

## **SECTION 27 – Table of Contents**

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## 27 Spokane Research, Monitoring and Evaluation Plan

In light of the various ongoing efforts to develop a regional monitoring plan, subbasin planners the Intermountain Province (IMP) have chosen to develop a monitoring plan based on existing monitoring methods described in the scientific literature. The IMP approach to the Research, Monitoring and Evaluation (RM&E) is as follows:

- Research is handled separately from the M&E design. A wish list of research needs is identified based on the biological objectives, strategies and critical uncertainties identified in the Subbasin management plans and subbasin assessments. Many of the subbasin work teams developed preliminary research needs lists. Although there is an extensive “wish list” of research questions in the IMP, the limitations of available funding made it important to prioritize the research questions into two categories: “need to know” and “would like to know.”
- For the M&E component, subbasin planners in the IMP developed a framework to link specific objectives and strategies identified in the IMP subbasin management plans to a suite of M&E protocols and existing programs (an M&E “tool box”). To do this a subcommittee of the OC identified a broad list of existing M&E protocols and existing M&E programs, which represent: peer reviewed, scientifically validated approaches to M&E; are appropriate to range of geographic scales; and include the range of the Independent Science Review Panel’s (ISRP) three tiers of RM&E. Specific M&E objectives and strategies from each of the subbasin management plans, and from the province level, were then linked in Table 27.1 to:
  - The type of generic approach to addressing limiting factors that is addressed by the strategy or objective (same list used to categorize the inventory of projects)
  - The type of M&E protocol that would be most appropriate
  - Which ISRP M&E tier level of RM&E would be appropriate
  - Which of the “tool box” tools would be used.

The complete tool box bibliography is found in Appendix I. More detailed information on the process for developing the RM&E plan is found in Section 2.

Table 27.1. Spokane Subbasin research, monitoring, and evaluation plan

AQUATIC					
Strategy & Objective	Strategy Type <sup>1</sup>	Monitoring Type <sup>2</sup>	Tier <sup>3</sup>	Scale <sup>4</sup>	Tool Box Tool <sup>5</sup>
<b>Subbasin Objective 1A1:</b> Complete assessments of resident fish losses	1, 2, 3, 4, 5, 9, 10			1, 2, 3	1, 3, 4, 6, 8, 11, 12, 14, 17, 22, 26, 28
<b>Strategy a:</b> identify data gaps and critical information needs	1, 2, 3, 4, 5, 9, 10			1, 2, 3	1, 3, 4, 6, 8, 11, 12, 14, 17, 22, 26, 28
<b>Strategy b:</b> Continue filling data gaps	1, 2, 3, 4, 5, 9, 10			1, 2, 3	1, 3, 4, 6, 8, 11, 12, 14, 17, 22, 26, 28
<b>Proposed Strategy c:</b> Monitor entrainment.	2, 10			1, 2	17, 22
<b>Subbasin Objective 1A2:</b> Fully mitigate and compensate for resident fish losses...					
<b>Proposed Strategy a:</b> Following the completion of baseline data gathering...	1, 2, 3, 4, 5, 6, 9			1, 2, 3	1, 4, 5, 6, 9, 10, 14, 15, 16, 17, 18, 19, 20, 21, 23, 25, 26, 28
<b>Subbasin Objective 1B1:</b> Evaluate instream and riparian habitat quality and quantity...					
<b>Strategy a:</b> Continue stream and riparian habitat surveys ...	1, 5, 6, 10			1, 2, 3	1, 4, 5, 6, 9, 10 . . .
<b>Strategy b:</b> Continue populating existing databases and develop new	1, 2, 3, 4, 5, 9, 10			1, 2, 3	1, 3, 4, 6, 8, 11, 12, 14, 17, 22, 26, 28
<b>Strategy c:</b> Inventory fish passage barriers by year 2010.	1, 3, 4, 5			1, 2, 3	23
<b>Strategy d:</b> Develop and utilize consistent barrier criteria and inventory methodology.	1, 3, 4, 5			1, 2, 3	23
<b>Subbasin Objective 1B3:</b> Meet or exceed applicable water quality standards					
<b>Strategy b:</b> Develop TMDL subbasin assessments	1, 2, 5			1, 2, 3	5, 9, 10
<b>Subbasin Objective 1B4:</b> Determine a range of flows suitable for protection and enhancement	1, 2, 3, 4, 5, 9, 10			1, 2, 3	1, 4, 5, 6, 9, 10, 14, 15, 16, 18, 19, 20, 21, 23, 25, 26, 28

AQUATIC					
Strategy & Objective	Strategy Type <sup>1</sup>	Monitoring Type <sup>2</sup>	Tier <sup>3</sup>	Scale <sup>4</sup>	Tool Box Tool <sup>5</sup>
<b>Strategy a:</b> Complete or initiate flow studies	1, 2, 3, 4, 5, 9, 10			1, 2, 3	1, 4, 5, 6, 9, 10, 14, 15, 16, 18, 19, 20, 21, 23, 25, 26, 28
<b>Subbasin Objective 1B6:</b> Evaluate heavy metal/organic/inorganic contamination as a limiting factor	1, 2, 5			1, 2, 3	5, 9, 10
<b>Proposed Strategy a:</b> Conduct the evaluation	1, 2, 5			1, 2, 3	5, 9, 10
<b>Subbasin Objective 1C1:</b> Assess the distribution and relative abundance of threatened and endangered species within the Spokane River Subbasin by year 2010.	1, 2, 4, 5, 6, 9			1, 2, 3, 4	4, 5, 6, 11, 12, 14, 15, 16, 17, 18, 19, 20, 21, 25, 26, 27, 28
<b>Subbasin Objective 2A1:</b> Conduct baseline investigations to determine native resident and resident fish stock composition, distribution, and relative abundance in the Subbasin by year 2010.	1, 2, 3, 4, 5, 6, 8, 9, 10			1, 2, 3, 4	1, 4, 5, 6, 7, 8, 12, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28
<b>Strategy a:</b> Perform assessment of native salmonid stocks composition using DNA analysis or other appropriate techniques by 2010.	1, 2, 3, 4, 5, 6, 8, 9, 10			1, 2, 3, 4	1, 4, 5, 6, 7, 8, 12, 14, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28
<b>Strategy b:</b> Continue surveys to determine fish species distribution and relative abundance	1, 2, 3, 4, 5, 9, 10			1, 2, 3	1, 3, 4, 6, 8, 11, 12, 14, 17, 22, 26, 28
<b>Strategy c:</b> Continue populating existing databases and develop new databases as appropriate.	1, 2, 3, 4, 5, 9, 10			1, 2, 3	1, 3, 4, 6, 8, 11, 12, 14, 17, 22, 26, 28
<b>Subbasin Objective 2B2:</b> Assess need for conservation aquaculture facilities					
<b>Subbasin Objective 2C1:</b> In the event anadromous fish return to the Spokane arm of Lake Roosevelt, the appropriate Tribes, agencies, and stakeholders will assess the feasibility of restoration of access and habitat throughout the remainder of the Spokane	1, 2, 3, 4, 5, 6, 8, 9, 10			1, 2, 3	1, 4, 5, 7, 11, 17, 20, 21, 26, 27, 28
<b>Proposed Strategy a:</b> Conduct the study.	1, 2, 3, 4, 5, 6, 8, 9, 10			1, 2, 3	1, 4, 5, 7, 11, 17, 20, 21, 26, 27, 28

AQUATIC					
Strategy & Objective	Strategy Type <sup>1</sup>	Monitoring Type <sup>2</sup>	Tier <sup>3</sup>	Scale <sup>4</sup>	Tool Box Tool <sup>5</sup>
<b>Subbasin Objective 2C2:</b> Upon the three-year review cycle of the subbasin plan, assess the status of anadromous fish in Lake Roosevelt.	1, 2, 3, 4, 5, 6, 8, 9, 10			1, 2, 3	1, 4, 5, 7, 11, 17, 20, 21, 26, 27, 28

**<sup>1</sup>Strategy types:**

- 1) Habitat Assessments
- 2) Population Assessments
- 3) Instream Diversion
- 4) Instream Passage
- 5) Instream Habitat
- 6) Riparian Habitat
- 7) Upland Habitat
- 8) Education/Coordination
- 9) Population Management
- 10) Reservoir Operations

**<sup>2</sup>Monitoring Protocol e.g. type of monitoring protocol [note: the specific reference to detailed monitoring protocol is identified in the "tool box"]:**

- TMDL
- Survey
- Survey and mapping
- HEP
- P/A and trend surveys
- All habitat

**<sup>3</sup>ISRP Tier Level:**

- 1) Tier 1: trend or routine monitoring
- 2) Tier 2: statistical (status) monitoring
- 3) Tier 3: experimental research (effectiveness) monitoring

**<sup>4</sup>Scale of Monitoring and Evaluation:**

- 1) Project
- 2) Subbasin
- 3) Province
- 4) Columbia Basin

**<sup>5</sup>Tool Box Tool**

The Tool Box is found in Appendix I.

TERRESTRIAL					
Strategy & Objective	Strategy Type <sup>1</sup>	Monitoring Type <sup>2</sup>	Tier <sup>3</sup>	Scale <sup>4</sup>	Tool Box Tool <sup>5</sup>
<b>Province Level and Spokane Subbasin Objectives 1A:</b> Mitigate for construction and inundation losses. By 2015.					
<b>Proposed Strategy a (for Objectives 1A1-1A9):</b> Identify and evaluate parcels....	1, 6, 7			1, 2, 3	29, 32, 33
<b>Objective 1A11:</b> Evaluate effectiveness of mitigation by monitoring and evaluating species and habitat responses to mitigation actions.	1, 2			1, 2, 3	29, 32, 33
<b>Spokane Subbasin Objective 1B:</b> Assess and mitigate the operational effects of the Grand Coulee Project in the Spokane Subbasin.					
<b>Objective 1B1:</b> Using third party contractor, perform assessment of operational impacts by year 2008.	1, 2			1, 2, 3	29, 32, 33
<b>Proposed Strategy a:</b> Have a third party impartial contractor conduct the assessment.	1, 2			1, 2, 3	29, 32, 33
<b>Objective 2A1</b> Maintain bald eagle at or above present levels...					
<b>Proposed Strategy a:</b> Maintain secure bald eagle...	1, 2			1, 2, 3	29, 32, 33
<b>Proposed Strategy c:</b> Continue or increase monitoring...	1,2			1, 2, 3	29, 32, 33
<b>Objective 2A2</b> Restore sharp-tailed grouse populations...	1,2				
<b>Proposed Strategy a:</b> Determine limiting factors on sharp-tailed grouse.					
<b>Proposed Strategy b:</b> Develop, prioritize, and implement projects and/or research to address identified sharp-tailed grouse limiting factors by year 2007.	1,2				
<b>Proposed Strategy c:</b> Assess current versus historical habitat ...	1			1, 2, 3	29, 32, 33

TERRESTRIAL					
Strategy & Objective	Strategy Type <sup>1</sup>	Monitoring Type <sup>2</sup>	Tier <sup>3</sup>	Scale <sup>4</sup>	Tool Box Tool <sup>5</sup>
<b>Proposed Strategy d:</b> Assess and if deemed needed limit/restrict nonnative ...	1, 2			1, 2, 3	29, 32, 33
<b>Proposed Objective 2A3:</b> Restore blue grouse populations...					
<b>Proposed Strategy a:</b> Determine limiting factors...	1, 2			1, 2, 3	29, 32, 33
<b>Proposed Strategy b:</b> Develop, prioritize, and implement projects and/or research to address identified blue grouse limiting factors by year 2007.	1, 2			1, 2, 3	29, 32, 33
<b>Proposed Strategy c:</b> Assess current versus historical habitat	1,2			1, 2, 3	29, 32, 33
<b>Proposed Strategy d:</b> Assess and if deemed needed limit/restrict nonnative ...	1,2			1, 2, 3	29, 32, 33
<b>Proposed Objective 2A4:</b> Maintain or increase golden eagle populations...					
<b>Proposed Strategy a:</b> Determine limiting factors...	1, 2			1, 2, 3	29, 32, 33
<b>Proposed Strategy b:</b> Develop, prioritize, and implement projects and/or research to address identified limiting factors for golden eagles by 2007.	1, 2			1, 2, 3	29, 32, 33
<b>Objective 2A6:</b> Maintain raptor populations...					
<b>Proposed Strategy a:</b> Identify specific factors limiting/affecting raptor ...	1, 2			1, 2, 3	29, 32, 33
<b>Proposed Strategy b:</b> Determine present population levels and monitor for trends.	1			1, 2, 3	29, 32, 33
<b>Proposed Strategy c:</b> Develop, prioritize, and implement projects and/or research to address identified raptor limiting factors by year 2012	1, 2			1, 2, 3	29, 32, 33

TERRESTRIAL					
Strategy & Objective	Strategy Type <sup>1</sup>	Monitoring Type <sup>2</sup>	Tier <sup>3</sup>	Scale <sup>4</sup>	Tool Box Tool <sup>5</sup>
<b>Objective 2A7:</b> Maintain or enhance populations of federal, state, local and Tribal species...					
<b>Proposed Strategy a:</b> Identify target species/guilds...	1, 2			1, 2, 3	29, 32, 33
<b>Proposed Strategy b:</b> Develop, prioritize, and implement projects and/or research to address identified target species limiting factors by year 2012, with consideration of benefits achieved through mitigation for HEP loss assessment indicator species.	1, 2			1, 2, 3	29, 32, 33
<b>Proposed Strategy c:</b> Determine present population levels and monitor for trends.	1,2			1, 2, 3	29, 32, 33
<b>Objective 2A8:</b> Neo-tropical migrant birds...					
<b>Proposed Strategy b:</b> Identify specific factors limiting/affecting neo-tropical bird...	1, 2			1, 2, 3	29, 32, 33
<b>Proposed Strategy c:</b> Determine present population levels.	1,2			1, 2, 3	29, 32, 33
<b>Proposed Strategy d:</b> Develop, prioritize, and implement projects and/or research to address identified neo-tropical bird population limiting factors by 2012.	1, 2			1, 2, 3	29, 32, 33
<b>Objective 2A9:</b> Amphibians and Reptiles...					
<b>Proposed Strategy a:</b> Identify specific factors limiting/affecting amphibian...	1, 2			1, 2, 3	29, 32, 33
<b>Proposed Strategy b:</b> Determine present population levels...	1,2			1, 2, 3	29, 32, 33
<b>Proposed Strategy c:</b> Develop, prioritize, and implement projects and/or research to address identified amphibian and reptile limiting factors by year 2012.	1, 2			1, 2, 3	29, 32, 33



TERRESTRIAL					
Strategy & Objective	Strategy Type <sup>1</sup>	Monitoring Type <sup>2</sup>	Tier <sup>3</sup>	Scale <sup>4</sup>	Tool Box Tool <sup>5</sup>
<b>Objective 2B2:</b> Identify, <i>protect</i> , maintain, restore, and enhance priority habitats...					
<b>Proposed Strategy a:</b> Identify and map using GIS	1, 2			1, 2, 3	29, 32, 33
<b>Objective 2B3:</b> Increase the quantity and quality of mule deer habitats, particularly winter and spring habitats.	2			1, 2, 3	29, 32, 33
<b>Proposed Strategy b:</b> Identify limiting factors...	1, 2			1, 2, 3	29, 32, 33

**<sup>1</sup>Strategy types:**

- 1) Habitat Assessments (includes monitoring)
- 2) Population Assessments (includes monitoring)
- 3) Instream Diversion
- 4) Instream Passage
- 5) Instream Habitat
- 6) Riparian Habitat
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