbia

- Agricultural Industry: Ted Van der Gulik, Partnership for Water Sustainability in BC  
Questions, discussion (All)

2:20 **Introduction to Working Groups**

Logistics for working groups, and presentation of suggested themes for discussion (Facilitator)

2:30 Refreshment Break

2:50 **Concurrent Working Groups: Identifying Potential Elements of an Effective Management Regime**

- All Groups: New Authorizations (Section 15)\* *Sections refer to the Water Sustainability Act*
- Discussion questions may include:
  1. What are the key elements needed for an effective, world class management approach?
  2. What can be done to enable the relevant decision maker(s) to make well-informed decisions?
  3. What are the priority data and information gaps that must be addressed to ensure effective management?
  4. How might other interests (e.g., First Nations, stakeholders, and the public) support or participate in effective decision making?"

4:15 **Reports from Working Groups**

- Presentation of summaries from small group discussions
- Questions for clarification

4:40 **Reflections on Day 1**

Commentary on outcomes from rapporteur:

- Brian Richter
- Deb Curran

Questions, discussion (All)

4:55 **Wrap Up**

- Closing comments from conveners: Oliver Brandes and Elizabeth Hendriks
- Housekeeping, as needed

5:00 Adjourn

6:30 *Optional Group Dinner, Steamworks Gastown, 375 Water Street, Vancouver, BC*

**Tuesday, February 2<sup>nd</sup>, 2016**

8:00 *Light refreshments available*

8:30 **Opening for Day 2**

- Introductory comments (Oliver Brandes, POLIS; Elizabeth Hendriks, WWF)
- Review of agenda for today (Julian Griggs, Facilitator)
- Housekeeping, as needed

8:40 **Review of Progress**

Summary of Day 1 (Julian Griggs, Facilitator)

Commentary

Questions, discussion

9:00 **Concurrent Working Groups (II): Identifying Potential Elements of an Effective Management Regime**



Working group discussion topics may include

- Water Objectives (Section 43)
- Water Sustainability Plans (Sections 64-85)
- Sensitive Streams / Area Based Regulations (Sections 124 & 128)
- Mitigation Measures (Section 16 & 17)
- Temporary Orders (Sections 86-88)
- Discussion questions TBD

10:00 **Reports from Working Groups**

10:20 Refreshment Break

10:40 **Key Elements of an Effective Management Regime & Strategies for Implementation**

- Review and refinement of key elements identified by working groups
- Potential priority actions to establish an effective, world-class regime for the management of environmental flows in BC

11:30 **Summary & Next Steps: Where to From Here**

- Summary of key outcomes from this forum (Facilitator, Forum Co-Chairs)
- Confirmation of action items / next steps, including timelines and responsibilities for follow up

11:50 **Wrap Up**

- Closing comments
- Forum evaluation

12:00 Adjourn

All discussions during the forum will be managed under a modified 'Chatham House Rule,' whereby no comments will be attributed after the event to any individual or organization.

## Appendix A - Environmental flows in the Water Sustainability Act

### Primary Mechanisms

**Section 15:** Decision-makers “Must Consider” environmental flows. Section 15 of the WSA requires decision-makers to consider the environmental flow needs of streams for new authorizations (including licences and short term use approvals) for surface water and non-domestic groundwater use that is hydraulically connected.

**Section 16 & 17:** Mitigation measures. Decision-makers may require licence holders to undertake mitigation measures if a proposed diversion or water use, or changes in and about a stream, is on a sensitive stream, or if it will likely have significant adverse impacts on water quality, quantity or aquatic ecosystems.

**Sections 86-88:** Temporary orders. The Minister or Cabinet may make a declaration of a significant water shortage; when this declaration is made, the Comptroller may make a critical environmental flow order that takes precedence, once essential household needs are accounted for, over other water rights, regardless of seniority. The Minister may also issue a fish population protection order to allow for the restriction of water use regardless of precedence when low flows threaten the survival of a population of fish.

### Additional Mechanisms

**Section 43:** Water objectives. The WSA creates new authority to set water objectives in regulation for the purposes of sustaining water quality, quantity, and aquatic ecosystems. Water objectives set out criteria for water quality and quantity that land and resource use decision-makers must consider when making their individual decisions. Local governments can also be required to consider water objectives in their planning processes.

**Section 124:** Area-based regulations. Cabinet or the Minister may make area-based regulations, which are location-specific regulations that designate specific areas and create unique thresholds and requirements for those places.

**Section 128:** Sensitive streams. This section enables government to develop a regulation that brings in the existing 15 designated sensitive streams, as well as the ability to designate additional streams and hydraulically connected aquifers. Any new authorizations on designated streams or hydraulically connected aquifers may have terms and conditions related to mitigation measures, use of water, and monitoring and reporting.

### Related Planning & Administrative Processes:

**Sections 64-85:** Water sustainability plans. The Minister is able to request or designate an area for the purpose of developing a water sustainability plan in order to prevent or address conflicts between water users or between the needs of water users and environmental flow needs, or to address risks to water quality or aquatic ecosystem health. Cabinet can enact several different regulations to make these plans binding; for example, water sustainability plan regulations can reduce the amount of water that licensees may divert.

**Section 127:** Cabinet may make regulations that prescribe methods for determining the environmental flow needs of streams.

**Section 1:** Beneficial Use. The WSA defines “beneficial use” as including using water as efficiently as practicable and in accordance with applicable regulations, and for the authorized water use purposes and times.

**Sections 23 & 121:** Adaptation and no compensation. There is a 30-year review process allowing Ministry staff to give notice and review and subsequently change licence terms and conditions. This works with section 121, which dictates that no compensation is payable to any losses or damages resulting from license changes under the Act. If water sustainability plans propose significant changes to licences, then the plans are required to set out a plan for compensation.

<sup>1</sup>Adapted from: Brandes, O.M., Wilson, S., Curran, D. & R. Simms. 2015. *Awash with Opportunity: Ensuring the Sustainability of British Columbia's New Water Law*. Victoria, B.C.: POLIS Project on Ecological Governance, online: [poliswaterproject.org/awashwithopportunity](http://poliswaterproject.org/awashwithopportunity)

## Appendix B: Glossary of Terms

**Governance:** The processes of decision-making and provisions for holding decision-makers accountable. Governance concerns who has the power to make decisions and their jurisdiction, and fundamentally is the *who, how and what* of decision-making.

**Policy:** Typically refers to a course of action that an actor (such as a government) adopts and follows to deal with an issue or matter of concern. A policy provides guidelines for government decision-making. Thresholds and standards set in a policy are not enforceable as they are not law. Thus, typically a policy is not legally binding.

**Regulation:** Regulations are secondary or “subordinate” pieces of legislation that set out additional detail to specify how a law will be interpreted and applied. Regulations are enforceable laws and set out legally enforceable standards. Decision-makers are required to adhere to a regulation; if they do not, affected parties may be able to legally challenge their decisions as contravening regulation.

**Environmental flow (International Definition, Brisbane Declaration):**

Environmental flows describe the quantity, timing, and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend on these ecosystems.

**Environmental flow needs (as defined in the Water Sustainability Act, WSA):**

In relation to a stream, means the volume and timing of water flow required for the proper functioning of the aquatic ecosystem of the stream.

**Critical environmental flow threshold (as defined in WSA):** In relation to the flow of water in a stream, means the volume of water flow below which significant or irreversible harm to the aquatic ecosystem of the stream is likely to occur.

**Stream (as defined in WSA):**

Includes a natural watercourse or source of water supply, whether usually containing water or not, and a lake, river, creek, spring, ravine, swamp and gulch.

**Instream Flow Need (as defined by Instream Flow Council, 2004):**

The amount of water flowing through a natural stream course that is needed to sustain, rehabilitate, or restore the ecological functions of a stream in terms of hydrology, geomorphology, biology, water quality, and connectivity at a particular level.

**British Columbia Instream Flow Methodology (BCIFM):** A Standardized approach to the collection of instream flow information in relation to fish and fish habitat as explained in appendix A of the [Assessment Methods for Aquatic Habitat and Instream Flow Characteristics in Support of Applications to Dam, Divert, or Extract Water from Streams in British Columbia](#).

**Instream Flow Reference Points:** Seasonally adjusted thresholds for alterations to natural stream flows that are expected to result in low risk to fish, fish habitat, and productive capacity. These thresholds are meant to act as a “coarse filter” during the review of proposed water uses; they are general reference flows to be used on B.C. streams when there is limited biologically or physically relevant data available. ([Development of instream flow thresholds as guidelines for reviewing proposed water uses](#))

**Presumptive Standard (adapted from Richter et al. 2012):**

A method to define environmental flows for a watercourse, based on risk thresholds, that can be used when site specific standards are absent. Risk thresholds are:

- 1) a high level of ecological protection is provided when flow alterations are within 10% of the natural flow
- 2) a moderate level of protection is provided when daily flow alterations are within 10-20%
- 3) moderate to major changes in riverine ecosystem are to be expected if alterations are > 20% of the natural flow, with an increasing risk for alterations with a higher deviation from the daily natural flows.

**Performance measure:** A metric for assessing the consequences of taking an action or set of actions.

**Fish stream:** As described in the [Fish-stream Identification Guidebook \(1998\)](#) means a stream that (regulations (Forest Practices Code) define fish streams (class S1 to S4)):

- a. is frequented by any of the following species:
  - i. anadromous salmonids;
  - ii. rainbow trout, cutthroat trout, brown trout, bull trout, Dolly Varden char, lake trout, brook trout, kokanee, largemouth bass, smallmouth bass, mountain whitefish, lake whitefish, arctic grayling, burbot, white sturgeon, black crappie, yellow perch, walleye or northern pike;
  - iii. identified threatened or endangered fish classified under section 71 (of the Operational Planning Regulation);
  - iv. regionally important fish classified under section 71, or
- b. has a slope gradient, determined in accordance with the Ministry of Forests' publication "Fish-stream Identification Guidebook," as amended from time to time, of less than 20%.
  - i. unless the stream has been identified in a fish inventory carried out in accordance with the Ministry of Forests' publication "Fish-stream Identification Guidebook," as amended from time to time, as not containing any of the species of fish specified in paragraph (a), or
  - ii. unless
    - A. the stream is located upstream of a known barrier to fish passage, identified on a fish and fish habitat inventory map,
    - B. all reaches upstream of the barrier are simultaneously dry at any time of the year, and
    - C. no perennial fish habitats exist upstream of the barrier.

**Non-fish streams:** As described in the [Fish-stream Identification Guidebook \(1998\)](#) (classes S5 and S6) are those streams or specific reaches of streams that:

1. are < 20% average gradient but are proven to contain no fish at any time of the year within the categories listed in the fish-stream definition
2. are ≥ 20% average gradient (with the exception of known fish presence detailed in the section "Gradients and stream fish distribution").

**Run of River:** A term to describe a type of hydroelectric generating facility that utilizes little or no water storage. The flow through the generating system is therefore subject to seasonal river flows and provides an intermittent energy source. A typical stream-based run-of-river facility consists of a weir or low-head dam that enables the diversion of water through a penstock, tunnel or canal to a lower elevation powerhouse with a turbine where electricity is generated. The diverted water is then discharged back into the stream channel either directly or through a short channel called a tailrace. ([Independent Review: Potential Impacts of Run-Of-River Hydroprojects on Salmonids](#))