MAINSTEM AND SYSTEMWIDE PROPOSALS
Comments from the RME Workgroup 7/19/02

The Bonneville Power Administration (BPA) and the Northwest Power Planning Council (NWPPC) recently solicited proposals for the Mainstem and Systemwide Province of the Columbia River. Special emphasis was placed on soliciting projects that would meet the Action Agencies' (U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, and BPA) responsibilities under the National Marine Fisheries Services' FCRPS 2000 Hydro Biological Opinion (BiOp), especially those responsibilities associated with Reasonable and Prudent Alternative (RPA) actions 179-199. BPA, in coordination with the National Marine Fisheries Service (NMFS) and the NWPPC, agreed to implement a modified review process for this province. The purpose of this review is to provide some preliminary information to the ISRP and project sponsors on the ability of proposals to meet the RME needs identified in the Biological Opinion or as further defined by the NMFS-AA RME working group efforts. This process is intended to aid in the development, selection, and funding of a suite of integrated projects that will meet the intent of these BiOp RPA actions in the most effective, economic way possible.

The Action Agencies and NMFS members of the RME Workgroup identified a group of proposals that potentially addressed implementation of the RME BiOp RPA action items. Written comments on these proposals address how well the proposed project would meet the RME requirements of the BiOp. Some of the comments address shortcomings in the proposal relative to BiOp requirements and/or how the proposals might be modified to more directly meet the intentions of the RPA actions. The comments are reported in the attached document entitled "The RME Workgroup Preliminary Comments on Mainstem and Systemwide Proposals."

The RME Workgroup members providing these comments consist of scientists primarily from NMFS and the Action Agencies. The Workgroup has developed the RME requirements for the BiOP over the past year, including a Draft RME Framework and a RME workgroup charter (both will be posted July 22 at http://www.efw.bpa.gov/cgi-bin/FW/welcome.cgi?ViewMode=ExternalView). These draft documents form a foundation for a regional RME program as was contemplated under the BiOp. A Regional RME Coordination Workgroup will be formed soon to coordinate this BiOp RME Plan with the Fish and Wildlife Program and other regional federal, state, and tribal RME programs.

The RME Workgroup consists of a facilitating Planning Group of four members and six sub-groups: 1) Status Monitoring; 2) Habitat Action Effectiveness Research; 3) Hydro RME; 4) Harvest and Hatcheries RME; 5) Estuary and Ocean RME; and 6) Data Management. Each subgroup developed comments on the proposals addressing RPAs in their area (see the attached Table 1: RME Proposals that Received Comments by the RME Working Groups). Some proposals addressing RPAs in more than one area received a secondary comment from another subgroup. Secondary workgroup comments are also identified in the table. Although comments from each sub-group vary in formatting, each attempted to adhere to the following guidelines:

1. Identify the general project elements/requirements that are needed to meet the goals/objectives/intent of each RME RPA, and assess if the proposal possesses those features by addressing the following issues:

    a. Does the proposal satisfy the objectives of the RPA?

b. If not, explain what elements are lacking.
c. If the proposal partially satisfies the RPA objectives, suggest means or opportunities to strengthen the proposal.
d. If a proposal is entirely satisfactory, indicate so and note the particular strong points.

2. Assess the feasibility of the proposed work in general terms.

The RME workgroup will send the comments to the NWPPC, the proposal sponsors, the Columbia Basin Fish and Wildlife Authority, and the Independent Scientific Review Panel (ISRP). On a voluntary basis, the sponsors of these selected proposals may opt to work directly with the RME Workgroup to discuss and/or revise their proposal prior to final review by the ISRP in late August. Alternatively, sponsors may choose to address the comments of the ISRP and the RME Workgroup without any further collaboration. As a point of initial contact, proposal sponsors may contact Chris Jordan, NMFS, mailto:Chris.Jordan@NOAA.gov. Typically Sponsors who adequately address technical comments from the ISRP in their proposal are more likely to receive a favorable funding recommendation from the ISRP and Council.

Members of the RME Planning group (Chris Jordan, NMFS, Jim Geiselman, BPA, Michael Newsom, BOR, Jim Athern, COE) appreciate the additional work that may have resulted from this process modification and look forward to working with sponsors whose proposals may benefit from additional interaction and development. The modification of the review process will help initiate RME activities in 2003 for the Columbia Basin that utilize and build upon ongoing efforts, fill critical information gaps, and provide a scientifically sound base for subsequent analysis and evaluation of Biological Opinion related mitigation actions in the basin.

The RME Workgroup Preliminary Comments on Mainstem and Systemwide Proposals

7/19/02

A Product of the Following NMFS–Action Agencies

FCRPS-Biological Opinion RME Working groups:

Planning Group

Status Monitoring

Habitat Action Effectiveness

Hydro

Harvest and Hatchery

Estuary and Ocean

Data Management

Outline

Table 1: RME Proposals that Received Comments by the RME Working Groups

ProjectID	Title	SponsorName	Primary Work Group	Secondary Work Group
35001	Habitat Monitoring and Restoration Program for the Lower Columbia River and Columbia River Estuary	LCREP	EO	
35003	Vitality based studies of Delayed Mortality	UW	EO	
35011	The Floating Net Pen Transportation System Pilot Project	Columbia Basin Fishery Restoration L.L.C.	EO	
35020	Regional Project Effectiveness Monitoring Program for Columbia River Basin Listed Anadromous Salmonids.	NMFS-NWFSC	EO	
35025	Optimization of FCRPS Impacts on Juvenile Salmonids: Restoration of Lower-Estuary and Plume Habitats	OHSU	EO	HY
35031	Tagging Study Technical Committee	BPA	EO	
35046	Estimate juvenile salmon residence in the Columbia River Plume using micro-acoustic transmitters.	NMFS	EO	
35049	A multiscale evaluation of steelhead supplementation in the West Fork Elochoman River	NMFS	EO	
198201301	Coded-Wire Tag Recovery Program	PSMFC	EO	
199702400	Avian Predation on Juvenile Salmonids in the Lower Columbia River	OSU/USGS/CRITFC/ RTR	EO	
35012	Spatial scales of homing and the efficacy of hatchery supplementation of wild populations	NMFS	HH	
35014	Measurement of Quantitative Genetic Variation Among Columbia River Basin Chinook Propagation Programs	CRITFC	HH	
35015	Replicated stream system for the evaluation of hatchery and wild juvenile salmonid interaction and development of innovative culture technologies	UI/CRITFC	HH	
35027	Evaluation of Two Captive Rearing Methods for Assisting with Recovery of Naturally Spawning Populations of Steelhead and Coho Salmon	USFWS	HH	
35037	Measuring the potential for domestication selection of spawn timing in chinook captive and supplementation programs; implications for recovery.	UW and NMFS	HH	
35039	The influence of hatcheries and their products on the health and physiology of naturally rearing fish	USGS, CRRL	HH	
35041	Monitoring the reproductive success of naturally spawning hatchery and natural spring chinook salmon in the Wenatchee, Tucannon, and Kalama Rivers	WDFW, NMFS	HH	

35049	A multiscale evaluation of steelhead supplementation in the West Fork Elochoman River	NMFS	HH	
198909600	Monitor and evaluate genetic characteristics of supplemented salmon and steelhead	NMFS	HH	
199105500	Natural Rearing Enhancement Systems (NATURES)	NMFS	HH	
199305600	Assessment of Captive Broodstock Technologies	NMFS	HH	
200001700	Kelt Reconditioning: A Research Project to Enhance Iteroparity in Columbia Basin Steelhead (Oncorhynchus mykiss)	CRITFC	HH	HY
35010	An Interactive Biodiversity Information System for the Columbia River Basin	NHI	DM	EO
35048	NWFSC Salmon Data Management, Analysis, and Access for Research Monitoring and Evaluation Programs	NMFS-NWFSC	DM	
198810804	StreamNet	PSMFC	DM	
199601900	Second-Tier Database Support	UW	DM	
35016	A Pilot Study to Test Links Between Land Use / Land Cover Tier 1 Monitoring Data and Tier 2 and 3 Monitoring Data	NWFSC	SM	
35017	Inventory and Synthesis of Physical Process Models and Methods to Supplement Habitat Conditions Analysis and Subbasin Planning	KWA and Golder	SM	
35019	Develop and Implement a Pilot Status and Trend Monitoring Program for Salmonids and their Habitat in the Wenatchee and Grande Ronde River Basins	NMFS-NWFSC	SM	
35031	Tagging Study Technical Committee	BPA	SM	HY
35060	Instream evaluation of populations, migration, individual adult return and wild-hatchery interactions of naturally produced salmonids	USFWS	SM	
198201301	Coded-Wire Tag Recovery Program	PSMFC	SM	
198201302	Annual Stock Assessment - Coded Wire Tag Program (ODFW)	ODFW	SM	
198201304	Annual Stock Assessment - Coded Wire Tag Program (WDFW)	WDFW	SM	
198906500	Annual Stock Assessment - CWT (USFWS)	USFWS	SM	
199403300	The Fish Passage Center	PSMFC	SM	HY
199803100	Implement Wy-Kan-Ush-Mi Wa-Kish-Wit Watershed Assessment and Restoration Plan Now	CRITFC	SM	EO
35020	Regional Project Effectiveness Monitoring Program for Columbia River Basin Listed Anadromous Salmonids.	NMFS-NWFSC	AER	EO
35022	Habitat Mitigation Tracking System	STEWARD AND ASSOCIATES	AER	DM
35050	UW Offsite Habitat and Fish Survival Effectiveness Monitoring	UW	AER	

35058	Evaluation of food availability and juvenile salmonid growth rates under differing thermal and sediment regimes.	CRITFC	AER	
35062	Impacts of Flow Regulation on Riparian Cottonwood Ecosystems in the Columbia River Basin	University of Idaho	AER	
35047	Evaluate Delayed (Extra) Mortality Associated with Passage of Yearling Chinook Salmon Smolts through Snake River Dams	NMFS	HY	
198331900	New Marking and Monitoring Techniques for Fish	NMFS	HY	
198712700	Smolt Monitoring by Federal and Non-Federal Agencies	PSMFC	HY	
199007700	Northern Pikeminnow Management Program	PSMFC	HY	
199302900	Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers	NMFS/NWFSC	HY	
199602000	Comparative Survival Rate Study (CSS) of Hatchery Pit Tagged Chinook & Comparative Survival Study Oversight Committee	PSMFC & CBFWF	HY	
199900301	Evaluate Spawning of Fall Chinook and Chum Salmon Just Below the Four Lowermost Mainstem Dams	PSMFC, ODFW, USFWS, PNNL	HY	
35033	Collaborative, Systemwide Monitoring and Evaluation Program.	CBFWA	OG	

Planning Group - Preliminary Comments on Mainstem and Systemwide Proposals

The Planning Group commented on Proposal 35033 due to the predominant planning and process components of this proposal and duplication of current activities by the RME Work Group.

Proposal 35033 - Collaborative, Systemwide Monitoring and Evaluation Program

This project is well written and has several valuable objectives and tasks that are needed by the region. However, most all of the objectives and tasks are currently underway as part of other regional processes and associated contracts or proposals such as: 1) the NMFS Biological Opinion and the Federal Caucus' Basinwide Salmon Strategy RME Program; 2) NMFS and USFWS TRT Recovery Planning; 3) the NWPPC's Provincial Review Process;4) Data Protocols and Data Needs Assessment Contracts; 4) Subbasin Planning; 5) the Regional Analytical Advisory Committee; 6) USFS , BLM, and EPA Monitoring Programs; 7) Oregon and Washington State Monitoring Programs; 8) the Lower Columbia River Estuary Program; and 9) the Corps of Engineer's AFEP Program. The NMFS and Federal Action Agencies have developed a draft RME framework that overlaps much of the needs of the Fish and Wildlife Program and other Federal and state RME programs. A regional workgroup session in September, 2002 with the formation of an RME Regional Coordination Group is already planned to provide a collaborative process for coordinating these overlapping programs. The state and tribal fishery agencies, CBFWA, USFWS, and the NWPPC will be included in this Regional Coordination Group as well as other key agencies for the RME Programs identified above. This coordination effort will include resident fish RME needs under the USFWS BiOp. The work proposed by 35033 would be redundant to these other processes and associated contracts. The proposal also appears to duplicate current CBFWA support contract objectives of coordinating the state and tribal fisheries agencies and the region. In addition, funding is proposed for federal and state employees that are already requirements under current programs and activities.

Status Monitoring Subgroup - Preliminary Comments on Mainstem and Systemwide Proposals

Of the 105 proposals submitted under the Mainstem/System Province, the Status Monitoring Technical Work Group reviewed those that met the following criteria:

1. Clear application of habitat or anadromous salmonid population status monitoring;
2. Clear relationship of proposed work to Status Monitoring RPAs (180, 181).

In the opinion of the RME Planning group, the subset of proposals with these elements included: 35016, 35017, 35019, 35031, 35060, 198201301, 198201302, 198201304, 198906500, 199403300, and 199803100. In addition, proposal 199900301 was considered secondarily related to status monitoring, but of primary importance to the Hydro Work Group.

35016 - A Pilot Study to Test Links Between Land Use / Land Cover Tier 1 Monitoring Data and Tier 2 and 3 Monitoring Data

This project is a pilot project to test the use of LU/LC spatial data in Willamette subbasin as Tier 1 monitoring data. The project will then link these data layers to Tier 2 fish data in Willamette River floodplain and potentially to Tier 3 data for floodplain restoration projects. Ultimately the approach will be applied to the John Day or Wenatchee River subbasins.

a. Does a proposal satisfy the objectives of RPA?

The proposed work directly addresses the landscape-scale monitoring component (Tier I) of RPA 180. The proposed work indirectly addresses RPA 181 through the work's dependence on remote sense (satellite imagery) data.

b. If not, explain what elements are lacking.

c. If the proposal partially satisfies the RPA objectives, suggest means or opportunities to strengthen the proposal.

The concepts put forth in the proposal lack significant detail to effectively evaluate exactly what would be done and what the specific outcomes would be. A significant effort will need to be undertaken to explain exactly what goes into quantifying and assessing ecosystem status, how this relates to fish distribution (habitat associations), and how they will be linked to form a more synthetic analysis of the two. As the proposal is currently written it appears to focus on large floodplain systems in the Willamette basin, a tributary-based focus will need to be added to improve the export of this approach to systems throughout the Columbia.

d. If a proposal is entirely satisfactory, indicate so and note the particular strong points.

e. Assess the feasibility of the proposed work in general terms.

Given the track record of the researcher's involved in this proposal and the general concepts they describe, the proposal shows significant promise in principle to address key aspects of RPA 180/181. Developing specific analyses linking population status and ecosystem status will be critical elements in the development of Tier 1-3 monitoring programs. This proposal

potentially offers a significant opportunity to bridge some of these gaps to develop more quantitative and landscape-based analyses that inform managers about critical bottlenecks to population and watershed recovery. Development of a much more detailed proposal should answer just how the project would accomplish this.

35017 - Inventory and Synthesis of Physical Process Models to Supplement Habitat Condition Analysis and Subbasin Planning

This proposal would engage earth scientists, civil/systems engineers, geomorphologists, hydrogeologists and others familiar with the science of physical processes to conduct a synthesis inventory of tools and develop a Landform Library, database, web based application, and model.

a. Does a proposal satisfy the objectives of RPA?

This proposal is vaguely linked to RPA 180 in the narrative but no specific linkages are established by the proposal. The proposal is really aimed more at supporting subbasin planning than monitoring, although data derived from monitoring will be necessary to model development and application.

Proposal indicates applicability to RPA 180 as it would provide new overall subbasin analysis and planning capability similar/parallel to EDT, SSHIAP, and/or GIS-based analytical functionality. The primary purpose appears to be to provide tools that translate habitat treatments into specific changes in habitat attributes, which could then be used by EDT or other habitat analysis tools. Relevance to RPA 180 appears to be in which habitat attributes might be monitored.

b. If not, explain what elements are lacking.

Explicit linkage to RPA's 180/181 is lacking. The proposed models/tools to be developed under this proposal would need environmental data developed under RPA's 180/181, in addition to providing some synthesis of the potential and/or realized benefits of restoration actions. The proposal is long on concepts but very sparse on the details, particularly in the objectives section.

This project appears to relate more to RPA 183 (effectiveness monitoring) by identifying the physical attributes that might respond to specific habitat actions and predicting the potential magnitude of the responses.

c. If the proposal partially satisfies the RPA objectives, suggest means or opportunities to strengthen the proposal.

The authors need to integrate biological processes (riparian vegetation) into their conceptual framework of what processes control the environment. Ecosystem processes and structure are not simply based on physical processes controlling the environment. A more holistic conceptual framework would be useful. In addition, treatments need to be expanded to consider passive processes in addition to engineered solutions. Sometimes the best solution is just taking the human disturbance off the land, not just mitigating or engineering around it.

d. If a proposal is entirely satisfactory, indicate so and note the particular strong points.

e. Assess the feasibility of the proposed work in general terms.

This proposal is highly ambitious as it attempts integrate significant known and unknown elements of putting together physically-based models and tools to quantify cause and effect in biophysical processes. The direction of their approach is based on physical processes and an engineering-oriented perspective on how to address recovery of watersheds. There doesn't seem to be much emphasis on the *biological processes* (e.g. riparian vegetation) that also shape and form the habitat template. While the problem statements addresses by this proposal are laudable, it is unclear how the proposal will address many of these lofty goals.

35019 – Pilot Status and Trend Monitoring Program

This proposal seeks to develop, as subbasin scale pilot programs, status and trend monitoring efforts for anadromous salmonids and their habitat in the upper Wenatchee and Grande Ronde River basins.

This proposal most directly addresses RPA 180, and supports elements in up to 10 additional RME RPAs.

RPA 180 – The objective is to develop and implement a basinwide hierarchical monitoring program, focusing on population and environmental status. This proposal is in direct response to that need. The approach is to initiate two pilot efforts in different subbasins to establish a foundation of suitable sampling protocols and estimation procedures. Our work group sees merit in this approach. Good thinking has gone into this product. However the proposal could be improved somewhat by providing more details on a few key issues. Those issues are specified as guidelines for implementing status monitoring, in a draft RME framework document that has had limited circulation (RME Framework for the 2000 Biological Opinion – NMFS and Action Agencies). Those guidelines are useful in proposal develop, as well as implementation. Clearly this proposal has adopted some of the guidelines. But we recommend the full complement of guidelines be considered. Separate guidelines were compiled for adult, juvenile life stages and environmental attributes. As an example we reproduce the population status adult life stage guidelines from that document here:

Proposed Guidelines -Adult Life Stage:

1. Clearly identify the demographic scale (e.g. population, ESU, deme; wild/natural or hatchery origin) for which abundance estimates will be produced.
2. Demonstrate that the target unit is readily distinguishable from other sympatric population units (e.g. spawning location, timing, etc.).
3. Identify the performance measure or indicator that will be monitored/enumerated (e.g. redds, carcasses, weir counts, dam counts etc.) in order to estimate spawner escapement. If multiple methods (e.g., weir counts and redd counts) are used to enumerate the same population, specify.
4. Describe the method used to enumerate the indices, e.g., aerial or ground surveys, peak or cumulative (repeated) counts, and the error associated with the method.
5. Specify any expansion factors (e.g. spawners/redd, expansions beyond index areas) or other adjustments (e.g. harvest removals, passage mortality) that need to be applied to the raw counts. Provide the rationale supporting the use of those expansion factors, how the factors change over time, how they are estimated, and assess their reliability.
6. Provide estimates of the annual age structure of the sampled population, and how this is estimated.

7. Provide an assessment of the accuracy and precision associated with the proposed methods for estimating spawner escapement, or total numbers of returning adults.

Data will be collected on an annual basis at the sub-basin scale:

- Adults, Spawners, or Redds
- Age structure of spawning population
- Sex ratio of spawning population
- Fraction of naturally spawning fish that are of hatchery origin, (CV should be specified.)

35031 - Tagging Study Technical Committee

a. Does a proposal satisfy the objectives of RPA?

This proposal is not explicitly linked to RPA's 180/181 in the narrative, but it is implicit that some tagging studies can/do support RPA 180 (Population and Environmental Status Monitoring – Tiers 1 and 2) by having the potential to estimate life-stage specific survival rates such as SAR. The proposal does reference 15 unspecified RPA Actions that involve pit-tags.

b. If not, explain what elements are lacking.

An explicit linkage to RPA 180 and specific objective, tasks, and methods to ensure that pit-tag studies that can support RPA 180 are identified and reviewed by the proposed Tagging Study Technical Committee. The proposal in its current form is aimed at being a central clearinghouse for all proposed and on-going tagging studies.

c. If the proposal partially satisfies the RPA objectives, suggest means or opportunities to strengthen the proposal.

One approach the proposal should consider is using state and federal scientific take permits to track the who, what, and where in the application of tagging technologies. For example, in Oregon the 4d and State Take database can tell exactly who is pit-tagging how many of what species where and for what reason. NMFS or States throughout the Columbia would require similar information.

d. If a proposal is entirely satisfactory, indicate so and note the particular strong points.

e. Assess the feasibility of the proposed work in general terms.

Although the appeal of this type of effort is apparent, it seems that instead of creating another entity to oversee/advise another aspect of activities in the CRB, the essential elements of this proposal could be incorporated into another project already addressing pit-tags. These might include the PTAGIS or Fish Passage Center. The tasks and responsibilities could be incorporated into on-going work statements with the same net result.

35060 - Instream Evaluation of Populations, Migration, Individual Adult Return…

This proposal seeks to evaluate stock status, distribution, and abundance of juvenile and adult salmonids using new PIT tag techniques.

The proposal does not indicate applicability to either RPA 180 or RPA 181. None of the target species in the study area belong to ESUs covered by the NMFS 2000 FCRPS BiOp. The project proposes to study, among other things, the effects of PIT-tag size on juvenile fish survival and growth, which could be considered testing of tools (i.e., PIT tags) that are widely used in some monitoring activities that do satisfy RPA 180. Therefore, while the proposal does not directly meet RPA needs, the methodological aspects of the work, as well as its potential contribution to the development of Biological Opinion status monitoring performance standards merit consideration.

198201301 - Coded-Wire Tag Recovery Program
198201302 - Annual Stock Assessment - Coded Wire Tag Program (WDFW)
198201304 - Annual Stock Assessment – Coded Wire Tag Program (ODFW)
198906500 - Annual Stock Assessment - Coded Wire Tag Program (USFWS)

(These 4 proposals were considered as a block.)

These proposals do not claim relevance to either RPA 180 or 181; they list only hatchery-release groups as being tagged, although Short Descriptions and Abstracts for some proposals indicate wild populations will also be assessed. Proposal narratives indicate that the tagged hatchery fish should be fairly representative of wild fish in migratory patterns, timing in the fisheries, etc., but the proposals do not suggest which ESUs or wild stocks might be represented by which hatchery stocks being tagged. However, absent direct application to RPAs, CWTs may be very useful for estimating harvest of similar wild stocks in monitored fisheries, which would apply to status monitoring performance standards (e.g., stage-specific survival).

For many stocks addressed by these proposals, release locations are Bonneville Pool or below Bonneville, so groups are exposed only to small reaches of the mainstem/estuary migration corridor and part of the inriver fisheries. PIT-tagging projects are probably better for monitoring smolt-adult-returns of listed stocks than are CWTs.

Sponsor may wish to clarify which ESA-listed stocks, if any, might be represented by the proposed release groups and the type of resulting data that might be applicable to those listed stocks.

199403300 - The Fish Passage Center

These comments are aimed at how the 199403300 Fish Passage Center proposal addresses RPA 180, which calls for the development of a program to determine population and environmental status while allowing ground-truthing of regional databases. The proposal includes some important elements in the service of the Biological Opinion RPA 180, specifically, the measurement of annual juvenile population abundance, survival, and SARs. Useful guidelines for the proposal, taken from document Mainstem/Systemwide Province Stock Status Program Summary (February 22, 2002), are given below. We suggest that the sponsors address these guidelines in the proposal. Using these guidelines, we have commented on how the proposal 199403300 can be strengthened or clarified to help meet the RME needs specified in RPA 180.

<u>Guidelines: Tier 2 Population Status-Juvenile Life Stage:</u>

1. Clearly identify the demographic unit (e.g., population, ESU, deme; wild/natural or hatchery origin) over which sampling will take place.

Comments: It would be helpful if the proposal would clearly identify the demographic units targeted. According to reports on the FPC website, Comparative Survival Study work appears to be aimed at spring/summer chinook juveniles of hatchery-origin, while the Smolt Monitoring Program is aimed at all salmon species. Presumably identifying demographic units can be done using PITTAGIS data system and FPC databases. As far as RPA 180 is concerned it is measures of population abundance, survival, and trend that are of interest. The proposal would be made more relevant to the RPA 180 if it had a thorough treatment of wild juveniles. The current FPC work is more relevant to hatchery-born juveniles, and, according to the CSS report, it cannot presently be demonstrated that hatchery-born juvenile survivals can be used to reliably estimate wild-born juvenile survivals. The method for constructing confidence intervals for wild fish juvenile numbers, adult numbers, and in-river survivals should be explicitly treated in the proposal. What progress has been made in this endeavor? Do the confidence intervals indicate that estimates are reliable?

2. Clearly identify the spatial scale represented by each samples (e.g., reach, watershed, basin).

   Comments: The location of the samples for the Smolt Monitoring Program (traps and dams) are clearly indicated in the proposal. For the Comparative Survival Study tagging sites, it was necessary to read reports on the FPC website. A link (or reference) should be supplied to this information, along with a table of the tagging sites.

3. Identify the performance measure or indicator that will be monitored (e.g. summer/winter juveniles, outmigrating smolts). If different methods are used to enumerate the same population, specify.

   Comments: The performance measures are described in the proposal. They include smolt-to-adult ratios, juvenile passage survivals, and relative abundance measures.

4. Describe the method used for enumerating the indices, e.g., snorkel surveys, electrofishing, smolt trap, and the error associated with the method.

   Comments: The method for estimating juvenile survival (the program MARK) is outlined in the proposal. The proposal should have greater detail in the methods for estimating relative abundance and smolt-to-adult ratios. It should reference papers and reports where detailed methods are given for estimating these measures. The proposal should describe which measures have standard errors and confidence intervals reported, and how they are developed.

5. Specify any expansion factors (e.g. aerial expansions, trap efficiency) or other adjustments (e.g., daylight trapping only) that need to be applied to the raw counts. Provide the rationale supporting the use of those expansion factors, how the factors change over time, how they are estimated, and assess their reliability.

6. Provide an assessment of the accuracy and precision associated with the proposed methods for estimating juvenile abundance or an index of juvenile abundance.

Comments: Estimates of bias and precision should be available for all estimates derived. When sample sizes are small biases can be large and precision poor. How will bias be assessed?

199803100: Implement Wy-Kan-Ush-Mi Wa-Kish-Wit Watershed Assessment and Restoration Plan Now

Proposal indicates applicability to RPA 180. Objectives and tasks that appear relevant (paraphrased):

3.b. Promote incorporation of standards in Tribal Restoration Handbook…

4.c Cooperate with StreamNet to gather digital data (GIS) on watersheds to identify and address data gaps.

5.b. Train and use Salmon Corps members to collect necessary field data where gaps exist for assessments and project monitoring.

7.b. Coordinate development of a comprehensive water quality monitoring program for the Columbia River, develop a protocol and coordinate installation of a comprehensive thermograph system in the lower tributaries and dam reservoirs throughout the Columbia and Snake rivers to monitor water temperature.

Proposal lacks technical details, reports and documents (e.g., Handbook) describing project methods and results apparently are not available on either BPA or sponsor web pages, so cannot evaluate how any of these activities might satisfy RPA 180 or compare to RM&E guidelines being developed regionally. Need results and data.

Habitat Action Effectiveness Research Subgroup - Preliminary Comments on Mainstem and Systemwide Proposals

This review focused on RME requirements for RPA 183. The document titled "Guidelines for Action Effectiveness Research Proposals for FCRPS Offsite Mitigation Habitat Measures Guidelines for Habitat Action Effectiveness Research" and the ISRP comments to this document were referenced on the web within the solicitation for proposals. An update to these guidelines that addresses some of the ISRP comments is in the draft RME Framework document being posted July 22 at http://www.efw.bpa.gov/cgi-bin/FW/welcome.cgi?ViewMode=ExternalView**.** All of the following proposals were preliminarily identified as having relevance to RPA 183. This preliminary designation was made on the basis of some indication that they dealt with habitat modification projects or were explicitly named as habitat effectiveness monitoring projects.

35020—NMFS Regional Project Effectiveness Monitoring Program

Does the proposal satisfy the objectives of RPA 183?

The proposals intent to provide a mechanism to coordinate and prioritize implementation of projects, provide design guidelines for monitoring, and implement several pilot projects does not fully satisfy RPA requirements.

Elements that are Lacking.

Much of the work proposed here is already underway within the Action Agencies RME framework. What this proposal offers that the AER team is not currently doing is the implementation of several pilot projects. These pilot projects can be used to test the methods and guidelines established by the AER team. In addition, the pilot studies can test cause-effect linkages between management actions and the proposed indicators. I believe this is an important component of AER.

Means and Opportunities to Strengthen Proposal.

The study proposes to develop pilot projects aimed at grazing control, barrier removal, and installation of irrigation diversion screens. Providing information on how these studies will be developed or the methods that will be used would clearly strengthen the proposal. It is not clear if the pilot studies intend to test the protocols (and selected indicators) developed by the AER team, or if the pilot studies will "intensively" investigate the web of mechanistic relationships in the stream ecosystems (the latter is referred to as "intensive effectiveness research" by the AER team).

Feasibility of Proposed Work.

More information on the development of the pilot studies is needed to ascertain the feasibility of the proposed work. It is not clear how the studies will be developed, nor is it clear if the sponsor intends to implement and test the protocols developed by the AER team. I sense that the sponsor intends to develop their own monitoring criteria and guidelines.

Project ID 35022 – Habitat Mitigation Tracking Project

Does Proposal Satisfy RPA Objectives?

Principally, this proposal is not RPA 183 relevant because it doesn't address monitoring or implementation of specific projects as identified under RPA 183 of the BIOP. Rather it requests funds to develop a programmatic structure.

What Elements are Lacking.

This proposal is weakened by a lack of specific information on what the developed products will look like. For example the proposal includes large scale quotes of the Paulsen et al (2002) document that describes what projects should look like, but does not identify current habitat projects that it would coordinate.

This project received primary review by the Data Management Subgroup. Like 35001, 35020 and 35050, it proposes to organize a project management team to track, prioritize, and coordinate projects within the Columbia River Basin. This project has three objectives: 1) develop a framework to track project implementation, 2) develop a system to confer credit on those doing the projects and 3) to develop habitat indicators as surrogates for fish responses. The criteria above indicate that programmatic proposals that lack any supporting intention to do some monitoring will receive low priority. In addition.

Means and Opportunities to Strengthen Proposal.

This proposal would be strengthened by more detailed information on what habitat improvement projects are currently out there to be monitored. If there were some assessment of current projects, then one might be able to provide some more details within the proposal to allow the reader to know that the proposal sponsors are constructing an appropriate team and that they know what they are getting into.

Project ID 35050—UW Offsite Habitat and Fish Survival

Does the Proposal address RPA Objectives?

Overall, the proposal offers a useful approach to developing a central design that provides guidance and criteria for monitoring management actions within the Columbia Basin. However, much of what is proposed is already well established or is currently being developed by the Action Effectiveness Research (AER) The proposal also intends to develop and coordinate a WEB SITE that will centralize monitoring protocols, guidelines, data, and information. I believe this is necessary and beneficial, as it will help the Action Agencies coordinate current and future projects, provide quality control of data, and provide a central location for sharing information. This site would provide potential sponsors with all the information needed to develop a valid effectiveness monitoring study.

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What Elements are Lacking.

This proposal lacks specific information on what the developed products will look like. There is not a clear indication of what investment the authors have made in determining which monitoring needs exist and what percent could be feasibly executed.

Means and Opportunities to Strengthen Proposal.

This proposal would be strengthened by some more detailed information on what habitat improvement projects are currently out there to be monitored. The development of a centralized WEB SITE is an excellent idea. The proposal should describe in more detail how it intends to develop the site, how it will be managed, and how data quality will be controlled. A simplified outline or structure of the WEB SITE would be useful.

Specific Comments: The proposal needs to provide more information on how it intends to evaluate past and current projects. The proposal needs to define the criteria by which it intends to evaluate the projects. For example, a checklist of questions that will be asked of each project is needed. I should think the following list of questions could be asked of each project:

1. What hypothesis is the project testing?
2. Where is the project located (province, subbasin, etc.)?
3. What type of project was implemented (e.g., road closure, addition of LWD, etc.)?
4. How many sites were sampled?
5. Where were the sites located?
6. What was the sampling design (sampling in test and control sites, sampling only in test sites, etc.)?
7. How were sites selected (e.g., random selection)?
8. What fish species were targeted?
9. What factors were measured (include both physical/environmental and biological)?
10. Where were these factors measured?
11. How were these factors measured?
12. How frequently were factors measured?
13. How were the data analyzed?
14. What are the key conclusions?

A simple checklist of questions like these will not only help rank the validity of projects, but will also identifying gaps in our understanding of effects of management actions on fish populations within and across watersheds or provinces.

35058- Evaluation of food availability and juvenile salmonid growth rates

Does the Proposal address RPA Objectives?

This proposal is designed to examine the effect of temperature and food availability on juvenile salmon growth rates within the John Day Subbasin.While the experimental layout, with pristine treatment

areas and anthropogenically altered control areas, is well-designed for the study objectives, its relevance to 183 is limited.

Elements the Proposal is Lacking.

The proposal does not directly meet the requirements of RPA 183. The sample size and site selection do not adequately address monitoring needs.

Means and Opportunities to Strengthen the Proposal.

It could be made more applicable by simultaneous measurement of salmonid survival rates in treatment and control areas, in addition to growth rates. This proposal will also benefit from increased sample size and site selection that produces more representative sampling. The basic material is present to generate a high quality project.

35062 – Impacts of flow regulation on riparian cottonwood ecosystems

Does the Proposal meet RPA Objectives?

They have one stated objective that suggests a potential experimental base upon which to ask the RPA 183 relevant question of action effectiveness: can regulated flows be modified to promote recovery of riparian cottonwood ecosystems? However, the sponsors do not propose to measure any listed salmonid survival rates or other variables directly relevant to 183, nor would this be possible in their Flathead control area. As such, 35062's direct relevant to 183 is very limited.

Elements the proposal is lacking.

Measurements of salmonid survival rates, variables directly relevant to 183, and site location to meet these objectives are lacking.

Means and Opportunities to Strengthen Proposal.

This is a clear, focused and well-supported proposal. The focus is on the ecology of the trees with some superficial references to how that in turn affects habitat for anadromous fish. It is unclear if this project can be modified to address questions regarding the affects of riparian improvement projects on fish.

Hydro RME Subgroup - Preliminary Comments on Mainstem and Systemwide Proposals

Of the numerous proposals submitted under the Mainstem/System Province, the Hydro RME Subgroup reviewed those that met the following criteria:

1. Clear association to mainstem passage, operations or habitat was established
2. Salmon or steelhead were the species of interest (FCRPS BO focus).
3. Association with RME-specific RPAs 179-199 was explicitly stated or implicitly obvious, or
4. Relevance to evaluating Hydro Survival Performance Standards was apparent.

In the opinion of the RME Planning group, the subset of proposals with those elements included: 35047, 198331900, 198712700, 199007700, 199302900, 199602000 and 199900301. A second subset had hydro RME implications, but the thrust of the proposals appeared to be more appropriate for other work groups to review. However, we were directed by the Planning Group to provide hydro-specific comments where appropriate. That subset of proposals included: 200001700, 35031, 199403300, and 35025.

35047 - Extra Mortality, Hydro related - NMFS

The authors indicate the proposed research provides information useful in satisfying RPAs 188 and 195.

The objective of RPA 185 is to contrast productivity and hydrosystem effects (delayed) between wild stocks in upper Snake stocks and those in the Lower Columbia Basin. To accomplish this, the RPA calls for PIT-tagging both wild population complexes with PIT tags. This proposal relies heavily on hatchery stocks from the Snake drainage as the population monitored. Thus its ability to fully satisfy the intent of RPA 188 is not readily apparent. The primary objective of this research is to identify the existence and generally quantify the magnitude of extra mortality as associated with dam passage. The linkage to the RPA is not all that pronounced.

The objective of RPA 195 is to establish how much post-Bonneville mortality is attributable to natural causes or other processes, such as hydrosystem passage or general fish fitness. This proposal is relevant to the fundamental intent of this RPA, i.e., identify delayed effects associated with hydrosystem passage. The proposed research clearly addresses the hydrosystem contribution to any extra, unexplained mortality that may exist. The experimental approach appears sound. However, the sample sizes necessary to provide the precision targets are considerable (~ 236,000 PIT-tagged @ LGR) and may be a challenge to acquire in some brood years.

Ancillary Benefits. These tagged yearling chinook will also yield inriver survival estimates. The large sample sizes all but ensure improved precision over most extant smolt survival estimates. This could be advantageous to the extent these estimates can be incorporated into survival Performance Standards tests prescribed in the BO. The proposal does not discuss the suitability of these estimates for such evaluations. The RME Hydro Work Group encourages the authors to explore this application and incorporate it as a section in the proposal.

198331900 - New Marking and Monitoring Techniques for Fish - NMFS

The proposal sponsors indicate this project addresses RPA Actions 50, 87, 192, and 193. The RME subgroup sees direct and critical association with 50, 87, and 192. However, we question the extent that this project contributes to 193 (RPA Action 193 includes discriminating hatchery and wild fish, tracking fish in oceanic environs, and determining growth and survival for specific wild stocks.

This project provides PIT tag detection infrastructure support, specifically development/refinement of transceivers, antenna, and associated hardware/software used at dams and in small streams. Its current focus is on the expansion of current PIT-tag interrogation technologies for adult PIT detection in fish ladders (RPA Actions 50 and 192) and juvenile PIT detection through high flow systems (e.g., Bonneville second powerhouse corner collector, full-flow surface bypass facilities, and small streams; RPA Action 87). These developments include transceiver upgrades for multiplexing and auto-tuning, and alternative antenna design (e.g., arrays, flat plate).

Juvenile and adult PIT tag detection facilities at dams are critical to estimating reach survival, assessing progress toward hydrosystem performance standards, evaluation of transportation, and addressing critical uncertainties such as delayed transportation mortality, extra mortality, passage through multiple bypasses, and adult return rates.

For purposes of hydrosystem RME and performance standard tracking, objectives 1, 2, and 4 are very relevant. The RME subgroup wants to emphasize the continued importance of development of high flow juvenile PIT detection at the Bonneville second powerhouse corner collector - this is imperative for sustaining sufficient detection rates in the lower Columbia River. We also want to emphasize the continued support of developing adequate adult detection capability in fish ladders. Each is imperative to assessing progress toward hydrosystem performance standards. The Status Monitoring subgroup should assess the priority and adequacy of objective 3, development of in-stream PIT tag interrogation systems. Objective 5, adaptation of state-of-the-art technology to tagging fish (e.g., video technology, spectral analysis) does not appear to be associated with any RPA Action.

198712700 – Smolt Monitoring Program. Federal and State Agencies.

The proposal identifies three BO research actions (1240,-41,-42) that can benefit from information obtained under this program. These research actions are linked to RME RPA 199 in the FCRPS BO. We further note that some of the estimates generated in the SMP may also have utility in the context of juvenile performance standards (Hydro) specified in the BO.

*RA 1240. S*pecifies the evaluation of the spillway weir at LGR Dam using telemetry techniques. The contribution of the SMP would be to collect fish to use in the research.

RA 1241. The action specifies that telemetry be used to assess smolt behavior and survival at dams in the Lower Columbia. The contribution of the SMP would be to collect fish to use in the research.

RA 1242. The objective of this RA is to evaluate inriver migration survival and transportation survival from LGR to BON Dam. Fish PIT tagged under the SMP have the potential to contribute to this. However, it is not clear if the sample sizes described in the proposal will generate survival estimates

with suitable precision. It would be instructive to detail these points in a revised version of the proposal, so the utility of the proposed survival estimates can be estimates can be evaluated a priori.

Performance Standards. The survival estimates derived from the PIT tagged SMP fish can potentially have application in the evaluation of BO performance standards. However, concerns regarding the suitability of precision need to be addressed before this could be determined. Also, as we noted for the NMFS survival proposal, the reliance on hatchery stocks may restrict the utility of these fish, since ESA focuses on wild stock performance. If this proposal remains linked to ESA needs, then it should offer evidence or rationale to support the use of hatchery fish as surrogates for wild populations.

199007700 - Northern Pikeminnow Management Program - PSMFC

This proposal addresses RPA Action 100, which is not explicitly linked to BO RME RPAs 179-199. However, the RME Planning Group suggested we offer commentary on it.

This proposal is for the continuation of the Northern Pikeminnow Management Program, which is the primary thrust of RPA 100. This is an implementation project to directly improve juvenile salmonid survival within the FCRPS through the reduction of predation mortality; as such, it contributes directly to the hydrosystem juvenile reach survival performance standard. Integral to this project is a biological evaluation component to evaluate the effectiveness of removal fisheries. Results of biological evaluation indicate that annual predation losses have decreased approximately 25% when compared to pre-program levels and that there is no evidence of either inter- or intra-specific compensation. The management program and exploitation monitoring are implemented annually; the biological evaluation component is implemented in a 3-5 year cycle with the next evaluation in 2004. The RME group generally considers this project to be adequate for addressing northern pikeminnow predation.

The RME group also notes that the other component of RPA 100, evaluation of methods to control predation by non-indigenous fishes, is not addressed by this project. While this project includes evaluation of the effect of northern pikeminnow removals on predation, growth, and reproduction of smallmouth bass, walleye, and channel catfish, it does not include potential methods to reduce predation mortality by these fishes. This component of the RPA is outside the scope of the Northern Pikeminnow Management Program.

A new proposal is referenced, titled *Assess the Feasibility of Reducing Predation on Juvenile Salmonids in the Columbia River through Operation of the Hydropower System*" (Proposal No. 35032) that attempts to address the second component of RPA 100. Specifically, the proposal entails review of existing data and evaluation of components of the riverine habitat that might be manipulated through operations to reduce the number of predators and associated predation losses. Sponsors propose to initially focus on areas downstream of Bonneville Dam, with some work in the lower Columbia and eventually in the lower Snake rivers. We note several areas of concern that may reduce the immediate priority of this proposal. Based on the proposal, there is too limited information on the location and timing of spawning of smallmouth bass and walleye for determining the feasibility of operational management alternatives; substantial resources may need to be devoted to obtain this information before any direct evaluation of operations to reduce predation might be feasible. This may be true, but we question if general information on spawning of smallmouth bass and walleye (e.g., timing, conditions, etc.) may not provide sufficient basis for developing an operation scenario for evaluation. Also, the proposal is for the river reach below Bonneville Dam where water elevation is largely a result of river flow (and to a lesser extent tidal influence). Reservoirs in the lower Columbia

or Snake rivers upstream of Bonneville Dam afford considerably greater flexibility for operations across a range of flow conditions that would be more conducive for evaluating the feasibility of operational control of these predators. Conditions below Bonneville, on the other hand, are largely subject to river flow and not easily manipulated for such control measures. We also want to note that control of non-native species may be in direct conflict with regional fishery management objectives; this has important policy implications that must be addressed for this approach to be feasible.

199302900 – Inriver smolt survival estimates - NMFS

The researchers indicate that the proposed research contributes information that supports RPAs 185, 189, 190 and 193. The RME group also notes the estimates can be important for evaluating compliance with certain Hydro-Performance Standards. But the authors do not mention such.

The thrust of the proposal is to continue generating inriver smolt survival estimates for Snake River stocks (steelhead, spring/summer chinook and fall chinook). The research contributes data useful in satisfying elements within each of the RPAs they identify. We generally agree. The Objective of RPA 185 is to produce useful estimates of "D". The RPA states that extant estimates have wide confidence levels, implying their utility may be questionable. New estimates should exhibit improved precision. Part of that improvement may lay in the quality of inriver survival estimates that are a product of the proposed research. The proposal could be improved by describing precision associated with the inriver survival estimates and implications to the future utility of "D".

The objective of RPA 189 is to investigate causes of apparent discrepancies in adult return rates associated with different smolt passage routes. This proposed research may contribute information regarding the magnitude of survival exhibited by screen-bypassed fish, but not other routes individually. Furthermore, there is not expressed intent in this proposal to identify actual causes or mechanisms of mortality. Overall contribution to RPA seems limited.

The objective of RPA 190 is to improve our understanding of wild Snake River fall chinook early life history, including juvenile survival. If the hatchery fish used in this research are suitable surrogates then this proposal has merit in contributing to RPA 190. However, the RME Hydro Work Group encourages the authors to incorporate information into the proposal that supports the use of hatchery fish as surrogates.

The objective of RPA 193 emphasizes developing novel tools for discriminating hatchery and wild fish, track fish in oceanic environs, and determine growth and survival for specific wild stocks. The linkage of the proposed research to this RPA is not readily apparent.

In the opinion of the federal RME team the proposed research has important implications in evaluation compliance with performance standards at the BO-prescribed check in periods, although the authors did not explore this application. ESU-specific life stage survival for juveniles and adults while migrating through the FCRPS are key performance measures detailed in the BO. The proposed research will be generating smolt survival estimates for Snake River stocks of interest, albeit using primarily hatchery fish.

It would be instructive if the proposal specified sample sizes and precision associated with survival estimates. Lacking this information it is difficult to ascertain how useful the estimates will be in progress and compliance tests called for in the BO. Also, the performance standards in the BO are

ESU-specific. The estimates from this research involve only Snake River ESUs. It seems there are opportunities to develop estimates for other stocks as well, such as Yakima and Leavenworth as Zabel et al. (2002) report. We encourage expanding stock coverage if tractable. Finally, the BO focuses on wild fish survival, where this research uses primarily hatchery fish. Justification for using these as surrogates should be discussed in the proposal.

199900301 – Fall chinook and chum salmon spawning in the lower Columbia - State and Federal Agencies

This proposal appears to be in direct response to RPA 199, RA-2001.

That RA (2001) calls for research to collect relevant information for lower Columbia fall chinook and chum salmon spawning populations. The tasks in this proposal appear to satisfy the information requested in that RA. The Willamette Lower Columbia TRT has been developing guidelines for delineating population structure of these species. Their finding would appear to have bearing on population sampling resolution that may be required to satisfy status monitoring requirements under the BO. Presumable that RME work group will treat that matter further.

The proposal calls for the CWT implantation of Ives/Pierce Island fall chinook. It is not clear how these will be discriminate from other stocks that may move downstream and inhabit those locales. Clarifying this would be helpful.

199602000 – Comparative Survival Study – CBFWA

The proposal identified several Hydro-related RME-RPAs that the research would support 185 (“D”), 187 (“D”), 188 (lower Columbia stocks), and 189 (EM).

The RME Hydro work group recognizes that the proposed research has the potential to provide data and estimates useful in satisfying elements in those RPAs. Hydro-related RME RPAs 185, 187, 188, and 189. The smolt survival estimates have further application in the context of testing compliance with the Hydro performance standards as noted for other proposals in this review. The proposal was thorough in specifying sample sizes comprising key index and treatment groups. However, it would be beneficial if that information was translated into precision estimates. Alternatively power analyses for key hypothesis tests could be presented to demonstrate the estimates will be satisfactory for evaluating key hypotheses remaining in the region. This would also aid in assessing the utility of the information in performance tests that would be performed at the checkins.

Summary

It appears that many of these proposals have failed to recognize the need and potential for using their survival estimates in progress and compliance test at the checkin years. If the survival, D and EM estimates from these collective research efforts do not yield estimates of suitable precision, their use by NMFS at the checkin periods may be questionable. Furthermore, if claims or implications that the research will resolve key hypotheses be supported with power analyses included in the proposals.

Brief reviews of proposals that have implications to BO RME Hydro-related matters.

200001700 – Kelt reconditioning - CRITFC

Elements of this proposal involve assessing the effectiveness of certain treatments relative to hydro passage experience by kelts. For example, some kelts will be transported to below Bonneville Dam in order to evaluate potential benefits of this passage option. This type of study would be classified as action effectiveness research in the RME-vernacular of the BO. It would be instructive if the authors provided additional detail regarding projected sample sizes and the ability to detect meaningful differences in adult returns, between hydro passage options (transport vs. not).

35031 – Tagging Coordination - BPA

The Hydro work group sees a need for the coordination activities identified in this proposal. Many of the survival studies linked to RME RPAs appear redundant in coverage, while gaps can be evident. A forum to coordinate tag use and coverage, particularly in terms of satisfying BO needs could be advantageous to the community.

199403300 – Fish Passage Center - CBFWA

As part of the FPC activities a variety of smolt survival estimates are generated using combinations of hatchery and wild fish. In the RME-context of the NMFS BO, these estimates could be useful in computations of D, EM and testing compliance with survival Performances Standards for the hydro system. It would be instructive if the investigators provided examples as to how these might be applied to such. Given there are a number of other NMFS (D, EM, inriver survival estimates) and CBFWA (CSS) studies producing hydro-related survival estimates, it would be useful to understand what the applications of the collective estimates are. It appears that there may be overlap for some stocks and river segments. However, this is difficult to decipher since the efforts are not treated as a whole. This is probably more of a regional process matter than one specific to FPC investigations.

35025 - FCRPS Impacts on the Columbia River Plume - OSU

This proposal establishes the need to link FCRPS river management to plume dynamics and productivity and ultimately salmon survival. Clearly there is a need to understand the contribution of early ocean conditions to salmon survival. The additional premise that the FCRPS might be managed to improve those conditions is less obvious. The river system is already being managed for multiple purposes; flood control, hydro power, irrigation, recreation and optimization of inriver smolt survival. To suggest that the system can be substantively altered further would require considerable reprioritization of existing river uses. This is not to diminish the importance of studying and understanding plume dynamics, but to be realistic with respect to expectations regarding the flexibility of the FCRPS.

Harvest and Hatchery RME Subgroup - Preliminary Comments on Mainstem and Systemwide Proposals

35012 - Spatial scales of homing and the efficacy of hatchery supplementation of wild populations

Address critical element of RPA?

It is relevant to RPA 184. Will provide information useful for planning/implementation of hatchery reform measures to increase homing fidelity and reduce straying of hatchery fish.

With respect to RPA 182, a straying study may help determine the specific origin of hatchery fish spawning in the wild (some of whom are likely to be strays and should be so identified).

A portion of the proposal, the study of site-specific olfactory changes during imprinting, does not directly address either RPA 184 or 182.

Scope? [ESU's covered, Transferability, Species covered] The proposal does not address multiple listed species. The study offers no broader application than to the Yakima spring chinook population. Could the scope of this proposal be broadened to include other species, e.g. steelhead?

Study design adequate, as is, or as may be modified? Yes. For RPA 184, the proposal will suffice to determine the spatial and temporal patterns of homing and spawning by wild and hatchery-reared salmon released from supplementation facilities (and to examine the physiological changes in the olfactory system during imprinting).

35014 - To investigate the existence of genotype-environment interactions in salmon, the building block of local adaptation, and thus refine the concept of conservation units.

Address critical element of RPA? No. More relevant to RPA 179. The proposal does not attempt to address hatchery/wild reproductive success in RPA 182. With respect to RPA 184, it neither addresses the topic of hatchery reform, nor address whether conservation hatcheries contribute to recovery. Too far removed from practical application and not adequately linked to specific reform under RPA 184.

Opposing view. Relevant to RPA 184. Will examine genotype-environment interactions and will attempt to determine if incubation performance of a stock is related to life history performance and if incubation success could be used as predictor of expected performance through the adult stage. Results of study may provide guidance in identifying and prioritizing populations for conservation activities.

Scope? [ESU's covered, Transferability, Species covered] Would address listed chinook. Results not transferable between species, ESUs, or populations, due to site- specific artificial selection regimes at experimental location.

Study design adequate, as is, or as may be modified?

No comment at this time.

35015 - Develop sixteen independent streams using spring water at the University of Idaho Hagerman Research Station with the goal of providing a research facility for investigating interaction between wild and hatchery salmonids and rearing technique development.

*Address critical element of **RPA?*** No. Proposal itself is not directly responsive to either RPA. Proposal is for design and construction of 16 experimental stream channels. There is a possibility that the experimental stream facility proposed in this project could be used to investigate issues of relevance to RPA 184.

Scope? ESU's covered, Transferability, Species covered] Future research at the proposed facility would target fall chinook. No evidence in proposal of transferability to other populations, ESU's, or species.

Study design adequate, as is, or as may be modified? No comment at this time.

35027 - Test and evaluate two hatchery reform methodologies; Assess natural reproductive success of returning hatchery-origin adults; Establish Abernathy, Germany, and Mill creeks as a Tier 3 "monitoring and evaluation" site for anadromous salmonids.

Address critical element of RPA? Relevant to RPA 182, 184. With respect to RPA 184, the steelhead aspect of the proposal may provide a viable alternative to "broodstock mining" and genetic bottlenecks for conservation hatchery programs seeking to obtain and utilize local stocks (the thrust of many reforms).

Scope? [ESU's covered, Transferability, Species covered] Targeted species are as follows. Steelhead: Southwest Washington ESU, Coho salmon: Lower Columbia River, Southwest Washington coast ESU, Chinook salmon: Lower Columbia River ESU (naturalized population in Abernathy Creek). Proposal includes more than one listed species and ESU, and may have transferability to many others. As a side benefit, this technique, if successful, might have direct application to SNAPP (RPA 175)

Study design adequate, as is, or as may be modified? Well designed and written.

35037 - Measuring the potential for domestication selection of spawn timing in chinook captive and supplementation programs; implications for recovery.

Address critical element of RPA? Although this proposal does not directly address either RPA 182 or 184, it may have some relevance to both.

With respect to RPA 184, this proposal relates to hatchery reforms aimed at lessening domestication selection. The comparison of levels of domestication selection between supplementation programs and captive brood programs might provide insight on which types of conservation hatcheries have the potential to contribute to recovery, compared to their respective domestication risks

Opposing view. Of some relevance to RPA 184. Basic research, but not directly linked to what hatchery operators could apply in the real world to reform hatcheries. The problem already is "addressed," albeit imperfectly, by measures designed to minimize domestication selection.

With respect to RPA 182, a study of domestication may provide information on a potential genetic risk of hatchery fish spawning in the wild, i.e. outbreeding depression. Likewise, the inadvertent selection for altered run timing, and the transmission of those traits to wild fish via hatchery fish spawning in the wild, may be a valid biological concern.

*Scope? [ESU's covered, Transferability, Species covered]*Puget Sound Chinook ESU. Single species/ESU. Uncertain transferability.

Study design adequate, as is, or as may be modified? Important basic research. The data from this proposal concerning levels of inbreeding, however, might have limited , i.e. site specific, application, since the experimental populations at the UW have been under culture for several generations.

35039 - To determine whether standard hatchery or supplementation operations influence the concentration of Renibacterium salmoninarum in streams and subsequently affects the health of naturally-rearing salmonids

Address critical element of RPA? Not relevant to RPA 182.

This proposal would relate to RPA 184, since hatchery reforms include protocols to reduce disease transmission. Diseased wild fish would be less likely to survive to adult, which would affect the risk of extinction for listed fish.

Relevant to RPA 184 and planning of hatchery reforms. Investigates influence of salmonid hatcheries and hatchery fish on transmission of disease to wild fish. Before the value of a reform can be assessed, the occurrence of the problem needs to be assessed.

Scope? [ESU's covered, Transferability, Species covered] Spring Chinook, steelhead, and other hatchery-reared salmonids. Results generally transferable to other hatcheries and other ESUs, but may be pathogen specific.

Study design adequate, as is, or as may be modified? Studies could also be combined with the heritability studies on disease resistance and immune function, this may also provide information on whether conservation hatchery breeding protocols may affect genetic traits for disease resistance. This affects the degree to which conservation hatcheries may contribute to recovery, at a genetic, in addition to a demographic, level (another topic under RPA 184).

Could this proposal examine other pathogens at the same time? Proposal No. 35041 - Evaluate the relative fitness (mating success and progeny survival) of hatchery and wild spring chinook that spawn naturally in rivers

Address critical element of RPA? Designed to directly address RPA 182. It is a direct examination of reproductive success hatchery fish relative to wild fish. This project has high likelihood of shedding

light, based on empirical evidence using latest genetic analytical tools, on relative spawning effectiveness of hatchery fish vs. natural fish.

The proposal may relate to a topic under RPA 184, i.e. conservation hatcheries. The issue of whether conservation hatcheries contribute to recovery depends, in part, on the reproductive success of hatchery F1s, and their progeny, spawning in the wild

Scope? [ESU's covered, Transferability, Species covered] Mainstem/system wide spring chinook. Transferability is good due to diverse experimental locations.

Study design adequate, as is, or as may be modified? Good. Biological traits are suitable as surrogates for "fitness". The inability to capture fish at Tucannon weir may weaken design for this captive stock. Significant precocious fish contribution would dilute ability to attribute progeny to hatchery or natural adult spawners. We may want to discuss with investigators ways to improve the ability to carry comparison over into the success of progeny and other possible explanations for survival differences between hatchery and wild fish.

35049 - A multiscale evaluation of steelhead supplementation in the West Fork Elochoman River .

Address critical element of RPA? 182- Poor fit. Mostly juvenile work. Since it does not study reproductive success or compare hatchery/wild spawning success, it does not address RPA 182

Possibly relevant to RPA 184. It could be tied to reducing effects of juvenile hatchery fish, particularly competition after release in target stream. Some hatchery reforms target the ecological effects to listed fish from hatchery/wild interactions during the juvenile stage. But, it is not clear whether this part of the study is related to any particular hatchery reform that has been effectuated or is being considered.

Scope? [ESU's covered, Transferability, Species covered] Target species include steelhead, coho salmon and cutthroat trout. Uncertain transferability, i.e., uncertain to what degree the conclusions would be transferable to Upper Columbia.

Study design adequate, as is, or as may be modified? This proposal could be revised in order to specifically relate it to a particular hatchery reform and tying the results to a metric for reducing extinction risk under RPA 184.

198909600 - Monitor and evaluate genetic characteristics of supplemented salmon and steelhead

Address critical element of RPA? Relevant to both RPAs. The proposal applies to RPA 182, since it includes the study of reproductive success. Little Sheep steelhead portion addresses this RPA well.

The proposal applies to RPA 184, as well. It relates to conservation hatcheries as a recovery tool (and the extent to which it might contribute). Some hatchery reforms are directed at reducing gene flow from hatchery fish to wild fish.

Scope? [ESU's covered, Transferability, Species covered] Target species are chinook salmon and steelhead. It covers most of an ESU and two listed species. Results should be broadly applicable.

Study design adequate, as is, or as may be modified? Regarding Sheep Creek, the data presented at the captive brood workshop showed limited success at assigning parentage, an issue that requires further discussion with investigators. This may be exacerbated for steelhead, where the genetic exchange with resident fish may be fluid, and where precocial and resident males are likely to contribute genetically. In general, good use of techniques available to determine contribution at this time. Incorporates latest genetic technology plus parentage analysis. This may provide the most powerful insight to relative fitness of hatchery vs. wild spawners.

It resembles some of the M&E programs addressing genetic effects from hatcheries – it describes basic genetic metrics (Ne, Fst, etc.), then tracks change over time. Continues long genetic data set, giving this special monitoring/evaluation value. For chinook, good monitoring for supplemented versus unsupplemented areas in the Grande Ronde (although straying into unsupplemented areas has occurred, and will cloud results).

199105500 - Evaluate NATURES effects on salmonid behavior, morphology, physiology, postrelease survival, and ecological interactions.

Address critical element of RPA? Not relevant to RPA 182. Proposal has nothing to do with reproductive success of hatchery fish. Only juvenile survival effects are examined.

Relevant to RPA 184. By looking at effects of NATURES rearing on survival, and the ecological risk/benefits of NATURES fish released into wild, the project addresses both major issues associated with transforming (reforming) hatcheries to conservation tools, thus very pertinent to 184. Conservation hatcheries may eventually employ NATURES rearing techniques to increase juvenile survival.

It also has potential application to evaluating hatchery reforms under RPA 184. Hatchery reform includes changes in rearing techniques, including the use of NATURES rearing, which deserve testing before universal application.

Scope? [ESU's covered, Transferability, Species covered] Target species include steelhead, chinook salmon, sockeye salmon and coho salmon. Results may be transferable to other hatcheries.

Study design adequate, as is, or as may be modified? This is a continuation of the research on the effectiveness of NATURES hatchery rearing techniques. Adequate study design. No other comment at this time.

199305600 - Develops technologies to improve genetic integrity, inculture survival, maturation, and reintroduction success of ESA-listed salmon captive broodstocks. Applies research on physiology, behavior, genetics, ecology, microbiology, and nutrition.

Address critical element of RPA? It has limited application to RPA 182, since it does not compare hatchery/wild reproductive success. Some of the proposed captive rearing evaluations compare the performance of hatchery fish to wild fish. Other evaluations in the proposal do not.

Proposal is applicable to RPA 184. The use of captive broodstock as a conservation hatchery technique is contemplated in the BiOp. Proposal may be useful to determining the potential of one type of conservation hatchery action to contribute to recovery.

Scope? [ESU's covered, Transferability, Species covered] Proposal will target chinook salmon and sockeye salmon. Results should be broadly applicable to most captive brood programs using these species/ESUs.

Study design adequate, as is, or as may be modified? Yes. Generally, this proposal is for continued development/refinement of captive broodstock technology, focusing on a number of parameters that will ultimately affect success. However, some of the individual studies listed in the proposal do not fit under either RPA.

200001700 - Continue to test and evaluate methods to recondition steelhead kelts and/or transport them around hydro system, generate science-based management recommendations, and assist in their implementation to rebuild wild steelhead populations throughout the Basin

Address critical element of RPA? It has no application to RPA 182, since hatchery/wild reproductive success is not evaluated as a part of the proposal.

With respect to RPA 184, it has very limited application, since its goal is to simply use hatchery facilities as a means to "improve" the usefulness wild steelhead often found in juvenile collection facilities associated with hydro operations. This proposal fails to specifically address how conservation hatcheries can contribute to recovery. Proposal doesn't develop an argument as to kelt reconditioning constitutes a hatchery reform.

Opposing view. This could be a reform, if, for instance, a hatchery program live spawned fish and released them below Bonneville Dam or reconditioned them. Proposal may have relevance to RPA184, if it is characterized as a conservation hatchery strategy to replace current strategies.

Scope? [ESU's covered, Transferability, Species covered] Proposal targets steelhead, and may have application to steelhead throughout Columbia River system.

Study design adequate, as is, or as may be modified? Uncertain at this time.

Ocean and Estuary Subgroup - Preliminary Comments on Mainstem and Systemwide Proposals

35001 – Habitat Monitoring and Restoration Program for L. Col. R. and Estuary

Action items addressed - RM&E - 161; 162. Also supports 158; 159; 160; 163. This project has been coordinated with BPA as part of the LCREP Science workgroup. The monitoring protocols proposed are supposed to integrate with the larger RM&E focus for the basin. Future direction on RM&E should be communicated to the project applicant to further refine this proposal in accordance with that direction.

35003 – Vitality Based Studies of delayed Mortality

The following ongoing projects are, or would, contribute to the delayed and extra mortality issues. Before funding this proposal a complete integration should be made with the COE's work, Carl Schreck, OSU, and with the ongoing NMFS and Dept. of Fisheries Oceans Canada project 1998-014 (now a separate proposal 30010), and the acoustic projects proposed in this RM&E section as 35046 and 35047, and the estuary as 30007.

35010 – An Interactive Biodiversity Information System for the Columbia River Basin

Action item addressed - 198. The proposal identifies data fields related to the entire basin, including estuarine resources (i.e., bays and estuaries; inland marine deeper waters; marine nearshore areas). The project applicant needs to identify which data fields are to be emphasized/actually used, and how this prioritization relates to the estuary/basin. This proposal identifies a specific data management structure. The structure needs to be reviewed to determine how the project fits with current conversations on data base management, including the ongoing StreamNet project, EDT, and with work that LCREP has been coordinating.

35011 – Floating Net Pen Transportation System Pilot Project

Potential action items addressed - 187; 195. The artificial transportation aspect of this proposal is not in concert with the habitat restoration efforts and proposed research on ecosystem function of the lower river and estuary currently being conducted by LCREP, NMFS, and others.

35020 – Regional Project Effectiveness Monitoring Program for Col. R. Basin Listed Aandromous Salmonids

Action item addressed - 183. Pilot projects have already been chosen that do not include the estuary. Unless that focus is going to be expanded, this proposal does not address the estuary.

35025 – Optimization of FCRPS Impacts on Juvenile Salmonids: Restoration of Lower-Estuary and Plume Habitats

Action items addressed - 158, 194; 161, 187,196. Doesn't clearly address all the RPAs proposed by authors. Focus is on physical aspects of estuary and plume. Compliments projects 199801400 and 30001 (estuary province numbers), so the project will be linked to understanding biological aspects of the estuary. This project is complete enough for current funding

35031 – Tagging Study Technical Committee

Potential action items addressed - 196; 197. The proposal needs to specifically clarify what action items it actually supports. This proposal may be duplicative with other existing forums. The project needs to clarify whether or not this proposal will address the estuary and plume. If the forum is funded, it should include membership, or ad hoc involvement, and full coordination with the acoustic tag work under development (COE, NMFS, KinTama).

35046 – Estimate Juvenile Salmon Residence in the Col. R. Plume using micro-acoustic transmitters

Action items addressed - 193; 195; 197. This project is complementary to the KinTama Proposal 30007, submitted under the Estuary Province. The tag being developed by NMFS is an important addition to the work completed under the KinTama innovative project. The smaller tags will fill a data need for NMFS' estuary/plume work, and as they are further developed, may be used for longer term studies on the shelf. The KinTama acoustic array feasibility study was funded as the ISRP's top ranked Innovative Project in 2000 and is now complete. An appropriate scaled back deployment involving both contractors might include the estuary and plume and an array covering the shelf at the northern end of Vancouver Island. There is also a need to coordinate with studies funded by Portland District of the Corps.

35049 – Multiscale Evaluation of Steelhead Supplementation in the W. For Elochoman River

Does not address action items in BO related to the estuary. Focus is on hatchery fish interaction. There was a question whether this would be considered estuary or tributary during initial review.

1982-013-01 – Coded-Wire Tag Recovery Program

Potential action items addressed - 165; 166; 174; 179; 184. Includes estuary and part of ocean in sample area. This proposal needs to be coordinated with proposal 35046 and 30007 which may be more effective means of tracking movement and habitat use, and the work that John Ferguson of the Northwest Fisheries Science Center is doing on acoustic tags to assess potential duplication of effort and do a better job of developing trend data on delayed mortality. It also needs to be coordinated (it has to some extent in the past) with the Dept. of Fisheries Oceans Canada, US/Canada Shelf sampling cruises, funded since 1998 under project 1998-014 and now proposed as 30010.

1997-024-00 – Avian Predation on Juvenile Salmonids in the Lower Col. R.

Action items addressed - 49; 101; 103; 104; 186; 195. This project is complete enough for funding.

1998-031-00 – Implement Wy-Kan-Ush-Mi Wa-Kish-Wit Watershed Assessment and Restoration Plan Now

Potential action item addressed - 180. This proposal claims to support 23 different RPAs but is so broad and vague it is not possible to clearly establish that support. It could possibly be focused on

estuary and RM&E needs as the CRITFC Wy-Kan-Ush-Mi Wa-Kish-Wit report is one that the NMFS BO has supported.

Data Management Subgroup - Preliminary Comments on Mainstem and Systemwide Proposals

The April 24th, 2002 BPA and NWPPC solicitation generated some proposals that address the data management and data collection needs of the BiOp. Additional information and requirements regarding Data Management are identified in the RM&E framework paper (posted July 22 at http://www.efw.bpa.gov/cgi-bin/FW/welcome.cgi?ViewMode=ExternalView). The following proposals, identified by project number and name are reviewed below: (35010 – An Interactive Biodiversity Information System for the Columbia River Basin; 35022 – Habitat Mitigation Tracking System; 35048 - NWFSC Salmon Data Management, Analysis and Access for Research Monitoring and Evaluation Programs; 198810804 - StreamNet; and, 199601900 – Second Tier Database Support.

35010 – An Interactive Biodiversity Information System for the Columbia River Basin

Does the Proposal address RPA Objectives?

The proposal represents a substantial development of a stand-alone DBMS with addition of data and mapping and Internet capabilities. In other words it would represent a fully functional end-to-end information system, with custom query tools, all for a subset of regional data. While each of the proposals have the potential to improve information system delivery, specifically by overcoming technical constraints with the existing IBIS system, and by expansion to new data sets, the proposal does not document well the extent of these claims. The proposal does not adequately address RPA's 180, 181, or 198.

Elements the Proposal is Lacking.

The strengths of the proposal are in it's claims to overcome deficiencies in the current IBIS information system design, offer basin wide mapping utilities, and provide currently needed wildlife and related habitat data, and some resident fish data, not otherwise available in a regional as opposed to a state context. However there are many lacking elements within the proposal. Despite claims of developing materials to support monitoring; it is not clear how the proposal will actually meet goal 180 by developing or integrating with a monitoring program and ground-truthing data. This proposal appears to be to develop imagery technology rather than to provide the imagery. The main problem with providing digital imagery is not the technology for delivery, rather, it is the very high cost of acquiring the imagery. Since there is no budget request in this proposal for actually acquiring spatial data layers, and it could take years to acquire "all the Columbia spatial data layers", there is no guarantee of delivery of the spatial data from this proposal. It would make more sense to adopt the technology for spatial data provision when there is also a budget for acquisition of data layers. This claim the proposal will fulfill the needs for a regional information system is not supportable by information within the proposal since the needs are currently being identified by SAIC. Furthermore the report by Coutant et.al identified many problems that concern information management per se rather than nominal collection and delivery of a subset of data. Since the claim of performance for this proposal is narrow it cannot reasonably claim to solve the problems identified by Coutant et.al. There appears to be potential for overlap with other data collection institutions: for example the plan to include marine fish habitat data into IBIS appears to overlap, at least in part, with the current recording of data by the PSMFC. The proposal requires a new DBMS design which results in a custom stand alone solution for just a subset of regional data. The project currently lacks tabular database management; proposed project will develop interactive databases.

Means and Opportunities to Strengthen Proposal.

Clearly identifying how the proposed system is distinct and different from the proposal by StreamNet to provide data collection for stream habitat data users would strengthen the proposal. Detailing the proposed advance query capabilities and decision support tools, and delineating cost effectiveness of off the shelf query tools versus custom query tools would also strengthen this proposal. Another adjustment possibility is to clearly demonstrate how the basin wide mapping utilities apply to other mapping initiatives and how they relate to RME needs. Finally the proposal needs t directly address RME information system design needs and in particular address RME needs with respect to anadromous fish and wildlife populations as opposed to only addressing non-anadromous fish and wildlife populations.

Feasibility of Work

It is not clear whether the proposal is more or less efficient in terms of regional funding resources with a completely separate database organization and administration for collection of terrestrial wildlife and non-migratory fish species. It is also unclear that there is funding for obtaining actual data for digital imagery.

35022 – Habitat Mitigation Tracking System

Does the Proposal meet RPA needs?

The Action Agencies have an urgent need for tracking habitat related projects to meet its obligations under the Biological Opinion. This proposal addresses those obligations directly. The project seems to be designed particularly to address RPA 183 and the evaluation of the benefits of offsite mitigation habitat actions. The proposal does not seem to meet the Action 198 goal to develop a Cooperative Information System.

Elements the Proposal is Lacking

The proposal does not state that it will provide a structured hierarchical program for status monitoring. There is some lack of clarity in the proposal. At one level it is described as a project compliance system. On the surface, this is a relatively simple data collection task: was the proposal completed as planned? At the next level the proposal plans to gather information about the success of these projects. This is a much more difficult task, especially since, as the proponents state, the indicators for success have not been developed or agreed upon. These issues need to be clearly resolved.

Means and Opportunities to Strengthen Proposal

The proposed information system, to be successful needs to be designed to at least reference other project data. While the proposed data collection system is focused on BPA funded projects there are potentially other projects that would need to be considered before the effectiveness of a particular BPA funded project could be evaluated. Stating the provisions for data retention and protection would greatly enhance this proposal. Private operation and maintenance of the database implies a long term and ongoing obligation for this service. On one hand the proposal is for private data management while the proposal also claims that the tracking system will reduce the BPA's overall liability. On the surface these claims appear contradictory. More information on coordination with other ongoing projects would alleviate potential for duplication of other work currently in progress. For example, this proposal appears to duplicate the RME work group's "Protocols for Monitoring Habitat-Based Environmental Indicators" study by Hillman and Giorgi. Broadening the project focus to a wider constituency beyond BPA Program Managers, Scientists, and Administrators for needs gathering and evaluation would strengthen the proposal.

Feasibility of Proposed Work

There is no indication of adoption of metadata standards.

35048-NWFSC Salmon Data Management, Analysis and Access for Research Monitoring and Evaluation Programs

The NWFSC RM&E proposal is designed to make it possible for researchers to query the data, which will be collected from multiple regional databases, through a single portal. The NWFSC currently has a prototype that has been demonstrated using data from OWEB and PRISM databases.

The project is not designed to ensure that agencies that submit the data have a quality control and quality assurance program that would meet the RME requirement. Hence data may be insufficient for the needs of the BO if the data collecting agencies have not used consistent, rigorous protocols as defined by the RME program.

The proposal anticipates however that there will be concurrent improvements in data quality through implementation of other elements in a regional RME program and the benefits of those improvements will roll up to the RME repository.

The Action Agencies' RME program calls for the systematic, rigorous and directed collection and maintenance of data for status and effectiveness monitoring as defined by the framework. The framework implicitly distinguishes data and information. Information is developed from data through the use of analytical and decision tools. Preferably one develops the tools, and then one seeks the data for the tools. Sometimes there is feedback in that the data suggest new tools. The NWFSC has developed tools such as SWAM which direct the collection of data. However it is unclear how the Council's subbasin planning process and the Action Agencies' RME program would use SWAM and other NWFSC analytical tools. The appropriateness of the tools for the RME program needs resolution before the required data layers can be identified.

RPA 180.

The NWFSC proposed pilot proposal provides a solution to a part of the challenge of "development and implementation of a basinwide hierarchical monitoring program", it does not propose the "ground truthing of regional databases" or a "draft program including protocols for specific data to be collected". The proposal offers a way to bring together the RPA data from many different RPA databases and provide access to it through a single web and GIS environment. It is a basinwide repository of all monitoring and evaluation data.

RPA 198.

The NWFSC proposal does propose to be repository for regional RME data. It also proposes to use a development called SDM web for an RPA tracking pilot at the Regional Office of NMFS.

Pros:

1. The proposed pilot RME database would be helpful to assess the potential problems in developing a larger database. The OWEB database for the coastal salmon restoration program most likely represents the best example of data that was collected consistently with the RME guidelines. Since the NWFSC has previously collected this data, the NWFSC pilot project could assess the OWEB data and database, and propose changes to the OWEB project that would satisfy a BO data management program.

2. The proposal extends badly needed, recently-developed corporate data / information management system.
3. The proposal consolidates fish data collected from numerous sources and tied to metadata.
4. It provides on-line access to NWFSC data and information; it will apply prototype systems technology to allow web access to databases used and needed inside and outside NWFSC.
5. It is a distributed data system, with broad selection capabilities.
6. The data are closer to some of the key regional researchers;
7. The Salmonid Data Management (SDM) Web allows researchers to share all project information and includes a project tracking utility.
8. The project may be consistent with SAIC recommendations if data access tools are the same; it promises to incorporate SAIC findings.
9. It will model similar capabilities without duplicating DART;
10. It will use FPC smolt data.
11. It obtained StreamNet backup files in March 2002.
12. It will develop tools to enhance distribution of data and other info.
13. It proposes linking and making available via the web the Center's Genetic and Evolution Database and the centers Salmonid database.
14. It includes substantial in kind services (approximately 40%).

Cons:

1. It has the potential to be inconsistent with approach of slow-moving SAIC project because of timing differences.
2. Data / information will be collected but not necessarily standardized. It will be a repository, no guarantee of data integrity.
3. Its deliverables may lack Data Exchange Formats to make data comparable from State-to-State and agency-to-agency?
4. It duplicates part of StreamNet responsibilities without being a part of it. For example, thirty spatial data layers needed (including status information) might duplicate some new StreamNet data layers and will need integration. Will the States and Tribes cooperate?
5. SDM prototype tool appears to duplicate StreamNet's (and USFS?) restoration project databases from OWEB and PRISM.
6. It lacks resident fish data that Action Agencies need for other BOs. Not part of agency mission.
7. How will data be kept up to date? By periodic re-collection or update from sources? Two versions may be on the Web simultaneously.

198810804 – StreamNet

The Stream net proposal claims specifically to address RPA's 180 and 198 (at Section 1), and other RPA's outside the Data Management Subgroup's scope.

Overall:

The Action Agencies' RME program calls for the systematic, rigorous and directed collection and maintenance of data for status and effectiveness monitoring as defined by the program. Like the NWFSC project (see comments on NWFSC proposal above), the StreamNet project only manages data that is submitted to it by the participating agencies. The project is not designed in the base or new program to ensure that agencies that submit the data have a quality control and quality assurance program that would meet the RME requirement. Hence data in the base program and data anticipated in the new program may be standardized but may be insufficient for the needs of the BO if the data collecting agencies have not used consistent, rigorous protocols as defined by the RME program. For example, because of the lack of protocols, the current StreamNet database does not adequately locate dams, barriers, points of diversion, amounts of each diversion, changes in points of diversion, etc. Any new data collection should proceed only after common field collection protocols have been adopted.

The StreamNet proposal has a considerably greater emphasis on Subbasin data than specific Opinion-generated RM&E data.

RPA 180.

It is not clear how the StreamNet proposal meets the requirements for the "development and implementation of a basinwide hierarchical monitoring program… the ground truthing of regional databases… and a draft program including protocols for specific data to be collected".

The text of the StreamNet proposal at page 8 refers to RPA 180 with the detail of the proposal offered by StreamNet stated as follows: "StreamNet's experience and abilities with database management can be provided to support this effort on a more cost effective basis than through entities that are not already dealing with monitoring data in the basin". This claim is not supported with any other information, and it does not address the concept of a basin wide monitoring program specified in RPA 180. It is not clear what the StreamNet deliverables for RPA 180 are.

Note: StreamNet has two funding requests that it says do relate to RPA 180.
The first is to deploy a prototype database to obtain and deliver water temperature data. This item, temperature recording for RPA 143, has a 2003 cost of $83,130. The second expenditure is stream habitat data for 2003 expenditure of $89,799 to complete a needs assessment (scoping) with existing groups who collect habitat data, hold focus groups, define core data develop a database structure and manage the data. While this could be a part of a basin wide monitoring program it is by no means complete.

RPA 198.

There is a specific reference in the StreamNet proposal to work on the SAIC project as "Participation in Regional Data Initiatives". The proposal is listed in a category of expenditure called "Services to Fish and Wildlife program". The 03 budget for this category is $167,508 however it is not possible to determine how much of thius funding is being proposed for RPA 198 and, for that matter, what "Participation in Regional Data Initiatives means". There is a reference at page 22 of the proposal as follows: "Work with state and local subbasin teams to identify priority information management and sharing needs. Share findings with SAIC project". There is inadequate information here to determine what the deliverables are and who has responsibility.

Pros:

1. StreamNet's willingness to address new information system development needs.

1. 2. StreamNet's experience in data management and knowledge of existing databasesThe project consolidates, standardizes and distributes fish information throughout the Columbia Basin; also some coastal streams.
2. It includes a library function.
3. Through use of data exchange formats (DEFs), data are made comparable among the 4 states, CRITFC, PSMFC and USFWS.
4. Relies on metadata, 1:100,000 hydrography; Uses LLIDs for accuracy.
5. Program is distributed among F&W management agencies. The seven cooperating agencies represent the major F&W management agencies, except for NMFS.
6. It uses restoration project database format developed by PSMFC and California; data from states.
7. Has ARC-IMS GIS application; on-line query system promotes distribution of standardized data.

Cons:

1. The proposed budget does not include budget items for Planning/Design or Construction/Implementation. This makes it difficult to determine how StreamNet will complete proposed tasks such at needs assessment which is a Planning/Design task.

2. We cannot determine how and when StreamNet will meet RPA action item 180 and what the cost will be. The StreamNet proposal for RPA 180 does not address the requirements of RPA 180 for a basin wide hierarchical monitoring program.

3. Data / information will be collected but not necessarily standardized. It will be a repository, no guarantee of data integrity.
4. For RPA 198, we cannot determine what the actual spending and deliverable is, apart from generally described cooperation and coordination and completing a needs assessment for priority subbasin data.
5. Current data categories are limited to those established as part of the StreamNet mission. Region needs other data but guidance previously lacking.
6. Data are not distributed but partial distribution through State StreamNet servers has been evaluated.
7. Lacks 1:24,000 level data of interest to IRICC agencies – difference in mission.
8. Lack of NMFS in StreamNet may mean data are not standardized and cannot be exchanged with the StreamNet projects.

9. NMFS proposing use of OWEB and PRISM restoration databases also.
10. NMFS' identified 30 tabular data layers might duplicate newly proposed StreamNet data layers and will need integration. Who serves the Region?

199601900 – Second Tier Database Support.

Action 180:

The DART proposal is not considered a core contribution to a basin wide hierarchical monitoring program and appears to be more closely directed to reporting and tracking the effect of temperature, flow and gas changes on populations and passage.

Action 198

Apart from indicating general support and suggesting actions that should take place DART does not propose any particular actions.

Pros:

1. Identified as a non-discretionary work element by BPA
2. Project has created and maintains a number of mainstem FCRPS applications for TDG, flow operations and temperature.
3. Applications integrate data from Fish Passage Center, Corps of Engineers, tagging programs, StreamNet, EPA and others.
4. Will participate in Regional database integration using tools such as XML.
5. Provides tracking of performance standards for the hydro system called for under the BiOp.

Cons:

1. The DART proposals for RME are not specific enough to meet RME needs.