

# Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: Standards and Procedures, Version 2.0 - RISC 2001

## Errata (April 2009)

This *Errata (April 2009)*, provides clarifications and additions to the existing [Reconnaissance \(1:20 000\) Fish and Fish Habitat Inventory: Standards and Procedures - Version 2.0, RISC 2001](#) and associated documents. It consists of new *Updates for April 2009* as well as *Updates for April 2007* [based on the former *Errata (April 2007)*]. Where applicable; the clarifications and additions in *Errata (April 2009)* also apply to and supersede standards in the following documents and their associated errata:

- [Aerial Photography and Videography Standards: Applications for Stream Inventory and Assessment, 1996](#)
- Bathymetric Standards for Lake Inventories – Version 3.0, RISC 2009
- Reconnaissance (1:20 000) Fish and Fish Habitat Inventory of Buba Creek Watershed ([Example Watershed Report](#))
- Reconnaissance (1:20 000) Fish and Fish Habitat Inventory of Buba Lake ([Example Lake Report](#))
- [Field Key to the Freshwater Fishes of British Columbia, 1994](#)
- Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: [Follow-up Sampling \(Stream\) Standards - Version 1.0](#) and [Errata, 2007](#)
- Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: [Fish Collection Form Field Guide - Version 2.0, RISC 2008](#)
- Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: [Lake Survey Form Field Guide - Version 2.0, RISC 2008](#)
- Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: [Site Card Field Guide – Version 2.0, RISC 2008](#)
- [Fish Collection Methods and Standards - Version 4.0, RISC 1997](#) and [Errata No.1, 1999](#); [Errata No.2, 2004](#)
- [Overview Fish and Fish Habitat Inventory- Version 1.0, RISC 1999](#)
- Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: [Reach Information Guide - Version 1.0, RISC 2000](#)
- [Standards for Fish and Fish Habitat Maps - Version 3.0, RISC 2000](#)
- Reconnaissance (1:20:000) Fish and Fish Habitat Inventory: [Quality Assurance Procedures - Version 1.0, RISC 2000](#) and [Errata No.1, 2004](#)

- Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: **Users Guide to the Fish and Fish Habitat Assessment Tool (FHAT20)**, 2000
- [User's Guide to the BC Watershed/Waterbody Identifier System - Version 3.0, RISC 2004](#)

## Updates for April 2009:

### Project Objective

The objective of the Reconnaissance (1:20,000) Fish and Fish Habitat Inventory is to describe watershed-wide fish distributions and habitat characteristics for all watersheds within the Project Area. The inventory is not intended to address site specific operational developments (i.e. stream crossing structures, 1:5,000 “Fish-stream Identification”). However it may be optionally used in conjunction with sampling procedures identified in [Fish-stream Identification Guidebook – Version 2.1 FPC 1998](#) to determine fish bearing status for reaches identified as part of the Reconnaissance (1:20,000) Fish and Fish Habitat Inventory project (See ‘*Fish Bearing Status*’).

### Sampling Survey Timing

The standard sampling period for Reconnaissance (1:20,000) Fish and Fish Habitat Inventory is during the summer periods of low flows (June-September). However, if gathering evidence to support a determination of fish absence, additional sampling may also need to occur at other times of the year in a season that is most appropriate for fish presence considering the type of habitat, species, and life stage. Sampling gear, and environmental conditions must also be considered; for example, electrofishing will be much less effective in cold water (i.e., <5°C) or where electrical conductivity is low (i.e., <30µs). For further standards on survey timing, see [Fish-stream Identification Guidebook – Version 2.1 FPC 1998](#) (page 56) and ‘*Additional Sampling Requirements Reporting*’ below. Departure from the standard summer sampling period for the initial Reconnaissance Inventory sampling must be approved by the appropriate Ministry of Environment Representative ( [FishStand@gov.bc.ca](mailto:FishStand@gov.bc.ca)).

### Fish Bearing Status

If the Reconnaissance (1:20,000) Fish and Fish Habitat Inventory is to include sampling to determine fish bearing status for project reaches, then the following additions and clarifications to the standards apply to the following specified Phases of the project:

#### **Phase 3: Project Plan**

- Specify in the ‘Project Plan’ the intent to determine fish bearing status for project reaches.

#### **Phase 4: Field Data Collection – Reconnaissance Stream Inventory**

- Conduct fish sampling as described in the [Fish-stream Identification Guidebook – Version 2.1 FPC 1998](#) (pages 33-62; *Methods for Identifying Fish Streams*) for each stream reach as indicated in the project plan for the current year of sampling.
- Conduct additional sampling following the directions given in ‘*Additional Sampling Requirements Reporting*’ below, with approval of the appropriate Ministry of Environment Representative (contact [FishStand@gov.bc.ca](mailto:FishStand@gov.bc.ca)).

- Examine the reach and record locations of fisheries sensitive zones on the appropriate maps. An effort should be made to locate fish obstructions that may be impacting fish distribution in sampled reaches. Confirmation of any physical feature that may be a factor in restricting fish movements can be very important evidence to provide in a non-fish bearing status report. Contractors should use fish sampling results and their professional judgement to decide if a downstream obstruction to fish movement may exist and attempt to confirm its existence.

#### **Phase 6: Report and Map Preparation**

- Report on Fish Bearing Status in the Reconnaissance (1:20,000) Fish and Fish Habitat Inventory Watershed Report (see Section 4.6 of the [example report](#) and [Fish-stream Identification Guidebook – Version 2.1 FPC 1998- pages 60-61](#))
- In addition to an overview map; either provide both a Project Map and Interpretive Map or one Project/Interpretive Map (See *‘Additional Updates’*).

#### **Additional Sampling Requirements Reporting**

Results of a reconnaissance survey may leave many questions unanswered in relation to project objectives (see *Project Objective*). To address these questions report on what additional sampling is required to meet the project objectives. This includes recommendations for additional sites or re-sampling sites using alternate methods and different times of the year; in recognition of habitat availability, condition, fish species, and seasonal habitat use. These recommendations may include sampling that can be done during the time frame of the current project or work that should be at a later time as a Follow-up Sampling project (for information on Follow-up sampling projects see [Reconnaissance \(1:20 000\) Fish and Fish Habitat Inventory: Follow-up Sampling \(Stream\) Standards - Version 1.0](#)).

The following are some example situations to be aware of for determining the requirement for additional sampling. This is not meant to be an exhaustive list and the user is still responsible to use their professional judgment to determine specific situations for their project where additional sampling may be required. For further standards on survey timing, see [Fish-stream Identification Guidebook – Version 2.1 FPC 1998 \(page 56\)](#)” and *‘Sample Survey Timing’* above:

- Particular attention will be paid to times and locations which have not been adequately assessed by initial sampling efforts. Intermittent or ephemeral channels that form Fisheries Sensitive Zones in high water are key areas of concern. The Contractor will mark and note (use of flagging tape; description of UTM coordinates with GPS recommended) such sites during the standard summer sampling period, and make recommendations for sampling in high water the following winter (coast) or spring (interior).
- Pay particular attention to developing second trial sampling recommendations on broader floodplains, where, at the time of initial survey, many dry channels with favorable gradients occur. Tributaries to lakes will also be of particular concern in this regard. It may not always be possible to detect, let alone sample, all such streams during first trial inventory efforts. However, the occurrence of such streams should be evident during initial sampling, and this information will be noted and used to provide recommendations for second trial efforts.
- Note the possible presence of species or life stages which may only have seasonal or life-cycle specific use of stream habitat. Juveniles of such species (i.e., kokanee, pink and chum salmon)

may leave the stream before summer sampling begins and adults may not yet have arrived. If other stream-rearing species are not present, the stream may ultimately receive an incorrect non-fish bearing stream classification. To assess the risk of this, known species distributions from nearby systems will be examined. Where concerns are evident, spring sampling for fry will be recommended, along with periodic visits during or after spawning season to look for adults/carcasses.

To conduct additional sampling recommended during the current project's time frame, obtain written approval from the appropriate Ministry of Environment Representative (contact [FishStand@gov.bc.ca](mailto:FishStand@gov.bc.ca)). For sampling that would be done after the time frame of the current project; report the follow-up sampling requirements in the '*Reconnaissance (1:20,000) Fish and Fish Habitat Inventory Watershed Report*' (see Section 4.6.3 of the [example report](#)) along with a table of the specific reaches recommended for follow-up sampling.

### Additional Updates

1. Notify the appropriate Ministry of Environment Representative ( [FishStand@gov.bc.ca](mailto:FishStand@gov.bc.ca)) that a **Reconnaissance (1:20,000) Fish and Fish Habitat Inventory** project is being initiated.
2. Obtain approval from the Ministry Representative (contact [FishStand@gov.bc.ca](mailto:FishStand@gov.bc.ca)) to proceed to the Field Data Collection (Phase 4) after the Pre-Field Phases (Phases 1-3).
3. The bullet from the former *Errata (April 2007)* 1. Clarifications of Deliverables for Reconnaissance (1:20 000) Fish and Fish Habitat Inventory – Mapping Products:
  - “Project Maps are an optional deliverable. The interpretive Map is still a required deliverable. When a Project map is not provided as a deliverable, the site data symbol for the Project Map must be included on the Interpretive Map. Project Map labels will continue to be included in the “Fish and Fish Habitat Map Features Table”, even where no Project Map is produced.”

#### Has been superseded with:

- If determining fish bearing status for project reaches is part of the project; either provide both a Project Map and Interpretive Map or one Project/Interpretive Map. A Project/Interpretive map is an Interpretive Map including the site data symbols and or lake Summary Symbols associated with Project Maps. Project Map labels will continue to be included in the ‘Fish and Fish Habitat Map Features Table, even when an individual Project Map is not produced (See the [Standards for Fish and Fish Habitat Maps](#) for specific details on symbols, map labels and Inventory Maps).

If determining fish bearing status for project reaches is **not** part of the project, only a Project Map is required. In all cases an Overview Map is still required.

4. UTM coordinates must include the UTM zone number; an Easting value of six significant digits, and a Northing value of seven significant digits (1 metre precision, NAD 83).
5. Hardcopy waterproofed versions of Reconnaissance (1:20 00) Fish and Fish Habitat field forms can be ordered from Queen's Printer Government Publications Centre at: (250) 387-3309 or Toll-free: 1-800-663-6105 or through their webpage at: <http://www.publications.gov.bc.ca>

6. This is an addition to *Updates for April 2007* 1. Clarifications of Deliverables for Reconnaissance (1:20 000) Fish and Fish Habitat Inventory – General Project Requirements (3.). QA auditors for Reconnaissance (1:20 00) Fish and Fish Habitat projects must be a Registered Professional Biologist (R.P.Bio.) with the College of Applied Biology of BC. The auditor must have no role in the project other than QA. The QA auditor must not be involved in either the collection/interpretation of the project data or in the procedural monitoring of the data collection contract.

## Updates for April 2007:

These updates are based on the former *Errata (April 2007)*. They are in addition to the *Updates for April 2009*. Information that has been superseded by the *Updates for April 2009* has been removed. The updates will supersede standards in other RISC standards and associated documents (Listed at beginning of this document).

### 1. Clarifications of Deliverables for Reconnaissance (1:20 000) Fish and Fish Habitat Inventory

#### Introduction

The clarifications noted in this document are necessary to address the changes in the delivery and mechanisms driving the collection and receipt of fish and fish habitat inventory information. The intent is to simplify the process for contractors and forest licensees without compromising the utility of the final products. The following clarifications will over-ride existing standards, where applicable, as described in RISC manuals and example reports.

#### General Project Requirements

1. One complete digital copy of the Phase 1-3 (Planning) and Phase 4-6 (Field work and reporting) deliverables must be submitted through the [Fish Data Submission](#) process. One complete hardcopy and one complete digital copy of the Phase 1-3 (Planning) and Phase 4-6 (Field work and reporting) deliverables and all quality assurance documentation (forms, correspondence, and reports) are to be sent to the appropriate Regional Ministry office.
2. Copies of the digital report, appendices and applicable attachments must be provided in PDF format. The Ministry must be able to reproduce the entire hardcopy report from the PDF files submitted. To ensure the PDF files are not too large, provide a separate PDF document for the report, for Appendix I, and for each map in Appendix II. Each PDF document must match the hardcopy document, and have all tables, figures, FDIS printouts, and integrated site photos etc. inserted and collated appropriately.
3. Quality assurance (QA) is required for every phase of the inventory, except where otherwise noted. Standard documentation of the quality assurance must accompany all deliverables. This shall comprise a report, signed by the Quality Assurance auditor, identifying that the inventory deliverables are complete, have been reviewed and meet the standards required pursuant to the "[Reconnaissance \(1:20,000\) Fish and Fish Habitat Inventory: Quality Assurance Procedures](#)", *RIC, March 2000, version 1*. Any revisions required by the auditor as a result of the initial stages of QA must be checked and confirmed to be complete by the auditor. The Quality Assurance auditor shall affix his or her professional seal to the final report with verification of the auditor's qualifications and professional independence from the inventory work. Documentation of QA

shall also include an explanation for all errors or warnings identified in the FDIS QA report that are not correctable and a clear indication of which errors or warnings have been addressed. A standard fdisdat.mdb file and the associated QA reports on the fdisdat file will be required for the digital deliverables.

4. In the watershed report, both tables “Summary of data from surveyed fish bearing reaches...” and ”Summary of data from surveyed Non-fish bearing reaches...” will now require details of fish sampling employed in each reach; previously, only the ”Summary of data from surveyed Non-fish bearing reaches...” table, as shown in the example report, “[\*Reconnaissance \(1:20 000\) Fish and Fish Habitat Inventory of Buba Creek Watershed\*](#)” (section 4.6.2), required gear specification information.
5. FISS updates on official FISS forms and 1:50,000 NTS maps are no longer required as a standard deliverable. However, new fish information pertaining to the project found during the data review of existing information, still needs to be reported. Any new fish information pertaining to the project not found in Ministry sources during the data review of existing information is to be provided in the Pre-Field Project Planning Report (Phase 1-3). If that is not possible (for example due to copy right issues), details of what the information is (title or description), where it is housed, and who the custodian contact is should be provided.
6. Please do not use special fonts in the production of hardcopy or digital reports and maps. Arial and Times New Roman (True Type fonts) or Helvetica and Times (PostScript) must be used for all report and mapping text. Use only standard Mapping fonts provided by the Ministry for map symbols
7. The correct watershed code for all lakes and streams, and waterbody identifier for each lake must be determined and recorded for all data collected. Any waterbody without a watershed code or waterbody identifier must have an ILP (Interim Locational Point) reference. Separate ILP maps and ILP Data Sheets are not to be submitted; however, ILP’s must still be assigned and included in all final mapping products submitted to the Ministry. All ILP’s must be mapped in such a way to allow for the Ministry to match ILP locations to database information and generate watershed codes and waterbody identifiers for the ILP waterbody. Requirements for generating watershed codes and waterbody identifiers from ILPs include:
  1. ILP Map Number: The mapsheet number of the map used to assign ILP numbers.
  2. ILP Number: A user defined number unique to any particular point on the map sheet (Note: this is a five –digit numeric field- e.g. 00023)
  3. UTM as described in the RECCE manual pg 2:8

## Mapping Products

1. All maps must be in UTM projection.
2. TRIM 1 to be used as map base for sample plans and all mapping products.
3. Non visible channel reaches that are wetlands will be designated as NVC-W in the lower portion of the site/reach data symbol.
4. All label fields in the Fish and Fish Habitat Map Features Table must be consistent with all other report products, especially the interpretive maps.

5. Digital versions of all hardcopy maps must be provided in PDF format

### **Field Sampling Program**

1. Additional field sites may be added to address fish distribution questions at the discretion of field crews (subject to proponents approval), in an amount of up to 10% of the total number of random and bias reaches in the sample plan (e.g. in order to address specific habitat types, or habitat above suspected barriers).
2. Proponents may also exercise the option to reduce sampling above confirmed barriers when absence of fish above the barrier was confirmed by sufficient sampling. To be sufficient, this sampling must be strategic and focused on optimum fish habitats.
3. Field crews should make a reasonable effort to ensure the site location is representative of the reach.
4. If lakes identified during the planning phase are later confirmed in the field as wetlands, a primary or secondary survey will not be completed. An alternative lake will be selected for sampling.

### **Fish Vouchers and Aging Structures**

1. The collection and analysis of aging structures from several representatives of each size group of sport fish caught in lakes and streams throughout the watershed is required. When deciding whether or not to collect aging structure for fish caught at a particular sample site, crews should consider how age information from the site will contribute to the overall knowledge of fish age information for the watershed. It is important to collect length-at-age data that describes the fish populations(s) and life history patterns within the entire project area. Field crews need to consider the sizes and habitats of streams selected for sampling and how these might affect both the actual sizes as well as growth rates of fish captured, when deciding whether or not to collect aging structures. Ideally, aging structures will be collected throughout the entire project area from a variety of sample sites. Depending on the size of the watershed, it is recommended that at stream sample sites, crews collect a sample of 30 to 60 aging structures for each sport fish species caught.
2. It is required to have an expert analysis of collected fish aging structures, and the subsequent results of the analyses presented in the form of a summary; identifying the aging structures collected, the resultant ages for each, and copies of all relevant aging structure prints or photographs as described in the example report, "[\*Reconnaissance \(1:20 000\) Fish and Fish Habitat Inventory of Buba Creek Watershed\*](#)", (Attachment III - Collected Fish Aging Structures). The actual samples (e.g. scales, otoliths) are a requirement of the deliverables, to be sent to Regional Ministry office.
3. Proponents must ensure all fish species captured are identified correctly. Vouchers must be collected and submitted for expert examination for any fish that cannot be identified to species accurately. The UBC Fish Museum will accept samples for species verification. Costs will be borne by the submitter of the vouchers. Results will be presented in the form of a summary table as described in the example report, "[\*Reconnaissance \(1:20 000\) Fish and Fish Habitat Inventory of Buba Creek Watershed\*](#)", (Attachment IV - Voucher/DNA samples). The actual vouchers (fish) are a requirement of the deliverables, to be sent to Regional Ministry office.

4. The collection of genetic samples is not mandatory; and will have project-specific requirements, where necessary. Contact Ministry Regional Information Specialist for information on submission.

### **Photodocumentation**

1. One copy only, of items i-iii is now required, as per requirements outlined in Attachment V (Photodocumentation) of the example report, "[\*Reconnaissance \(1:20 000\) Fish and Fish Habitat Inventory of Buba Creek Watershed\*](#)".
2. It is no longer a requirement to develop photographic prints, but where conventional film cameras are used, deliverables will include negatives, as per item iv in the above noted Attachment V.

## **2. General Updates**

Below are a number of general updates that apply to existing [Reconnaissance \(1:20 000\) Fish and Fish Habitat Inventory: Standards and Procedures - Version 2.0, RISC 2001](#) as well it's associated manuals (listed at beginning of this document) where applicable, and their errata:

### **Updates**

1. Digital Copies of RISC Standards for Reconnaissance Fish and Fish habitat Inventories are available on the [RISC Standards Aquatic Ecosystem](#) webpage.
2. References to specific versions of standards documents should be interpreted as references to the most current version of the standard which can be found on [RISC Standards Aquatic Ecosystem](#)
3. All references to "Resources Inventory Committee" or "RIC", and "http://www.for.gov.bc.ca/ric" should be replaced with: "Resource Information Standards Committee" or "RISC", and <http://ilmbwww.gov.bc.ca/risc/index.html> .
4. All references to "FRIM" should be replaced with "Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: Standards and Procedures"
5. All references to the "Forest Practices Code" or "Code" or "FPC" should be replaced with: "Forest and Range Practices Act." or "FRPA"
6. All references to "Geographic Data BC" should be replaced with: "[Base Mapping and Geomatic Services](#)"
7. The "1:20 000 TRIM Watershed Atlas (TWA)" is now known as the: "Corporate Watershed Base (CWB)"
8. All references to "BC Fisheries", "BC Environment", "Ministry of Environment Lands and Parks" or "MELP", "Ministry of Water, Land and Air Protection" or MWALP" and "Ministry of Sustainable Resource Management" or "MSRM" should be replaced with: "Ministry of Environment" or "MoE".



9. All references to “Regional Fisheries Inventory Specialist” should be replaced with: “Regional Resource Information Specialist.”
10. All references to “Forest Renewal British Columbia” or “FRBC” should be replaced with: “Forest Investment Account” or “FIA”
11. References to FishWizard should be replaced with “[Habitat Wizard](#)” (Habitat Wizard has replaced FishWizard as the tool to spatially access detailed fish and fish habitat information over the internet. FishWizard is now an angler and public orientated spatial tool managed by the Freshwater Fisheries Society of BC.)
12. All references to the “British Columbia Index of Geographical Names (BCGIN)” should be replaced with “[BC Geographical Names Information System \(BCGNIS\)](#)”
13. All references to the “Fish and Fish Habitat Inventory Report Index” or “AquaCat” should be replaced with “[EcoCat](#)”

### 3. Specific Updates

The following are specific changes in the Reconnaissance (1:20 000) Fish and Fish Habitat Inventory: Standards and Procedures Manual, or other Standards documents where noted, that are not reflected in “1. Clarifications of Deliverables for Reconnaissance (1:20 000) Fish and Fish Habitat Inventory or 2. General Updates”

1. Page 2:17 **Figure 2.4** In the two diagrams; **replace** “Magnitude” and “Order” **with** “Magnitude (Shreve 1967)” and “Order (Strahler 1952)”
2. Page 2:15 Section **2.4.4.2 Stream reach numbering** Third paragraph (also applies to Standards for Fish and Fish habitat Maps Version 3.0, Section 2.2.1, first paragraph, sentences 5-7 and Figure 3):

**Replace:** “Reach numbers start at 1 at the mouth or the downstream end of the stream in the project area and increase sequentially upstream (e.g., 1, 2, 3, ...). If an additional reach is to be broken out within the existing reaches (e.g., reach 2 is broken into three reaches due to vegetation obscuring a bedrock canyon on the airphoto, but identified in the field, reach numbers should be identified using decimals (e.g., 1, 2, 2.1, 2.2, 2.3, 3, ...). This will require changing only a limited number of reach numbers.

**with** “Reach numbers start at 1 and are placed at the upstream boundary (break) for each reach, starting with the reach closest to the mouth of the stream and increase sequentially upstream (e.g., 1, 2, 3, ...). If an additional reach (due to field evidence) needs to be added a decimal system is used. For example if it was discovered in the field that reach 2 was really three reaches, then reach 2 would be renumbered using the decimal system. The recommended reach renumbering in this case would then be 1, 2.1, 2.2, 2.3, 3.... This will require changing only a limited number of reach numbers.

3. Page 2:26 Section **2.54 Permits and Other Operational Regulations:** In the first paragraph, second sentence; **replace** “Provincial Fish Collection Permits can be obtained from the Fisheries Section of the local BC Environment regional office.” **with** “Provincial fish collection permits are available through the [Permit and Authorization Service Bureau](#)”
4. Page R:3 Replace the entire section “Resource Inventory Committee (RIC) References” with:

## “Resource Inventory Committee (RISC) References

The following documents and their associated errata can be found on the [RISC Standards Aquatic Ecosystems web site](#):

- Aerial Photography and Videography Standards: Applications for Stream Inventory and Assessment
  - Ambient Freshwater and Effluent Sampling Manual
  - Bathymetric Standards for Lake Inventories: Fish and Fish Habitat
  - Field Key to the Freshwater Fishes of British Columbia
  - Fish Collection Methods and Standards
  - Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Lake Survey Form Field Guide
  - Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Fish Collection Form Field Guide
  - Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Site Card Field Guide
  - Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Reach Information Guide  
Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Quality Assurance Procedures
  - Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Follow-up Sampling (Stream) Standards
  - Reconnaissance (1:20,000) Fish and Fish Habitat Inventory: Users Guide to the Fish and Fish Habitat Assessment Tool (FHAT20)
  - RISC Standards for Fish and Fish Habitat Maps
  - User’s Guide to British Columbia’s Watershed/Waterbody Identifier System”
5. Page R:4 Section **Non Provincial Government Publications; Add references:**
1. Shreve, R.L. 1967. Infinite topologically random channel networks. *J. Geology* 75:178-186
  2. Strahler, A.N. 1952. Hypsometric (area-attitude) analysis of erosional topography. *Bulletin of the Geological Society of America* 63: 923-938
6. Page R:5 The **Website** section is replaced by:
- [Ministry of Environment \(MoE\)](#)
  - [Environmental Stewardship Division](#)
  - [Ecosystems Branch](#)
  - [Fish and Fish Habitat Inventory and Information](#)
  - [Forest Practices Code Guidebooks](#)
  - [Conservation Data Centre \(CDC\)](#)
  - [Permit and Authorization Service Bureau \(PASB\)](#)
  - [Fish Data Submission](#)
  - [HabitatWizard](#)

[EcoCat](#)  
[Base Mapping and Geomatic Services](#)  
[Resource Information Standards Committee \(RISC\)](#)  
[RISC Standards Aquatic Ecosystem](#)  
[RISC Background Documents Aquatic Ecosystem](#)  
[BC Geographical Names Information System \(BCGNIS\)](#)

7. Page A1:3 **Internet Access to Data; Replace the whole section with:** “Access to fisheries information is available through the [Fish and Fish Habitat Inventory and Information](#) website.”

8. Page A1:3 **Fisheries Information Summary System;**

**Replace the whole section with:**

“The Fisheries Information Summary System (FISS) is one of the sources for existing data review. FISS contains information previously available in the Stream Information Summary System (SISS) catalogues, and any other information available since the compilation was undertaken.

FISS information is available from the [Fish and Fish Habitat Inventory and Information](#) website. General or specific questions regarding the nature and/or content of FISS data, geographic status reports, or information about references may be directed to:

FISS Data Manager  
Ministry of Environment  
email: [FISH.Issues@gov.bc.ca](mailto:FISH.Issues@gov.bc.ca)”

9. Page A1:4 The **Information Types and Contact Agencies** section is replaced by:  
“Some lead agencies for additional information that may be required:

- Fisheries project information: Ecosystem Information Section (Victoria), Regional Information Specialists (MoE Regional Offices: Surrey, Nanaimo, Kamloops, Smithers, Prince George, and Williams Lake)
- Salmon Escapement and related information: Fisheries and Oceans Canada
- Water quality: MoE-Water Stewardship Division; Environment Canada
- Hydrology: MoE-Water Stewardship Division; Environment Canada
- Forestry/Forest Range and Practices/ Forest Investment Account: Ministry of Forests and Range (Victoria, regional and district offices)”