Northwest Power and Conservation Council

DRAFT

Information and Instructions for the Development and Review of Proposed Projects to Implement the Council's Columbia Basin Fish and Wildlife Program Fiscal Years 2007 through 2009

Dear Interested Party:

Introduction

The Northwest Power Act calls upon the Northwest Power and Conservation Council (Council) to develop a fish and wildlife program to protect, mitigate, and enhance fish and wildlife impacted by hydroelectric development in the Columbia Basin. Bonneville uses its fund to implement that Program, integrating its other fish and wildlife obligations such as those required by the Endangered Species Act. The Act charges the Council with the responsibility of making annual recommendations to the Bonneville Power Administration (Bonneville) for funding fish and wildlife projects.

The Council has an adopted Program, recently updating it extensively with subbasin plans that describe objectives, strategies, for fish and wildlife protection and restoration. The subbasin plans will be critical reference and prioritization guides for developing proposals in this solicitation (for more on Subbasin Plans, **add a links here**). Bonneville has identified its annual budget for the Program for Fiscal Years 2007 through 2009. With those pieces in place, the Council and Bonneville are ready to solicit proposals for projects to implement the Council's Fish and Wildlife Program. The proposals selected for funding will be for one or more of Fiscal Years 2007 through 2009. Proposals for all areas (geographic and category) of the Program are requested in this solicitation[1].

You will use a detailed electronic form to describe your proposal. A link to that form is provided below. The purpose of this document is to give prospective sponsors information regarding the requirements, standards, steps and schedule for this proposal development, review, and selection process to assist them in completing the proposal form and participating effectively.

[1] The Council intends to renew a sequenced review of its program in the near future -- a format similar to the last provincial review process. This process will divide the program into three tracks, and begin the review of the first in calendar year 2007, yielding updated recommendations for some portion of the Program for FY 2009 and beyond. The second and third tracks of the program would be sequenced in, yielding new recommendations for FY 2009 or 2010 and beyond.

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Detailed schedule and process information is provided in subsequent sections of this letter. The following is a summary of the schedule and steps this process:

- October 2005: Request for proposals
- January 2006: All proposals due
- January - June 2006: Science review and local and systemwide prioritization
- Mid June 2006: Science review report to the Council
- Mid July 2006: Responses for prioritized projects due
- August 2006: Final science review report to the Council
- October 2006: Council recommendations for funding to Bonneville

Available Funding

Expense and Capital Elements

Bonneville has advised the Council that it will make available for spending an annual average of $143 million for Fiscal Years 2007 through 2009.[2] In addition to that amount of "expense" funding, Bonneville will also make available up to an annual average of $36 million in funds borrowed from the U.S. Treasury. This latter amount, often referred to as "capital" funding, is subject to particular rules and standards prescribed by Bonneville in its "Capital Funding Policy for Fish and Wildlife Projects". That policy can be found at **[add a link here]**.

Proposal sponsors may wish to review the Bonneville capital funding policy, and seek guidance from Bonneville and Council staff, prior to developing their proposals. This is especially the case if the proposal is for large facility construction or upgrades, or for sizeable land acquisitions. While not exclusively, these types of projects are those that are most likely to qualify for capital funds. After the proposals are submitted, they will be jointly reviewed by Bonneville and Council staff to see which qualify for Bonneville capital funding.

Bonneville Allocation Goals by Program Area

Bonneville has articulated a goal of committing at least 70% of its annual fish and wildlife funding to "on the ground work", and no more than 25% to research and monitoring and evaluation activities, and 5% to coordination actions. This type of advance allocation to subject matter is new for Program implementation, and as such, may be challenging. The Council has developed this proposal development and review process in a manner to test the ability to meet Bonneville's objectives.

There is not a precise definition for what will be considered an "on-the-ground" proposal. Generally speaking, proposals for habitat protection, habitat restoration, artificial production, and the similar activities will be "on-the-ground." This will be work that implements the strategies and objectives in the subbasin plans adopted by the Council. A critical point to note is that Bonneville's goal of limiting monitoring and evaluation spending to no more than 25% of the annual program will require a significant reduction in existing project-level monitoring and

[2] This is an increase from an annual average spending level of $139 million in prior years.

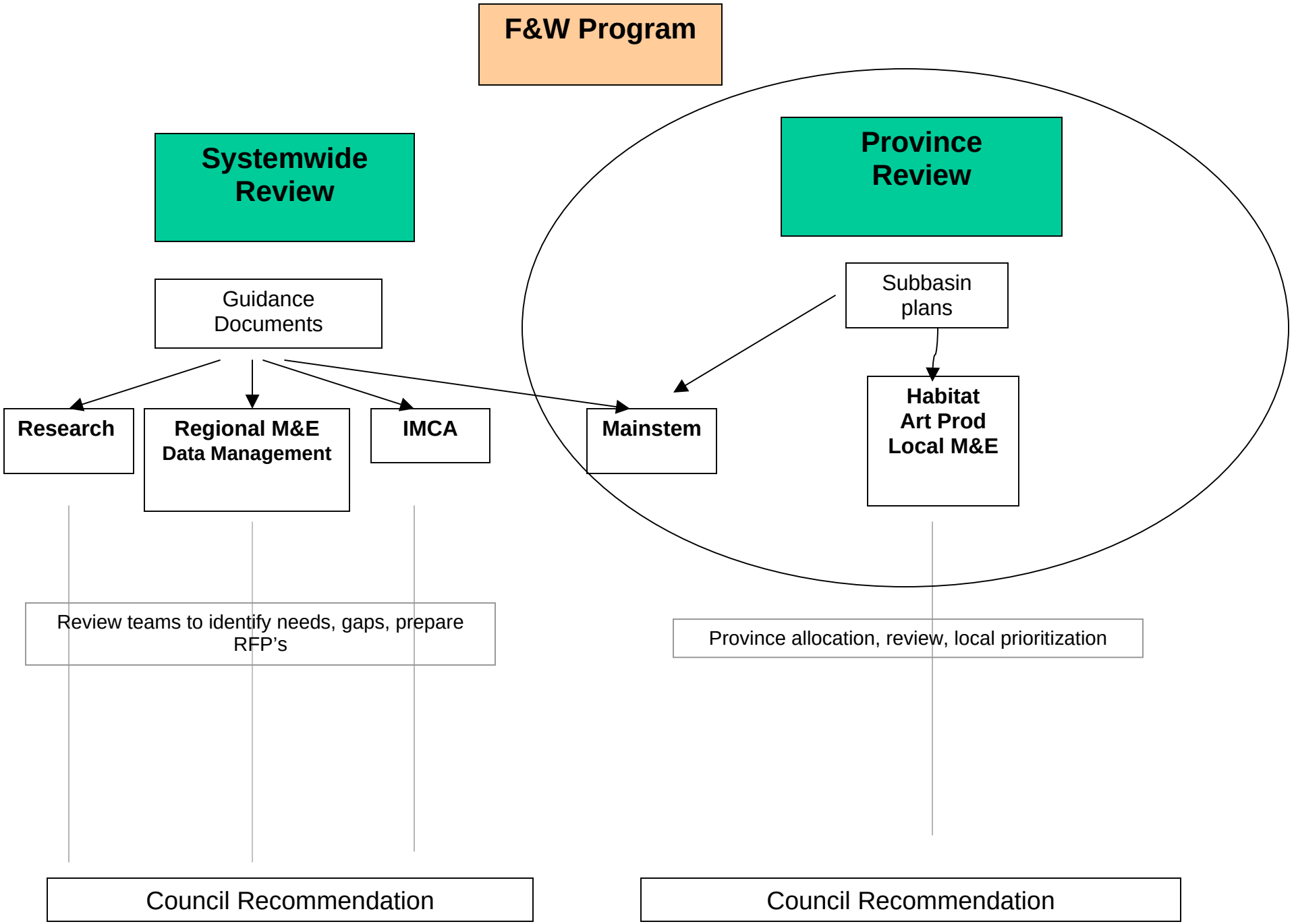
evaluation activities. ***Project level monitoring and evaluation activities for habitat projects, in most cases, should not constitute more than 5% of the proposal budget for implementation monitoring activities (see Attachment A for definition and rationale).*** At this time, there will *not* be a similar limit for monitoring and evaluation activities for artificial production projects. However, one product of this project selection process will be a total cost and survey of artificial production monitoring and evaluation and research, and that information will be used to help design a program-wide monitoring and evaluation program for artificial production actions.

Additional guidance as to what will be considered "monitoring and evaluation", "research" and "coordination" is provided in Attachments A, B and C. You should consult this material prior to developing your proposal if monitoring and evaluation, or research is the focus or significant elements of your proposal. **[Waste piece on m/e as A; research as B, attach marker definition of coord as B]**.

Allocating the Available Funds-- by Program Area and Geography

In order to ensure the ability for all areas of the Columbia Basin to participate, planning target allocations have been established for each Province. For a map that identifies the Provinces recognized in the Program, see **[add a link to the province map].** Similarly, for research, monitoring and evaluation, and coordination activities that are not lined to a particular province, a "Systemwide" planning target is established.

The diagram below illustrates how the annual Bonneville expense funding is allocated by Program area to seek to achieve Bonneville's goal of 70% on-the-ground project funding, and 25% and 5% for research and monitoring and evaluation and coordination, respectively.


F&W Program
Systemwide Review
Province Review
Guidance Documents
Subbasin plans
Research
Regional M&E
Data Management
IMCA
Mainstem
Habitat
Art Prod
Local M&E
Review teams to identify needs, gaps, prepare RFP's
Province allocation, review, local prioritization
Council Recommendation
Council Recommendation

The allocations for each Province are based on historical Council recommendations. That is, the Council has surveyed how it, along with Bonneville, fish and wildlife managers, and others have traditionally committed funding under the Program. These patterns are the legacy of management emphasis and legal and policy considerations, and are not to be considered perfect or those that will be used in future years. In fact, in a few cases, the historical allocations have been adjusted to meet certain objectives (those are noted below).

The allocations for each province are presented in the table below[3]:

Province/Group	Percent of Allocation	Calculated allocation
Blue Mountain	8.1	$7,935,165
Columbia Cascade	5.4	$5,290,110
Columbia Gorge	4.5	$4,408,425
Columbia Plateau	24.8	$24,295,320
Intermountain	8.6	$8,424,990
Lower Col*	1.6	$1,567,440
Estuary*	5.1	$4,996,215
Middle Snake	2.2	$2,155,230
Mountain Columbia	7	$6,857,550
Mountain Snake	16.2	$15,870,330
Upper Snake	1.5	$1,469,475
Mainstem/Systemwide (on the ground)	15	$14,694,750

Some Adjustments to Historical Based Allocations

Three Provinces have had their historical based allocations augmented -- the Columbia Gorge, Columbia Estuary, and the Lower Columbia. These are areas where, in very recent years, Bonneville has increased spending to meet requirements of the Endangered Species Act. The adjustments offered are evaluated against increased costs of recent years, but do not try to precisely mirror those. It is important to that Bonneville, NOAA Fisheries, and proposal

[3] Bonneville has committed an annual average of $143 million in expense funding for FY 07-09. The Council, with the concurrence of Bonneville, will use a planning figure of $153 million. The higher planning target recognizes slippage and delay that occurs in the implementation of a program this size, and is conservative based on a survey of prior years. Bonneville's administration costs are deducted first from the $153 million, as are costs for the Independent Science Advisory Board and the Independent Science Review Panel.

sponsors to prioritize within areas that are seeing increased ESA costs and to recognize that these increases require trade-offs in other areas and for other important species.

Two more Provinces have had their historical allocations augmented -- the Inter-Mountain and Mountain Columbia. The Council has augmented the allocation in these areas recognizing that mitigation and restoration efforts have not kept pace with those in other areas, particularly those where ESA listed salmon are managed. These provinces also contain ESA listed species, have significant hydrosystem impacts, and experienced challenges in having Council recommendations from the last provincial review implemented. Issues of equity and balance call for measured increases in the allocations for these provinces.

Achieving and Maintaining a Division of 70% Anadromous Fish; 15% Wildlife; and 15% Resident Fish

The Council's 2000 Program carries forward the goal of ensuring that Bonneville funds are committed to all three of these Program areas. The Council will be tracking the recommendations it is developing against this objective throughout this process. It is possible that resident fish and wildlife *expense funding* will not keep pace with that committed to anadromous fish. If this materializes, those areas will need to be augmented with capital funded projects prioritized in a capital projects spending plan that will be developed as part of this process.[4]

Steps in the Proposal Review and Selection Process

Locate the Program Area for Your Proposal

With the above information, prospective sponsors should be able to determine if their position in the process design -- Systemwide or Province. In the former, Attachment A provides additional detailed guidance and context for proposal development. If on the Province side, sponsors should locate the applicable subbasin plan to use as the key guidance. The allocations for each province are presented (see above), and specific guidance and limits for habitat proposal monitoring and evaluation activities (Attachment A) will apply. Additionally, some states, may offer ***additional*** guidance for proposal development and prioritization. Check the Council's website to see if there is additional state-specific guidance, or check with the appropriate individual identified in the "Contacts" information at the end of this letter to ensure that you have all of the guidance and standards that may apply to your proposal.

Complete the Electronic Form

The proposal form will draw out all of the needed information. Sponsors need to remember that this form will be the primary and key description relied upon by the Council, Bonneville, the Independent Science Review Panel[5], and prioritization groups. Sponsors should take great care

[4] After the proposals are submitted, the Council and Bonneville staff, perhaps with the assistance of others, will review the proposals to determine which may qualify as presented, or with modifications, for Bonneville capital funding. Once all such projects are identified, the capital projects selected by local groups as priorities will be arrayed and sequenced for implementation in a capital plan. It is possible that projects aimed at resident fish and/or wildlife will be given priority in the capital plan to meet the 70/15/15 goal of the Program.

[5] Section 4(h)(10)(D) of the Act sets out the criteria that the ISRP will apply.

in completing the form thoroughly and accurately. At the end of this document, contact information is provided for assistance in completing the form or for information about the solicitation process generally.

Understand the Prioritization Process

The Council will rely upon groups organized at the subbasin or province scale to review the proposals against subbasin plans. These groups will be familiar with the subbasin plans, and represent fish and wildlife management, watershed board, recovery board (where applicable) and as broad a set of interests as possible. Bonneville, NOAA Fisheries, and the Fish and Wildlife Service are expected to provide information regarding their needs and expectations at the beginning of the prioritization process, and to assist in developing work plans that meet their expectations.

These groups will evaluate the proposals against the subbasin plans and propose a prioritized work plan for FY 07-09 within the available planning budget to implement the subbasin plans. Not all proposal sponsors will participate in the prioritization. See the contact information below to locate the individual that can give you more and current information about the local prioritization processes and the state of their progress.

For proposals that relate to Systemwide work, Attachment A describes the guidance documents that will be relied upon by the Council, Bonneville, fish and wildlife managers and others to develop the research, monitoring and evaluation, and coordination workplan for FY 07-09. Again, Bonneville, NOAA Fisheries, the Fish and Wildlife Service and others must develop a program that meets all needs within the available budget for this implementation period.

Prioritization for both the Province and Systemwide Program areas will begin *before* the Science Review Report is released (see next step below). It makes sense to begin the task of evaluating proposals against the subbasin plans and systemwide guidance, for management relevance and priority as soon as possible. Adjustments, if necessary in light of Science Panel comments, can be made later in the process. The prioritized workplans for all areas will be due to the Council at the same time the Independent Science Review Panel provides the Council its written report.

Respond to Science Questions or Issues Raised by the Council

If the prioritized workplans include proposals that, in the Council's opinion, require additional response from the sponsor, those sponsors will be asked to develop supplemental information that will be considered by the ISRP. This was called the "fix-it-loop" in the last provincial review. The difference here is that not all proposals will automatically get an opportunity to respond to the ISRP critique -- rather, only those that are prioritized by the local/systemwide group may be asked to respond.

If the Council requests a response, it will be developed on a short time-frame (approximately 30 days). Those responses will be considered by the ISRP, and it will provide an additional report approximately 6 weeks later.

Follow the Council and Bonneville Decision-Making Process

The Council will consider the prioritized workplans, any public comment, and the ISRP reports as it makes a decision on what proposals to recommend for Bonneville funding. The Council would like to make funding recommendations at or before its October 2006 meeting. After the Council makes its recommendations, Bonneville reviews them and advised the Council in writing on its acceptance, noting with specificity any points of departure with the Council's recommendations.

The various elements of the review process, and provisional time-frames and dates are illustrated in the following diagram:

[Add the Schedule diagram in the text here -- due to technical difficulty at the moment, it is attached right behind this memo]

Where to Submit and Contact Information

You electronic proposal forms can be located at **[add link again]**. When completed, those forms will be sent to **[add the location here]**. You will get a confirming e-mail when your form has been received **[check with Eric on if and how]**. Check the Council's website periodically for news and updates regarding the Proposal Development and Selection Process **[add link].** Additionally, the following individuals can provide questions and assistance:

Add in contacts for:

Central staff lead (Patty)
BPA lead (Bill?)
State staff -- with note that these are key contacts for local process
Tech support (Eric S -- form help)

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c:\documents and settings\ogan\desktop\ps0709guidance9_7finpack.doc (John Ogan)

Reference Document for Monitoring and Evaluation Projects for the FY 07-09 Fish and Wildlife Program Provincial Review and Solicitation Process

This reference document provides supplemental information to the solicitation guidance document developed for the FY 07-09 project selection process for the Columbia Basin Fish and Wildlife Program. It explains the rationale for a programmatic, regional approach to research and monitoring. In support of this approach, the document provides some standard terminology and a framework of strategies for implementing the different types of monitoring and research. A matrix of monitoring activity is introduced for assessing regional coverage of monitoring issues across all Columbia Basin agencies with research and monitoring programs. The approach we propose would entail filling out the matrix as an exercise to help assess critical monitoring gaps and inform the project selection process.

A Programmatic, Regional Approach for Research and Monitoring

Much of the monitoring in the Fish and Wildlife Program was selected to evaluate work at the project scale, across all subject areas. While work at this scale has intrinsic value, it cannot substitute for the lack of a monitoring program of sufficient scope to provide a basis upon which the program as a whole can be evaluated, and re-directed. Monitoring is required at a number of different scales to assess the performance of the program relative to biological and programmatic objectives, to identify where and why there are performance problems, and to identify the most effective actions needed to correct problems so that program objectives can be achieved. This type of monitoring and evaluation across multiple geographic and temporal scales requires standardized approaches and programmatic, long-term commitments and interconnections for effectively combining information and answering program management questions.

The objectives and management questions of the Fish and Wildlife Program overlap with those of other regional state, federal and tribal agencies. The costs of the monitoring and research needed to adequately address these common management questions are more than one program can afford to cover alone. Only through the combined efforts of multiple entities can an adequate level of information be developed to guide these regionally shared resource management decisions. Only through coordinated, standardized and programmatic approaches to monitoring can this information be combined across multiple agencies and monitoring programs. This coordination is the purpose and vision of the recently chartered Pacific Northwest Aquatic Monitoring Partnership. As members of this coordination group, the Council and BPA are working to implement the Fish and Wildlife Program within a regional network of monitoring programs so that the shared monitoring needs and objectives of the program can be achieved.

Standard Research, Monitoring and Evaluation Terminology

<u>Differentiating Between Monitoring and Research</u>

In tandem, monitoring and research are two program elements that provide the basis for evaluation. Although often associated, they are different types of activities.

> *Monitoring data can describe what happened; research is often needed to help explain why and how it happened…. Monitoring involves measuring and*

sampling physical, chemical, and biological attributes of the resources. Research involves analysis or experiments to establish mechanisms that explain observed correlations.

-- Comprehensive Monitoring, Assessment and Research Program, CALFED, 1999.

Thus, monitoring measures the existence and extent of changes while research helps to identify the causes of the change. The purpose of monitoring and evaluation in the Fish and Wildlife Program is to assure that the effects of actions taken under the program are measured and analyzed to provide better understanding of the results, and then use this knowledge to direct future actions. Research is necessary to provide scientifically credible answers to questions pertinent to management that are complicated by uncertainty.

Description of the Types of Monitoring and Research

In the Columbia River Basin several large-scale planning documents have categorized three types of monitoring in a hierarchical sequence e.g., the All-H Paper, the 2000 Biological Opinion, and the Retrospective Report of the Independent Scientific Review Panel (ISRP). The three types of monitoring differ in terms of their application, and along spatial and temporal scales. The ISRP and ISAB recognized that the inconsistency of terminology concerning monitoring among the various fields of science (e.g., fisheries, hydrology, wildlife, genetics) and with the scientific basis for "effectiveness monitoring." The ISRP and ISAB have used the words "Tier 1, Tier 2, and Tier 3" in a slightly different manner in past reports referring more to the way data are collected (i.e., census versus sample) than to the scale of the study. To eliminate potential confusion, they have dropped the use of the word "Tier" when referring to the way data are collected. The relationship of the ISRP's definitions of census and statistical monitoring to Action Agency (2002) Tier 1, 2 and 3 monitoring is set forth in the ISRP's Retrospective Report.

In addition to these three monitoring tiers for biological, environmental and physical data, there is compliance and implementation monitoring associated with monitoring of restoration projects. A framework for compliance monitoring of restoration projects will be used to assess the status of contract compliance and to provide a form of post project auditing of project performance. Implementation monitoring documents the type of management action, the location, and whether the action was implemented properly or complies with established standards. It does not require environmental data and is usually a low-cost monitoring activity. This is normally associated with a restoration project where an engineered solution has been constructed, or where a best management practice has been implemented. Thus, implementation monitoring is the monitoring of task completion in a specific project. For example, the researcher may report miles of stream fenced, number of culverts removed, irrigation diversions maintained, implementation of an experiment, numbers of fish PIT tagged, etc.

The Council staff proposes to use a threshold of five percent as a standard for most types of project monitoring. The Council will look closely at the reasons why important monitoring might exceed five percent. A percentage of program projects should have annual compliance monitoring after a project is completed. This may require the development of a compliance

monitoring program with one contractor specifically tasked to monitor and assess multiple completed projects.

Framework for a Coordinated Regional Approach to Monitoring

The development of a coordinated regional approach to monitoring will continue to require planning, assessment, and research with other regional entities. The development of a coordinated regional approach to monitoring has been underway for about four years. Several large-scale planning documents support this approach by identifying common objectives and priorities. Source documents that have contributed to the conceptual foundation of the regional approach include:

- Section of ISRP's Retrospective Report on Monitoring – *NPCC 2005?*
- Draft Research Plan for the Columbia River Basin – *NPCC 2005*
- Strategy for Coordinating Monitoring of Aquatic Environments in the Pacific Northwest – *PNAMP 2005*
- Considerations for Monitoring in Subbasin Plans 2004 – *PNAMP 2004*
- Conservation of Columbia Basin Fish; Final Basinwide Salmon Recovery Strategy - *Federal Caucus 2000*
- Research, Monitoring, and Evaluation (RME) Plan for the NOAA Fisheries 2000 Federal Columbia River Power System (FCRPS) Biological Opinion - *Action Agencies and NOAA 2003*
- Updated Proposed Action for the FCRPS Biological Opinion Remand - *Action Agencies 2004*
- Proposed Design and Evaluation of Preliminary Design Templates – *CSMEP 2004*
- Scope of Work for Implementation of the Northwest Environmental Data Network Project - *Northwest Environmental Data Network 2005*

Through the FY07-09 project selection process, the Council and Bonneville will contribute to the design and implementation of a coordinated and integrated regional monitoring network of programs. This network of regional programs is being built on a common monitoring framework with the following key components:

1. Fish/Wildlife Population and Environmental Status Monitoring – abundance, condition, and trend of fish/wildlife populations and key environmental attributes.

    - Tier 1 Monitoring- Ecosystem/Landscape level, broad-scale, periodic monitoring
    - Tier 2 Monitoring- Geographically localized, frequent monitoring

2. Action Effectiveness Monitoring and Research - Tier 3 monitoring and research of the effects of actions on fish survival and habitat attributes.

3. Uncertainties Research – research to identify the underlying relationships between fish population performance and habitat, life history and/or genetic conditions (e.g., delayed mortality, hatchery spawner reproductive success, etc.).

4. Implementation/Compliance Monitoring – tracking execution and outcomes of management actions.

5. Data Management – support system(s) for data sharing and analysis.

6. Regional Coordination – coordinating processes and agreements across the various Federal, State and Tribal agencies and regional monitoring programs.

At this stage of its development, the regional approach to monitoring can best be portrayed as a matrix with the range of monitoring components on the left side and the projects (including proposals) with the agency, geographic area, and fish and wildlife population identified on the other side (see Table 1. below). Many of the cells of the matrix can be populated with ongoing or proposed projects or programs conducting Status Monitoring, Action Effectiveness, and Critical Uncertainties research that addresses several key focus areas: Tributary Habitat, Hydro Corridor, Estuary, Harvest, and Hatchery. However, it is essential that the entities move to fill the regional monitoring needs (cells) that do not currently host project or programmatic activity. The Council, PNAMP, and the Federal Caucus have, and will continue to host, discussions of the gaps and the appropriate roles and responsibilities of the regional entities in regards to assignments to address the "gaps" in the matrix. Implementation strategies are being developed as the means for filling in the gaps in the framework, cell by cell. This matrix assessment will be completed during the Systemwide project review and selection process.

Table 1. Organizing Framework for All Funding Sources

RM&E Framework Components	*(Partitioned by Regional Agency)*
Tributary Habitat RM&E	*(Projects with geographic area and fish and wildlife population listed within Matrix)*
Tributary Status Monitoring	
Tributary Action Effectiveness Research	
Tributary Uncertainties Research	
Hydrosystem RM&E	
Hydrosystem Corridor Status Monitoring	
Hydrosystem Action Effectiveness Research	
Hydrosystem Uncertainties Research	
Estuary RM&E	
Estuary Status Monitoring	
Estuary Action Effectiveness Research	
Estuary Uncertainties Research	
Harvest RM&E	
Harvest Status Monitoring	
Harvest Action Effectiveness Research	
Harvest Uncertainties Research	
Hatchery RM&E	
Hatchery Status Monitoring	
Hatchery Action Effectiveness Research	
Hatchery Uncertainities Research	
Project Implementation/Compliance Monitoring	
Data Management	
Regional Coordination	

Priorities for Research, Monitoring and Evaluation Projects

Focusing Research, Monitoring and Evaluation on Key Management Questions

Research, Monitoring and Evaluation should provide the information and analyses to key management questions that must be answered to effectively meet the objectives of the Fish and Wildlife Program. These high-level management questions have many supporting information needs that fit within the RM&E framework and matrix identified above. The following management questions provide a focus and a basis for prioritization of F&W Program RM&E.

1. Are we the meeting biological and programmatic performance objectives Established within the FCRPS BiOp, the Columbia Basin Fish and Wildlife Program, and ESA Recovery Plans?
   - Monitor and assess the status and trend of adult fish abundance, adult and juvenile survival through the hydrosystem, and changes in survival or productivity associated with offsite mitigation actions.
   - Monitor and assess project implementation relative to project objectives and programmatic level standards

2. What factors are limiting our ability to achieve performance standards or objectives?
   - For populations that are not achieving performance standards or objectives, and where limiting factors to performance are not well understood, monitor and assess fish population and habitat status for limiting factors at each life stage.

3. What mitigation actions are most effective at addressing the limiting factors?
   - Action effectiveness research targeting specific limiting factors and associated mitigation actions.
   - Critical uncertainty research to better understand the underlying relationships between fish population performance and habitat conditions.

4. How should we allocate our limited integrated Fish and Wildlife Program funding to most effectively achieve defined performance standards and objectives and implement needed RM&E in concert with other regional mitigation and RM&E programs with common objectives?
   - Complete a regional inventory of what, where, when, and who for mitigation and RM&E actions (matrix) to assess current project coverage, areas of needed coordination, and cost sharing opportunities across federal, state, and tribal agencies.
   - Identify project specific RM&E needed to address management questions and mitigation actions that would most effectively address limiting factors for each targeted species.
   - Use the inventory (matrix) of existing and proposed RM&E and mitigation projects to perform a gap and prioritization assessment.
   - Prioritize mitigation projects and gaps based on criteria that include species status relative to performance objectives, species-specific limiting factors, and information on action effectiveness.
   - Prioritize RM&E project proposals and gaps based on criteria developed from the key management questions and associated RM&E needs.
   - Allocate funding to high priority projects and gaps within allocated funding levels.

- Develop targeted requests for proposals to fill high priority gaps.
- Identify cost sharing opportunities and responsibilities of other regional entities.
- Coordinated regional inventories and funding allocation assessments will be greatly improved through standardized implementation monitoring across the Pacific Northwest.
- Coordination, cost sharing, and allocation of responsibilities for RM&E, data networking, and mitigation actions is needed to optimize combined regional efforts and meet common regional performance objectives and RM&E needs.

Strategies for Developing A Regional Monitoring Framework under PNAMP

The following strategies will be implemented by appropriate combinations of the entities interested in developing a regional approach to monitoring.

1.) High Level Indicators

Identify a set of high-level indicators that can be used as the basis for developing provincial scale objectives. It will be important for provincial level objectives to encompass a core set of objectives common to the four states, while respecting additional reporting needs of the individual states. The process of developing, negotiating, and gaining regional acceptance of provincial level objectives will be highly analogous to the on-going efforts of Washington and Oregon. Once established, provincial level objectives will provide targets for our effort to develop a regional approach to monitoring in order to evaluate the effectiveness of the overall Fish and Wildlife Program. A subcommittee of PNAMP is currently working to develop a pool of high-level indicators that can be used as the basis for developing provincial scale objectives.

2.) Habitat Monitoring Strategy, Watershed Conditions

Develop and implement pilot projects for testing monitoring actions. Support the Upper Columbia, John Day, and Upper Salmon Pilot Studies as testing areas for comparing protocols and sampling methods. Support the design of routine monitoring and reporting of the key parameters that were used by EDT and QHA. This would follow the approach of Washington State in their application of a modest number of key high level indicators; i.e., the seven key parameters of the 52 assembled in EDT that collectively cover the range of watershed conditions. Much of this data is already being collected at the reach scale, but is not being manipulated for high scale evaluations. It will be important to regularly assess the effectiveness of these parameters for programmatic scale evaluation. A PNAMP subcommittee is working to develop a recommended set of high-level indicators for evaluation at the provincial and regional scales.

Identify the key questions that could be addressed with coordinated watershed level monitoring in support of management. Identify the current and proposed metrics, monitoring designs, and evaluation methods that could be used to answer these questions:

- What is the status of freshwater habitat within streams of the Pacific Northwest at a subbasin and statewide scale? What are the trends?
- What is the status of water quality in streams of the Pacific Northwest at a subbasin and statewide scale? What are the trends?

- What is the status of riparian condition (e.g., vegetation, seral state and number of roads) along streams of the Pacific Northwest at a subbasin and statewide scale? What are the trends?
- What is the status of upslope condition (e.g., vegetation, seral state, and number of roads) along streams of the Pacific Northwest at a subasin and statewide scale? What are the trends?

Some restoration projects will generate data that is relevant to regional monitoring objectives at scales beyond the project; i.e., watershed, subbasin, province, ESU, or basinwide. The data generated by such restoration projects presents an opportunity to help populate a regional database that can be manipulated for analytical purposes; i.e., the assessment of program elements. One example is the need for collection of data on the high level indicators that the region agrees should provide the basis for evaluation at the basin scale. More specifically, data relevant to the assessment of progress towards or away from provincial scale objectives provides an example of use for program assessment of data collected at projects. In order to develop data that constitutes a common currency, it is essential that projects generating data for higher scale monitoring purposes must utilize data collection protocols endorsed by PNAMP for regional use.

3.) Habitat Monitoring, Project Effectiveness

Develop a recommended network of Intensively Monitored watersheds (IMW) and reach specific studies for effectiveness monitoring. Intensively monitored watersheds are designed to address key questions in a disciplined scientific manner. All possible factors need to be considered: accurate measures of fish populations including spawners entering the watershed and juvenile migrants leaving the watershed, and accurate estimates of mortality factors such as marine conditions, harvest, hydropower, predation, and other factors directly affecting salmon abundance and survival. Without a holistic approach, it will not be possible to determine the response of salmon to habitat restoration and other management efforts. Recommend a strategy for placing Intensively Monitored Watersheds throughout the Pacific Northwest to monitor and evaluate "cause and effect" relationships between habitat restoration and management actions, and changes in fish population responses and other viable salmonids population criteria.

Members of PNAMP and other entities working with support from the Pacific Coastal Salmon Recovery Fund have already identified watersheds for the intensive monitoring of restoration project results. The PNAMP Effectiveness Monitoring Workgroup has developed a document to help guide this analogous activity, "Establishing a Network of Intensively Monitored Watersheds in the Pacific Northwest." The Fish and Wildlife Program is supporting this work via Project #200301700 "Develop and Implement a Pilot Status and Trend Monitoring Program for Salmonids and their Habitat in the Wenatchee and Grande Ronde River Basins." This project is an example of current development of Tier 2 statistical monitoring for status and trend of salmonids and aquatic habitat over three large subbasins in the Columbia Basin. Concurrently, the Bonneville Environmental Foundation is also supporting similar work in the Chinook River in the lower Columbia and Kootenai. We would concentrate on supporting these current efforts and avoid significant technical investments in other watersheds. This means that project monitoring would rely on low-cost methods such as photopoints.

Identify the key questions that could be addressed by coordinated project effectiveness monitoring in support of management. Identify the current and proposed metrics, monitoring designs and evaluation methods needed to answer these questions:

- What categories of restoration projects are most effective at the reach scale in terms of design longevity, habitat restoration, and local fish abundance?
- What categories of restoration projects have demonstrated actual improvements in fish production within the watershed?
- What is the location and functionality of fish passage barriers affecting listed species in the region? What are the trends?
- What is the location and functionality of fish restoration projects throughout the region?

4.) Population Status, Trends and Distribution

Seek prioritization of monitoring requirements through agreement with the NOAA Science Center and Technical Recovery Teams. A key issue could be the Program's relationship to specific requirements that may fall outside of their traditional fish and wildlife management responsibility. Identify, develop, and recommend a standardized set of metrics and compatible protocols for sampling designs and data collection. Coordinate and recommend standardized sampling protocols and field data collection procedures between Status/Trend, Effectiveness, and Implementation Monitoring efforts. Identify the key questions that could be addressed with coordinated fish population monitoring in support of management. Identify the current and proposed monitoring metrics, monitoring designs, and evaluation methods that could be used to answer these questions:

- What are the overall abundances of adult salmonid populations within each ESU, subbasin, and state? What are the trends?
- What is the current distribution of adult salmonids within each subbasin and state? What are the trends?
- What is the freshwater productivity (e.g., smolt/female) of each population within the ESU, subbasin, and state? What are the trends?

<u>Strategies for Artificial Production Effectiveness</u>

Monitoring the effects of artificial production on population health is an issue that lacks a regional forum. Such work is currently conducted project-by-project, yet constitutes a significant component of the current monitoring budget. Can ongoing work be prioritized for concentrated monitoring of representative projects, similar to the habitat effectiveness monitoring strategy?

Some ongoing artificial production projects have monitoring planning or research elements embedded in them. When these elements address monitoring questions or needs relevant to the region such projects should no longer be viewed solely as hatchery projects, but should be identified as dedicated monitoring or research projects warranting long-term funding commitments. The Council acknowledges that the continuation, or addition, of work elements

relevant to monitoring at the regional scale may significantly increase the annual funding requirements of the project, and that not all project sponsors will be interested in expanding this aspect of their work. However, in cases where sponsors are willing to continue their ongoing work and expand it to help the region address key monitoring questions they will be providing great service. Consequently, similar to the initiative for prioritizing watershed condition parameters, key attributes of hatcheries should be identified for consistent performance reporting.

ISRP Retrospective Recommendations for Monitoring Priorities

The ISRP has provided advice to the Council regarding monitoring that will be helpful in the development of a regional approach to monitoring. Specifically:

> 1. Develop a Tier 1 Trend Monitoring Procedure - Develop a sound Tier 1 trend monitoring procedure based on remote sensing, photography, and data layers in a GIS. Landscape changes in terrestrial and aquatic habitat and land use should be monitored for the smallest units; i.e., pixels or sites, possible. Future technology may allow low cost remote sensing of important parameters such as water temperature. Accuracy and precision of data layers in the GIS should be evaluated using "blind" classification of randomly selected units by on-the-ground verification during field visits. Large-scale Tier 1 trend monitoring of fish populations might include fish counts and condition in by-pass systems at dams, adult counts at dams, and adult counts at weirs. (*Staff Note:* These are considered Tier 2 under the Federal RME Plan, All H Strategy, CSMEP, and BiOp.) However, Tier 2 monitoring is often more cost-effective because counts can be made during a random or systematic sample of time.
>
> 2. Develop Common Tier 2 Probabilistic Site Selection Procedures - Cooperate with Columbia Basin-wide attempts to develop common Tier 2 probabilistic (statistical) site selection procedures for population and habitat status and trend monitoring. Use common protocols for on-the-ground or remotely sensed data collection. In so far as possible, measurement of indicator variables should be co-located on the same sites. Cooperate with status and trend monitoring plans being developed by the Action Agencies for implementation of the EPA EMAP probabilistic selection of aquatic sites in pilot projects in the Wenatchee, John Day, and Upper Salmon Subbasins (BPA Draft Report "Research, Monitoring & Evaluation For the NMFS 2000 FCRPS Biological Opinion"). The implementation and refinement of subbasin plans provides the opportunity to promote the collection of research and monitoring data with common methods throughout the entire Columbia Basin. Use of probabilistically selected sites should be made as soon as possible to avoid inherent biases in subjectively selected and non- co-located study sites.
>
> 3. Develop Models for Predicting of Abundance - As data are obtained on status and trends of wildlife or fish populations and habitat, develop empirical e.g., regression, models for prediction of current abundance or presence-absence of focal species. Potential predictor variables include not only physical habitat variables (flow, temperature, etc.), but also measures of habitat recovery actions that are currently in place or are implemented in the future. Use the empirical models to evaluate the relative importance of physical factors and habitat improvements and to predict abundance or

presence-absence throughout major sections of the subbasin. If adequate coverage exists with current study sites, it may be advisable to conduct initial analyses on current data.

4. Determine Whether to Initiate Additional IMW Research - Make best professional judgment, based on available data, as to whether any new research in the spirit of the Intensive Watershed Monitoring approach should be initiated immediately. Most new intensive research should arise as a result of the interaction of existing inventory data with new data arising in population and habitat status and trend monitoring.

The ISRP recommended that the approach in these four steps is the most likely to accomplish successful large-scale, long-term research, monitoring, and evaluation programs. An extensive long-term status monitoring program identifies important and unexplained trends and changes, i.e., identifies the intensive research that if conducted would explain the "why." Tier I trend monitoring by remote sensing procedures and Tier 2 statistical monitoring provide indications of trend and change in indicator variables, but the "why" of certain trends and changes is usually not well understood. Tier 1 and 2 monitoring lay the groundwork for wise choices about when and where more extensive or intensive Tier 3 research-oriented monitoring is needed.

Reference Document for Research Projects for the FY 07-09 Fish and Wildlife Program Provincial Review and Solicitation Process

This reference document provides an overview of some of the elements of the staff's draft Research Plan for the Columbia River Basin. It also identifies the critical management uncertainties considered by staff to constitute priorities for research in the FY 07-09 Program Provincial Review and Solicitation Process.

Rationale for the Research Component of the Fish and Wildlife Program

For 25 years the Council has fielded a diverse range of research projects in support of the objectives of the program. Hundreds of excellent projects, including dedicated research projects and habitat restoration projects with research elements, have been completed since the inception of the program in 1982. Research projects implemented under the Program and others in the Columbia River Basin have substantially advanced the state of scientific understanding of fish and wildlife restoration. Yet during the development of the Program, the Council adopted specific measures for research without clear prioritization of remaining critical management uncertainties. A plan to coordinate and guide research in the region was needed to improve the region's focus on key research priorities. Consequently, the Council called for development of a Columbia River Basin Research Plan (Research Plan) in the 2000 Program. The draft Research Plan will guide the development of a research program under the Fish and Wildlife Program, and foster collaboration with other research programs within the region.

Specifically, the draft Research Plan identifies critical management uncertainties and provides a vehicle for prioritization and implementation of research that addresses those uncertainties as they affect anadromous fish, resident fish, and wildlife and the ecosystems that support them. The draft Research Plan also provides a programmatic framework for research, and associates the research needed for ESA recovery planning with the broader responsibilities of the Program. For these reasons, the draft Research Plan will help the Council manage the Program by informing decision-making, facilitating scientific review, focusing project selection, and providing a basis for redirecting future research.

Definition of Research

Research is necessary to provide scientifically credible answers to questions pertinent to management that are complicated by uncertainty. For the purpose of this document, the term "research" is used broadly and includes more than just dedicated hypothesis testing, e.g., estimation, pattern recognition, observation, categorization, studies involving the collection of data to better quantify important known relationships, and improvements in statistical methods. In contrast, monitoring measures the existence and extent of changes while research helps to identify the causes of the change.

Developing a Framework for a Coordinated Regional Approach to Research

Interface with Other Research Plans in the Pacific Northwest

The draft Research Plan recognizes other research plans as important components of a potentially integrated regional approach to research, and provides a framework for establishing linkages between existing research programs and initiatives. Many of the critical management uncertainties identified in other research plans in the region have been incorporated into the draft Research Plan. (Some examples of these other plans include the Federal Research, Monitoring, and Evaluation Plan, Anadromous Fish Evaluation Program, the Strategy of the Pacific Northwest Aquatic Monitoring Partnership, and the Washington State Salmon Recovery Plan.) Critical management uncertainties were also drawn form several reports of the Independent Advisory Board Science and the Independent Scientific Review Panel, regional fish and wildlife managers, subbasin plans, and the reports of national science review groups, biological opinions, and other research plans within the region. To the extent possible, the draft Research Plan will facilitate the coordination of processes already in place.

Relationship of the Draft Research Plan to Subbasin Plans

Subbasin plans identified research needs that were either site specific or a prevalent need within the subbasin or province. The critical management uncertainties in this reference document include those set forth in the subbasin plans that have broad application at the subbasin scale, to other provinces, or to the entire Columbia basin. In the project selection process, preference will be given to research projects the results of which will have application beyond a particular subbasin.

Focusing on Critical Management Uncertainties in the Columbia River Basin

Critical management uncertainties arise from the most important policy issues facing the region and include both long-standing and contemporary issues important to the Fish and Wildlife Program. The draft Research Plan divides these scientifically important, but complex issues, into discrete topics. By articulating and organizing the critical management uncertainties under these topics, the plan will help the region identify research priorities, address knowledge gaps, and avoid duplication of effort. The critical management uncertainties are described at a high level in order to guide but not dictate research proposals, maintain flexibility of implementation, and to prevent the plan from quickly becoming dated.

In this reference document, the critical management uncertainties are presented in order of priority as determined by Council staff to facilitate the FY 07-09 project selection process. However, before the draft Research Plan is finalized, the prioritization of the critical management uncertainties may be revised, based on the recommendations of the managers and the members of the Regional Research Partnership, regarding opportunities for collaborative funding, and the logistics of implementation.

The following list of research priorities was drawn from the critical management uncertainties set forth in the draft Research Plan. They are presented in a priority sequence based on the degree to which they fall within the responsibilities of the Fish and Wildlife Program to mitigate and restore impacts from the hydropower system. Thus, the initial questions address impacts of the dams themselves, and then shift across hatchery, habitat, to other areas of research.

Identifying Regional Research Priorities

There will always be more research questions to answer than there are resources to provide answers. Therefore, research should be focused first on those questions that have the greatest relevance to the region. For example, does a critical management uncertainty apply to multiple subbasins or a single subbasin, or the status of a single population or will it help multiple populations? Scientists who work with "systems theory" often warn that trying to optimize one component, such as the mainstem, of a complex system like the Columbia River Basin may not necessarily increase the system's overall performance. Furthermore, the current emphasis on mainstem research may not provide the certainty that is sought in relation to the recovery of ESA-listed salmonids. In order to achieve an ecological approach it will be important to maintain a diversity of research activities across the basin and among anadromous fish, resident fish, and wildlife. The research priorities should guide the selection of projects so that the funded projects move us forward in a defined and consistent way that provides synergy across the projects.

Overarching Management Questions

1. What are the current sources and magnitudes of fish and wildlife mortality? Requires determination of the relative contributions of habitat loss, harvest, predation, and mainstem passage to reduced riverine survival and production of anadromous salmonids and other fishes targeted in the program. Answering this would help us understand the current status of the resources and where the likely areas of future research will be most fruitful.

2. What are the most effective techniques and activities that can be used to modify the sources and levels of fish and wildlife mortality and improve access to other benefits? Answering this tells us what we need to do in order to achieve improvements. Requires the development of quantitative indicators and analytical methods to assess the status of salmon, characterize risk factors, and evaluate out-comes of remediation efforts to improve environmental conditions or reduce risks.

3. What is the level and pattern of mortalities that is consistent with long-term survival and utilization of fish and wildlife resources? Answering this tells us where we need to go if restoration and recovery efforts are to succeed.

H-Specific Critical Management Uncertainties

For brevity, the following descriptions of critical management uncertainties are brief, and have been drawn from more detailed explanations in the Research Plan. Lists of specific research questions addressing each critical management uncertainty are also presented in the Research Plan.

1. What is the relationship between levels of flow and juvenile and adult salmon survival through the Columbia hydrosystem?

2. How effective are the current operational measures designed to protect outmigrating juvenile fall Chinook?

3. Determine the status, limiting factors, passage requirements, and management alternatives for anadromous and resident lamprey.

4. Is it possible to integrate natural and artificial production systems in the same basin to achieve sustainable long-term productivity?

5. What is the relationship between basin-wide hatchery production and the productivity of naturally produced salmon for a given level of ocean productivity?

6. What pattern and amount of habitat protection is needed to ensure long-term survival of fish and wildlife populations in the face of variable environmental regimes?
7. Can harvest be managed in mixed-stock areas like the ocean and mainstem Columbia by ESU or even individual populations?

8. Determine which recovery approaches will be most effective in regaining meta-population structure that will increase viability.

9. Determine the effects of toxic contaminants in the Columbia River Basin on fish and wildlife survival and productivity.

10. Identify primary introduction pathways of invasive and nonnative species and develop protocols and methodologies to limit new introductions.

Strategies for Implementing A Regional Research Framework

Regional Research Partnership

The draft Research Plan identifies research that can be funded directly through the Fish and Wildlife Program, as well as recommendations for research that will require collaborative, multi-party funding commitments by the Council and other entities with similar research mandates. In regards to the former, we suggest staff convene a management-level working group to identify priorities for project selection. The 2000 Fish and Wildlife Program states that a meeting of fish and wildlife agencies, tribes and

hydrosystem operating agencies should be convened regularly to identify key uncertainties about the operation of the hydrosystem and associated mainstem mitigation activities. In regards to the latter, we suggest the convocation of a Regional Research Partnership to facilitate the coordination of such research within the region, to identify and remove unnecessary redundancies, facilitate collaborative funding, and redirect savings to new research priorities. Many of the resource management entities contacted during the development of this draft Research Plan expressed support for this concept.

An initial task will be to develop a set of decision criteria to guide the identification of research priorities. It is anticipated that these decision criteria will be drawn from the prior experience with the internal prioritization processes of the respective members. Four key questions need to be addressed by the Regional Research Partnership:

1. How should the prioritization of the research agenda be conducted?
2. Who will designs the experiments?
3. How will the data be collected, stored, and analyzed?
4. How will the synthesis of the results be conducted and management implications be disseminated?

The Council is strongly positioned to serve as a sponsor of a collaborative regional research program that encompasses the multiple entities involved in fish, wildlife, and hydrosystem mitigation in the Columbia Basin. In particular, the Council's membership, structure and processes, e.g., public hearings, provide opportunities to facilitate coordination amongst the parties involved in research. In sum, the complications created by different, but often-overlapping management authorities and broad geographic scope generate the need for the draft Research Plan. It is intended that the critical management uncertainties identified in the plan will inform the research agenda for the region, with proposals to do specific research to be developed over time as the Plan is implemented via the FY 07-09 project selection process and other processes.

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Improvements to the Proposal form for FY 2007-2009 Project Section Process

The form has increased in complexity over the years, and we propose to collect the same or even more information from sponsors but by using new and improving technology, collect the information in ways that are simpler to the proposer. We often receive proposals from entities that have proposed projects before and are familiar with the proposal form and review process but recognize that the form may seem complicated and cumbersome for new sponsors. To address this issue, the staff proposes to use a web based form to improve accessibility and incorporate new, simple screens to provide clear instructions for new users, and quick access to existing information for experienced users.

We propose to bring in new information from the Bonneville PISCES system. Pisces is the new system being used to contract for and manage projects at Bonneville. The PICSES system has made great strides in collecting consistent project and contract information from project sponsors. The system currently houses the most accurate database of contact information, statements of work, status reports and reporting metrics.

The form used for past solicitation processes was created as a Microsoft Word document, which allows sponsors to fill in information entirely in free-form style. This leads to inconsistency in how sponsors fill out the form. This information cannot be converted into a database that can be queried and reports created with the information.

There are two main parts to the form. The first is a tabular section and collects contact information, a short description of the project, location of the project, information regarding the target species of the project, relationship of the proposed project to other projects and to Biological opinions, estimated budget by stage of the project, outyear budget estimates and cost share information.

We propose to use "drop-down box" technology to collect this same information in this part of the form. We will ask sponsors to provide project objectives and to provide task information in "work element" format. These are the same work elements that exist in the Pisces system today. Sponsors will be able to chose work elements from a drop down list and insert the appropriate work elements into the form. This will accomplish several things.

- ensure compatibility with Pisces if the project is selection for implementation,
- saves sponsor time due to efficiencies gained from choosing from a list of options, instead of free form writing
- reduces errors
- ensures easier aggregation for review & analysis
- improves translation from proposal to contract

Other information will be collected in a similar fashion. If the project is an existing project, the sponsor, from the existing PISCES database, can automatically pull contact information and other project information into the form.

- We propose slight modifications to the content of this section to obtain more detailed information about how the proposed project relates to other BPA funded projects, expected project outcomes, expected duration of the project, its estimated completion date, a description of deliverable and a more detailed cost-share information. We also propose to collect information regarding how projects are related to the 2005 Lower Columbia Interim Local Recovery Plan and Draft Regional Recovery Plans anticipated for release in 2006.

The second part of the form is a narrative containing a detailed description of the proposed project. It is this section that contains the detailed information used by the Independent Scientific Review Panel and others during project review. This section contains detail about project history (if it is an existing project), scientific background, objectives, and methods.

We propose to leave this part of the form in a free-form format to allow for maximum flexibility for the sponsor to enter the information they believe is important.

The most significant change to the narrative section of the form will be that the sponsor now needs to reference subbasin plans where relevant. The proposal will walk the sponsor towards a clear link of the proposed project objectives to the priorities of the subbasin plan, by strategy and if applicable, by location in the subbasin.

We estimate it will take several weeks to incorporate these changes into the proposal form but believe it will be ready to go when the solicitation is initiated. Meanwhile, we are encouraging interested sponsors to look at the existing form (included in the July Council packet memo and can be found on the CBFWA website) to begin organizing the information for their proposal, since the content of the existing form and the form under development, is very similar.