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April 30, 2009

MEMORANDUM

TO: Fish and Wildlife Committee members

FROM: Patty O'Toole, Program Implementation Manager

SUBJECT: Multi-year action plans

The staff is continuing to develop a working concept for the multi-year actions plans, called for in the 2009 Fish and Wildlife Program. At the March meeting the staff discussed with committee, some principles for development of the actions plans and staff agreed to develop a template for the plans, and a few example plans (see separate hand-outs). At the May meeting staff will review the example action plans, along with some further considerations for completing the actions throughout the basin.

The 2009 Fish and Wildlife Program calls for the Council to work with recommending entities, Bonneville and others to shape the measures recommended for all areas of the Program into multi-year action plans similar to those implementation plans in the 2008 Biological Opinion and the Accords. The Council will then work with Bonneville and relevant entities to estimate multi-year implementation budgets and secure funding commitments that ensure adequate funding for these action plans.

Needs statement		Administrative information					Budget information							
Need statement (Limiting Factor, objective, strategy or M&E need statement)	Source	Identification number or BPA Project Number (FY08)	Action/work description or BPA Project Title	Staff comment-draft	BiOp?	Location	BPA FY09 Expense	Recommended by entity:			BPA CAP FY09	CAP 10	CAP 11	CAP FY 12-18 AVG
								FY10	FY11	FY12-18 Average				
Estuary, Lower Columbia Mainstem														
Limiting factor, Bi-state plan: Manage columbia River fisheries at sustainable levels, maintaining a viable population through adequate spawner abundance and directing harvest away from depressed stocks. Physical objective: Protect genetic integrity and biological diversity and abundance of depressed salmonid stocks by directing effort of commercial harvesters in the estuary to alternative, hatchery derived stocks. From LCFRB plan: Preserve fishery opportunity focused on hatchery fish and strong natural-spawning stocks in a manner that does not adversely affect recovery efforts.	Mainstem Lower Columbia River and Columbia River Estuary Subbasin Plan (SBP, page 6-35, F.S.2) and The LCFRB Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan, 3-67	199306000	Select Area Fisheries Enhancement Project			E	\$ 1,800,000	\$1,842,200	\$1,890,300	\$2,089,083	\$ -	\$ -	\$ -	\$ -
Assess the mainstem, lower columbia river and estuary by discrete geographic reaches for restoration and protection priorities, and develop approach for determining expected outcomes of RM&E activities. // River flow, channel alterations and habitat disconnection	Mainstem Lower Columbia River and Columbia River Estuary Subbasin Plan. The LCFRB Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan, 3-27, 3-32,	200500100	Pilot Study for Research, Monitoring, and Evaluation of Subyearling Salmon in Tidal Freshwater of the Columbia River	Need to determine future of pilot study.	BiOp RPA 58	E	\$ 700,000	\$500,000	\$500,000	\$552,580	\$ -	\$ -	\$ -	\$ -
Channel Alterations and habitat disconnection, river flow	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead, 3-32, 3-27	200301000	Historic Habitat Opportunities and Food-Web Linkages of Juvenile Salmon in the Columbia river Estuary and Their Implications for Managing River Flows and Restoring Estuarine Habitat		BiOp RPA 58, 59	E	428000	\$756,971	\$756,971	\$836,574	\$ -	\$ -	\$ -	\$ -

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Availability of preferred habitat (i.e. shallow water, low velocity, peripheral habitats). Microdetritus-based food web. The current microdetritus-based food web is expected to be less productive than the historical microdetritus-based food web. Loss of habitat connectivity. Areas of adjacent habitat types distributed across the estuarine salinity gradient may be necessary to support annual migrations of juvenile salmonids. Contaminant exposure. Density dependence. Density dependent mechanisms in the lower mainstem, Western Oregon tributaries, estuary, and plume may limit juvenile salmonid survival and productivity, however, the significance is unclear.	Mainstem Lower Columbia River and Columbia River Estuary Subbasin Plan, Limiting Factors 1,2,3,5,7.	200300700	Lower Columbia River and Estuary Ecosystem Monitoring		BiOp RPA 58, 59	E/LC	\$ 975,000	\$640,625	\$656,641	\$413,895.09	\$ -	\$ -	\$ -	\$ -
Harvest, habitat degradation, changes in flow regimes, riverbed movement and siltations (Johnson et al. 1997 - project narrative)	The LCFRB Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan	200871000	Chum Salmon Enhancement in the Lower Columbia River, Development of an Integrated Strategy to Implement Habitat Restoration, Reintroduction and Hatchery Supplementation in the Tributaries below Bonneville Dam.	Is this same as 200715000?	BiOp	E/LC	\$265,082				\$ -	\$ -	\$ -	\$ -
Availability of preferred habitat (i.e. shallow water, low velocity, peripheral habitats); Microdetritus-based food web. The current microdetritus-based food web is expected to be less productive than the historical microdetritus-based food web; Loss of habitat connectivity; Density dependence; Migration barriers/ lack of resting habitats.	Mainstem Lower Columbia River and Columbia River Estuary Subbasin Plan	200301100	Columbia R/Estuary Habitat	May be covered by overall BPA habitat commitment - will this project continue??	BiOp RPA 58, 60									
Lack of floodplain connectivity and side channel development due to flood control measures and channelization reduced channel habitat complexity and access to historic habitats. Inadequate summer rearing flows. Teir 1 reach: where recovery measures will yield the greatest benefits towards accomplishing the biological objectives.		200301300	Grays River Watershed Restoration	Grays River Watershed Restoration			\$ 400,000	\$410,000	\$420,250	\$464,443.24				

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Need for biological status monitoring.	The LCFRB Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan (chapter 7, M&E)	200715000	Expand Salmonid Monitoring in Grays River to Meet Monitoring Needs Identified in the Lower Columbia Salmon Recovery and Subbasin Plan and maintain an at risk Chum Salmon Pop. through Supplementation.	Is this same as 20071000? Should this be in the lower columbia? Most chum work usually in estuary. Need to discuss outyear budget estimates with recommending entity.	BiOp	E/LC		\$1,398,142	\$1,433,096		\$ -	\$ -	\$ -	\$ -
Water temperature, reduced macrodetrital inputs, and exotic plants.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 1 - 1	Educate landowners about the ecosystems benefits of intact riparian areas and the costs of degraded riparian areas.	Budget estimate from estuary module, chapter 5, no 2.5% cola included in this estimate.	?	E		\$250,000	\$250,000	\$250,000	\$ -	\$ -	\$ -	\$ -
Water temperature, reduced macrodetrital inputs, and exotic plants.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE1-2	Encourage and provide incentives for local, state and federal regulatory entities to maintain improve (where needed), and enforce consistent riparian area protections throughout the lower Columbia region	Budget estimate from estuary module, non 2.5% cola included.	?	E		\$200,000	\$200,000	\$200,000	\$ -	\$ -	\$ -	\$ -

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Water temperature, reduced macrodetrital inputs, and exotic plants.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 1-3	Actively purchase riparian areas from willing landowners in urban and rural settings when the riparian areas cannot be effectively protected through regulation or voluntary or incentive programs and (1) are intact, or (2) are degraded but have good restoration potential.	Budget estimate from estuary module, non 2.5% cola included.	BiOp	RPA 37 E		\$625,000	\$625,000	\$625,000	\$ -	\$ -	\$ -	\$ -
Water temperature, reduced macrodetrital inputs, and exotic plants.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 1-4	Restore and maintain ecological benefits in riparian areas; this includes managing vegetation on dikes and levees to enhance ecological function.	Budget estimate from estuary module, non 2.5% cola included.	BiOp	RPA 37 E		\$400,000	\$400,000	\$400,000	\$ -	\$ -	\$ -	\$ -
Reduced macrodetrital inputs, sediment/nutrient-related estuary habitat changes, bankfull elevation changes, sediment/nutrient related plume changes, exotic plants.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 9-1	Educate landowners about the ecosystem benefits of protecting and stewarding intact off-channel areas and the costs of restoring degraded areas.	Budget estimate from estuary module, non 2.5% cola included.	?	E		\$250,000	\$250,000	\$250,000	\$ -	\$ -	\$ -	\$ -
Reduced macrodetrital inputs, sediment/nutrient-related estuary habitat changes, bankfull elevation changes, sediment/nutrient related plume changes, exotic plants.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 9-2	Encourage and provide incentives for local, state, and federal regulatory entities to maintain, improve (where needed), and enforce consistent riparian area protections throughout the lower Columbia region.	Budget estimate from estuary module, non 2.5% cola included.	?	E		\$1,000,000	\$1,000,000	\$1,000,000	\$ -	\$ -	\$ -	\$ -
Reduced macrodetrital inputs, sediment/nutrient-related estuary habitat changes, bankfull elevation changes, sediment/nutrient related plume changes, exotic plants.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 9-3	Actively purchase off-channel habitats in urban and rural settings that (1) cannot be effectively protected through regulation, (2) are degraded but have good restoration potential, or (3) are highly degraded but could benefit from long-term restoration solutions.	Budget estimate from estuary module, non 2.5% cola included.	BiOp	RPA 37 E		\$1,250,000	\$1,250,000	\$1,250,000	\$ -	\$ -	\$ -	\$ -
Reduced macrodetrital inputs, sediment/nutrient-related estuary habitat changes, bankfull elevation changes, sediment/nutrient related plume changes, exotic plants	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 10-1	Breach or lower the elevation of dikes and levees; create and/or restore tidal marshes, shallow-water habitats, and tide channels.	Budget estimate from estuary module, non 2.5% cola included.	BiOp	RPA 37 E		\$1,250,000	\$1,250,000	\$1,250,000	\$ -	\$ -	\$ -	\$ -

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Reduced macrodetrital inputs, sediment/nutrient-related estuary habitat changes, bankfull elevation changes, sediment/nutrient related plume changes, exotic plants	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 10-2	Remove tide gates to improve the hydrology between wetlands and the channel and to provide juveniles with physical access to off-channel habitat; use a habitat connectivity index to prioritize projects.	Budget estimate from estuary module, non 2.5% cola included.	BiOpR PA 37	E		\$600,000	\$600,000	\$600,000	\$ -	\$ -	\$ -	\$ -
Reduced macrodetrital inputs, sediment/nutrient-related estuary habitat changes, bankfull elevation changes, sediment/nutrient related plume changes, exotic plants	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 10-3	Upgrade tide gates where (1) no other options exist, (2) upgrad structures can provide appropriate access for juveniles, and (3) ecosystem function would be improved over current conditions.	Budget estimate from estuary module, non 2.5% cola included.	RPA 37	E		\$200,000	\$200,000	\$200,000	\$ -	\$ -	\$ -	\$ -
Short-term toxicity and bioaccumulation toxicity.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 21-1	Identify non-permitted point-source pollutant discharge sites and take enforcement action where necessary.	Budget estimate from estuary module, non 2.5% cola included.	?	E		\$150,000	\$150,000	\$150,000	\$ -	\$ -	\$ -	\$ -
Short-term toxicity and bioaccumulation toxicity.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 21-2	Provide cost-share incentives for National Pollution Discharge Elimination System permit holders to upgrade effluent above their permit requirements	Will BPA fund?	?	E					\$ -	\$ -	\$ -	\$ -
Short-term toxicity and bioaccumulation toxicity.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 21-3	Study and establish threshold treatment standards for pharmaceuticals and other unregulated substance discharges; update existing NPDES permits to reflect the new standards.	Will BPA fund?	?	E					\$ -	\$ -	\$ -	\$ -
Short-term toxicity and bioaccumulation toxicity.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 21-4	Provide grants and low-cost loans to permit holders required to treat effluent to standards established in No. 3.	Will BPA fund?	?	E					\$ -	\$ -	\$ -	\$ -

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Short-term toxicity and bioaccumulation toxicity.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 22-1	Implement contamination monitoring recommendations identified in the <i>Federal Columbia River Estuary Research, Monitoring, and Evaluation Program</i> (Pacific Northwest National Laboratory 2006)	Cost TBD	?	E, LC					\$ -	\$ -	\$ -	\$ -
Short-term toxicity and bioaccumulation toxicity.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 22-2	Develop criteria and a process for evaluating contaminated sites to establish their restoration potential.	Module: \$500/yr, estimate BPA share @ 10%	?	E		\$50,000	\$50,000	\$50,000	\$ -	\$ -	\$ -	\$ -
Short-term toxicity and bioaccumulation toxicity.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 22-3	Develop an integrated multi-state funding strategy to address contamination cleanup in the estuary from non-identifiable upstream sources.	No estuary cost identified for this element in module	?	E					\$ -	\$ -	\$ -	\$ -
Short-term toxicity and bioaccumulation toxicity.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 22-4	Restore those contaminated sites that will yield the greatest ecological and economic benefits.	Module: 20 yrs @ \$3m/yr so went with 50% for BPA share estimate	?	E		\$1,500,000	\$1,500,000	\$1,500,000	\$ -	\$ -	\$ -	\$ -
Sediment/nutrient related estuary habitat changes, sediment/nutrient-related plume changes, exotic fish, native birds, and bioaccumulation toxicity.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 8-1	Inventory, assess and evaluate in-channel pile dikes for their economic value and their impact on estuary ecosystem; develop criteria for establishing project priority.	2007-2009 only, 1 plan produced	BiOp RPA 38	E					\$ -	\$ -	\$ -	\$ -
Sediment/nutrient related estuary habitat changes, sediment/nutrient-related plume changes, exotic fish, native birds, and bioaccumulation toxicity.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 8-2	Remove priority pilings and pile dikes.	25 yrs @ 1.2 m /yr	BiOp RPA 38	E		\$100,000	\$100,000	\$100,000	\$ -	\$ -	\$ -	\$ -
Sediment/nutrient related estuary habitat changes, sediment/nutrient-related plume changes, exotic fish, native birds, and bioaccumulation toxicity.	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 8-3	Monitor the physical and biological effects of pile dike removal.	10 yrs @ \$25k /yr, start 2010	BiOp RPA 60	E		\$100,000	\$100,000	\$100,000	\$ -	\$ -	\$ -	\$ -
Native bird predation		CRE 16-3	Monitor tern population 25 years @ \$100,000/yr. BPA has funded in the past, probably not speculative, include as BiOp		RPA 45, 66	E		\$100,000	\$100,000	\$100,000	\$ -	\$ -	\$ -	\$ -

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Various	Proposed Action, Biological Opinion	BPA habitat work	Columbia R/Estuary Habitat (existing)	BiOp placeholder existing work budget estimate from proposed action	BiOp	E	\$ 3,000,000	\$2,000,000	\$2,000,000	\$3,500,000	\$ -	\$ -	\$ -	\$ -
Various	Proposed Action, Biological Opinion	Additional habitat work	New, now incorporated above	Placeholder from proposed action	BiOp	E		\$1,500,000	\$1,500,000		\$ -	\$ -	\$ -	\$ -
Estuary MOA (WDFW)														
Estuary: reduced off channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient related plume opportunity); food source changes (reduced macrodetrital inputs); water temperature (cold water refuge). Subbasin: reduced off-channel habitat opportunity; reduced habitat complexity; reduced riparian; reduced spawning and rearing habitat availability.	WDFW Estuary MOA		Abernathy Tidal Restoration					\$300,000						
Estuary: reduced off channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient related plume opportunity); food source changes (reduced macrodetrital inputs); water temperature (cold water refuge). Subbasin: reduced off - channel habitat opportunity; reduced habitat complexity; reduced riparian; reduced spawning and rearing habitat availability for chum, coho and Chinook.	WDFW Estuary MOA		Germany Tidal Restoration					\$350,000	\$287,000					
Estuary: reduced off - channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs); water temperature (cold water refuge). Subbasin: reduced offchannel habitat opportunity; reduced habitat complexity; reduced riparian; reduced spawning and rearing habitat availability	WDFW Estuary MOA		Lower Kalama Tidal Restoration					\$200,000						

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Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient related plume opportunity); food source changes (reduced macrodetrital inputs); exotic plants; water temperature (cold water refuge). Subbasin: reduced off - channel habitat opportunity; reduced habitat complexity; reduced riparian; reduced spawning and rearing habitat availability.	WDFW Estuary MOA		Acquisition of Chaney Parcel at Wood's Landing and Restoration of Chum Salmon Spawning Tributary					\$800,000	\$461,250					
Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs)	WDFW Estuary MOA		Ft Columbia Tidal Reconnection			E		\$1,000,000						
Estuary: reduced off - channel habitat opportunity (flow related and bankfull elevation changes); reduced inchannel habitat opportunity (flow-related and sediment/nutrient-related estuary habitat changes); reduced plume habitat opportunity (sediment/nutrientrelated plume opportunity); food source changes (reduced macrodetrital inputs); exotic plants; piling and predatory fish/bird habitat.	WDFW Estuary MOA		Fish-Hump Island Restoration					\$500,000						
Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs); water temperature (cold water refuge). Subbasin: reduced offchannel habitat opportunity; reduced habitat complexity; reduced riparian; reduced rearing habitat availability.	WDFW Estuary MOA		Paradise Point Wetland Enhancement					\$400,000						

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Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs); exotic plants; water temperature (cold water refuge). Subbasin: reduced off-channel habitat opportunity; reduced habitat complexity; reduced riparian; reduced rearing habitat availability.	WDFW Estuary MOA		Austin Point LWD Complexing					\$200,000						
Estuary: reduced off - channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs); exotic plants.	WDFW Estuary MOA		Elochoman Tidal Restoration			E		\$500,000	\$102,500					
Estuary MOA (WDFW) projects -- to be scoped in 2010.														
Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced reduced macrodetrital inputs); exotic plants.	WDFW Estuary MOA		Willow Grove Tidal Restoration											
Estuary: Reduced off - channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs).	WDFW Estuary MOA		Shillapoo Wildlife Area/Post Office Lake Setback Levees											
Estuary and Subbasin: reduced adult access/passage.	WDFW Estuary MOA		Duncan Creek Fish Passage Restoration											

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Estuary: reduced off - channel habitat opportunity (flow related and bankfull elevation changes); reduced inchannel habitat opportunity (flow-related and sediment/nutrient - related estuary habitat changes); competition and predation; reduced plume habitat opportunity (flow related and sediment/nutrient-related plume changes; food source changes (reduced macrodetrital inputs); exotic plants; piling and predatory fish/bird habitat.	WDFW Estuary MOA		Pile Dike Removal			E								
Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced inchannel habitat opportunity (flow-related and sediment/nutrient-related estuary habitat changes); reduced plume habitat opportunity (flow related and sediment/nutrient-related plume changes; food source changes (reduced macrodetrital inputs); piling and predatory fish/bird habitat.	WDFW Estuary MOA		Burke Island Hydrology Improvements						\$300,000					
Estuary: reduced off - channel habitat opportunity (flow related and bankfull elevation changes); water temperature (cold water refuge). Subbasin: reduced offchannel habitat opportunity; reduced habitat complexity; reduced adult holding habitat; reduced rearing habitat availability.	WDFW Estuary MOA		Lower Washougal Delta Habitat Complexing						\$200,000					
Estuary: reduced off - channel habitat opportunity (flow related and bankfull elevation changes); water temperature (cold water refuge). Subbasin: reduced offchannel habitat opportunity; reduced habitat complexity; reduced adult holding habitat; reduced rearing habitat availability predation.	WDFW Estuary MOA		Lower Kalama Delta Habitat Complexing						\$400,000					

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Estuary: reduced off - channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs). Subbasin: reduced off-channel habitat opportunity; reduced access/fish passage; reduced riparian; exotic plants.	WDFW Estuary MOA		Chinook River Estuary Restoration	Est. \$6 million		E								
Estuary: reduced off - channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs) Subbasin: offchannel habitat opportunity; riparian; water temperature (cold water refuge).	WDFW Estuary MOA		Lower Cowlitz Tidal Restoration											
Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs). Subbasin: reduced off - channel habitat opportunity; reduced habitat complexity; reduced riparian; water temperature.	WDFW Estuary MOA		Lewis River Acquisition											
Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs); exotic plants; piling and predatory fish/bird habitat.	WDFW Estuary MOA		Port of Kalama Off-channel wetland Enhancement											
Estuary: reduced off-channel habitat opportunity (flow-related and bankfull elevation changes); reduced inchannel habitat opportunity (flow-related and sediment/nutrient-related estuary habitat changes); food source changes (reduced macrodetrital inputs); exotic plants; piling and predatory fish/bird habitat.	WDFW Estuary MOA		Cottonwood/Howard Island Tidal Channel Connection											
Estuary: fish stranding	WDFW Estuary MOA		Barlowe Point Beach Nourishment											
Other related actions in module, probably COE or other funds:														

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Native pinniped predation	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 14-1	Expand federal and state activities at Bonneville Dam to test non-lethal and potentially lethal methods of reducing pinniped populations throughout the estuary.	is this BPA responsibility or COE.		RPA 49 E		\$500,000	\$500,000	\$500,000	\$ -	\$ -	\$ -	\$ -
Native pinniped predation	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 14-2	Implement actions likely to reduce pinniped predation on adult salmonids	is this BPA or COE?		RPA 49 E		\$500,000	\$500,000	\$500,000	\$ -	\$ -	\$ -	\$ -
Native bird predation	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 16-1	Enhance or create tern nesting habitat at alternative sites in Washington, Oregon and California.	(4.5 mill/project probably COE, USFWS, states funding)		RPA 45 E		\$1,000,000	\$1,000,000	\$1,000,000	\$ -	\$ -	\$ -	\$ -
Native bird predation	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 16-2	Reduce tern nesting habitat on East Sand Island to 1-1.5 acres.	Probably COE, USFWS and states		RPA 45 E		\$625,000			\$ -	\$ -	\$ -	\$ -
Native bird predation	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 17-1	Identify, assess and evaluate methods of reducing double-crested cormorant abundance numbers.	Probably COE, USFWS and states		RPA 46, 67 E		\$500,000	\$500,000	\$500,000	\$ -	\$ -	\$ -	\$ -
Native bird predation	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 17-2	Implement demonstration projects resulting for no 1 above.	Probably COE, USFWS and states		RPA 46 E		\$500,000	\$500,000	\$500,000	\$ -	\$ -	\$ -	\$ -
Native bird predation	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 17-3 (2013)	Implement project resulting in reduced predation by cormorants.	Probably COE, USFWS and states		RPA 46 E					\$ -	\$ -	\$ -	\$ -
Exotic fish	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 18-1	Initiate a planning process to organize technical information about shad and identify potential control methods.	Probably COE & states		E, LC		\$400,000	\$400,000	\$400,000	\$ -	\$ -	\$ -	\$ -
Exotic fish	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 18-2	Implement demonstration project to evaluate effective management methods.	Probably COE & states		E, LC		\$280,000	\$280,000	\$280,000	\$ -	\$ -	\$ -	\$ -
Exotic fish	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 18-3	Implement shad population management techniques.	Probably COE & states		E, LC		\$250,000	\$250,000	\$250,000	\$ -	\$ -	\$ -	\$ -
Exotic fish	Columbia River Estuary ESA Recovery Plan Module for Salmon and Steelhead	CRE 18-4	Monitor and evaluate management techniques.	Probably COE & states		E, LC			\$50,000	\$50,000	\$ -	\$ -	\$ -	\$ -

Needs statement		Administrative information					Budget information							
Need statement (Limiting Factor, objective, strategy or M&E need statement)	Source	Identification number or BPA Project Number (FY08)	Action/work description or BPA Project Title	Staff comment-draft	BiOp?	Location	BPA FY09 Expense	Recommended by entity:			BPA CAP FY09	CAP 10	CAP 11	CAP FY 12-18 AVG
								FY10	FY11	FY12-18 Average				
Other (estuary workgroup list)														
		200751300	Eelgrass enhancement and restoration in the Columbia River Estuary through innovative site selection and planting techniques	Council rec through 2009 (Innovative)	BiOp	RPA	59,60							
Lower Columbia														
Need for biological status monitoring,	The LCFRB Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan (chapter 7, M&E)	200736800	Adult Coho Salmon Monitoring Proposal for the Lower Columbia Province.	Not currently funded, is coho in lower river a FCRPS responsibility?		LC		\$585,296	\$599,928		\$ -	\$ -	\$ -	\$ -
Availability of overwintering habitat identified as the limiting factor for dusky Canada geese and sandhill cranes; nesting habitat for bald eagles and osprey; reestablish and enhance wetland and riparian shrub and forest habitats benefiting yellow warblers and red-eyed vireos; potential future dispersal habitat for Columbian White-tailed deer	Mainstem Lower Columbia River and Columbia River Estuary Subbasin Plan: (Limiting Factor MI.LF.1—Volume II Chapter A, page A-190); (Limiting Factors BE.LF.2—Volume II Chapter A, page A-184; and OS.LF.2 Volume II Chapter A, page A-188-89); (Sections 3.7.2.7 and 3.7.2.8—Volume II Chapter A, page 189). (limiting factor CWTD.LF.1, Volume II Chapter A, page185).	200301200	Shillapoo Wildlife Area			LC	\$253,430	\$259,766	\$266,260	\$147,555.09	\$ -	\$ -	\$ -	\$ -
Check wdfw subbasin plan		200105300	Reintroduction of Chum Salmon into Duncan Creek		BiOp	LC	\$ 158,033	\$162,291	\$166,349	\$183,841.73	\$ -	\$ -	\$ -	\$ -
Consistent with biological monitoring plan as described in the subbasin plan.	Check?	200001200	Evaluate Factors Limiting Columbia River Chum Salmon	Not currently funded.		LC	0	\$0	\$0		\$ -	\$ -	\$ -	\$ -
?	?	199900301	Evaluate Spawning of Fall Chinook and Chum Salmon Just Below the Four Lowermost Mainstem Dams		BiOp	LC	\$ 261,074	\$102,500	\$105,063	\$116,111	\$ -	\$ -	\$ -	\$ -

Needs statement		Administrative information					Budget information							
Need statement (Limiting Factor, objective, strategy or M&E need statement)	Source	Identification number or BPA Project Number (FY08)	Action/work description or BPA Project Title	Staff comment-draft	BiOp?	Location	BPA FY09 Expense	Recommended by entity:			BPA CAP FY09	CAP 10	CAP 11	CAP FY 12-18 AVG
								FY10	FY11	FY12-18 Average				
Ocean											\$ -	\$ -	\$ -	\$ -
F&W Program 2009, Chapter IV, 2003 F&W Program, No subbasin plan		199801400	Ocean Survival Of Salmonids		BiOp RPA 58,61	O	\$ 2,020,600	\$1,866,115	\$1,912,768	\$2,113,913	\$ -	\$ -	\$ -	\$ -
F&W Program 2009, Chapter IV, 2003 F&W Program, No subbasin plan		200300900	Canada-USA Shelf Salmon Survival Study		BiOp RPA 61	O	\$ 434,000	\$444,850	\$455,971	\$252,688.75	\$ -	\$ -	\$ -	\$ -
F&W Program 2009, Chapter IV, 2003 F&W Program, No subbasin plan		200311400	Acoustic Tracking For Survival		BiOp RPA 61	O	\$ 2,040,515	\$1,230,000	\$1,260,750	\$1,393,329.73	\$ -	\$ -	\$ -	\$ -

E= Estuary, LC = Lower Columbia, O= Ocean

Needs statement		Administrative information				Budget information							
Need statement (Limiting factor, objective, strategy or M&E need statement)	Source	Identification number or BPA Project Number (FY08)	Action/work description or BPA Project Title	Staff comment - draft	BiOp?	BPA FY09 Expense	FY10	FY11	FY12-18 Average	BPA CAP FY09	CAP 10	CAP 11	CAP FY 12-18 AVG
Kootenai Subbasin													
Impoundment and hydro-operations, physical habitat Alternations, Non native species introduction	Kootenai River Subbasin Plan	198806400	Kootenai River Native Fish Restoration and Conservation Aquaculture		BiOp	\$ 2,465,200	\$ 10,250,000	\$ 10,250,000	\$ 11,314,082		\$ 7,500,000	\$ 7,500,000	\$ 7,500,000
Impoundment and hydro-operations, physical habitat Alternations, Non native species introduction	Kootenai River Subbasin Plan	199404900	Kootenai River Ecosystem Improvements Project		BiOp, RPA	\$ 1,695,800							
Impoundment and hydro-operations, physical habitat Alternations, Non native species introduction	Kootenai River Subbasin Plan	200200200	Restore Natural Recruitment of Kootenai River White Sturgeon		BiOp/Settlement Agreement	\$ 2,078,120							
Impoundment and hydro-operations, physical habitat Alternations, Non native species introduction	Kootenai River Subbasin Plan	200200800	Reconnect Kootenai River with the historic floodplain		BiOp	\$ 496,350							
Impoundment and hydro-operations, physical habitat Alternations, Non native species introduction	Kootenai River Subbasin Plan	200201100	Kootenai Floodplain Operational Loss Assessment		No	\$ 700,023							
white sturgeon: evaluating habitat and the biological effects of temperature and water quality related to sturgeon flows. The importance of flows is outlined in one of the strategies of the Subbasin Plan, which includes moving Libby Dam operations 50 percent closer to normative. Burbot: provide flows for burbot spawning migration to improve spawning and recruitment; the effects of warmer temperatures on burbot maturation	Kootenai subbasin plan,	198806500	Kootenai R White Sturgeon Investigations		BiOp	\$ 966,942	\$ 1,180,000	\$ 1,180,000					
Kootenai subbasin plan: Objective RBT1a and b: Maintain or increase the total number of genetically pure local populations, and replicate genetically pure redband stocks for use in restoration actions throughout their historic range. Page 48. Develop genetic management plans and update guidelines for appropriate use of transplantation and artificial propagation. Objective RBT2: Achieve a minimum of 2 genetically pure conservation populations, each containing at least 250 adult redband trout (including British Columbia tributaries). Evaluate potential effects of introduced fish species on redband trout restoration, bull trout recovery, westslope cutthroat trout, and kokanee conservation and implement tasks to minimize negative effects...Boise, Payette, Weiser subbasin plan: Biological Objective 3C: Evaluate hybridization between hatchery rainbow trout and redband trout, where it occurs, within 10 years. Bruneau Management Plan: Aquatic objective 9A: Determine the degree of genetic purity of redband trout populations. Clearwater Management Plan: Objective G, Strategy 1: Determine Middle Snake Management Plan: Biological Objective 3C: Evaluate	Kootenai subbasin plan, Boise, Payette, Weiser subbasin plan, Bruneau subbasin plan, Clearwater subbasin plan, Middle Snake subbasin plan	200721800	Development of single nucleotide polymorphism (SNPs) genetic markers diagnostic between coastal rainbow trout and interior redband trout		No		\$ 25,392						
Habitat loss and fractionation caused by inundation	Kootenai River Subbasin Plan	199500400	Libby Mitigation Program		?	\$ 843,710	\$ 864,803	\$ 886,423	\$ 967,299				
Habitat loss and fractionation caused by inundation	Kootenai River Subbasin Plan		Secure and Protect Fish Habitat in the Kootenai Subbasin		No					\$ 5,000,000	\$ 5,000,000	\$ 5,000,000	
Altered hydrograph (reservoir and river). Biological Objective: Determine biological responses to modified dam operations at Hungry Horse and Libby Dams	Kootenai River Subbasin Plan		Mainstem Amendment Monitoring	Note: recommended for Kootenai and Flathead. Need to decide how to split costs	No	\$ 554,256	\$ 576,426	\$ 676,413					