ALL ACTIONS									
Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Investment strategy	199	High		IS - 1	The Council will work with Bonneville and the other action agencies to ensure that past fish-and-wildlife-related investments are kept current or properly decommissioned.	Council and Bonneville	New		
Investment strategy	199	High		IS- 2	The federal action agencies shall define the comprehensive maintenance costs by fish and wildlife investment types for both the direct and reimbursable aspects of the program.  Anticipated costs should be developed year by year within a 20-year timeframe and be provided annually to the Council.	Federal action agencies	New	Annual	
Investment strategy	199	High		IS- 3	The Council will convene a work group comprising action agencies and agencies and tribes with expertise in fish screens, fishways and traps, hatcheries, lands, and habitat actions, to define and develop a long-term maintenance plan and process. This work group will be assisted by the IEAB, the Wildlife Advisory Committee, Fish Screening Oversight Committee, and federal action agencies. The work group shall report to the Council quarterly on its progress toward developing a long-term plan for protecting fish and wildlife investments. The long-term plans shall be completed at the end of one year from the initial meeting of the work group. The plan will be presented to the Council for review and recommendation to Bonneville and the action agencies. Bonneville shall fund the long-term maintenance plan as reviewed and recommended by the Council.	Council	New	Quarterly Progress Report	O&M sub- committee
Investment strategy	200	High		IS - 4	The Council and the federal action agencies will work together to ensure that federal agencies provide adequate funds for long-term maintenance for facilities where they have responsibility (such as NOAA Fisheries for Mitchell Act hatcheries).	Council and federal action agencies	New		
Investment strategy	200	High		IS- 5	Annual symposiums will be convened by the Council to ensure collaboration and efficiencies are achieved by all parties seeking to protect past investments in fish and wildlife by Bonneville and the action agencies under the program.	Council	New	Annual Symposiums	
Implement Adaptive Management	102	High	Monitoring	M- 1	The ISRP will use the risk uncertainty matrix to assess whether the level of monitoring is appropriate for the proposed project and measures.	ISRP	New		
Implement Adaptive Management	102	High	Monitoring	M-2	Bonneville will ensure that all monitoring projects report the accuracy and precision of their data.	Bonneville		Annual	
Implement Adaptive Management	102	High	Monitoring	M-3	Bonneville should continue to support and require the use of Monitoring Resources , which is sponsored by the Pacific Northwest Aquatic Monitoring Partnership, to share information about how data are collected.	Bonneville	Ongoing		

	Page			Sub-Action			New or		_
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Implement Adaptive Management	102	High	Monitoring	M-4	Consistent with the goals and objectives section of this program, Bonneville should report annually on the number of juvenile fish released each year; the number of adults that contribute to harvest, are used for broodstock, and are present on the spawning grounds for all hatchery programs that receive Bonneville funding. Bonneville also should provide support to ensure that all managers have the capacity to collect this data and should support regional processes that standardize the data, facilitate reporting, and make this data publicly accessible.	Bonneville	New	Annually. The first report should be submitted in December 2014.	
Implement Adaptive Management	103	High	Monitoring	M-5	Bonneville should require project sponsors to ensure data are secured in appropriate regional data bases if those data contribute to program and regional reporting needs.	Bonneville			
Implement Adaptive Management	103	High	Monitoring	M-6	Bonneville should identify preferred methods to guide future data collection and report back to the Council annually. The Council will request the ISAB or ISRP to review the methods identified by Bonneville, and based on its review, the Council will adopt methods into the program.	Bonneville (Council, ISRP, ISAB)		Annually	
Implement Adaptive Management	103	High	Monitoring	M-7	Funding entities such as Bonneville, NOAA Fisheries, and Oregon Watershed Enhancement Board should align their implementation metrics to share information about what, and where, actions are funded in the basin. This will improve their ability to work together to achieve cost savings.	Bonneville, NOAA Fisheries, and Oregon Watershed Enhancement Board			
Implement Adaptive Management	103	High	Monitoring	M-8	Bonneville and its partners should continue to explore whether a programmatic approach for monitoring would be more cost-effective and efficient.	Bonneville and its partners	Ongoing		
Implement Adaptive Management	103	High	Monitoring	M-9	For projects assessing species and habitat conditions in intensively monitored watersheds, Bonneville will require the project sponsors to provide information on the condition of these watersheds at least every three years in a format that can be used by the Council.	Bonneville and IMW projects (Council)	Ongoing	At least every three years	
Implement Adaptive Management	103	High	Effectiveness	E - 1	Bonneville and its partners should continue to transform the effort to evaluate action effectiveness from monitoring individual projects into a cost-effective, independent third-party, standardized, and statistically valid method for habitat projects and water transactions projects.	Bonneville and its partners	Ongoing		
Implement Adaptive Management	104	High	Research	RES -1	The Council will, with federal and state fish and wildlife agencies and tribes review and update its research plan every three years beginning in 2014.	Council, ISRP/ISAB (with federal and state fish and wildlife agencies and tribes)	new/ongoing	Beginning 2014, then every three years	
Implement Adaptive Management	104	High	Research	RES -2	To assist with updating its research plan, the Council will co-sponsor Columbia River science/policy conferences to discuss scientific and technical developments in key policy areas. The Council will work with the Independent Scientific Advisory Board and others to develop the agendas.	Council, ISAB	ongong	As appropriate	

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Implement									
Adaptive	104	I III ala	Doggovah	DEC 2	Bonneville should ensure that all contracts for research projects, including those covered by	DDA		DDAti	
Management Implement	104	High	Research	RES-3	funding agreements, identify an end date.	BPA	new	BPA contracting	
Adaptive					Bonneville will report annually to the Council on the publications resulting from program				
Management	104	High	Research	RES-4	research	Bonneville		Annually	
Implement Adaptive Management	104	High	Research	RES-5	The Council will review the accomplishments of intensively monitored watersheds and the Integrated Status and Effectiveness Monitoring Project to ensure that it is cost-effective and produces useful results.	Council		During project review	
Implement Adaptive Management	105	High	Data Management	DM-1	Bonneville should ensure that data associated with broad categories of information (fish abundance, productivity, genetic diversity, geographic distribution, habitat conditions) are identified and accessible from a single, centralized website. Data users should be able to find references, data descriptions, and links to all the data collected in the program on fish abundance in such a website.	Bonneville			
Implement Adaptive Management	105	High	Data Management	DM-2	Bonneville should ensure that all information about anadromous fish is summarized by specific life-cycle stages and made accessible from a single gateway location.	Bonneville			
Implement Adaptive Management	105	High	Data Management	DM-3	Bonneville should contract for complete data products (e.g., annual population estimates for adult and juvenile spring Chinook in the Entiat) and not only collaborative processes and preliminary data collection (e.g., redd counts or weir counts of fish). And when Bonneville pays for the development of standards or protocols the contracts should include a viable strategy for adoption.	Bonneville			
Implement Adaptive Management	105	High	Reporting	RPT-1	Bonneville should require all research, monitoring, and evaluation projects, including hatchery programs, to report annually, providing an electronic summary of their results and interim findings, as well as the benefits to fish and wildlife. A high priority is to separate research reports from monitoring reports. The former should address hypotheses and critical uncertainties and the latter should provide important data about implementation, status, and trends. As appropriate, action effectiveness should be reported as part of research and monitoring reports.	Bonneville	Ongoing	Annually	
Implement Adaptive Management	106	High	Reporting	RPT-2	Bonneville should continue working with the Council to implement a concise, useful template for annual reports for research and monitoring projects that can replace other more cumbersome, more costly, and less useful reports for individual projects. The Council will continue to work with Bonneville and the ISRP to identify and assemble the information needed to produce an annual summary of results for Council review.	Bonneville, Council, ISRP	Ongoing	Annually	

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Implement Adaptive Management	106	High	Reporting	RPT-3	The Council, with the assistance of agencies, tribes and others, will periodically review and update the high-level indicators report to communicate accomplishments to Congress, the region's governors, legislators, and citizens of the Northwest. When the Council completes its work on biological objectives, it will update its high-level indicators to ensure they are consistent with these objectives.	Council, with the assistance of agencies, tribes and others	Ongoing	Periodic review and update	
Implement Adaptive Management	106	High	Reporting		The Council, with the assistance of agencies, tribes and others, will maintain the program's dashboard and the HLI website report, and also will produce other reports as appropriate, such as one that tracks annual anadromous fish forecasts and actual run sizes. The Council expects others to provide data and reports to the Council on a regular basis and make them available to the public [see Reporting Appendix L for a list of Council-requested reports]. This will provide easy access for the public and allow the Council to review the accuracy of the pre-season runsize estimates.	Council, with the assistance of agencies, tribes and others	Ongoing	Annually, and as appropriate	
Implement Adaptive Management	106	High	Evaluation	EV-1	Working with the region, the Council will develop an evaluation process that considers new information to verify or adjust assumptions, hypotheses, goals, biological objectives, strategies, measures, and indicators. This adaptive management approach will ensure program accountability.	Council, working with the region			
Implement Adaptive Management	106	High	Evaluation	EV-2	The Council, with input from the ISAB and ISRP, will request evaluation of data gathered over several years, with the evaluation approach overseen by those that gathered the data, to inform decisions and advance understanding supported by these data.	The Council, with input from the ISAB and ISRP			
Implement Adaptive Management	106	High	Evaluation	EV-3	The Council supports continued research and life cycle modeling to inform decision makers of the biological benefits they could expect from implementing or synchronizing different suites of measures across the life cycle.	Council			
Implement Adaptive Management	106	High	Evaluation	EV-4	Bonneville, agencies, tribes, and other entities receiving Bonneville funding will assist the Council in compiling data in the appropriate format to inform the reports described in the reporting section.	Bonneville, agencies, tribes, and other entities receiving Bonneville funding,  Council			
Identify and Organize Objectives	33	High	Objectives for adult salmon and steelhead	OBJ-1	Objectives that represent different perspectives on healthy and harvestable populations already exist. The Council will work with state and federal agencies and tribes in the region to collect, organize, review, and report on these quantitative objectives by the end of 2015.	Council will work with state and federal agencies and tribes in the region	New	By the end of 2015	
Identify and Organize Objectives	33	High	Objectives for adult salmon and steelhead	OBJ-2	The Council will work with the states, federal agencies, and tribes to identify specific indicators for Bonneville-funded hatchery programs that could be tracked and reported to inform progress on meeting mitigation objectives (i.e., harvest, supplementation, reintroduction, and conservation).	Council will work with state and federal agencies and tribes in the region	New		

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Identify and Organize Objectives	34	High	Other anadromous and resident fish objectives		Step 1 Once the process to produce objectives for hatchery salmon and steelhead is completed, the Council will work with the fish and wildlife agencies and tribes to survey, collect, and organize existing quantitative objectives for focal species including lamprey, bull trout, eulachon, white sturgeon, kokanee, rainbow trout, and cutthroat trout.	Council will work with the fish and wildlife agencies and tribes	New		
Identify and Organize Objectives	34	High	Other anadromous and resident fish objectives		Step 2 As soon as practicable, the Council will determine which of these to consider as program objectives, as well as considering needed modifications to existing goal statements, objectives, and indicators. The Council will conduct a program amendment process if it is determined that adopting the objectives should be considered.	Council	New		
Identify and Organize Objectives	81	High	Wild Fish	WF 2	Consistent with the Council's quantitative objectives for adult salmon and steelhead, the Council will collect, organize, and review biological objectives for wild fish.	Council	New		
Identify and Organize Objectives	35	High	Ecosystem function, habitat, and hydrosystem objectives	OBJ-5	Step 1 The Council will identify measureable objectives in the region. The data needed for these objectives should be available and not require extensive new data-gathering efforts.	Council	New		
Identify and Organize Objectives	35	High			Step 2 As soon as practicable, the Council will determine which objectives to consider as program objectives. The Council will conduct a program amendment process if it is determined that adopting the objectives should be considered.	Council	New		
Identify and Organize Objectives	36	High	Public engagement quantitative objectives	OBJ-7	The Council will initiate an internal process to identify objectives and indicators for this topic [see program strategies: public engagement]. Once the process to produce objectives is completed, the Council will seek public input to help identify the most useful objectives. The Council will conduct a program amendment process if it is determined that adopting the objectives should be considered.	Council	New		
Climate Change	57	High		CC-1	Support the development of improved runoff forecasting methods and techniques for Columbia River Basin watersheds	Federal action agencies, in coordination and collaboration with others			
Climate Change	57	High		CC-2	Work to provide early (e.g., late fall or early winter) runoff forecasts for the Columbia River Basin	Federal action agencies, in coordination and collaboration with others			
Climate Change	58	High		CC-3	Continue to encourage, monitor, and promote public awareness of pertinent climate change research and information and assess how it should influence program mitigation efforts	Federal action agencies, in coordination and collaboration with others	Ongoing		

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Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Climate Change	58	High		CC-4	Assess whether climate change effects are altering or are likely to alter critical river flows, water temperatures or other habitat attributes in a way that could significantly affect fish or wildlife important to this program, either directly or by affecting the success of current mitigation efforts and if so, evaluate whether alternative water management scenarios, including changes in flood control operations, could minimize the potential effects of climate change on mainstem hydrology and water temperatures	Federal action agencies, in coordination and collaboration with others	Ţ Ţ		
Climate Change	58	High		CC-5	Evaluate the effectiveness and feasibility of possible actions to mitigate effects of climate change, including selective withdrawal from cool/cold water storage reservoirs to reduce water temperatures or other actions to create or protect cool water refugia in mainstem reaches or reservoirs	Federal action agencies, in coordination and collaboration with others			
Climate Change	58	High		CC-6	Identify and evaluate management and mitigation options for fish and wildlife under various climate-change scenarios	Federal action agencies, in coordination and collaboration with others			
Climate Change	58	High		CC-7	Assess and revise, if necessary, ongoing monitoring efforts to ensure collection of necessary data on key species responses, interactions, and productivity under future climate scenarios	Federal action agencies, in coordination and collaboration with others			
Climate Change	58	High		CC-8	Implement long-term habitat protections for resident fish and wildlife in the basin	Federal action agencies, in coordination and collaboration with others			
Climate Change	58	High		CC-9	Identify and implement a strategic expansion of the network of stations for surface weather and streamflow observations in high-altitude mountainous areas of the Columbia Basin	Federal action agencies, in coordination and collaboration with others			
Climate Change	58	High		CC-10	Investigate the feasibility of mitigating climate change impacts in the estuary and plume through changes in hydrosystem operations, including changes in flood-control operations	Federal action agencies, in coordination and collaboration with others			
Climate Change	58	High		CC-11	Variations in regional climate and ocean conditions play a large role in the survival of anadromous fish and other native species in the Columbia River Basin. Management actions shall strive to help those species accommodate a variety of climate and ocean conditions by providing a wide range of life history strategies. The Council supports the federal action agencies, in coordination and collaboration with others, monitoring salmon returns and climate-change impacts on ocean conditions in order to identify factors affecting survival in the near-ocean and plume environments.	Federal action agencies, in coordination and collaboration with others			
Climate Change	58	High		CC-12	The Council supports ongoing studies and development of assessment methods by the federal action agencies and others. Further, the Council requests other entities to collaborate with the federal action agencies on this work.	Federal action agencies, and others			
Climate Change	58	High		CC-13	The Council, in collaboration with the federal action agencies, shall convene one or more science/policy workshops on climate change effects in the Columbia Basin, including panels of climate change scientists, to inform an overarching climate change strategy for the Columbia Basin.	Council, in collaboration with the federal action agencies			
Climate Change	59	High		CC-14	The Council continues to encourage, monitor, and promote public awareness of pertinent climate change research and information and assess how it should influence program mitigation efforts.	Council			

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Climate Change	59	High		CC-15	The Council continues to require project sponsors to consider and plan for different climate change scenarios that could affect their work.	Council and project sponsors			
Predator Management	49	High		PM-1	The federal action agencies, in cooperation with the Council, state and federal fish and wildlife agencies, tribes, and others, should convene a technical work group to: (a) determine the effectiveness of predator-management actions; and (b) develop a common metric to measure the effects of predation on salmonids, such as salmon adult equivalents, to facilitate comparison and evaluation against other limiting factors.	Federal action agencies, Council, state and federal fish and wildlife agencies, tribes, and others			Technical Work Group
Predator					The federal action agencies shall report to the Council annually on their respective predator-				
Management  Predator  Management	49	High High		PM-2	management efforts  The U.S. Army Corps of Engineers (the Corps) or Bonneville shall evaluate the extent of predation on lamprey at Bonneville and other upstream dams	Federal action agencies  U.S. Army Corps of Engineers or  Bonneville		Annually	
Predator Management	49	High	Management of predator	PM-4	Bonneville should continue to annually implement and evaluate the base predator-control program and, where warranted, expand northern pikeminnow removals to other mainstem dams in the lower Columbia River (for example: expand the program to include northern pikeminnow removals at McNary and Bonneville dams).	Bonneville; The action agencies; NOAA Fisheries and the fish and wildlife agencies and tribes, Council		Annually	
Predator Management	50	High	Management of predator	PM-5	The federal action agencies should work cooperatively with NOAA Fisheries, U.S. Fish and Wildlife Service, states, tribes, and the Council to develop and implement systemwide strategies to manage and reduce non-native fish species that compete and feed on native fish (both anadromous and resident species) in the basin.	Federal action agencies, NOAA Fisheries, U.S. Fish and Wildlife Service, states, tribes, Council			
Predator Management	50	High	Management of predator birds	PM-6	The Council will encourage more aggressive efforts by the Corps and others to make the fullest possible use of their existing authority to remove or manage avian predation that is impacting wild fish populations.	Council, U.S. Army Corps of Engineers			
Predator Management	50	High	Management of predator birds	PM-7	The federal action agencies should, in collaboration with state and federal agencies, tribes, and other hydropower operators:	Federal action agencies, state and federal agencies, tribes, and other hydropower operators			
Predator Management	50	High	Management of predator birds	PM-7.1	PM -7.1 Continue efforts to reduce the number of Caspian terns on East Sand Island in the lower Columbia River and estuary by implementing the U.S. Fish and Wildlife Service Caspian Tern Management Plan	Federal action agencies, state and federal agencies, tribes, and other hydropower operators	Ongoing		
Predator Management	50	High	Management of predator birds	PM -7.2	PM -7.2 Develop a double-crested cormorant management plan encompassing additional research, development of a conceptual management plan, and implementation of warranted actions in the lower Columbia River and estuary	Federal action agencies, state and federal agencies, tribes, and other hydropower operators			

	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Predator Management	50	High	Management of predator birds	PM -7.3	PM-7.3 Implement the avian management plans (for double-crested cormorants, Caspian terns, and other bird species) for Corps-owned lands and associated shallow-water habitat areas in the mid-Columbia area that have been developed through the Corps and other processes for predatory bird species in the Columbia River estuary. The action agencies should also develop and implement any management plans developed for double-crested cormorants, Caspian terns, and other bird species in the mid-Columbia area and prioritize actions for implementation.	Federal action agencies, state and federal agencies, tribes, and other hydropower operators	J		
Predator Management	50	High	Management of predator birds	PM-7.4	PM- 7.4 Implement predator-bird management actions in the Columbia River Basin in coordination with state and federal fish and wildlife agencies and tribes.	Federal action agencies, state and federal agencies, tribes, and other hydropower operators			
Predator Management	50	High	Management of predator birds	PM-8	The Corps should continue to implement and improve avian-deterrent programs at all lower Snake and Columbia River dams.	U.S. Army Corps of Engineers	Ongoing		
Predator Management	50	High	Management of predator seals and sea lions	PM-9	The Corps should:				
Predator Management	50	High	Management of predator seals and sea lions	PM-9.1	PM-9.1 Take actions to improve the exclusion of sea lions at all main adult fish ladder entrances and navigation locks at Bonneville Dam.	U.S. Army Corps of Engineers	Ongoing		
Predator Management	50	High	Management of predator seals and sea lions	PM-9.2	PM-9.2 Continue to support land- and water-based harassment efforts by NOAA Fisheries, the Oregon and Washington departments of fish and wildlife, and tribes to keep sea lions away from the area immediately downstream of Bonneville Dam.	U.S. Army Corps of Engineers, NOAA-f, ODFW, WDFW, tribes	Ongoing		
Predator Management	51	High	Management of predator seals and sea lions	PM-10	PM-10 The federal action agencies should fund federal, tribal, and state agencies to evaluate the extent of seal and sea lion predation on salmonids, sturgeon, and lamprey in the lower Columbia River from below Bonneville Dam to the mouth of the river.	Federal action agencies, federal, tribal, state agencies			
Predator Management	51	High	Management of predator seals and sea lions	PM-11	PM-11 The federal action agencies, in collaboration with the region's state and federal fish and wildlife agencies, tribes, and others, should identify opportunities and implement actions to reduce salmon, sturgeon, and lamprey losses through seal and sea lion management in the lower Columbia River and estuary.	Federal action agencies, federal, tribal, state agencies, others			
Predator Management	51	High	Management of predator seals and sea lions	PM-12	PM-12 When federal, state, or tribal managers determine that predation by seals and sea lions is causing significant adverse impacts to salmonids or other native fish, state and federal fish agencies employing lethal and non-lethal methods to manage predation shall continue the lethal methods if non-lethal methods are not successful.	Federal, state, tribal managers			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Toxics	56	High	Toxics	TOX 3	The federal action agencies should partner with and support ongoing federal, state, tribal, and regional agencies' efforts to:	Federal action agencies			
Toxics	56	High	Toxics		TOX-3.1 Monitor, assess and map high priority toxic contaminant hot spots in the Columbia River Basin and evaluate their relationship, if any, to the development and operation of the	Federal action agencies			
Toxics	56	High High	Toxics	TOX-3.1	TOX-3.2 Identify and assess the effects of toxic contaminants, alone or in combination with other stressors, on native fish, including sturgeon and lamprey, wildlife, and food webs in toxic hot spots in the Columbia River Basin	Federal action agencies			
Toxics	56	High	Toxics		The federal action agencies should partner with and support federal, state, tribal and regional agencies' efforts to conduct targeted monitoring in the Columbia River Basin of vulnerable native fish and wildlife species for specific, high-priority toxic contaminants and other priority contaminants of emerging concern, including in the middle and upper Columbia reaches and in the Snake River, and evaluate if toxic contaminants limit the reproductive success of native fish.	Fedral action agencies, federal, state, tribal, regional agencies			
Non-native and Invasive Species	46	High	Evaluate potential adverse impacts		NNI-1 The Council, in coordination with the federal action agencies, other federal, state and tribal entities, and regional organizations such as the 100th Meridian Initiative-Columbia Basin Team (hereafter referred to as the Council and federal and other regional entities) should request regional power producers to evaluate the invasive potential and ecological risks of using non-native bioenergy feedstock species, cultivars, and hybrids.	Council, federal, state, tribal, and other regional entities			
Non-native and Invasive Species	47	High	Prevent establishment		NNI-2 The Council encourages federal and other regional entities to prevent non-native and invasive species introductions by:	Council, federal, state, tribal, and other regional entities			
Non-native and Invasive Species	47	High	Prevent establishment	NNI-2.1	NNI-2.1 Monitoring and managing the various pathways that could introduce additional aquatic nuisance species into the Columbia River Basin	Council, federal, state, tribal, and other regional entities			
Non-native and Invasive Species	47	High	Prevent establishment		NNI-2.2 Developing and implementing strategies to suppress, reduce, or control non-native invasive fish species where they are identified as a limiting factor and are negatively impacting salmonids and native fish populations	Council, federal, state, tribal, and other regional entities			
Non-native and Invasive Species	47	High	Prevent establishment		NNI-2.3 Develop strategies and public outreach tools to educate the public about regional prevention and management of invasive species	Council, federal, state, tribal, and other regional entities			

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		-							
Non-native and	4-		Durant artablish areast	NAU 2	BPA and other federal agencies should assist the Northwest states' efforts to prevent the	BPA and other federal agencies, NW			
Invasive Species	47	High	Prevent establishment  Monitor and control non-	NNI-3	establishment of quagga and zebra mussels.	States			
			native species		Each of the four Northwest states should continue to implement the preventative strategies in				
Non-native and			introduction and		their respective state aquatic nuisance species management plans and coordinate their				
Invasive Species	47	High	dispersal	NNI-4	prevention efforts closely with the other Northwest states and British Columbia	Northwest states	Ongoing		
			Monitor and control non-		,		J- U		
			native species		If non-native fish species are to be used to achieve mitigation for hydropower system impacts,				
Non-native and			introduction and		the agencies and tribes shall conduct an environmental risk assessment of potential negative				
Invasive Species	47	High	dispersal	NNI-5	impacts on native fish species prior to introduction.	Agencies and tribes			
					Agencies and tribes shall apply existing and new scientific research to identify situations				
Non-native and			Removal and eradication		(species, times, sizes, and places) where increased removal of non-native fish would be most				
Invasive Species	47	High	of non-native species	NNI-6	effective in increasing native fish populations.	Agencies and tribes			
					Agencies and tribes shall minimize non-native fish impacts to native fish species by using appropriate invasive fish-removal methods (e.g., gill net, chemical control, electrofishing,				
					changes in fishing regulations, sport reward programs, etc.) and monitor their effectiveness.				
					Lethal take to control non-native predators or competitors, consistent with state and federal				
Non-native and			Removal and eradication		law, is appropriate when non-lethal methods of control are not successful and the adverse				
Invasive Species	47	High	of non-native species	NNI-7	impacts to salmonids and native fish species or their habitat are significant.	Agencies and tribes			
					The constitution of the co				
Non-native and			Removal and eradication		The agencies and tribes shall prioritize non-native species control actions to ensure program funds are spent to address the most significant threats, including predation, competition, and				
Invasive Species	47	High	of non-native species	NNI-8	hybridization.	Agencies and tribes			
	,,	6"	2	,					
Non-native and			Removal and eradication		If quagga and zebra mussels become established in the Columbia Basin, BPA and other federal	BPA and other federal agencies, along			
Invasive Species	48	High	of non-native species	NNI-9	agencies, along with FERC-licensed utilities, shall support regional rapid-response efforts.	with FERC-licensed utilities,			
					The federal action agencies, other federal and state agencies, tribes, and the Council should	Federal action agencies, other federal			
Non-native and					continue to review, evaluate, develop, and implement strategies to reduce competition from	and state agencies, tribes, and the			
Invasive Species	48	High	Reduce competition	NNI-10	non-native fish species with juvenile and adult salmonids.	Council	Ongoing		
Non-native and					The Council will continue to coordinate regional stakeholder groups and partnerships on the				
Invasive Species	48	High	Regional coordination	NNI-11	issue of non-native invasive species, particularly those species that pose the greatest risk to the Columbia Basin ecosystem and the regional hydropower system.	Council	Ongoing		
invasive species	+0	TIIgii	Regional coordination	IAIAI-TT	Solution Submiceobystem and the regional hydropower system.	Council	Oligoliig		
Non-native and					The Council will support the collaborative work of the PSMFC 100th Meridian Initiative-				
Invasive Species	48	High	Regional coordination	NNI-12	Columbia Basin Team and request regular reports	Council		Regular Reports	

	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Non-native and					The Council will assist regional entities with legislative efforts to prevent the invasion and				
Invasive Species	48	High	Regional coordination	1	control the spread of non-native invasive species in the Columbia Basin.	Council			
					The Council and federal action agencies should coordinate with other federal, state, and tribal entities, and regional organizations such as the 100th Meridian Initiative-Columbia Basin Team,				
					to track and monitor data on existing non-native invasive species distribution and population				
					trend assessments in the Columbia Basin and encourage regional data sharing on rapid				
Non-native and	40		Designal accordination		response, prevention, containment, control, eradication, enforcement, and education and	Council, federal action agencies, states,			
Invasive Species	48	High	Regional coordination	NNI-14	outreach efforts.	tribes, and regional organizations			
Anadromous Fish					The action agencies, in collaboration with state agencies and tribes, shall fund mitigation of				
Mitigation in	84	I III ala	All blocked avecs		anadromous fish losses, including strategies relying on habitat improvements, reintroductions,	Action accusing (state accusing twikes)			
Blocked Areas	84	High	All blocked areas	AFM-1	hatcheries, harvest opportunities, and other mitigation.	Action agencies, (state agencies, tribes)			
Anadromous Fish									
Mitigation in Blocked Areas	84	High	All blocked areas	AFM-2	Bonneville shall provide funding to:	Bonneville			
biocked Areas		Tilgii	All blocked areas	1	AFM- 2.1 Develop and increase opportunities for consumptive and non-consumptive resident	Bonnevine			
Anadromous Fish					fisheries for native, introduced, wild, and hatchery-reared stocks that are compatible with the				
Mitigation in					continued persistence of native resident fish species and their restoration to near historic				
Blocked Areas	84	High	All blocked areas	AFM- 2.1	abundance	Bonneville			
Anadromous Fish									
Mitigation in									
Blocked Areas	84	High	All blocked areas	AFM -2.2	AFM -2.2 Consider passage projects to benefit native species	Bonneville			
Anadromous Fish									
Mitigation in					AFM- 2.3 Expand and rebuild native fish numbers in blocked areas where habitat exists or can				
Blocked Areas	84	High	All blocked areas		feasibly be restored or improved	Bonneville			
Anadromous Fish									
Mitigation in Blocked Areas	84	High	All blocked areas		AFM- 2.4 Address anadromous fish losses with resident fish and wildlife, as appropriate, where	Ronnovilla			
biocked Areas	84	High	All blocked areas	AFIVI- Z.4	full mitigation cannot be accomplished with resident fish alone	Bonneville			
Anadromous Fish									
Mitigation in									
Blocked Areas	84	High	All blocked areas	AFM- 2.5	AFM- 2.5 Protect and improve degraded fish habitat consistent with the habitat sub-strategy	Bonneville			

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	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
			Reintroduction of						
			anadromous fish above						
			Chief Joseph and Grand						
			Coulee dams to						
Anadromous Fish			mainstem reaches and		<b>Phased approach</b> . Pursue a science-based, phased approach to investigating the reintroduction	Bonneville, relevant federal action			
Mitigation in			tributaries in the United		of anadromous fish above Chief Joseph and Grand Coulee dams including juvenile and adult	agencies, state and federal fish and			
Blocked Areas	84	High	States	AFM-3	passage at the dams. The phases shall include:	wildlife agencies and tribes			
			Reintroduction of						
			anadromous fish above						
			Chief Joseph and Grand						
			Coulee dams to						
Anadromous Fish			mainstem reaches and			Bonneville, relevant federal action		To be completed	
Mitigation in			tributaries in the United			agencies, state and federal fish and		no later than the	
Blocked Areas	84	High	States	AFM- 4	Phase 1 (to be completed no later than the end of 2016):	wildlife agencies and tribes		end of 2016	
			Reintroduction of						
			anadromous fish above						
			Chief Joseph and Grand						
			Coulee dams to						
Anadromous Fish			mainstem reaches and			Bonneville, relevant federal action			
Mitigation in			tributaries in the United		AFM-4.1 Evaluate information from passage studies at other blockages and from previous	agencies, state and federal fish and			
Blocked Areas	84	High	States Reintroduction of	AFM-4.1	assessments of passage at Grand Coulee and Chief Joseph dams	wildlife agencies and tribes			
			anadromous fish above						
			Chief Joseph and Grand						
			Coulee dams to		AFAA A 2 In an alian to the later and the la				
Anadromous Fish			mainstem reaches and		AFM-4.2 Investigate habitat availability, suitability and salmon survival potential in habitats	Poppovillo, rolovent federal esti-			
Mitigation in			tributaries in the United		above Grand Coulee. This might include selective releases of salmon and steelhead. Investigate the scientific feasibility and possible cost of upstream and downstream passage options for	Bonneville, relevant federal action agencies, state and federal fish and			
Blocked Areas	85	High	States	AFM-4.2	salmon and steelhead.	wildlife agencies and tribes			
Diocked Aleas	33	High	Reintroduction of	Al IVI-4.Z	Jannon and Secureda.	whalife agencies and tribes			
			anadromous fish above						
			Chief Joseph and Grand						
			Coulee dams to						
Anadromous Fish			mainstem reaches and		AFM-4.3 As part of Phase 1, the Council will engage in discussions with tribal, state, and federal				
Mitigation in			tributaries in the United		agencies and others regarding the purpose, scope and progress of reintroduction efforts above	Council, tribes, state and federal			
Blocked Areas	85	High	States	AFM-4.3	Chief Joseph and Grand Coulee dams.	agencies, others			
2.00007003		6''	5.5.65	7.1.71 4.3	The state of the s	a <sub>D</sub> e			

	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
			Reintroduction of anadromous fish above Chief Joseph and Grand		Phase 2:  AFM-5.1 Based on the results in the first phase, the Council in collaboration with the other relevant entities will decide how to proceed. Phase 2 activities may include one or more of the following:  design and test salmon and steelhead reintroduction strategies and interim fish passage facilities at Chief Joseph and Grand Coulee Dams				
			Coulee dams to		investigate alternative approaches to passage				
Anadromous Fish			mainstem reaches and		identify additional studies necessary to advance the fish passage planning process				
Mitigation in			tributaries in the United		reintroduction pilot projects				
Blocked Areas	85	High	States Reintroduction of	AFM-5	monitoring, evaluation, and adaptive management of the Phase 2 activities	Council, other relevant entities			
Anadromous Fish			anadromous fish above Chief Joseph and Grand Coulee dams to mainstem reaches and		Phase 3:  AFM -6.1 Based on the results of Phase 2, the Council in collaboration with the other relevant entities will decide whether and how to proceed to implement and fund reintroduction				
Mitigation in			tributaries in the United		measures as a permanent part of the program, including construction and operation of passage				
Blocked Areas	85	High	States	AFM-6	facilities.	Council, other relevant entities			
Anadromous Fish Mitigation in			Reintroduction of anadromous fish above Chief Joseph and Grand Coulee dams to mainstem reaches and tributaries in the United						
Blocked Areas	85	High	States	AFM- 6.2	AFM- 6.2 Monitor, evaluate, and adaptively manage the reintroduction efforts.	Council, other relevant entities			
Anadromous Fish Mitigation in Blocked Areas	85	High	Transboundary reintroduction	AFM-7	AFM - 7: The United States should pursue a joint program with Canada, with shared costs, to investigate and, if warranted, implement the reintroduction of anadromous fish on the mainstem Columbia River to Canadian spawning grounds. This joint program would proceed on an incremental basis, comparable to the phased approach described above.	United States, Canada			
Anadromous Fish Mitigation in Blocked Areas	85	High	Reintroductions above Grand Coulee to mainstem reaches and tributaries in the United States		Bonneville and the relevant federal action agencies, working in collaboration with state and federal fish and wildlife agencies and tribes, shall investigate and, if warranted, implement passage and reintroduction of anadromous fish into suitable habitats within the United States. This shall include:	Bonneville, relevant federal action agencies, state and federal fish and wildlife agencies and tribes			
Anadromous Fish Mitigation in		J	Reintroductions above Grand Coulee to mainstem reaches and tributaries in the United States		AFM -8.1 Funding research associated with critical uncertainties at Chief Joseph and Grand	Bonneville, relevant federal action agencies, state and federal fish and			
Blocked Areas	85	High	States	AFIVI -8.1	Coulee dams required to inform Phase 1	wildlife agencies and tribes			

	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
			Reintroductions above						
			Grand Coulee to						
			mainstem reaches and						
			tributaries in the United						
Anadromous Fish			States			Bonneville, relevant federal action			
Mitigation in						agencies, state and federal fish and			
Blocked Areas	85	High		AFM -8.2	AFM -8.2 Funding work required for Phases 2 and 3 based on Council recommendations	wildlife agencies and tribes			
Anadromous Fish			Reintroductions above						
					The Course and Demonstrate the solid course at and invade on the solid course of the s				MATER Charming
Mitigation in Blocked Areas	0.5	1111	projects in the	A EN 4 O	The Corps and Bonneville should support and implement anadromous fish passage measures	LLC Arms Corns of Engineers Donneyille	Ongoing	45	WATER Steering
DIUCKEG Areas	86	High	Willamette River Basin	AFM-9	prioritized through the Willamette River Basin Flood Control Project Biological Opinion.	U.S. Army Corps of Engineers, Bonneville	Ongoing	May-15	Team
			Hydropower dam						
			operations and fish						
Sturgeon	91	High	passage (passage)	STU-1	The action agencies shall:	Action agencies			
			Hydropower dam						
			operations and fish		STU- 1.1 Study the effects on downstream passage of sturgeon with and without removable				
Sturgeon	91	High	passage (passage)	STU- 1.1	spillway weirs.	Action agencies			
			Hydropower dam		STU- 1.2 Estimate mortality by size for fish that pass over spillways and removable spillway				
			operations and fish		weirs and those that pass downstream through turbines; if significant mortality is occurring,				
Sturgeon	91	High	passage (passage)	STU- 1.2	identify and evaluate the feasibility of mitigation measures.	Action agencies			
			Hydropower dam		STU- 1.3 In general, evaluate the importance of connectivity among sturgeon populations;				
			operations and fish		assess whether the mainstem dams isolate sturgeon populations; and if so, evaluate the				
Sturgeon	91	High	passage (passage)	STU- 1.3	feasibility of mitigation.	Action agencies			
			Hydropower dam						
			operations and fish		STU- 1.4 Evaluate costs, benefits, and risks of passage improvements for sturgeon relative to				
Sturgeon	91	High	passage (passage)	STU- 1.4	other potential strategies.	Action agencies			
			Hydropower dam						
			operations and fish		STU- 1.5 Evaluate opportunities for non-volitional passage by taking advantage of fish trapped				
Sturgeon	91	High	passage (passage)	STU- 1.5	in dewatered draft tubes or fish ladders during maintenance.	Action agencies			
			Hydropower dam		STU- 1.6 Continue to develop, refine, and implement protocols to prevent sturgeon				
			operations and fish		entrainment, dewatering, and mortality during planned maintenance activities at passage				
Sturgeon	91	High	passage (passage)	STU- 1.6	facilities.	Action agencies			

	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
			Hydropower dam operations and fish		STU- 1.7 Develop an operational protocol to block access by sturgeon to turbine draft tubes				
Sturgeon	91	High	passage (passage)	STU- 1.7	during turbine dewatering and start-up.	Action agencies			
Sturgeon	92	High	Research	STU-2	See research section of the adaptive management strategy				
Lamprov	95	∐igh	Hydropower system	LAMD 1	The action agencies shall:	Action agencies			
Lamprey	33	High	(passage)	LAMP 1	The action agencies shall:	Action agencies			
					LAMP 1.2 Monitor adult and juvenile lamprey passage at mainstem Columbia and Snake river				
			Hydropower system		and Willamette Basin hydropower dams to identify operations and lighting that delay, promote fall-back, obstruct, or kill migrating adult and juvenile lamprey (e.g. ramping rates, water				
Lamprey	95	High	(passage)	LAMP 1.2	elevation changes	Action agencies			
Lamprey	95	High	Hydropower system (passage)	LAMP 1.3	LAMP 1.3 Establish an interim passage standard for adult Pacific lamprey.	Action agencies			
Lumpicy		riigii	(passage)	LAWII 1.5	1.5 Establish an interim passage standard for addit racine lamprey.	Action agencies			
			Hydropower system		LAMP 1.4 Evaluate dam passage, assess passage efficiency and direct mortality, and other				
Lamprey	95	High	(passage)	LAMP 1.4	metrics relating to migratory success of lamprey above dams with poor passage	Action agencies			
			Hydropower system						
Lamprey	95	High	(passage)	LAMP 1.5	LAMP 1.5 Install lamprey-friendly passage structures for adult and juvenile lamprey	Action agencies			
			Hydronowar system		LAMB 1.C Manitar and appart production on adult and investigation are distinct.				
Lamprey	95	High	Hydropower system (passage)	LAMP 1.6	LAMP 1.6 Monitor and report predation on adult and juvenile lamprey during passage at mainstem dams.	Action agencies			
Lamprey	95	High	Monitoring (passage)	LAMP 2	The action agencies, in coordination with agencies and tribes, shall:	Action agencies, agencies and tribes			
Lamprov	95	Uiah	Monitoring (naccage)	LAMD 2.1	LAMP 2.1 Develop a regional strategy for monitoring passage into tributaries to better understand differences in counts of adult lamprey between dams	Action agencies, agencies and tribes			
Lamprey	33	High	Monitoring (passage)	LAMP 2.1		Action agencies, agencies and tribes		Annually	
Lamprey	95	High	Monitoring (passage)	LAMP 2.2	LAMP 2.2 Report passage counts at dams annually and map lamprey distribution every five years	Action agencies, agencies and tribes		(Counts), and 5 years (Map)	
Lamprey	95	High	Research		See research section of the adaptive management strategy			, (ap)	
Lampicy		i iigii		D (IVII )					
Subbasin Plans	108	High			The Council will identify subbasin plans most in need of an update.	Council			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Habitat	42	High	General Measures	HAB 1	Core measures of this strategy include:				
Habitat	42	High	General Measures	HAB 1.1	HAB 1.1 Removing fish-passage barriers				
Habitat	42	High	General Measures	HAB 1.2	HAB 1.2 Screening water diversions				
Habitat	42	High	General Measures	HAB 1.3	HAB 1.3 Protecting and improving riparian habitats in all areas of the Columbia River Basin				
Habitat	42	High	General Measures	HAB 1.4	HAB 1.4 Improving the amount, timing, and duration of instream flows through water rights and acquisitions				
Habitat	42	High	General Measures	HAB 1.5	HAB 1.5 Reconnecting floodplains through passive and active improvements in channel structure and geomorphology and re-establishing natural river processes				
Habitat	42	High	General Measures	HAB 1.6	HAB 1.6 Acquiring and enhancing terrestrial uplands for wildlife habitat				

	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Habitat	42	High	General Measures	HAB 1.7	HAB 1.7 Continuing Bonneville funding to acquire water and pursue water rights in subbasins where water quantity has been identified in subbasin plans as a primary limiting factor and where flow targets have been identified				
Habitat	42	High	Mainstem Habitat	HAB 2	The Council will consider primary mainstem habitat measures including:	Council			
Habitat	42	High	Mainstem Habitat	HAB 2.1	HAB 2.1 Coordinating actions with the flow measures intended to improve ecosystem function in the mainstem	Council			
Habitat	42	High	Mainstem Habitat	HAB 2.2	HAB 2.2 Enhancing the connections between the mainstem sections of the Columbia and Snake rivers and floodplains, side channels, and riparian zones	Council			
Habitat	42	High	Mainstem Habitat	HAB 2.3	HAB 2.3 Continuing actions to reconnect the river to its floodplains wherever possible in the mainstem, with special emphasis on the estuary and lower Columbia River	Council			
Habitat	42	High	Mainstem Habitat	HAB 2.4	HAB 2.4 Protecting and enhancing mainstem riparian areas and wetlands to protect aquatic conditions and form a transition to floodplain terrestrial areas and side channels	Council			
Habitat	42	High	Mainstem Habitat	HAB 2.5	HAB 2.5 Identifying, protecting, enhancing, and restoring the functions of alluvial river reaches in the mainstem	Council			

	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Habitat	43	High	Mainstem Habitat	HAB 2.6	HAB 2.6 Excavating, creating and reconnecting additional backwater sloughs, alcoves, and side channels to the main channel	Council			
Habitat	43	High	Mainstem Habitat	HAB 2.7	HAB 2.7 Dredging/excavating lateral channels that have silted in	Council			
Habitat	43	High	Mainstem Habitat	HAB 2.8	HAB 2.8 Creating more shallow-water habitat	Council			
Habitat	43	High	Mainstem Habitat	HAB 2.9	HAB 2.9 Identifying, protecting, restoring, and managing thermal refugia for salmonid use during high water-temperature periods	Council			
Habitat	43	High	Mainstem Habitat	HAB 2.10	HAB 2.10 Acquiring and protecting lands adjacent to the mainstem critical to protecting habitat areas and local water quality	Council			
Habitat	43	High	Mainstem Habitat	HAB 2.11	HAB 2.11 Where feasible, reconnecting protected and enhanced lower tributary habitats to protected and enhanced mainstem habitats, especially in the area of productive mainstem populations	Council			
Habitat	43	High	Mainstem Habitat	HAB 2.12	HAB 2.12 Increasing the amount of spawning habitat for mainstem core populations of Chinook, coho, chum, sturgeon, and lamprey	Council			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Ecosystem Function	39	High	General Measures		Identify and protect mainstem habitat areas and ecological functions that are relatively productive for spawning, resting, rearing, and migrating native anadromous and resident focal fish species and manage these areas to protect aquatic conditions and form a transition to floodplain terrestrial areas and side channels.	Responsible Entity	ongoing.	inicianc	Torum
Ecosystem Function	39	High	General Measures	EF 2	Restore and enhance habitat areas that connect to productive areas to support expansion of productive populations and to connect weaker and stronger populations so as to restore more natural population structures.				
Ecosystem Function	39	High	General Measures	EF 3	Protect, enhance, restore, and connect freshwater habitat in the mainstem and tributaries.				
Ecosystem Function	39	High	General Measures	EF 4	Protect and enhance ecological connectivity between aquatic areas, riparian zones, floodplains, side channels, and uplands.				
Ecosystem Function	39	High	General Measures	EF 5	Where feasible, reconnect protected and enhanced tributary habitats, especially in areas with productive populations.				
Ecosystem Function	39	High	General Measures	EF 6	Identify, protect, enhance, and restore the functions of alluvial river reaches.				
Ecosystem Function	39	High	General Measures	EF 7	Allow for biological diversity and complexity to increase among and within populations and species to increase ecological resilience to environmental variability and allow for greater life history and species diversity.				
Ecosystem Function	39	High	General Measures	EF 8	Manage water to provide appropriately timed streamflows that promote productive populations of anadromous fish and resident fish. Where feasible, support seasonal fluctuations in flow and quantity, while reducing large, rapid, short-term fluctuations. Ensure that any changes in water management are premised upon and proportionate to scientifically demonstrated fish and wildlife benefits.				
Ecosystem Function	39	High	General Measures	EF 9	Frame habitat restoration in the context of measured trends in water quantity and quality.				
Ecosystem Function	39	High	General Measures		Decrease the disparity between water temperatures and the naturally occurring regimes of temperatures throughout the basin, using stored water to the extent feasible to manage water temperatures downstream from storage reservoirs where temperature benefits from releases can be shown to provide improved fish survival.				
Ecosystem Function	39	High	General Measures	EF 11	Identify, protect, enhance, restore, and connect ecosystem functions in the Columbia River estuary and near-shore ocean discharge plume as affected by actions within the Columbia River mainstem.				

	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Faccustom					Evaluate flow regulation and changes to estuary-area habitat and biological diversity to better				
Ecosystem Function	39	High	General Measures	EF 12	understand the relationship between estuary ecology and near-shore plume characteristics and the productivity, abundance, and diversity of salmon and steelhead populations.				
Ecosystem Function	39	High	General Measures	EF 13	Understand the status of the Columbia River ecosystem in terms of habitat and other ecosystem features (both natural and human-caused) to better inform Council decisions.				
Ecosystem	- 33	111811	General Measures	Li 13	reatures (both natural and name) caused to better miorni council decisions.				
Function	40	High	General Measures	EF 14	Develop metrics of juvenile recruits-per-spawner in order to evaluate habitat effectiveness.				
Charach ald			Cara and Massay	CTD 4		0 11.51.1			
Strongholds	44		General Measures	STR 1	Request states to identify stronghold areas  Consider for stronghold recognition areas designated by states and tribes in accordance with	Council, States			
Strongholds	44		General Measures	STR 2	state law	Council			
					Work with fish and wildlife agencies and tribes and others to keep up-to-date maps available for				
Strongholds	44		General Measures	STR 3	strongholds and other areas in the basin that are managed for wild fish stocks  Inventory existing actions that have occurred and are occurring within identified stronghold	others			
Strongholds	45		General Measures	STR 4	areas as identified by the respective states of the Council	Council			
			_						
Strongholds	45		General Measures		Support fish habitat improvement actions implemented within strongholds  Support actions intended to eradicate non-native and invasive species from, or prevent their	Council			
Strongholds	45		General Measures		introduction into, stronghold areas	Council			
					The Council expects the Federal Energy Regulatory Commission, in the exercise of its licensing authority under the Federal Power Act, to take the Council's hydroelectric development				
					standards and protected areas designations into account to the fullest extent practicable. This				
					includes a Council determination whether favorable or unfavorable on a petition for an				
					exception to a protected area designation for a project proposed to have exceptional benefits for fish and wildlife. The Commission should implement the Council's decision in the				
					Commission's licensing and exemption proceedings unless the Commission's legal				
			Company language and the company		responsibilities require otherwise. The Council also expects Bonneville not to acquire power				
Protected Areas	53		General Implementation Measures		from or provide transmission support for a new hydroelectric development in a manner inconsistent with the Council's designation of protected areas.	FERC, Council, Bonneville	Ongoing	As necessary	None
3 3 3 3 3 3 3 3 3 3 3 3							- 0- 0	,	
			General Measures to address total dissolved			Federal and non-federal project			
Water Quality	54		gas and temperature	WQ 1	Federal and non-federal project operators should:	operators			

	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Matan Gualita			TDC and Towns and towns	W0.4.4	WQ 1.1 Continue real-time monitoring and reporting of TDG and water temperatures measured	Federal and non-federal project			
Water Quality	54		TDG and Tmperature	WQ 1.1	at fixed monitoring sites in the Columbia River Basin	operators		In real time	
					WQ 1.2 Continue to develop and implement fish passage strategies that produce less TDG, such				
					as spillway flow deflectors, spillway weirs and surface passage outlets, including updates and	Fodovol and non-fodovol project			
Water Quality	54		TDG and Tmperature	WQ 1.2	improvements to the System Total Dissolved Gas (SYSTDG) model to reflect ongoing modifications to spillways or spill operations	Federal and non-federal project operators			
Trace: Quanty			.23 and imperature		The state of the s	Spc. a.c			
					WQ 1.3 Collaborate to complete the water temperature modeling capabilities in the mainstem				
Water Quality	54		TDC and Imporature	WO 1 2	Columbia River from Grand Coulee to McNary dams to better assess the effect of operations or	Federal and non-federal project			
Water Quality	54		TDG and Tmperature	WQ 1.3	flow depletions on summer water temperatures	operators			
Water Quality	55		TDG and Tmperature	WQ 2	The Corps should continue to:	U.S. Army Corps of Engineers			
Tracer Quanty			. Do and imperature		WQ 2.1 Develop and use the SYSTDG model for estimating TDG production to assist in real-time	oler and compact angularity			
					decision making for spill operations, including improved wind forecasting capabilities, as				
Water Quality	55		TDG and Tmperature	WQ 2.1	appropriate	U.S. Army Corps of Engineers			
					WQ 2.2 Develop and use the CE-QUAL-W2 model for estimating mainstem Snake River				
					temperatures and cold-water releases from Dworshak Dam on the North Fork Clearwater River				
Water Quality	55		TDG and Tmperature	WQ 2.2	to assist in real-time decision-making for Dworshak summer operations	U.S. Army Corps of Engineers			
						federal project operators, EPA, other			
					The federal action agencies, FERC, and the non-federal project operators, in cooperation with	federal, tribal, regional, and state			
Water Quality	55		TDG and Tmperature	WQ3	the EPA and other federal, tribal, regional, and state agencies, should:	agencies reuerai action agencies, renc, non-			
						federal project operators, EPA, other			
			TD0 17		WQ 3.1 Update and implement the Water Quality Plan for Total Dissolved Gas and Water	federal, tribal, regional, and state			
Water Quality	55		TDG and Tmperature	WQ 3.1	Temperature in the Mainstem Columbia and Snake Rivers (WQP)	agencies			
					WQ 3.2 Monitor water quality parameters and implement water quality improvement				
					measures to reduce water temperatures and TDG to meet state, EPA-approved tribal, and	Federal action agencies, FERC, non-			
					federal water quality standards to improve the health, condition, and survival of anadromous	federal project operators, EPA, other			
					and native resident fish, as well as their related spawning and rearing habitat, in the Columbia	federal, tribal, regional, and state			
Water Quality	55		TDG and Tmperature	WQ 3.2	Basin	agencies			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Water Quality	55		TDG and Tmperature	WQ 4	The federal action agencies should incorporate the provisions of various total maximum daily loads (TMDLs) as they are developed and approved into the regional Water Quality Plan, particularly TMDL provisions containing allocations affecting federal hydropower projects in the Columbia River Basin.	Fedral action agencies			
Water Quality	55		TOXICS	TOX-1	To support ongoing regional efforts to identify, assess and reduce toxic contaminants in the Columbia River Basin, the Council may initiate and will participate in, support, and coordinate periodic science/policy workshops on characterizing the state of the science related to toxic contaminant issues. The Council will also assist regional parties in advancing public education and information on toxics issues.	Council			
Water Quality	55		TOXICS	TOX-2	The federal action agencies, in cooperation with the EPA and other federal, tribal, regional, and state agencies, should:	Federal action agencies, EPA, other federal, tribal, regional, and state agencies			
Water Quality	55		TOXICS	TOX -2.1	TOX -2.1 Support implementation of the regional 2010 Columbia River Basin Toxics Reduction Action Plan. Both the WQP and the Toxics Reduction Action Plan are comprehensive regional documents containing water quality monitoring, research, and improvement measures needed to enhance the survival of anadromous and native resident fish and to meet Northwest Power Act, ESA, and Clean Water Act responsibilities. The Council will continue to encourage preventive and remedial actions such as those identified by the WQP and the Toxics Reduction Action Plan.	Federal action agencies, EPA, other federal, tribal, regional, and state agencies, Council			
Water Quality	55		TOXICS	TOX -2.2	TOX -2.2 Monitor water quality parameters and implement water quality improvement measures to reduce toxic contaminants, as appropriate, to meet state, EPA-approved tribal, and federal water quality standards to improve the health, condition, and survival of anadromous and native resident fish, as well as their related spawning and rearing habitat, in the Columbia Basin	Federal action agencies, EPA, other federal, tribal, regional, and state agencies			
Water Quality	56		TOXICS	TOX -2.2	TOX -2.2 Monitor water quality parameters and implement water quality improvement measures to reduce toxic contaminants, as appropriate, to meet state, EPA-approved tribal, and federal water quality standards to improve the health, condition, and survival of anadromous and native resident fish, as well as their related spawning and rearing habitat, in the Columbia Basin	Federal action agencies, EPA, other federal, tribal, regional, and state agencies			

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Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
					Using all available water quality data, Bonneville and the other federal action agencies should continue to identify areas where aquatic habitat restoration projects implemented under the				
					program may be affected by toxic contaminants and incorporate pollution reduction and				
Water Quality	56		TOXICS	TOX-6	mitigation techniques into restoration projects when toxic contamination is a concern.  But the second of the seco	onneville, other federal action agencies			
					The Council urges Congress to provide funding, similar to the funding provided to other Large				
Water Quality	56		TOXICS	TOX-7	Aquatic Ecosystems, to protect and restore water quality in the Columbia River Basin, including efforts to:	Council			
- Trade: Quality									
					TOX -2.2 Develop sensitive diagnostic indicators of chemical exposure and salmon health, such				
Water Quality	56		TOXICS	TOX -2.2	as biomarkers, for use in field studies in the Columbia Basin	Council			
Water Quality	56		TOXICS	TOX 7.2	TOX 7.2 Determine the extent to which toxics limit prey quality and abundance in degraded habitats and otherwise affect the food web	Council			
					TOX 7.3 Improve understanding of contaminants of emerging concern, such as endocrine-				
Water Quality	56		TOXICS	TOX 7.3	disrupting pharmaceuticals and chemicals in personal care products, and their effects on salmonids, sturgeon, and lamprey.	Council			
water Quanty	30		TOXICS	10.7.3	saintonus, sturgeon, and ramprey.	Council			
					The federal action agencies shall provide streamflows with appropriate timing, quantity, and				
Mainstem					water quality to promote productive populations of anadromous and resident fish, provide				
Hydrosystem Flow and Passage					reservoir conditions to promote productive populations of native fish and wildlife, and manage				
Operations	61		General Measures	MSH 1	water to protect and improve habitat conditions for all fish affected by the hydrosystem, not just listed species.	Federal action agencies			
						J			
					The federal action agencies, in collaboration with state, federal, and tribal fish agencies, shall (1)				
Mainstom					design mainstem fish passage actions to protect biological diversity by benefitting a broad range				
Mainstem Hydrosystem					of species, stocks, and life-history types, not just listed species and not just salmon and steelhead, and (2) favor solutions that best fit natural behavior patterns and river processes and				
Flow and Passage					' ','	Federal action agencies, state, federal,			
Operations	61		General Measures	MSH 2	for uncertainty, multiple passage methods are necessary at individual projects.	and tribal fish agencies,			
Mainstem									
Hydrosystem					The water management and fish passage actions, flow objectives, and passage standards in the				
Flow and Passage					current biological opinions under Section 7 of the Endangered Species Act and in the Columbia				
Operations	61		General Measures	MSH 3	Basin Fish Accords are the baseline flow and passage measures for the Council's program.				

Street	Page	Dui - uit-	A shi sa Tanas	Sub-Action	Constant	Description South	New or	T: f	F
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
					The federal action agencies should collaborate with the Council, state, federal, and tribal fish agencies and the utilities before implementing flow and passage measures to protect habitat				
					and improve survival of species not covered in the biological opinions including, for example,				
Mainstem					upper Columbia River summer and fall Chinook, upper Columbia sockeye, sturgeon, lamprey,				
Hydrosystem					and resident fish. The Council may convene a science/policy forum to investigate whether the	Federal action agencies, Council, state,			
Flow and Passage					baseline flow and passage operations in the FCRPS biological opinions are optimum for the	federal, and tribal fish agencies and the			
Operations	62		General Measures	MSH 4	needs of the non-listed fish important to the Council's program.	utilities			
Mainstem					Following the principles of adaptive management, the foderal action agencies in calls benefits				
Hydrosystem					Following the principles of adaptive management, the federal action agencies, in collaboration with the Council, state, federal, and tribal fish agencies and the utilities, shall continue to	Federal action agencies, Council, state,			
Flow and Passage					investigate, develop, and implement flow and passage measures that improve fish life-cycle	federal, and tribal fish agencies and the			
Operations	62		General Measures	MSH 5	survival.	utilities			
Mainstem Hydrosystem Flow and Passage					The Fish Passage Center provides technical assistance and information to the region's fish and wildlife agencies and tribes, and the public, on matters relating to the program's flow and passage measures. NOAA Fisheries and its Northwest Fisheries Science Center, the Corps, the Columbia River Data Access in Real Time (DART) Center at the University of Washington, the Pacific States Marine Fisheries Commission, and other entities also contribute and house				
Operations	62		General Measures	MSH 6	information relevant to the implementation of the program's mainstem measures.	Fish Passage Center			
Mainstem Hydrosystem Flow and Passage					The FPC Oversight Board will annually review the FPC's performance and help assure regional accountability, data management compatibility, and program consistency. The Fish Passage				
Operations	63		General Measures	MSH 7	Center functions include:	FPC Oversight Board			
Mainstem Hydrosystem Flow and Passage					MSH 7.1 Assemble, organize, make publicly available, and maintain the primary archive of the				
Operations	63		General Measures	MSH 7.1	smolt monitoring program data	Fish Passage Center			
Mainstem Hydrosystem Flow and Passage					MSH 7.2 Participate in the development of the annual smolt monitoring program				
Operations	63		General Measures	MSH 7.2	implementation plan, and assist in the implementation of the program	Fish Passage Center		Annual	

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures Responsible Entity	New or Ongoing?	Timeframe	Forum
Mainstem								
Hydrosystem					MSH 7.3 Assemble, organize and make publicly accessible, data from other primary sources,			
Flow and Passage					and conduct analyses as requested to meet the information needs of the fish and wildlife			
Operations	63		General Measures	MSH 7.3	agencies, tribes, and public with respect to water management, spill, and fish passage  Fish Passage Center			
Mainstem					MSH 7.4 Provide technical information necessary to assist the agencies and tribes in			
Hydrosystem					formulating in-season flow and spill requests that implement the measures in the Council's			
Flow and Passage					program, while also assisting the agencies and tribes in making sure that operating criteria for			
Operations	63		General Measures	MSH 7.4	storage reservoirs are satisfied Fish Passage Center			
Mainstem								
Hydrosystem					MSH 7.5 Provide the technical assistance necessary to coordinate recommendations for storage			
Flow and Passage					reservoir and river operations that, to the extent possible, avoid potential conflicts between			
Operations	63		General Measures	MSH 7.5	anadromous and resident fish Fish Passage Center			
Mainstem								
Hydrosystem								
Flow and Passage					MSH 7.6 Archive and make publicly accessible the data used in developing all analytical results,			
Operations	63		General Measures	MSH 7.6	associating the specific data with the respective analyses Fish Passage Center			
Mainstem Hydrosystem					The federal action agencies, in collaboration with the state, federal, and tribal agencies and the Mid-Columbia Public Utility Districts (PUDs), shall continue to reliably implement operations to protect spawning and emergence of fall Chinook in the Hanford Reach, consistent with the 2004 Hanford Reach Fall Chinook Protection Program Agreement. The parties to the agreement			
Flow and Passage			Hanford Reach fall		should report to the Council periodically to assure flow measures continue to be effective in and tribal agencies and the Mid-Columbia		Report	
Operations	63		Chinook	MSH 8	protecting fall Chinook redds and juveniles from flow and river elevation fluctuations.  Public Utility Districts (PUDs),	Ongoing	periodically	
					The Council continues to support the federal action agencies' current reservoir operations at			
					Libby and Hungry Horse dams as set forth in the relevant biological opinions. These include			
					VARQ as well as spring and summer operations developed as part of the 2003 Mainstem			
					Amendments. The Council encourages the action agencies to remove any reference to these			
					operations as "experimental" in future biological opinions. The Council supports continued			
					investigations to refine operations at Libby and Hungry Horse dams that improve conditions for			
Mainstem					fish near those reservoirs and do not adversely affect fish in the lower river, e.g., actions that			
Hydrosystem					help reservoir refill, reduce the potential for uncontrolled spill, reduce downstream flooding,			
Flow and Passage			Libby and Hungry Horse		and make operations mutually beneficial for the United States and Canada. Montana Fish, Wildlife & Parks should continue working with the pertinent parties to discuss proposals for			
Operations	63		operations	MSH 9	adjustments to winter and spring operations at Libby and Hungry Horse dams including  Council, federal action agencies	Ongoing		
Operations	03		υμεταιίστις	IVIJIIJ	couldi, federal action agencies	Oligoling		

	Page			Sub-Action		New or		
Strategy	Number	Priority	Action Type	Number	General Measures Responsible Entity	Ongoing?	Timeframe	Forum
Mainstem Hydrosystem								
Flow and Passage					To benefit native fish, the Corps shall investigate infrastructure changes at Albeni Falls Dam and			
Operations	64		Albeni Falls Dam	MSH 10	habitat enhancements in areas impacted by the dam.  U.S. Army Corps of Engineers			
Mainstem								
Hydrosystem			County Courter Davis		The Council calls on the Bureau and NOAA Fisheries to work with the relevant federal and state			
Flow and Passage Operations	64		Grand Coulee Dam Operations	MSH 11	fish and wildlife agencies and tribes to evaluate alternative operations and report back to the Council. The following principles should guide this evaluation:  Bureau, NOAA, relevant federal and state fish and wildlife agencies and tribes			
Operations	04		Operations	INIOU II	Tisti and whiches should gaide this evaluation.			
					MSH 11.1 Explore the optimum operations at Grand Coulee to provide improved conditions and			
D.0 = i = = + = = = =					survival for all the fish important to the program, including salmon and steelhead migration and			
Mainstem Hydrosystem					rearing needs in the lower Columbia River, Hanford Reach fall Chinook spawning and			
Flow and Passage			Grand Coulee Dam		emergence, and resident species in the reservoir that are critical to mitigation needs of the  Spokane Tribe and others, including operations in the fall and winter that protect kokanee  Bureau, NOAA, relevant federal and state			
Operations	64		Operations	MSH 11.1	access and spawning.			
·			·					
Mainstem								
Hydrosystem								
Flow and Passage			Grand Coulee Dam	1451144.2	Bureau, NOAA, relevant federal and state			
Operations	64		Operations	MSH 11.2	MSH 11.2 Refilling the reservoirs by the end of June remains a high priority. fish and wildlife agencies and tribes			
Mainstem								
Hydrosystem					MSH 11.3 As much as possible within current operating constraints, manage the reservoir and			
Flow and Passage			Grand Coulee Dam		dam discharges to minimize fluctuations and ramping rates and produce steady flows across  Bureau, NOAA, relevant federal and state			
Operations	64		Operations	MSH 11.3	each season and each day. fish and wildlife agencies and tribes			
					Idaho Power Company's Hells Canyon hydropower complex, consisting of three hydroelectric			
					projects on the mainstem Snake River, is currently undergoing Federal Energy Regulatory			
Mainstem					Commission (FERC) re-licensing and ESA Section 7 consultation. The Council will review the			
Hydrosystem			Holls Canus Camada		outcome of the FERC proceeding and, as appropriate, include in the program relevant provisions			
Flow and Passage Operations	64		Hells Canyon Complex project operations	MSH 12	recognizing the operations to benefit fish below the Hells Canyon Complex as part of the baseline flow measures of the program.  Council	Ongoing		FERC
Operations	04		project operations	191311 12	Passing now measures of the program.	Ongoing		TENC
Mainstem			Investigate the potential		The federal action agencies, in collaboration with state, federal, tribal agencies, and others,			
Hydrosystem			to further improve		should continue to investigate and adjust system water management to improve ecosystem			
Flow and Passage			ecosystem function and		functions in the mainstem, estuary, and plume, with an emphasis on improvements in the Federal action agencies, state, federal,			
Operations	64		floodplain connectivity	MSH 13	following areas: tribal agencies, and others,			

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Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Mainstem			Investigate the potential						
Hydrosystem			to further improve						
Flow and Passage			ecosystem function and			Federal action agencies, state, federal,			
Operations	64		floodplain connectivity	MSH 13.1	MSH 13.1 Reconnected floodplains related to river flows	tribal agencies, and others,			
Mainstem Hydrosystem Flow and Passage			Investigate the potential to further improve ecosystem function and			Federal action agencies, state, federal,			
Operations	64		floodplain connectivity	MSH 13.2	MSH 13.2 Enhanced Columbia River plume and near-shore ocean habitat	tribal agencies, and others,			
Mainstem Hydrosystem Flow and Passage Operations	64		Investigate the potential to further improve ecosystem function and floodplain connectivity	MSH 13.3	MSH 13.3 Reduced salt water intrusion during summer and fall	Federal action agencies, state, federal, tribal agencies, and others,			
Mainstem Hydrosystem Flow and Passage Operations	64		Investigate the potential to further improve ecosystem function and floodplain connectivity	MSH 13.4	MSH 13.4 Fewer and shorter hypoxia and acidification events in the estuary	Federal action agencies, state, federal, tribal agencies, and others,			
Mainstem Hydrosystem Flow and Passage Operations	64		Investigate the potential to further improve ecosystem function and floodplain connectivity	MSH 13.5	MSH 13.5 Lower summer water temperatures	Federal action agencies, state, federal, tribal agencies, and others,			
Mainstem Hydrosystem Flow and Passage Operations	65		Mid-Columbia PUD dams	MSH 14	The program's baseline passage measures and objectives include the passage actions and performance standards identified and agreed to by the operators of the Mid-Columbia PUD projects in FERC licenses and associated agreements.				
Mainstem Hydrosystem Flow and Passage Operations	65		Juvenile fish passage	MSH 15	To maintain and improve juvenile fish passage survival, the Corps, in collaboration with state, federal, and tribal fish agencies shall select the most biologically effective combination of passage routes at each mainstem dam (including a spill level that does not exceed interim TDG standards or variances) which, when combined with other passage routes, maximizes juvenile fish survival and minimizes adult fish migration and fallback problems. In this effort, the Corps and its partners should:	U.S. Army Corps of Engineers, state, federal, and tribal fish agencies			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
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Mainstem Hydrosystem Flow and Passage Operations	65		Juvenile fish passage	MSH 15.1	MSH 15.1 Continue to refine the operation of surface bypass systems at all federal mainstem dams. The focus should be on developing the most effective training-spill patterns at mainstem dams to improve juvenile fish passage and survival while not affecting adult passage. Surface passage structures and outlets are important tools to achieve the dual goals of safe juvenile fish passage and long-term compliance with Clean Water Act total dissolved gas standards.	U.S. Army Corps of Engineers, state, federal, and tribal fish agencies			
Mainstem Hydrosystem Flow and Passage Operations	65		Juvenile fish passage	MSH 15.2	MSH 15.2 Relocate juvenile fish bypass outfalls in those circumstances where there are problems with predation, tailrace egress, or other factors contributing to juvenile fish injury or mortality.	U.S. Army Corps of Engineers, state, federal, and tribal fish agencies			
Mainstem Hydrosystem Flow and Passage Operations	65		Juvenile fish passage	MSH 15.3	MSH 15.3 Install new, fish-friendly turbines or optimize turbine operations to improve juvenile fish survival.	U.S. Army Corps of Engineers, state, federal, and tribal fish agencies			
Mainstem Hydrosystem Flow and Passage Operations	65		Juvenile fish passage	MSH 15.4	MSH 15.4 Continue to investigate ways to reduce descaling of juvenile sockeye.	U.S. Army Corps of Engineers, state, federal, and tribal fish agencies	Ongoing		
Mainstem Hydrosystem Flow and Passage Operations	65		Spill	MSH 16	When making decisions regarding the timing and amount of spill, the federal action agencies should give priority to actions that (1) minimize impacts on returning adult fish; and (2) optimize in-river passage survival benefits for focal species, with particular emphasis on those species that cannot be or are not effectively transported.	Federal action agencies			
Mainstem Hydrosystem Flow and Passage Operations	65		Spill and other passage experiments	MSH 17	The Council continues to recognize the value of an experimental approach to salmon recovery in the Northwest. The Council supports the development of adaptive management experiments that address critical uncertainties related to species survival.	Council			
Mainstem Hydrosystem Flow and Passage Operations	66		Juvenile fish transportation	MSH 18	The Council recognizes the need to transport migrating juvenile salmon and steelhead under certain river conditions. The Council accepts this strategy as a means to achieve its biological objectives, where there are demonstrated benefits for fish. Implement juvenile fish transportation following adaptive management principles that consider and respond to new evidence regarding the relative life-cycle survival benefits when compared to in-river migration. Evaluation should include transportation effects on adult stray rates and the impacts of straying.	Council			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Mainstem Hydrosystem Flow and Passage Operations	66		Adult fish passage	MSH 19	The Corps, in collaboration with the state, federal agencies and tribes, should continue to implement improvements to the adult fish passage facilities at mainstem dams to benefit salmon and steelhead, Pacific lamprey, white sturgeon, and bull trout. In particular, cool water releases from storage reservoirs should continue to be used to facilitate adult migration. Emphasis should also be placed on research, monitoring, and evaluation; increased accuracy of fish counts; assessment of conversion rates of all adult fish species of interest, including lamprey, through key mainstem reaches; installation of PIT-tag and radio-tag detectors; evaluation of escapement numbers to spawning grounds and hatcheries; research into water temperature and spill effects on fish passage; and the connection between fish passage design and fish behavior. In particular:	U.S. Army Corps of Engineers, state, federal, and tribal fish agencies			
Mainstem Hydrosystem Flow and Passage Operations	66		Adult fish passage	MSH 19.1	MSH 19.1 As a priority for the Corps' capital construction program, implement structural improvements to correct adult fish-passage problems or improve reliability of adult passage facilities and report to the Council on progress	U.S. Army Corps of Engineers			
Mainstem Hydrosystem Flow and Passage Operations	67		Adult fish passage	MSH 19.2	MSH 19.2 Install adult PIT-tag detectors at key mainstem projects or near the mouths of major tributaries that do not have them	U.S. Army Corps of Engineers			
Mainstem Hydrosystem Flow and Passage Operations	67		Adult fish passage	MSH 19.3	MSH 19.3 Improve fish-counting accuracy and utilize known-origin PIT-tagged fish to evaluate adult survival (conversion rates) through key reaches of the mainstem Snake and Columbia rivers	U.S. Army Corps of Engineers			
Mainstem Hydrosystem Flow and Passage Operations	67		Adult fish passage	MSH 19.4	MSH 19.4 Investigate the use of, or need for, surface flow outlets during the winter months to provide a safer fallback route for over-wintering steelhead and kelts	U.S. Army Corps of Engineers			
Mainstem Hydrosystem Flow and Passage Operations	67		Power system considerations	MSH 20	The Council will work with federal and non-federal operating agencies, federal and state fish and wildlife agencies and tribes to review, update, and implement procedures that accommodate power system and dam operation emergencies with the least impact on listed and non-listed fish and with consideration of protection, mitigation, and recovery objectives.	Council, federal and non-federal operating agencies, federal and state fish and wildlife agencies and tribes			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Mainstem Hydrosystem Flow and Passage Operations	67		Power system considerations	MSH 21	Fish survival emergencies may require operations that temporarily reduce or curtail power production, which should be implemented in the most cost-effective manner possible by the federal action agencies and non-federal project operators.	Federal action agencies and non-federal project operators.			
Mainstem Hydrosystem Flow and Passage Operations	67		Power system considerations	MSH 22	The Council will investigate cost-effective power system strategies that improve ecosystem conditions for fish and wildlife, relax operational constraints adverse to fish and wildlife, and ensure the regional power system remains adequate, reliable, and economical	Council			
Estuary	68		General Measures	EST 1	The CEERP, along with the Council's estuary and Lower Columbia subbasin plans and locally developed recovery plans, will guide implementation, monitoring, and evaluation of habitat actions in the estuary.	CEERP			
Estuary	68		General Measures	EST 2	The Corps and Bonneville shall implement in partnership with fish and wildlife agencies and tribes and other organizations:	U.S. Army Corps of Engineers, Bonneville			
Estuary	68		General Measures	EST 2.1	EST 2.1 Assessments of opportunities for floodplain reconnection and removal or lowering of dikes and levees that block access to habitat, or installing fish-friendly tide gates for habitat reconnection, protection, and restoration of riparian areas and off-channel habitat	U.S. Army Corps of Engineers, Bonneville			
Estuary	68		General Measures	EST 2.2	EST 2.2 Effectiveness monitoring of habitat-restoration actions using a programmatic approach to mirror effectiveness monitoring elsewhere in the Columbia Basin	U.S. Army Corps of Engineers, Bonneville			
Estuary	68		General Measures	EST 2.3	EST 2.3 A long-term, continuous, status and trend monitoring and evaluation program for salmon, steelhead, and Pacific lamprey migration and survival that shall include monitoring habitat in the lower Columbia River, estuary, and the near-shore plume environment	U.S. Army Corps of Engineers, Bonneville			
Estuary	68		General Measures	EST 2.4	EST 2.4 Research and evaluation on the effects of flow regulation, dredging, and water quality (Including toxics) on estuary habitat and food webs to better understand the relationship between estuary ecology and salmon and steelhead productivity, abundance, and diversity	U.S. Army Corps of Engineers, Bonneville			
Estuary	68		General Measures	EST 3.1	EST 3.1 Work with partners in the estuary to establish biological objectives and estuary indicators for habitat restoration and ecosystem function that will serve to prioritize future actions.	Council			

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Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
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Estuary	68		General Measures	EST 3.2	EST 3.2 Receive from Bonneville and the Corps, a summary report on the results of action-effectiveness, status, and trend monitoring and research uncertainties in March 2015. The report must provide information to help improve and substantiate the effectiveness of habitat actions implemented in the estuary by parties that do not monitor their own habitat actions.	Council, U.S. Army Corps of Engineers, Bonneville		Mar-15	
Estuary	69		General Measures		EST 3.2 Receive from Bonneville and the Corps, a summary report on the results of action-effectiveness, status, and trend monitoring and research uncertainties in March 2015. The report must provide information to help improve and substantiate the effectiveness of habitat actions implemented in the estuary by parties that do not monitor their own habitat actions.	Council, U.S. Army Corps of Engineers, Bonneville			
Plume and					The Council supports monitoring plume and nearshore ocean conditions and in-river restoration actions to determine those actions of greatest benefit and to separate the effects of ocean-				Ocean and Plume Science and Management
Nearshore Ocean	70		General Measures	PLU 1	related mortality from that caused in the freshwater part of the life cycle.	Council	Ongoing	As necessary	Forum
Plume and Nearshore Ocean	70		General Measures	PLU 2	The federal action agencies shall evaluate the effects of flow regulation on near-shore plume characteristics and salmon and steelhead productivity, abundance, and diversity.	Federal action agencies	Ongoing	As necessary	Plume Science and Management Forum
Plume and Nearshore Ocean	70		General Measures		The Council supports continued monitoring of the Columbia River plume and ocean conditions, assessment of impacts on salmonid survival, and evaluation of the limits of restoration potential in the basin given variable ocean conditions. Predicting future ocean conditions and anadromous fish returns allows for adjustments to inland actions and may lead to increased survival benefits.	Council	Ongoing	As necessary	Ocean and Plume Science and Management Forum
Plume and Nearshore Ocean	71		General Measures		The Council supports coordination between ocean scientists and state fish and wildlife agencies and tribes to identify key uncertainties and opportunities to improve inriver management activities based on current ocean conditions.	Council	Ongoing	As necessary	Plume Science and Management Forum
Plume and Nearshore Ocean	71		General Measures	PLU 5	The Council supports efforts by the Ocean and Plume Science and Management Forum and science/policy exchanges to encourage coordination and communication between ocean researchers and fish and wildlife agencies and tribes. The Council will consider recommendations from the forum when making recommendations to Bonneville regarding implementation of this strategy.	Council	Ongoing	As necessary	Ocean and Plume Science and Management Forum
Plume and Nearshore Ocean	71		General Measures	PLU 6	The Council encourages scientists to develop an annual index of ocean survival from Bonneville Dam back to Bonneville Dam.	Council, Scientists	New	Uncertain	

	Page			Sub-Action			New or	_	
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Wildlife									
Mitigation	72		General Measures	WL 1	Bonneville shall work with the agencies and tribes on the following measures:	Bonneville, agencies, tribes			
			Ceneral measures						
Wildlife					WL 1.1 Where appropriate prioritization exists and agreements exist on the methodology,				
Mitigation	73		General Measures	WL 1.1	complete wildlife loss assessments for losses caused by operation of the hydropower projects	Bonneville, agencies, tribes	Ongoing	Nov-15	WAC
Wildlife			6 114	14/1/4/2	WL 1.2 Develop and implement habitat acquisition and enhancement projects to fully mitigate				
Mitigation	73		General Measures	WL 1.2	for identified losses	Bonneville, agencies, tribes			
Wildlife					WL 1.3 Coordinate habitat restoration and acquisition activities throughout the basin with fish				
Mitigation	73		General Measures	WL 1.3	mitigation and restoration efforts to promote terrestrial and aquatic area connectivity	Bonneville, agencies, tribes			
Wildlife									
Mitigation	73		General Measures	WL 1.4	WL 1.4 Maintain the values and characteristics of existing, restored, and created habitat	Bonneville, agencies, tribes			
					The Council encourages wildlife agencies and tribes to monitor and evaluate habitat and species				
Wildlife			Company I Managemen		responses to mitigation actions and develop a more standardized approach to wildlife	0 1 1 11 11 11 1 1 1 1 1			
Mitigation	73		General Measures	WL 2	monitoring.	Council, wildlife agencies, tribes			
					Bonneville and the fish and wildlife agencies and tribes will complete wildlife loss mitigation				
					agreements for at least the remaining construction and inundation losses by 2016. In addition,				
					for each wildlife agreement that does not already provide for long-term maintenance of the				
Wildlife	73		General Measures	W/I 2	habitat, Bonneville and the applicable management agency shall propose a management plan	Pannavilla agancias tribas		Dv 2016	
Mitigation	/3		General ivieasures	WL 3	adequate to sustain the minimum credited habitat values for the life of the project.	Bonneville, agencies, tribes		By 2016	
Wildlife					Fish and wildlife agencies and tribes and Bonneville will reach agreement on how wildlife	Bonneville, fish and wildlife agencies,			
Mitigation	73		General Measures	WL 4	mitigation projects and fish mitigation projects should be credited toward identified losses.	tribes			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Wildlife Mitigation	73		Specific measures for habitat units		Habitat units and the habitat evaluation procedure (HEP) methodology. The Council will continue to endorse habitat units as the preferred unit of measurement for mitigation accounting and the HEP methodology as the preferred method for estimating habitat units lost and acquired. Parties to a wildlife mitigation agreement may develop and use another method for evaluating potential mitigation actions if, in the Council's opinion, that alternative method adequately takes into account both habitat quantity and quality adequate to mitigate for the identified losses.	Council	Ongoing	Nov-15	WAC
Wildlife Mitigation	73		Specific measures for habitat units		Allocation of habitat units. Bonneville shall work with the agencies and tribes for habitat acquired as mitigation for lost habitat units identified in Table C-4, which shall be acquired in the subbasin in which the lost units were located unless otherwise agreed by the fish and wildlife agencies and tribes in that subbasin.	Bonneville			
Wildlife Mitigation	73		Specific measures for habitat units		Habitat enhancement credits. Habitat enhancement credits should be provided to Bonneville when habitat management activities funded by Bonneville lead to a net increase in habitat value when compared to the level identified in the baseline habitat inventory and subsequent habitat inventories. This determination shall be made through the periodic monitoring of the project site using the HEP methodology. Bonneville shall be credited for habitat enhancement efforts at a ratio of one habitat unit credited for every habitat unit gained.	Bonneville			
Wildlife Mitigation	74		Long-term agreements		Whenever possible, Bonneville shall work with the agencies and tribes to ensure that wildlife mitigation shall take place through long-term agreements that have clear objectives, a plan for action over time, a committed level of funding that provides a substantial likelihood of achieving and sustaining the stated wildlife mitigation objectives, and provisions to ensure effective implementation with periodic monitoring and evaluation.	Bonneville, agencies, tribes			
Wildlife Mitigation	75		Wildlife Advisory Committee	WL 9	The Council recognizes the ongoing difficulties in addressing wildlife operational losses. At the same time the Council recognizes the progress that has been made in addressing this issue as the result of pilot projects on the Kootenai River. To address this issue the Council has directed its Wildlife Advisory Committee to examine the existing options and alternatives for providing mitigation for wildlife operational losses and to provide a recommendation to the Council for resolving the issue by October 1, 2015. In addition, the committee has been charged to make recommendations on the following issues:	Wildlife Advisory Committee	Ongoing	Nov-15	WAC

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Wildlife			Mildlife Advisor						
Mitigation	75		Wildlife Advisory Committee	WL 9.1	WL 9.1 The need for additional HEP reports and future HEP Team funding	Wildlife Advisory Committee	Ongoing	Nov-15	WAC
Wildgation	,,,		Committee	WESIT	WEST THE RECURS CONTROL TELEFORE AND TAXABLE TELEFO	winding ridvisory committee	Oligonia	1101 13	· · ·
Wildlife	75		Wildlife Advisory Committee	WL 9.2	WL 9.2 The diminishing need for HEP on new acquisitions as Bonneville completes construction and inundation mitigation	Wildlife Advisory Committee	Ongoing	Nov-15	WAC
Mitigation	/5		Committee	WL 9.2	and inundation mitigation	Wildlife Advisory Committee	Ongoing	NOV-15	WAC
Wildlife Mitigation	75		Wildlife Advisory Committee	WL 9.3	WL 9.3 Current regional need for follow-up HEP capacity to track project agreement compliance on many properties. That need may be influenced by (1) long-term settlements for operation and maintenance, (2) technology advances that may allow the region to more cost effectively track changes in habitat conditions using remote sensing or other techniques, and (3) species responses.	Wildlife Advisory Committee	Ongoing	Nov-15	WAC
Wildlife Mitigation	75		Wildlife Advisory Committee	WL 9.4	WL 9.4 The need for new methods to assess operational losses that incorporate the results of ongoing pilot projects. This could include technical testing and evaluation of operational loss models and methodologies, or other alternative habitat evaluation methods.	Wildlife Advisory Committee	Ongoing	Nov-15	WAC
Fish Propagation Including Hatchery Programs	78		General measures for R,M, assessment, and reporting on hatchery effectiveness	HAT 1	For Bonneville-funded hatchery programs, Bonneville shall locate and operate propagation actions to complement the present and future management activities of the region's agencies and appropriate Indian tribes, including complements to habitat improvements by supplementing native fish populations.	Bonneville			
Fish Propagation Including Hatchery Programs	78		General measures for R,M, assessment, and reporting on hatchery effectiveness	HAT 2	The Council's research plan will identify critical uncertainties related to hatchery performance in the Northwest. This includes determining the effectiveness of hatchery programs in meeting their intended purposes and minimizing adverse impacts to natural-origin fish.	Council			
Fish Propagation Including Hatchery Programs	78		General measures for R,M, assessment, and reporting on hatchery effectiveness	HAT 3	Bonneville should support the use of standardized performance measures by the agencies and tribes to inform effectiveness of various propagation strategies in meeting intended hatchery goals.	Bonneville			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Fish Propagation						,	- Jange mg		
Including									
Hatchery									
Programs			General measures for						
			R,M, assessment, and						
	78		reporting on hatchery effectiveness	HAT 4	The Council intends to use available reporting mechanisms where possible.	Council			
	76		enectiveness	HAT 4	The Council interior to use available reporting mechanisms where possible.	Council			
Fish Propagation			General measures for						
Including			R,M, assessment, and						
Hatchery	=0		reporting on hatchery		The Council requests that NOAA Fisheries annually update the Council on the status of ESA				
Programs	78		effectiveness	HAT 5	reviews for state and tribal HGMPs.	NOAA		Annually	
Fish Propagation			General measures for						
Including			R,M, assessment, and		Where feasible, trends in abundance, productivity, distribution and, diversity of supplemented				
Hatchery			reporting on hatchery		populations shall be compared to non-supplemented populations in "reference streams"				
Programs	78		effectiveness	HAT 6	before, during, and after implementation of the production effort.				
Fish Propagation			General measures for						
Including			R,M, assessment, and		The Council requests that NOAA advise the Council on the utility of updating the list of reference				
Hatchery Programs	78		reporting on hatchery effectiveness	HAT 7	streams first identified by the Ad Hoc Supplementation Workgroup that are linked to distinct population segments (DPSs), and populations within evolutionarily significant units (ESUs).	NOAA			
Fiograms	76		enectiveness	HAT 7	population segments (br.35), and populations within evolutionally significant units (£305).	NOAA			
Fish Propagation			General measures for						
Including			R,M, assessment, and						
Hatchery			reporting on hatchery		The Council also requests NOAA share with the Council the results of NOAA status reviews of				
Programs	78		effectiveness	HAT 8	Columbia Basin salmon and steelhead ESUs and DPSs as the reviews are completed.	NOAA			
Fish Propagation			General measures for		Recovery plans have been or are in the process of being developed for each of the listed salmon				
Fish Propagation Including			R,M, assessment, and		ESUs and steelhead DPSs in the Columbia River Basin. Each recovery plan includes or will include				
Hatchery			reporting on hatchery		viability criteria, or targets that are based on the biological parameters of abundance, productivity, spatial structure, and diversity. Viability criteria, together with threats criteria, are				
Programs	79		effectiveness	HAT 9	considered when determining whether a species warrants delisting.				

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	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Fish Propagation			General measures for						
Including			R,M, assessment, and		Hatchery program implementation, monitoring, and evaluation results for all hatchery programs				
Hatchery			reporting on hatchery		in the Columbia River Basin should be made electronically available and hatchery operators and				
Programs	79		effectiveness	HAT 10	funders should coordinate annual summary presentations to the Council.	Hatchery operators and funders, Council		Annual	
Fish Droposation			Conoral massures for						
Fish Propagation Including			General measures for R,M, assessment, and						
Hatchery			reporting on hatchery		Hatchery summary presentations should include adaptive management actions implemented or planned to improve effectiveness in meeting intended hatchery goals or changes in goals to				
Programs	79		effectiveness	HAT 11	meet broader basin management strategies.	Hatchery operators and funders			
	-					7 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			
Fish Propagation			General measures for		To promote a diversified approach to hatchery management, hatchery operators will aspire to				
Including			R,M, assessment, and		improve hatchery program performance and, in coordination with agencies and tribes, will seek-				
Hatchery Programs	79		reporting on hatchery effectiveness		out opportunities to test and monitor alternative hatchery strategies and approaches and alternative hatchery practices.	Hatchery operators agencies tribes			
Piograms	/3		enectiveness	HAT 12	atternative natchery practices.	Hatchery operators, agencies, tribes			
Fish Propagation			General measures for						
Including			R,M, assessment, and		To facilitate compliance monitoring, agencies and tribes will monitor their hatchery programs				
Hatchery			reporting on hatchery		for compliance with federal, state, and other relevant requirements and will make this				
Programs	79		effectiveness	HAT 13	information readily available.	Agencies, tribes			
Fish Propagation			General measures for		The Council continues to support PIT tagging and detection, coded wire tagging and recovery,				
Including			R,M, assessment, and		acoustic and radio tagging and tracking, and genetic tagging and recovery. These all work				
Hatchery			reporting on hatchery		together to help assure adequate effectiveness monitoring, and other monitoring as necessary,				
Programs	79		effectiveness	HAT 14	throughout fish life cycles and across various fish environments.	Council			
					In consideration of book available escentific information the Council will achieve information				
					In consideration of best available scientific information the Council will rely on information provided by the independent science panels and the agencies and tribes regarding hatchery				
Fish Propagation			General measures for		science. The agencies and tribes will continue and expand their investments in research,				
Including			R,M, assessment, and		monitoring and evaluation for the purpose of reducing uncertainties and improving hatchery				
Hatchery			reporting on hatchery		performance, including developing a better understanding of the benefits and risks of hatchery				
Programs	79		effectiveness	HAT 15	programs.	Council, ISRP, ISAB, agencies, tribes			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Wild Fish	81		General Measures	WF 1	The Council will consider the needs of wild fish in all facets of its fish and wildlife program including: hydrosystem passage, fish propagation facilities, climate change, predation, strongholds, research, carrying capacity, and habitat actions.	Council			
Hatcheries for Reintroduction	82		General Measures	HFR 1	Bonneville shall locate and operate hatcheries to re-establish salmon and steelhead where they have been extirpated, and substitute for extirpated salmon and steelhead in blocked areas.	Bonneville			
Hatcheries for Reintroduction	82		General Measures	HFR 2	The goals, objectives, timelines, benchmarks and experimental framework for reintroduced populations will be developed by the agencies and tribes and submitted to the Council.	Agencies, tribes, Council			
Resident Fish Mitigation	88		General Measures	RFM 1	Where feasible, Bonneville shall preserve, enhance, and restore native fish in native habitats.	Bonneville			
Resident Fish Mitigation	88		General Measures	RFM 2	Bonneville shall develop interim fisheries where native fisheries have been lost, or where native populations and habitats are actively being recovered, and need protection.	Bonneville			
Resident Fish Mitigation	88		General Measures	RFM 3	In areas where losses may be most effectively mitigated by acquiring interests in real property, Bonneville shall acquire fish habitat equal to the quality of habitat lost through the acquisition of appropriate interests in real property at a minimum ratio of 1:1 mitigation to lost distance or area [see guidance for resident fish settlements].  The Council will convene a work group of fish and wildlife agencies and tribes, and Bonneville,	Bonneville			
Resident Fish Mitigation	88		General Measures	RFM 4	to develop a standardized methodology for habitat loss assessments to assist areas that currently do not have the capacity to complete this assessment and do not have a mitigation settlement agreement, and to ensure a consistent level of accuracy across the basin. This task force shall consider past efforts and will report to the Council quarterly on its progress toward developing a methodology.	Council, fish and wildlife agencies and tribes, Bonneville		Report Quarterly	Task Force
Resident Fish Mitigation	88		General Measures	RFM 5	Once loss assessments are completed and adopted by the Council, the Council encourages Bonneville to negotiate settlement agreements, as described in Appendix K.	Bonneville			
Resident Fish Mitigation	88		General Measures	RFM 6	Bonneville shall continue to support projects directed at other native freshwater species and the progression of these projects from a research and assessment phase into a restoration and monitoring phase	Bonneville			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Resident Fish Mitigation	88		General Measures	RFM 7	Bonneville shall support efforts to address all limiting factors affecting resident fish. This might include efforts to eradicate and suppress non-native species, research on critical uncertainties, impacts from ongoing operation of the hydrosystem, and other impacts.	Bonneville			
Resident Fish Mitigation	88		General Measures	RFM 8	Bonneville shall support evaluating the size of non-native fish populations to determine the potential effect of predation and implement a predator management program where appropriate in the Columbia Basin, for example Lake Roosevelt.	Bonneville			
Resident Fish Mitigation	89		General Measures	RFM 9	Bonneville, the Corps, and the Bureau shall restore passage for native resident fish where feasible, including at Albeni Falls Dam.	Bonneville, US Army Corps, Bureau of Reclamation			
Sturgeon	91		Hydropower dam operations and fish passage (passage)	STU-3	The action agencies shall:	Action Agencies			
Sturgeon	91		Hydropower dam operations and fish passage (passage)	STU 2.1	STU 2.1 Seek opportunities to operate the FCRPS to provide flow consistent with the needs of productive sturgeon populations including increased spring and summer flows, reduced flow fluctuations during spawning season, and spill where feasible. Recruitment in many lower Columbia River impounded areas has been positively correlated with high annual discharge during April through July.	Action Agencies			
Sturgeon	91		Hydropower dam operations and fish passage (passage)	STU 2.2	STU 2.2 Operate the hydropower system in a manner that balances needs of anadromous fish, Columbia River Basin sturgeon, and other native fish species in a way that improves the abundance and productivity of sturgeon.	Action Agencies			
Sturgeon	91		Mainstem habitat	STU-4	The action agencies, in coordination with the agencies and tribes, shall:	Action agencies, agencies, tribes			
Sturgeon	91		Mainstem habitat	STU-4.1	STU-4.1 Investigate the use of site-specific habitat measures such as substrate enhancement and channel restoration as viable alternatives for improving natural recruitment in some areas.	Action agencies, agencies, tribes			
Sturgeon	91		Mainstem habitat	STU-4.2	STU-4.2 Continue to identify, protect and restore habitat areas and ecological functions that are associated with productive spawning, resting, rearing, and migrating sturgeon.	Action agencies, agencies, tribes			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
						,	- Gragama.		
					STU-4.3 Identify the specific aspects of hydrosystem operations, such as duration of fluctuations				
Sturgeon	91		Mainstem habitat	STU-4.3	in water releases and of water levels, which affect natural spawning, reproduction, growth, and survival of larval and juvenile fishes, and overall recruitment success of sturgeon.	Action agencies, agencies, tribes			
Sturgeon	91		Mainstem habitat	STU-4.4	STU-4.4 Conduct dredging operations in a manner minimizing operation-related mortality on sturgeon and their primary prey.	Action agencies, agencies, tribes			
Sturgeon	92		Predation	STU -5	See predator management strategy				
Cham			Adam's	CT:: C					
Sturgeon	92		Monitoring	STU-6	The action agencies, in coordination with the agencies and tribes, shall:	Action agencies, agencies, tribes			
					STU-6.1 Monitor and evaluate white sturgeon restoration actions and population responses to environmental conditions consistent with the Columbia Basin White Sturgeon Planning				
Sturgeon	92		Monitoring	STU-6.1	Framework and the Lower Columbia River and Oregon Coast White Sturgeon Conservation Plan	Action agencies, agencies, tribes			
Sturgeon	92		Monitoring	STU-6.2	STU-6.2 Report on the status of sturgeon throughout the basin on a regular basis	Action agencies, agencies, tribes			
Sturgeon	92		Monitoring	STU-6.3	STU-6.3 Assess the effects of climate change on Columbia River Basin sturgeon populations and develop adaptation strategies to address these impacts	Action agencies, agencies, tribes			
				1 212 212					
					STU-6.4 Support fishery monitoring and management in combination with the suite of other				
					restoration options to mitigate for lost productivity and contribute to population rebuilding efforts in areas where harvest is warranted but where natural recruitment is currently limited				
Sturgeon	92		Monitoring	STU-6.4	and the subpopulation does not represent a unique component of the historical diversity	Action agencies, agencies, tribes			
Sturggen	0.2		Monitoring	STU-6.5	STU-6.5 Develop a sturgeon spawning and rearing habitat model in the basin to quantify habitat	Action agonalos agonalos tribas			
Sturgeon	92		Monitoring	310-6.5	throughout the year in conjunction with FCRPS operations	Action agencies, agencies, tribes			
					STU-7.6 Continue to evaluate project operations on sturgeon reproductive success in each of the				
Sturgeon	92		Monitoring	STU-7.6	pools behind FCRPS and Mid-Columbia River dams.	Action agencies, agencies, tribes			
Sturgeon	92		Hatchery	STU-8	The action agencies shall:	Action agencies			
	1		, , , , , , , , , , , , , , , , , , , ,	1	STU 8.1 Continue to support the Kootenai Tribe Integrated Fish and Wildlife Program as interim				
Sturgeon	92		Hatchery		measures to avoid extinction of endangered Kootenai white sturgeon	Action agencies			

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Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Sturgeon	92		Hatchery	STU-9	The action agencies, in coordination with the agencies and tribes, shall:	Action agencies, agencies, tribes			
Sturgeon	92		Hatchery		STU-9.1 Consider hatcheries for sturgeon as a mitigation strategy to supplement populations where natural recruitment is currently severely limited. When the strategy is implemented through the Council's step-review process for hatchery proposals, this strategy shall:	Action agencies, agencies, tribes			
Sturgeon	92		Hatchery	STU 9.2	STU 9.2 Be conservative and responsible in establishing protocols for source populations and numbers of hatchery fish released	Action agencies, agencies, tribes			
Sturgeon	92		Hatchery	STU 9.3	STU 9.3 Build on knowledge gained from ongoing hatchery efforts in other areas	Action agencies, agencies, tribes			
Sturgeon	92		Hatchery	STU 9.4	STU 9.4 Develop larval collection techniques for use in artificial propagation	Action agencies, agencies, tribes			
Sturgeon	92		Hatchery	STU 9.5	STU 9.5 Develop and implement improvements in rearing and release strategies	Action agencies, agencies, tribes			
Sturgeon	92		Hatchery	STU 9.6	STU 9.6 Utilize experimental hatchery releases and monitoring to assess ecological factors and population productivity limitations	Action agencies, agencies, tribes			
Sturgeon	92		Hatchery		STU 9.7 Optimize hatchery production and practices consistent with monitoring natural production and environmental carrying capacity, which will most effectively be identified using an experimentally adaptive approach	Action agencies, agencies, tribes			
Sturgeon	93		Upper-Columbia specific	STU-10	The action agencies, in coordination with the agencies and tribes, shall:	Action agencies, agencies, tribes			
Sturgeon	93		Upper-Columbia specific		STU-10.1 Conduct baseline population assessments to monitor hatchery and natural-origin sturgeon populations (size, abundance of age classes, age/length frequency, recruitment rate, mortality, distribution, and migration patterns, life history, habitat use, etc.); environmental factors limiting sturgeon abundance; and effectiveness of recovery measures in Lake Roosevelt from Grand Coulee Dam to the international border, including the Spokane arm of Lake Roosevelt	Action agencies, agencies, tribes			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Judegy	- rumber	Thomey	Action Type	- runneci	Schera measures	Responsible Enercy	engemg.	Timerranie	
Sturgeon	93		Upper-Columbia specific	STU-10.2	STU-10.2 Implement measures based on knowledge gained through assessments, limiting factors workshops, Upper Columbia White Sturgeon Recovery Initiative plans and Lake Roosevelt sturgeon recovery plans	Action agencies, agencies, tribes			
Sturgeon	93		Upper-Columbia specific	STU-10.3	STU-10.3 Continue interim hatchery production, including 100-percent PIT-tagging of hatchery sturgeon and 100-percent PIT-tagging and sonic tagging of broodstock collected in the upper Columbia River	Action agencies, agencies, tribes			
Lamprey	95		Hydropower system	LAMP 4	The action agencies shall:	Action agencies			
Lamprey	95		Hydropower system	LAMP 4.1	LAMP 4.1 Identify and seek opportunities to address effects of hydrosystem operations, including reservoir elevation fluctuations and an altered hydrograph on adult and juvenile lamprey	Action agencies			
Lamprey	95		Hydropower system	LAMP 4.2	LAMP 4.2 Assess the impacts of dredging on lamprey around hydropower dams and navigation facilities.	Action agencies			
			Mainstem and tributary						
Lamprey	95		habitat	LAMP 5	The action agencies, in coordination with agencies and tribes, shall:	Action agencies, agencies, tribes			
Lamprey	95		Mainstem and tributary habitat	LAMP 5.1	LAMP 5.1 Implement instream habitat projects in a manner that minimizes mortality to lamprey by consulting the Best Management Practices for Pacific Lamprey	Action agencies, agencies, tribes			
Lamprey	95		Mainstem and tributary habitat	LAMP 5.2	LAMP 5.2 Continue to identify, protect, and restore habitat areas and ecological functions, such as stream channel complexity and function, that are associated with productive spawning, resting, rearing, and migrating lamprey	Action agencies, agencies, tribes			
			Mainstem and tributary		LAMP 5.3 Install appropriate and effective juvenile lamprey screening for tributary water				
Lamprey	95		habitat	LAMP 5.3	diversions	Action agencies, agencies, tribes			
Lamprey	95		Predation	LAMP 6	See predator management strategy				
Lamprey	95		Monitoring	LAMP 7	The action agencies, in coordination with agencies and tribes, shall:	Action agencies, agencies, tribes			
Lamprey	95		Monitoring	LAMP 7.1	LAMP 7.1 Create a monitoring framework to report on the status of lamprey in the basin on a regular basis	Action agencies, agencies, tribes			
Lamprey	95		Monitoring	LAMP 7.2	LAMP 7.2 Conduct occupancy and distribution surveys where lamprey abundance is unknown	Action agencies, agencies, tribes			
Lamprey	95		Monitoring	LAMP 7.3	LAMP 7.3 Develop tags suitable for adult and juvenile lamprey monitoring and evaluation needs	Action agencies, agencies, tribes			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Lamprey	96		Propagation	LAMP 8	The action agencies, in coordination with the agencies and tribes, shall evaluate the potential role of lamprey propagation and translocation as a way to mitigate for lost lamprey production when passage and habitat improvements alone are insufficient to restore lamprey populations	Action agencies, agencies, tribes			
Lamprey	96		Other	LAMP 9	The action agencies, in coordination with agencies and tribes, shall:	Action agencies, agencies, tribes			
Lamprey	96		Other		LAMP 9.1 Complete a loss assessment for lamprey	Action agencies, agencies, tribes			
Lamprey	96		Other	LAMP 9.2	LAMP 9.2 Determine the potential effects of climate change on lamprey, including the effects of increasing water temperatures and changing runoff regimes on lamprey energetics and performance	Action agencies, agencies, tribes			
Lamprey	96		Other	LAMP 9.3	LAMP 9.3 Consider vulnerability of lampreys to toxin accumulation in water and sediment and to chemical spills, and the exacerbation of such risks in the vicinity of mainstem hydroelectric dams	Action agencies, agencies, tribes			
Lamprey	96		Other	LAMP 9.4	LAMP 9.4 Include Pacific lamprey in the tables of measures associated with the Upper Willamette Conservation and Recovery Plan for Chinook Salmon in Appendix O.	Action agencies, agencies, tribes			
Eulachon	97		General Measures	EULA 1	The Council supports measures to implement the two eulachon conservation recommendations found in the 2014 Supplemental FCRPS Biological Opinion.	Council			
Eulachon	97		General Measures	EULA 2	Upon completion of a recovery plan for eulachon, the Council will incorporate appropriate information regarding eulachon into the program and reflect the importance of this species and the need for protection and mitigation to the extent affected by the hydrosystem. The Council will consider developing the following:  o Biological objectives for eulachon population characteristics and habitat needs o A high-level indicator for eulachon abundance o Monitoring and evaluation of the status of eulachon and evaluation of the characteristics affecting their survival	Council			
Eulachon	97		General Measures	EULA 3	If NOAA Fisheries identifies actions for eulachon restoration, the Council will consider those as potential measures that may be implemented through proposed projects after science review and a Council recommendation to Bonneville.	NOAA, Council			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Eulachon	97		Mainstem and hydrograph:	EULA 4.1	EULA 4.1 The Council, in collaboration with Bonneville, the Corps, NOAA Fisheries, and agencies and tribes, will help organize and facilitate a science/policy forum in 2015 to address the biological requirements of eulachon, combined with related inquiries into the relationship between flow, current hydropower dam operations, and the biological requirements of lamprey and sturgeon. The goal would be to report to the Council, NOAA Fisheries, and interested others on the state of the science, the reasonable next steps in the assessment process, and a recommendation for how to incorporate those steps into the recovery plan.	Council, Bonneville, US Army Corps, NOAA Fisheries, and agencies and tribes		2015, Science/policy forum	
Eulachon	98		Mainstem and hydrograph:	EULA 4.2	EULA 4.2 Monitor and report eulachon abundance at Bonneville Dam.	Council, Bonneville, US Army Corps, NOAA Fisheries, and agencies and tribes			
Eulachon	98		Mainstem and hydrograph:	EULA 4.3	EULA 4.3 Study the role of eulachon as an alternative prey for sea lions.	Council, Bonneville, US Army Corps, NOAA Fisheries, and agencies and tribes			
Eulachon	98		Ocean and estuary	EULA 5	Monitor and evaluate the importance of the tidal freshwater, estuary, plume and nearshore ocean environment to the recovery of eulachon in the Columbia River Basin.	Council, Bonneville, US Army Corps, NOAA Fisheries, and agencies and tribes			
Public Engagement	99		General Measures	PE 1	The Council will inform and involve the public including elected officials through print, electronic, and social media; documents posted on the Council website and made available through public websites and libraries; updates of subbasin dashboards on the Council's website; comment periods on draft fish and wildlife programs (and reports on these hearings and comments); general and specific comment periods with our subbasin partners at Council meetings, including leveraging other opportunities in addition to regular Council meetings	Council			
Public Engagement	100		General Measures	PE 2	The Council, in partnership with Bonneville and other interested parties, will publicly recognize and acknowledge entities that provide good examples of productive partnerships across social and ecological boundaries.	Council, Bonnevillle, other interested parties			
Public Engagement	100		General Measures	PE 3	The Council will monitor the success of its outreach and involvement efforts.	Council			
How the Program is Implemented	113		Tracking Measures	TRM	TRM 1 Bonneville, the Corps, and the Bureau, in collaboration with federal and state agencies and tribes, shall report annually to the Council and the region on the implementation of program measures.	Bonneville, US Army Corps, Bureau, federal and state agencies and tribes	New	Annually	None/RCF if necessary

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Investment strategy	116		Emerging Program Priorities	EPP 1	EPP 1The Council is providing the following guidance to Bonneville, the other federal agencies, and the region in general as to which of these new measures are emerging priorities for implementation in the next five years. During the course of the next five years, the Council anticipates that Bonneville will take the necessary steps to integrate these priorities into the program and will report annually to the Council on its progress. The Council may adjust the following ordered program priorities:	Council to Bonneville, the other federal agencies, and the region in general		Annually	
Investment Strategy	116		Bonneville funding for emerging program priorities	EPP 1.1	EPP 1.1 Bonneville should fund any new fish and wildlife obligations from identifying savings within the current program and as necessary, from additional expenditures. Savings from the current program should not compromise productive projects that are addressing needs identified in this program.	Bonneville			
Investment Strategy	116		Bonneville funding for emerging program priorities	EPP 1.2	EPP 1.2 Prior to every rate case Bonneville should report to the Council how it plans to budget for implementation of the fish and wildlife program.	Bonneville		Prior to every rate case	
Program Coordination	121		Program coordination funding		All entities receiving funding for coordination of program activities must develop a work plan detailing the coordination elements, objectives, deliverables, and budget, as well as submit annual reports on this work, based on the upcoming year's priorities as outlined in the annual forum.	Regional Coordination entities		Annually	
Program Coordination	121		Coordination with other regional programs		The Council will continue to pursue opportunities to implement the program in coordination with other federal, state, tribal, Canadian, and volunteer fish and wildlife restoration programs. The Council will continue to work with national programs that influence our work in the basin. The Council will coordinate with organizations that track and monitor data on non-native species distribution, climate change, and human population change at the Northwest regional scale. There are also ongoing efforts to monitor trends in Northwest habitat quality, ocean conditions, and fish and wildlife that the Council will continue to track and participate in on an ongoing basis as it affects our program work. Continued coordination with these larger efforts is important as their products and reports can directly influence our work in the basin and help to guide decision-making	Council, federal, state, tribal, Canadian, and volunteer fish and wildlife restoration programs.			
Independent Scientific and Economic Review	123		ISRP		The ISRP reviews individual projects in the context of the program and makes recommendations on matters related to those projects.	ISRP			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Independent			ISRP and peer review groups have						
Scientific and			responsibilities in three						
<b>Economic Review</b>	124		areas:		Review projects proposed for Bonneville funding to implement the Council's program:	ISRP			
Independent Scientific and			ISRP and peer review groups have responsibilities in three						
Economic Review	124		areas:		Review program results:	ISRP			
Independent Scientific and Economic Review	124		ISRP and peer review groups have responsibilities in three		Review projects funded through Bonneville's reimbursable program:	ISRP			
LCOHOLING REVIEW	124		areas:		Interiew projects funded through bothlevine's reinfoursable program.	ISNY			
Independent Scientific and Economic Review	123		ISAB		The ISAB provides advice to the region on key scientific issues affecting Columbia River Basin fish and wildlife with the intent to avoid gridlock over scientific uncertainty, circumvent unnecessary additional research, and resolve conflicting advice and opinions on recovery issues and measures.	ISAB			
Independent Scientific and Economic Review	124		ISAB		Evaluate the fish and wildlife program on its scientific merits in time to inform amendments to the program and before the Council requests recommendations from the region	ISAB			
Independent Scientific and Economic Review	124		ISAB		Evaluate NOAA Fisheries' recovery plans for Columbia River Basin stocks and aspects of the recovery process when requested	ISAB			
Independent Scientific and Economic Review	124		ISAB		Provide scientific advice and review of topics identified as critical to fish recovery and conservation in the Columbia River Basin	ISAB			
Independent Scientific and Economic Review	124		ISAB		Evaluate the scientific merits of plans and measures proposed to ensure satisfaction and continuation of tribal treaty fishing rights in the Columbia River Basin and other tribal efforts to restore and manage fish and wildlife resources	ISAB			

	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Independent Scientific and Economic Review	124		ISAB		Provide specific scientific advice on topics and questions requested from the region or the ISAB and approved by majority vote of the Council's, NOAA Fisheries', and the tribes' representatives overseeing the ISAB's administration.	ISAB			
Independent Scientific and Economic Review	123		IEAB	IEAB-1	The Independent Economic Advisory Board advises the Council on the economics of issues within the Council's statutory responsibilities.	IEAB			
Independent Scientific and Economic Review	125		IEAB	IEAB-2	Advising the Council on the appropriate methods of economic analysis for proposed fish protection and mitigation measures and projects as well as other issues within the Council's statutory responsibilities. This advice will include the appropriate role and limits of economic analysis in making policy decisions and, where applicable, the associated economic costs and benefits of those decisions. The Independent Economic Analysis Board will fulfill this role by:	IEAB			
Independent Scientific and Economic Review	126		IEAB	IEAB 2.1	IEAB 2.1 Interacting as an advisory committee with the Council regarding methods of economic analysis for alternative fish recovery measures and other issues, including economic costs and benefits, within the Council's statutory responsibilities	IEAB			
Independent Scientific and Economic Review	125		IEAB	IEAB 2.2	IEAB 2.2 Assisting the Council to evaluate new analytical tools, and advising on the most appropriate study designs	IEAB			
Independent Scientific and Economic Review	125		IEAB	IEAB 2.3	IEAB 2.3 Helping to identify sources of information and data	IEAB			
Independent Scientific and Economic Review	125		IEAB	IEAB 2.4	IEAB 2.4 Performing specific tasks assigned by the Council on a cost reimbursement basis	IEAB			
Independent Scientific and Economic Review	125		IEAB	IEAB 2.5	IEAB 2.5 Assisting in the review and interpretation of study results	IEAB			

Strategy Appendix C.	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Wildlife mitigation priorities, construction and inundation loss assessments, and dam licensing	145		WL Mitigation	APP C-1	APP C-1 Bonneville and wildlife agencies and tribes: Ensure that wildlife mitigation projects implemented in fulfillment of this program consider the basinwide implementation priorities described in Tables C-1, C-2 and C-3, belowThe Council requests the Wildlife Advisory Committee revisit and update the priorities, if necessary, and report to the Council	Bonneville and wildlife agencies and tribes; WAC	Ongoing	Nov-15	WAC
Appendix C. Wildlife mitigation priorities, construction and inundation loss assessments, and dam licensing considerations	152		WL Mitigation in dam licensing decisions	APP C-3.1	APP C-3.1 Federal Energy Regulatory Commission  Non-federal hydroelectric projects are licensed by the Federal Energy Regulatory Commission.  The Northwest Power Act and the Electric Consumers Protection Act of 1986 require the Federal Energy Regulatory Commission to give equal consideration to the protection, mitigation of damage to, and enhancement of wildlife in licensing and relicensing decisions. In developing license conditions, take into account to the fullest extent practicable the policies established in this section, and the measures taken by Bonneville and others to implement this section. In particular, it is important to take into account the mitigation efforts at federal projects undertaken pursuant to this section, to ensure that license conditions are consistent with and complement these wildlife mitigation projects and contribute fully and proportionately to regional wildlife mitigation goals.	FERC			
Appendix C. Wildlife mitigation priorities, construction and inundation loss assessments, and dam licensing	152		WL Mitigation in dam licensing decisions	APP C-3.2	APP-C 3.2 Council The Council will monitor the Federal Energy Regulatory Commission licensing and relicensing proceedings and comment or intervene where appropriate.	Council			
Appendix F. Future hydropower electric development and licensing, and protected areas	163		General Measures - Standards for new hydroelectric development and licensing:	PROT 1 Potential effects on fish	PROT 1 The Federal Energy Regulatory Commission, Corps of Engineers, Bureau of Reclamation and Bonneville shall not license, exempt from license, relicense, propose, recommend, agree to acquire or wheel power from, grant billing credits for, or otherwise support any hydroelectric development in the Columbia River Basin without specifically providing for these development conditions:	FERC, US Army Corps, Bureau of Reclamation and Bonneville			

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	Page			Sub-Action			New or		_
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Appendix F. Future hydropower electric development and			General Measures - Standards for new hydroelectric	PROT 1 Potential	PROT 1.1 Consultation with the fish and wildlife agencies and tribes and the Council throughout study, design, construction, and operation of the project PROT 1.2 Development of specific plans for flows and fish facilities prior to construction PROT 1.3 Use of the best available means for aiding downstream and upstream passage of anadromous and resident fish PROT 1.4 Provision of Columbia and Snake river flows and reservoir levels of sufficient quantity and quality to protect spawning, incubation, rearing, and migration PROT 1.5 Full compensation for unavoidable fish losses or fish habitat losses through habitat	FERC, US Army Corps, Bureau of Reclamation and Bonneville, fish and			
licensing, and	460		development and	effects on	restoration or replacement, appropriate production, or similar measures consistent with the	wildlife agencies and tribes and the			
Appendix F. Future hydropower electric development and licensing, and protected areas	163		licensing:  General Measures - Standards for new hydroelectric development and licensing:	PROT 1	PROT 1.6 Assurance that the project will not inundate the usual and accustomed, traditional, or contemporary fishing places of any tribe without tribal approval PROT 1.7Assurance that the project will not degrade fish habitat or reduce numbers of fish in such a way that the exercise of treaty or executive-order tribal rights will be diminished PROT 1.8 Assurance that all fish protection measures are fully operational at the time the project begins operation	Council  FERC, US Army Corps, Bureau of Reclamation and Bonneville, fish and wildlife agencies and tribes and the Council			
Appendix F. Future hydropower electric development and licensing, and protected areas	164		General Measures - Standards for new hydroelectric development and licensing:	Potential effects on	PROT 1.9 Assurance that the project developer will collect data needed to monitor and evaluate the results of the fish protection efforts PROT 1.10 Assurance that the project will not degrade water quality beyond the point necessary to sustain sensitive fish species (as designated in consultation with the fish and wildlife agencies and tribes).	FERC, US Army Corps, Bureau of Reclamation and Bonneville, fish and wildlife agencies and tribes and the Council			
Appendix F. Future hydropower electric development and licensing, and protected areas	164		General Measures - Standards for new hydroelectric development and licensing:	PROT 2 Potential	PROT 2 The Federal Energy Regulatory Commission, Corps of Engineers, Bureau of Reclamation and Bonneville shall not license, relicense, exempt from license, propose, recommend, agree to acquire or wheel power from, grant billing credits for, or otherwise support any hydroelectric development in the Columbia River Basin without specifically providing for these development conditions:	FERC, US Army Corps, Bureau of Reclamation and Bonneville			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Appendix F. Future hydropower electric development and licensing, and protected areas	164		General Measures - Standards for new hydroelectric development and licensing:	PROT 2 Potential effects on wildlife	PROT 2.1 Consulting with fish and wildlife agencies and tribes and the Council throughout study, design, construction and operation of the project PROT 2.2 Avoiding inundation of wildlife habitat, insofar as practical PROT 2.3 Timing construction activities, insofar as practical, to reduce adverse effects on nesting and wintering grounds PROT 2.4 Locating temporary access roads in areas to be inundated PROT 2.5 Constructing sub-impoundments and using all suitable excavated material to create islands, if appropriate, before the reservoir is filled PROT 2.6 Avoiding all unnecessary or premature clearing of land before filling the reservoir PROT 2.7 Providing artificial nest structures when appropriate PROT 2.8 Avoiding construction, insofar as practical, within 250 meters of active raptor nests	FERC, US Army Corps, Bureau of Reclamation and Bonneville, fish and Wildlife agencies and tribes and the Council			
Appendix F. Future hydropower electric development and licensing, and	104		General Measures - Standards for new hydroelectric development and	PROT 2 Potential effects on	PROT 2.12 Regulating water levels to reduce adverse effects on wildlife during critical wildlife periods (as defined in consultation with the fish and wisters) are some proof of the wildlife agencies and tribes).	FERC, US Army Corps, Bureau of			
Appendix F. Future hydropower electric development and licensing, and	165		General Measures - Standards for new hydroelectric development and	PROT 2 Potential effects on	parts of the project area  PROT 2.14 Acquiring land or management rights, such as conservation easements, where necessary to compensate for lost wildlife habitat at the same time other project land is acquired and including the associated costs in project cost estimates  PROT 2.15 Funding operation and management of the acquired wildlife land for the life of the project  PROT 2.16 Granting management easement rights on the acquired wildlife lands to appropriate management entities  PROT 2.17 Collecting data needed to monitor and evaluate the results of the wildlife protection efforts  PROT 2.18 Assuring that the project will not inundate the usual and accustomed, traditional or contemporary hunting places of any tribe without tribal approval  PROT 2.19 Assuring that the project will not degrade wildlife habitat or reduce numbers of wildlife in such a way that the exercise of treaty or executive order tribal rights will be diminished	Reclamation and Bonneville  FERC, US Army Corps, Bureau of			

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum
Appendix F.			7,2			.,,	- 0- 0-		
Future hydropower electric development and licensing, and protected areas			General Measures - Standards for new hydroelectric development and licensing:	PROT 2 Potential effects on wildlife	PROT 2.1 Ensure that all licenses for hydroelectric projects or documents that propose, recommend, or otherwise support hydroelectric development explain in detail how the provisions of this section will be accomplished or the reasons why the provisions cannot be incorporated into the project.	FERC, US Army Corps, Bureau of Reclamation and Bonneville			
Appendix F. Future hydropower electric development and licensing, and			Implementing Protected		PROT 3.1 Bonneville Power Administration o Shall not acquire power from hydroelectric projects located in protected areas. The Council believes that the Long-Term Intertie Access Policy's reliance on protected areas is consistent with the Council's power plan and Fish and Wildlife Program as they apply to fish and wildlife in the Columbia River Basin. The Council continues to recommend that Bonneville adopt a similar				
protected areas	166		Areas	PROT 3	policy with respect to protected areas outside the Columbia River Basin.	Bonneville			
Appendix F. Future hydropower electric development and licensing, and protected areas	167		FERC		PROT 3.2 Federal Energy Regulatory Commission  o Under the Northwest Power Act, the Federal Energy Regulatory Commission, and all other federal agencies responsible for managing, operating, or regulating federal or non-federal hydroelectric facilities located on the Columbia River or its tributaries are required to take protected area designations into account to the fullest extent practicable at all relevant stages of decision-making processes. The Council recognizes that the Federal Energy Regulatory Commission makes licensing and exemption decisions for nonfederal projects, and does not expect that the Commission will abandon its normal processes with regard to projects located in protected areas. Rather, consistent with Section 4(h)(11) of the Northwest Power Act, the Council expects that the Federal Energy Regulatory Commission will take the Council's judgment into account, and implement that judgment in licensing and exemption decisions unless the Federal Energy Regulatory Commission's legal responsibilities require otherwise.	FERC			
Appendix F. Future hydropower electric development and licensing, and protected areas	170		General Implementation Measures		PROT 4.1 Shall review simultaneously all applications or proposals for hydroelectric development in a single river drainage, through consolidated hearings, environmental impact statements or assessments, or other appropriate methods. This review shall assess cumulative environmental effects of existing and proposed hydroelectric development on fish and wildlife.	Federal project operators and regulators			

	Page			Sub-Action			New or		
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum
Appendix F. Future hydropower electric development and licensing, and protected areas	170		Federal Energy Regulatory Commission		PROT 5 Shall require all applicants for licenses (including license renewals, amendments, and exemptions) and preliminary permits in the Columbia River Basin to demonstrate in their applications how the proposed project would take this program into account to the fullest extent practicable. FERC also shall provide the Council with copies of all applications for licenses (including license renewals, amendments, and exemptions) and preliminary permits in the Columbia River Basin so that the Council can comment in a timely manner on the consistency of the proposed project with this fish and wildlife program. This provision is not intended to supplant review of such applications by the fish and wildlife agencies and tribes.	FERC			
Appendix F. Future hydropower electric development and licensing, and protected areas			Federal land managers, federal and state fish and wildlife agencies and other state agencies		PROT 6 Federal and state fish and wildlife agencies and federal resource agencies shall incorporate pertinent elements of the fish and wildlife program in the terms and conditions they apply to projects exempted from licensing under Federal Energy Regulatory Commission exemption procedures. The Council also requests that federal land managers incorporate the development provisions of this program into their permit procedures related to hydroelectric development on lands they manage. And the Council requests that state agencies that grant permits for hydroelectric projects also apply these principles.				
Appendix F. Future hydropower electric development and licensing, and protected areas	171		Corps of Engineers, Bureau of Reclamation, and any other federal agency studying or proposing hydroelectric development in the Columbia River Basin	PROT 7	PROT 7 Shall provide opportunity for Council review and comment.	U.S. Army Corps of Engineers, Bureau of Reclamation, and any other federal agency studying or proposing hydroelectric development in the Columbia River Basin			
Appendix K. Resident fish mitigation settlements	178		RFSA		RFSA 1.1 The Bonneville Power Administration will require, wherever possible, that resident fish mitigation agreements through habitat acquisitions include a management plan with clear objectives; a plan for action over time; a committed level of funding that ensures long term maintenance to sustain the stated mitigation objectives; and provisions to ensure effective implementation with periodic monitoring and evaluation.	Bonneville			

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ANNUAL ACTIONS				Sub-							
				Action			New or				
Chunham.	Daga Number	Duiauitus	A stiem Tume		Compared Managemen	Desaransible Entity		Timesfuence	Milestones	Products	Status
Strategy	Page Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Milestones	Products	Status
								Annually			
			Monitoring		LAMP 2.2 Report passage counts at dams annually and map			(Counts), and 5			
Lamprey	95	High	(passage)	LAMP 2.2	lamprey distribution every five years	tribes		years (Map)			
Implement Adaptive					Bonneville will ensure that all monitoring projects report						
Management	102	High	Monitoring	M-2	the accuracy and precision of their data.	Bonneville		Annual			
Implement Adaptive					Bonneville will report annually to the Council on the					Publications resulting from program	
Management	104	High	Research	RES-4	publications resulting from program research	Bonneville		Annually	Annual Report from BPA	research	
Management	107	ingii	Research	ILD-4	passicularis resulting from program research	Domestile		Aintually	ramear report from br A	research	Template was presented to the
											Council at the 4 November 2014
									Annual reports for all research, M&E,		Council meeting. Template memo
									and hatchery programs to include		attached:
									summary of results, interim findings,		http://www.nwcouncil.org/media/7
									and benfits to fish and wildlife;		148417/2.pdf; Some project
					Bonneville should require all research, monitoring, and				research reports are separate from		sponsors are using the template for
					evaluation projects, including hatchery programs, to report				monitoring reports; research reports		reports this year(2014), with BPA
					annually, providing an electronic summary of their results				include hypotheses and critical		requiring that all research and
					and interim findings, as well as the benefits to fish and				uncertainties addressed; M&E to		monitoring projects utilize the
					wildlife. A high priority is to separate research reports from				include data regarding		template next year. ; The Council
					monitoring reports. The former should address hypotheses				implementation and status and	Electronic summary of the results	has developed a letter to the ISAB
					and critical uncertainties and the latter should provide important data about implementation, status, and trends.				trend information. As appropriate, action effectiveness should be	and interim findings, including benefits to fish and wildlife, for all	requesting their assistance in updating the research plan (in
Implement Adaptive					As appropriate, action effectiveness should be reported as				reported as part of research and	research, M&E, and hatchery	conjunction with NOAA and the
Management	105	High	Reporting	RPT-1	part of research and monitoring reports.	Bonneville	Ongoing	Annually	monitoring reports.	programs	tribes)
management	200	6	перогинд		part of research and monitoring reports.	Bonnevine	o.i.go.i.ig	7	morning reports.	programs	1.1003/
					Consistent with the goals and objectives section of this						
					program, Bonneville should report annually on the number of juvenile fish released each year; the number of adults						
					that contribute to harvest, are used for broodstock, and are						
					present on the spawning grounds for all hatchery programs						
					that receive Bonneville funding. Bonneville also should						
					provide support to ensure that all managers have the			Annually. The first			
					capacity to collect this data and should support regional			report should be			
Implement Adaptive					processes that standardize the data, facilitate reporting, and			submitted in			
Management	102	High	Monitoring	M-4	make this data publicly accessible.	Bonneville	New	December 2014.		Annual Report from BPA	
					Bonneville should identify preferred methods to guide						
					future data collection and report back to the Council				BPA identifies preferred methods,		
					annually. The Council will request the ISAB or ISRP to review				reports annually to the Council; ISRP		
Implement Adaptive					the methods identified by Bonneville, and based on its				or ISAB review of products; NPCC	Council adopted methods for data	
Management	103	High	Monitoring	M-6	review, the Council will adopt methods into the program.	Bonneville (Council, ISRP, ISAB)		Annually	adoption of methods	collection	

Strategy Page Number			Sub-							
Strategy Page Number			Action			New or				
	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Milestones	Products	Status
Implement Adaptive Management 106	High	Reporting		Bonneville should continue working with the Council to implement a concise, useful template for annual reports for research and monitoring projects that can replace other more cumbersome, more costly, and less useful reports for individual projects. The Council will continue to work with Bonneville and the ISRP to identify and assemble the information needed to produce an annual summary of results for Council review.	Bonneville, Council, ISRP	Ongoing	Annually	Reporting template that the Council and BPA agree on that results in the identification and assembly of information to produce an annual summary of results for Council review.	The Council will continue to work with Bonneville and the ISRP to identify and assemble the information needed to produce an annual summary of results for Council review.	
						88	, , , , , , , , , , , , , , , , , , , ,			
How the Program is Implemented 113		Tracking Measures		TRM 1 Bonneville, the Corps, and the Bureau, in collaboration with federal and state agencies and tribes, shall report annually to the Council and the region on the implementation of program measures.	Bonneville, US Army Corps, Bureau, federal and state agencies and tribes	New	Annually			
Predator Management 49	High	Management of predator fish		Bonneville should continue to annually implement and evaluate the base predator-control program and, where warranted, expand northern pikeminnow removals to other mainstem dams in the lower Columbia River (for example: expand the program to include northern pikeminnow removals at McNary and Bonneville dams).	Bonneville; The action agencies; NOAA Fisheries and the fish and wildlife agencies and tribes, Council		Annually	BPA ~implement and evaluate the base predator-control program and, where warranted, expand northern pikeminnow removals to other mainstem dams in the lower Columbia River; ~Action Agencies: evaluate annually the biological and cost effectiveness of focused pikeminnow removals for these expanded dam angling efforts and	Scoping of focused pikeminnow removals at other mainstem dams in the lower Columbia River will be based on evaluations and adaptive management principles with input from NOAA Fisheries and the fish and wildlife agencies and tribes and the Council.	
Investment strategy 200	High			Annual symposiums will be convened by the Council to ensure collaboration and efficiencies are achieved by all parties seeking to protect past investments in fish and wildlife by Bonneville and the action agencies under the program.	Council	New	Annual Symposiums	Annual Symposium		
Investment strategy 116		Emerging Program Priorities		EPP 1The Council is providing the following guidance to Bonneville, the other federal agencies, and the region in general as to which of these new measures are emerging priorities for implementation in the next five years. During the course of the next five years, the Council anticipates that Bonneville will take the necessary steps to integrate these priorities into the program and will report annually to the Council on its progress. The Council may adjust the following ordered program priorities:	Council to Bonneville, the other federal agencies, and the region in general		Annually			
Implement Adaptive				The Council, with the assistance of agencies, tribes and others, will maintain the program's dashboard and the HLI website report, and also will produce other reports as appropriate, such as one that tracks annual anadromous fish forecasts and actual run sizes. The Council expects others to provide data and reports to the Council on a regular basis and make them available to the public [see Reporting Appendix L for a list of Council-requested reports]. This will provide easy access for the public and allow the Council to review the accuracy of the pre-season	Council, with the assistance of		Annually, and as		The Council expects others to provide data and reports to the Council on a regular basis and make them available to the public . This will provide easy access for the public and allow the Council to review the accuracy of the preseason run-size estimates.	
Implement Adaptive Management 106	High	Reporting	RPT-4	allow the Council to review the accuracy of the pre-season run-size estimates.	Council, with the assistance of agencies, tribes and others	Ongoing	Annually, and as appropriate			

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				Action			New or				
Strategy	Page Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Milestones	Products	Status
Strategy	r age realiser	THORITY	Action Type	Number	General Weasures	Responsible Entity	Oligoliig:	Timetrame	Willestones	Troudets	Status
					The federal action agencies shall define the comprehensive						
					maintenance costs by fish and wildlife investment types for						
					both the direct and reimbursable aspects of the program.						
					Anticipated costs should be developed year by year within a						
Investment strategy	199	High		IS- 2	20-year timeframe and be provided annually to the Council.	Federal action agencies	New	Annual			
										Report to the Council annually on	
Predator					The federal action agencies shall report to the Council					their respective predator-	
Management	49	High		PM-2	annually on their respective predator-management efforts	Federal action agencies		Annually		management efforts	
Mainstem											
Hydrosystem Flow					MSH 7.2 Participate in the development of the annual smolt						
and Passage					monitoring program implementation plan, and assist in the						
Operations	63		General Measures	MSH 7.2	implementation of the program	Fish Passage Center		Annual			
						-					
			General measures								
			for R,M,		Hatchery program implementation, monitoring, and						
			assessment, and		evaluation results for all hatchery programs in the Columbia						
Fish Propagation			reporting on		River Basin should be made electronically available and						
Including Hatchery Programs	79		hatchery effectiveness		hatchery operators and funders should coordinate annual	Hatchery operators and funders, Council		AI			
Programs	79		enectiveness	HAT 10	summary presentations to the Council.	runders, Council		Annual			
			General measures								
			for R,M,								
			assessment, and								
Fish Propagation			reporting on		The Council requests that NOAA Fisheries annually update						
Including Hatchery			hatchery		the Council on the status of ESA reviews for state and tribal						
Programs	78		effectiveness	HAT 5	HGMPs.	NOAA		Annually			
					All entities receiving funding for coordination of program						
			Program		activities must develop a work plan detailing the						
Program			coordination		coordination elements, objectives, deliverables, and budget, as well as submit annual reports on this work, based on the						
Coordination	121		funding		upcoming year's priorities as outlined in the annual forum.	Regional Coordination entities		Annually			
coordination	121		runaing		upcoming year's priorities as outlined in the annual forum.	Regional Coordination entities		Annually			

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				Sub-Action								
Strategy	Page Number	Priority	Action Type	Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
										begin with an update of how previous research funds were		
										allocated to particular categories		
					The Council will, with federal and					and critical uncertainties; The		
					state fish and wildlife agencies and	Council, ISRP/ISAB				Independent Scientific Review		
					tribes review and update its research	(with federal and state		Beginning 2014,		Panel and the Independent		
Implement Adaptive					plan every three years beginning in	fish and wildlife		then every three		Scientific Advisory Board will assist		Letter sent to ISRP/ISAB
Management	104	High	Research	RES -1	2014.	agencies and tribes)	new/ongoing	years		with updating the critical	Updated Research Plan	2/23/2015
					EST 3.2 Receive from Bonneville and							
					the Corps, a summary report on the							
					results of action-effectiveness, status, and trend monitoring and research							
					uncertainties in March 2015. The							
					report must provide information to							
					help improve and substantiate the							
					effectiveness of habitat actions							
					implemented in the estuary by parties	Council, U.S. Army						
			General		that do not monitor their own habitat	Corps of Engineers,						
Estuary	68		Measures	EST 3.2	actions.	Bonneville		Mar-15				
											Configuration and	COP is in draft and
											Operations Plan (COP)	being reviewed by
					The Corps and Bonneville should						from the Corps and	NMFS and US Fish and
					support and implement anadromous						Bonneville that will	Wildllife Service. Will be shared with ODFW
			Reintroductions		fish passage measures prioritized						guide the passage actions for the North	and other members of
Anadromous Fish			above projects in		through the Willamette River Basin						and South Santiam.	the WATER Steering
Mitigation in Blocked			the Willamette		Flood Control Project Biological	U.S. Army Corps of			WATER Steering	Willamette Biological Opinion	McKenzie and Middle	Team once negotiations
Areas	86	High	River Basin	AFM-9	Opinion.	Engineers, Bonneville	Ongoing	May-15	Team	timelines	Fork Willamette	with NMFS and US Fish
					WL 1.1 Where appropriate							
					prioritization exists and agreements							
					exist on the methodology, complete							
					wildlife loss assessments for losses							
			General		caused by operation of the	Damas dila secolo				Method for quantifying	Damant to Co. 1971	Will be discussed by
Wildlife Mitigation	73			WL 1.1	hydropower projects	Bonneville, agencies, tribes	Ongoing	Nov 15	WAC	operational (perhaps secondary?) losses	Report to Council on	WAC throughout spring and summer in
Wildlife Mitigation	/3		Measures	VVL 1.1	Habitat units and the habitat	unses	Ongoing	Nov-15	VVAC	103553	operational losses	and Summer III
					evaluation procedure (HEP)							
					methodology. The Council will							
					continue to endorse habitat units as							
					the preferred unit of measurement for							WAC has not discussed
					mitigation accounting and the HEP					Report on the continued use of		byut will begin
			Specific measures		methodology as the preferred method					HEP methodology or change in		consideration of the
Wildlife Mitigation	73			\A/I E	for estimating habitat units lost and acquired. Parties to a wildlife	Council	Ongoing	Nov 15	WAC	status of HEP to Committee and	Papart to Council	matter in April or May
Wildlife Mitigation	/3		for habitat units	WL 5	acquired. Parties to a Wildlife	Council	Ongoing	Nov-15	WAC	Council from the WAC	Report to Council	WAC meeting

				Sub-Action								
Strategy	Page Number	Priority	Action Type	Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
			Wildlife Advisory		The Council recognizes the ongoing difficulties in addressing wildlife operational losses. At the same time the Council recognizes the progress that has been made in addressing this issue as the result of pilot projects on the Kootenai River. To address this issue the Council has directed its	Wildlife Advisory				Method for quantifying operational (perhaps secondary?)	Report to Council on	Will be discussed by WAC throughout spring
Wildlife Mitigation	75		Committee	WL 9	Wildlife Advisory Committee to examine the existing options and	Committee	Ongoing	Nov-15	WAC	losses	operational losses	and summer in
Wildlife Mitigation	75		Wildlife Advisory Committee	WL 9.1	WL 9.1 The need for additional HEP reports and future HEP Team funding	Wildlife Advisory Committee	Ongoing	Nov-15	WAC	Report on the continued use of HEP methodology or change in status of HEP to Committee and Council from the WAC	Report to Council	WAC has not discussed byut will begin consideration of the matter in April or May WAC meeting
Wildlife Mitigation	75		Wildlife Advisory Committee	WL 9.2	WL 9.2 The diminishing need for HEP on new acquisitions as Bonneville completes construction and inundation mitigation	Wildlife Advisory Committee	Ongoing	Nov-15	WAC	Report on the continued use of HEP methodology or change in status of HEP to Committee and Council from the WAC	Report to Council	WAC has not discussed byut will begin consideration of the matter in April or May WAC meeting
Wildlife Mitigation	75		Wildlife Advisory Committee	WL 9.3	WL 9.3 Current regional need for follow-up HEP capacity to track project agreement compliance on many properties. That need may be influenced by (1) long-term settlements for operation and maintenance, (2) technology advances that may allow the region to more cost effectively track changes in	Wildlife Advisory Committee	Ongoing	Nov-15	WAC	Report on the continued use of HEP methodology or change in status of HEP to Committee and Council from the WAC	Report to Council	WAC has not discussed byut will begin consideration of the matter in April or May WAC meeting
Wildlife Mitigation	75		Wildlife Advisory Committee	WL 9.4	WL 9.4 The need for new methods to assess operational losses that incorporate the results of ongoing pilot projects. This could include technical testing and evaluation of operational loss models and methodologies, or other alternative habitat evaluation methods.	Wildlife Advisory Committee	Ongoing	Nov-15	WAC	Method for quantifying operational (perhaps secondary?) losses	Report to Council on operational losses	Will be discussed by WAC throughout spring and summer in
Appendix CWildlife mitigation priorities, construction and inundation loss assessments, and dam licensing considerations	145		WL Mitigation	APP C-1	APP C-1 Bonneville and wildlife agencies and tribes: Ensure that wildlife mitigation projects implemented in fulfillment of this program consider the basinwide implementation priorities described in Tables C-1, C-2 and C-3, belowThe Council requests the Wildlife Advisory Committee revisit and update the priorities, if necessary, and report to the Council	Bonneville and wildlife agencies and tribes;	Ongoing	Nov-15	WAC	Priorities identified/affirmed	Report to Council	Not clear at this time. Might be discussed in WAC this year.

				Sub-Action								
Strategy	Page Number	Priority	Action Type	Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
					EULA 4.1 The Council, in collaboration							
					with Bonneville, the Corps, NOAA							
					Fisheries, and agencies and tribes, will							
					help organize and facilitate a							
					science/policy forum in 2015 to							
					address the biological requirements of							
					eulachon, combined with related	Council, Bonneville, US						
					inquiries into the relationship	Army Corps, NOAA						
			Mainstem and		between flow, current hydropower	Fisheries, and agencies		2015, Science/policy				
Eulachon	97		hydrograph:	EULA 4	dam operations, and the hiological Objectives that represent different	and tribes		forum				
										This effort should include a review	The final report will	
					perspectives on healthy and					of agency and tribal management	include, but not be	
					harvestable populations already exist.					plans, draft and final federal	limited to, an inventory	
					The Council will work with state and					recovery plans, subbasin plans and	of non-ESA listed	
			Objectives for		federal agencies and tribes in the	Council will work with				other relevant documents and	populations of salmon	
			•		region to collect, organize, review, and					reports. The Council will rely	and steelhead that lack	
Identify and Organize			adult salmon and		report on these quantitative	agencies and tribes in				on the agencies and tribes to	federal recovery	
Objectives	33	High	steelhead	OBJ-1	objectives by the end of 2015.	the region	New	By the end of 2015		identify "best source" locations of	objectives.	
					agencies and tribes will complete							
					wildlife loss mitigation agreements for							
					at least the remaining construction							
					and inundation losses by 2016. In							
					addition, for each wildlife agreement							
					that does not already provide for long-							
			General		term maintenance of the habitat,	Bonneville, agencies,						
Wildlife Mitigation	73		Measures	WL3	Bonneville and the applicable	tribes		By 2016				
			Reintroduction of									
			anadromous fish									
			above Chief									
			Joseph and Grand									
			Coulee dams to			Danas dll						
			mainstem			Bonneville, relevant						
Anadromous Fish			reaches and			federal action agencies,		<b>T.</b> I				
					Show 4 (to be considered as 1)	state and federal fish		To be completed no				
Mitigation in Blocked		10.1	tributaries in the	454.4	Phase 1 (to be completed no later than	-		later than the end of				
Areas	84	High	United States	AFM- 4	the end of 2016):	and tribes		2016				
					of fish and wildlife agencies and tribes,							
					and Bonneville, to develop a							
					standardized methodology for habitat		1					
					loss assessments to assist areas that		1					
					currently do not have the capacity to							
					complete this assessment and do not							
					have a mitigation settlement							
Bastala 1 mm 1			C-11		agreement, and to ensure a consistent	Council, fish and						
Resident Fish			General		level of accuracy across the basin. This	wildlife agencies and						
Mitigation	88		Measures	RFM 4	task force shall consider past efforts	tribes, Bonneville		Report Quarterly	Task Force			

Charter	D Noveber	Dutantha	Astisu Tour	Sub-Action		Bassassihla Fakika	Name of Control	Timeform	F	Miller	Don donto	Chahara
Strategy	Page Number	Priority	Action Type	Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
					For projects assessing species and habitat conditions in intensively						Report from the project sponsors to	
					monitored watersheds, Bonneville will						provide information on	
					require the project sponsors to						the condition of these	
					provide information on the condition						watersheds at least	
					of these watersheds at least every						every three years in a	
Implement Adaptive					three years in a format that can be	Bonneville and IMW		At least every three			format that can be used	
Management	103	High	Monitoring	M-9	used by the Council.	projects (Council)	Ongoing	years			by the Council.	
Munagement	100	111611	Wierintering	141 3	accomplishments of intensively	projects (country)	Oligonia	yeurs			by the council.	
					monitored watersheds and the							
					Integrated Status and Effectiveness							
					Monitoring Project to ensure that it is							
Implement Adaptive					cost-effective and produces useful			During project				
Management	104	High	Research	RES-5	results.	Council		During project review		Council review		
ivianagement	104	riigii	Nesearch	INES-5	resuits.	Council		Teview		Council review		
					WQ 1.1 Continue real-time monitoring							
					and reporting of TDG and water							
					temperatures measured at fixed	Federal and non-						
			TDG and		monitoring sites in the Columbia River	federal project						
<b>Water Quality</b>	54		Tmperature		Basin	operators		In real time				
					The Council, with the assistance of							
					agencies, tribes and others, will						When the Council	
					periodically review and update the						completes its work on	
					high-level indicators report to						biological objectives, it	
					communicate accomplishments to						will update its high-	
					Congress, the region's governors,						level indicators to	
					legislators, and citizens of the	Council, with the					ensure they are	
Implement Adaptive					Northwest. When the Council	assistance of agencies,		Periodic review and			consistent with these	
Management	106	High	Reporting	RPT-3	completes its work on biological	tribes and others	Ongoing	update			objectives.	
			Bonneville									
			funding for		EPP 1.2 Prior to every rate case							
			_		Bonneville should report to the							
			emerging		Council how it plans to budget for							
Increase and China	14.5		program	EDD 4.3	implementation of the fish and wildlife			Prior to every rate				
Investment Strategy	116		priorities	EPP 1.2	program.	Bonneville		case			Regular reports from	
											that group on the	
											following items: current	
					The Council will support the						regional efforts for	
					collaborative work of the PSMFC						inspection and	
					100th Meridian Initiative-Columbia						decontamination; early	
Non-native and			Regional		Basin Team and request regular						detection efforts and	
Invasive Species	48	High	coordination	NNI-12	reports	Council		Regular Reports			rapid response	

Stratomy	Pago Numbor	Priority	Action Type	Sub-Action Number	General Measures	Posnonsible Entity	Now or Ongoing?	Timeframe	Forum	Milestones	Products	Status
Strategy	Page Number	Priority	Action Type	Number	The federal action agencies, in	Responsible Entity	New or Ongoing?	Timetrame	Forum	Milestories	Products	Status
					collaboration with the state, federal,							
					and tribal agencies and the Mid-							
					Columbia Public Utility Districts							
					(PUDs), shall continue to reliably							
					implement operations to protect							
					spawning and emergence of fall							
					Chinook in the Hanford Reach,							
					consistent with the 2004 Hanford							
					Reach Fall Chinook Protection							
					Program Agreement. The parties to							
					the agreement should report to the							
					Council periodically to assure flow measures continue to be effective in							
					protecting fall Chinook redds and							
					juveniles from flow and river elevation	Federal action						
					fluctuations.	agencies, state, federal,						
Mainstem						and tribal agencies and						
Hydrosystem Flow						the Mid-Columbia						
and Passage			Hanford Reach			Public Utility Districts						
Operations	63		fall Chinook	MSH 8		(PUDs),	Ongoing	Report periodically				
					The Council expects the Federal							
					Energy Regulatory Commission, in the exercise of its licensing authority							
					under the Federal Power Act, to take							
					the Council's hydroelectric							
					development standards and protected							
					areas designations into account to the							
					fullest extent practicable. This includes	;						
					a Council determination whether							
					favorable or unfavorable on a petition							
			General		for an exception to a protected area							Ongoing monitoring of
			Implementation		designation for a project proposed to	FERC, Council,						FERC related activities
Protected Areas	53		Measures	PA	have exceptional benefits for fish and	Bonneville	Ongoing	As necessary	None			in protected areas.
					The Council supports monitoring		Ü	,				'
					plume and nearshore ocean							
					conditions and in-river restoration							
					actions to determine those actions of							
					greatest benefit and to separate the							
					effects of ocean-related mortality							
					from that caused in the freshwater							
					part of the life cycle.				Ocean and Plume			
Plume and Nearshore	•		General						Science and			
Ocean	70		Measures	PLU 1		Council	Ongoing	As necessary	Management Forum			
					The federal action agencies shall							
					evaluate the effects of flow regulation							
					on near-shore plume characteristics							
					and salmon and steelhead				Ocean and Plume			
Plume and Nearshore			General		productivity, abundance, and	- 1 1 11			Science and			
Ocean	70		Measures	PLU 2	diversity.	Federal action agencies	Ongoing	As necessary	Management Forum			

				Sub-Action					_			
Strategy	Page Number	Priority	Action Type	Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
					The Council supports continued monitoring of the Columbia River							
					plume and ocean conditions,							
					l' ,							
					assessment of impacts on salmonid survival, and evaluation of the limits of							
					· · · · · · · · · · · · · · · · · · ·							
					restoration potential in the basin given variable ocean conditions.							
					Predicting future ocean conditions and							
					anadromous fish returns allows for							
Plume and Nearshore			C		adjustments to inland actions and may				Ocean and Plume			
			General		lead to increased survival benefits.				Science and			
Ocean	70		Measures	PLU 3	The Council supports coordination	Council	Ongoing	As necessary	Management Forum			
					between ocean scientists and state							
					fish and wildlife agencies and tribes to							
					identify key uncertainties and							
					opportunities to improve inriver				Ocean and Plume			
Plume and Nearshore			General		management activities based on				Science and			
Ocean	71		Measures	PLU 4	current ocean conditions.	Council	Ongoing	As necessary	Management Forum			
	7-		casarcs	. 20 .	Ocean and Plume Science and	Courten	G.1.go.11.g	7 to Trededout y	Widnage mener or ann			
					Management Forum and							
					science/policy exchanges to							
					encourage coordination and							
					communication between ocean							
					researchers and fish and wildlife							
					agencies and tribes. The Council will							
					consider recommendations from the				Ocean and Plume			
Plume and Nearshore			General		forum when making				Science and			
Ocean	71		Measures	PLU 5	recommendations to Bonneville	Council	Ongoing	As necessary	Management Forum			
					Bonneville should ensure that all						End date identified in	
					contracts for research projects,						all Bonneville-funded	
Implement Adaptive					including those covered by funding						contracts for all	
Management	104	High	Research	RES-3	agreements, identify an end date.	BPA	new	BPA contracting			research projects.	

RESPONSIBLE	ENTITY ACTION	NS -ΔΙΙ										
Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
			Undon succession									
			Hydropower dam operations and fish		STU- 1.1 Study the effects on downstream passage of							
Sturgeon	91	High	passage (passage)	STU- 1.1	sturgeon with and without removable spillway weirs.	Action agencies						
Ŭ			1 0 11 0 7		STU- 1.2 Estimate mortality by size for fish that pass over	ÿ						
					spillways and removable spillway weirs and those that pass							
			Hydropower dam		downstream through turbines; if significant mortality is							
			operations and fish		occurring, identify and evaluate the feasibility of mitigation measures.							
Sturgeon	91	High	passage (passage)	STU- 1.2	incusures.	Action agencies						
					STU- 1.3 In general, evaluate the importance of							
			Hydropower dam		connectivity among sturgeon populations; assess whether							
			operations and fish		the mainstem dams isolate sturgeon populations; and if so, evaluate the feasibility of mitigation.							
Sturgeon	91	High	passage (passage)	310-1.3	-	Action agencies						
			Lludron outer dom		STU- 1.4 Evaluate costs, benefits, and risks of passage improvements for sturgeon relative to other potential							
			Hydropower dam operations and fish		strategies.							
Sturgeon	91	High	passage (passage)	STU- 1.4		Action agencies						
			partings (partings)		STU- 1.5 Evaluate opportunities for non-volitional passage							
			Hydropower dam		by taking advantage of fish trapped in dewatered draft							
			operations and fish		tubes or fish ladders during maintenance.							
Sturgeon	91	High	passage (passage)	STU- 1.5		Action agencies						
					STU- 1.6 Continue to develop, refine, and implement protocols to prevent sturgeon entrainment, dewatering,							
			Hydropower dam operations and fish		and mortality during planned maintenance activities at							
Sturgeon	91	High	passage (passage)	STU- 1.6	passage facilities.	Action agencies						
Stangeon	32	111611	pussage (pussage)	310 1.0		Action agencies						
			Hydropower dam		STU- 1.7 Develop an operational protocol to block access							
			operations and fish		by sturgeon to turbine draft tubes during turbine							
Sturgeon	91	High	passage (passage)	STU- 1.7	dewatering and start-up.	Action agencies						
					LAMP 1.2 Monitor adult and juvenile lamprey passage at							
					mainstem Columbia and Snake river and Willamette Basin							
					hydropower dams to identify operations and lighting that							
					delay, promote fall-back, obstruct, or kill migrating adult							
	0=	10.6	Hydropower system	14454543	and juvenile lamprey (e.g. ramping rates, water elevation	A -ti						
Lamprey	95	High	(passage)	LAMP 1.2	changes	Action agencies						
			Hydropower system		LAMP 1.3 Establish an interim passage standard for adult							
Lamprey	95	High	(passage)	LAMP 1.3	Pacific lamprey.	Action agencies						
					LAMP 1.4 Evaluate dam passage, assess passage efficiency							
					and direct mortality, and other metrics relating to							
1	-	Le 1	Hydropower system	LANGS	migratory success of lamprey above dams with poor passage	A all a second						
Lamprey	95	High	(passage)	LAMP 1.4	F0-	Action agencies						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
			Hydropower system		LAMP 1.5 Install lamprey-friendly passage structures for							
Lamprey	95	High	(passage)	LAMP 1.5	adult and juvenile lamprey	Action agencies						
			Hydropower system		LAMP 1.6 Monitor and report predation on adult and							
Lamprey	95	High	(passage)	LAMP 1.6	juvenile lamprey during passage at mainstem dams.	Action agencies						
					STU 2.1 Seek opportunities to operate the FCRPS to							
			Hydropower dam		provide flow consistent with the needs of productive							
	_		operations and fish		sturgeon populations including increased spring and summer flows, reduced flow fluctuations during spawning							
Sturgeon	91		passage (passage)	310 2.1	STU 2.2 Operate the hydropower system in a manner that	Action Agencies						
			Hydropower dam		balances needs of anadromous fish, Columbia River Basin							
			operations and fish		sturgeon, and other native fish species in a way that							
Sturgeon	91		passage (passage)	STU 2.2	improves the abundance and productivity of sturgeon.	Action Agencies						
			[0- (F0-)		STU 8.1 Continue to support the Kootenai Tribe Integrated	0						
					Fish and Wildlife Program as interim measures to avoid							
					extinction of endangered Kootenai white sturgeon							
Sturgeon	92		Hatchery	STU 8.1		Action agencies						
					LAMP 4.1 Identify and seek opportunities to address effects of hydrosystem operations, including reservoir elevation							
					fluctuations and an altered hydrograph on adult and							
Lamprey	95		Hydropower system	LAMP 4.1	juvenile lamprey	Action agencies						
Lampley	33		Trydropower system	LAWIF 4.1		Action agencies						
					LAMP 4.2 Assess the impacts of dredging on lamprey							
Lamprey	95		Hydropower system	LAMP 4.2	around hydropower dams and navigation facilities.	Action agencies						
					The action agencies, in collaboration with state agencies							
					and tribes, shall fund mitigation of anadromous fish losses, including strategies relying on habitat improvements,							
					reintroductions, hatcheries, harvest opportunities, and							
Anadromous Fish					other mitigation.							
Mitigation in Blocked Areas	84	High	All blocked areas	AFM-1		Action agencies, (state agencies, tribes)						
DIOCREU AI Cas	04	riigii	All blocked dieds	VI IAI-T		ugencies, tribesj						
					The action agencies, in coordination with agencies and	Action agencies,						
Lamprey	95	High	Monitoring (passage)		tribes, shall:	agencies and tribes						
					LAMP 2.1 Develop a regional strategy for monitoring							
					passage into tributaries to better understand differences in counts of adult lamprey between dams							
Lamprey	95	High	Monitoring (passage)		counts of addit lampley between dams	Action agencies, agencies and tribes						
Lampley	33	nigii	widilitoring (passage)	LAIVIF Z.I		agencies and tribes						
					LAMP 2.2 Report passage counts at dams annually and map	Action agencies,		Annually (Counts),				
Lamprey	95	High	Monitoring (passage)	LAMP 2.2	lamprey distribution every five years	agencies and tribes		and 5 years (Map)				
Sturgoon	01		Mainstem habitat	STILA	The action agencies, in coordination with the agencies and tribes, shall:	Action agencies, agencies, tribes						
Sturgeon	91		ivianistein nabitat	STU-4	Lines, siidli.	agencies, tribes						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
,		,	7,		STU-4.1 Investigate the use of site-specific habitat	,	- 0- 0-					
					measures such as substrate enhancement and channel							
					restoration as viable alternatives for improving natural	Action agencies,						
Sturgeon	91		Mainstem habitat	STU-4.1	recruitment in some areas.	agencies, tribes						
					STU-4.2 Continue to identify, protect and restore habitat areas and ecological functions that are associated with							
					productive spawning, resting, rearing, and migrating	A ation according						
Sturgeon	91		Mainstem habitat	STU-4.2	sturgeon.	Action agencies, agencies, tribes						
Stargeon	31		Wallistelli Habitat	310 4.2	STU-4.3 Identify the specific aspects of hydrosystem	agencies, tribes						
					operations, such as duration of fluctuations in water							
					releases and of water levels, which affect natural spawning,	Action agencies,						
Sturgeon	91		Mainstem habitat	STU-4.3	reproduction, growth, and survival of larval and juvenile	agencies, tribes						
					STU-4.4 Conduct dredging operations in a manner							
C4	04		National on bolished	CTIL 4.4	minimizing operation-related mortality on sturgeon and	Action agencies,						
Sturgeon	91		Mainstem habitat	510-4.4	their primary prey.	agencies, tribes						
					The action agencies, in coordination with the agencies and	Action agencies,						
Sturgeon	92		Monitoring	STU-6	tribes, shall:	agencies, tribes						
					STU-6.1 Monitor and evaluate white sturgeon restoration							
					actions and population responses to environmental							
					conditions consistent with the Columbia Basin White Sturgeon Planning Framework and the Lower Columbia							
					River and Oregon Coast White Sturgeon Conservation Plan							
						Action agencies,						
Sturgeon	92		Monitoring	STU-6.1		agencies, tribes						
			_			_						
					STU-6.2 Report on the status of sturgeon throughout the	Action agencies,						
Sturgeon	92		Monitoring	STU-6.2	basin on a regular basis	agencies, tribes						
					STU-6.3 Assess the effects of climate change on Columbia River Basin sturgeon populations and develop adaptation							
					strategies to address these impacts	Action agencies,						
Sturgeon	92		Monitoring	STU-6.3		agencies, tribes						
0			0		STU-6.4 Support fishery monitoring and management in	<u> </u>						
					combination with the suite of other restoration options to							<b> </b>
					mitigate for lost productivity and contribute to population							<b> </b>
					rebuilding efforts in areas where harvest is warranted but where natural recruitment is currently limited and the							
					subpopulation does not represent a unique component of							
					the historical diversity							<b> </b>
						Action agencies,						<b> </b>
Sturgeon	92		Monitoring	STU-6.4		agencies, tribes						<b> </b>
			_		STU-6.5 Develop a sturgeon spawning and rearing habitat							
					model in the basin to quantify habitat throughout the year							<b> </b>
					in conjunction with FCRPS operations							
						Action agencies,						<b> </b>
Sturgeon	92		Monitoring	STU-6.5		agencies, tribes						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
5.1.0.1587		,	7.00.0		STU-7.6 Continue to evaluate project operations on						1100000	
					sturgeon reproductive success in each of the pools behind							
					FCRPS and Mid-Columbia River dams.	Action agencies,						
Sturgeon	92		Monitoring	STU-7.6		agencies, tribes						
otungcom	7-		Womtoning	310 7.0		ageneres, tribes						
					The action agencies in coordination with the agencies and	Action agencies,						
Sturgeon	92		Hatchery	STU-9	The action agencies, in coordination with the agencies and tribes, shall:	agencies, tribes						
Sturgeon	32		riatchery	310-9	STU-9.1 Consider hatcheries for sturgeon as a mitigation	agencies, tribes						
					strategy to supplement populations where natural							
					recruitment is currently severely limited. When the strategy							
					is implemented through the Council's step-review process							
					for hatchery proposals, this strategy shall:	Action agencies,						
Sturgeon	92		Hatchery	STU-9.1	, , , , , , , , , , , , , , , , , , , ,	agencies, tribes						
<b>0</b>			,			, , , , , , , , , , , , , , , , , , ,						
					STU 9.2 Be conservative and responsible in establishing							
					protocols for source populations and numbers of hatchery	Action agencies,						
Sturgeon	92		Hatchery	STU 9.2	fish released	agencies, tribes						
- congeen			rideorie. y	3.03.2	, is it released	agenoies) tribes						
					STU 9.3 Build on knowledge gained from ongoing hatchery	Action agencies,						
Sturgeon	92		Hatchery	STIL 9.3	efforts in other areas	agencies, tribes						
Sturgeon	32		riateriery	310 3.3	chorts in other areas	ageneres, tribes						
					STU 9.4 Develop larval collection techniques for use in	Action agoncies						
Sturgeon	92		Hatchery	STU 9.4	artificial propagation	Action agencies, agencies, tribes						
Sturgeon	32		riatchery	310 9.4	artificial propagation	agencies, tribes						
					CTU 0.5. Develop and involunce time and involunce to	A -ti						
Sturgeon	92		Hatchery	STU 9.5	STU 9.5 Develop and implement improvements in rearing and release strategies	Action agencies,						
Sturgeon	92		пасспегу	310 9.5	and release strategies	agencies, tribes						
					STU 9.6 Utilize experimental hatchery releases and							
Ct	02		Hadaham.	671106	monitoring to assess ecological factors and population	Action agencies,						
Sturgeon	92		Hatchery	STU 9.6	productivity limitations STU 9.7 Optimize hatchery production and practices	agencies, tribes						
1					consistent with monitoring natural production and							
					environmental carrying capacity, which will most effectively							
					be identified using an experimentally adaptive approach							
Chamber			H-A-1	CT. 1 C =	adaptive approach	Action agencies,						
Sturgeon	92		Hatchery	STU 9.7		agencies, tribes						
			Upper-Columbia		The action agencies, in coordination with the agencies and	Action agencies,						
Sturgeon	93		specific	STU-10	tribes, shall:	agencies, tribes	L					

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
1												
!												
					STU-10.1 Conduct baseline population assessments to monitor hatchery and natural-origin sturgeon populations							
					(size, abundance of age classes, age/length frequency,							
					recruitment rate, mortality, distribution, and migration							
					patterns, life history, habitat use, etc.); environmental							
					factors limiting sturgeon abundance; and effectiveness of							
					recovery measures in Lake Roosevelt from Grand Coulee							
			Upper-Columbia	CT11 40 4	Dam to the international border, including the Spokane	Action agencies,						
Sturgeon	93		specific		arm of Lake Roosevelt STU-10.2 Implement measures based on knowledge gained	agencies, tribes						
					through assessments, limiting factors workshops, Upper							
					Columbia White Sturgeon Recovery Initiative plans and							
			Upper-Columbia		Lake Roosevelt sturgeon recovery plans	Action agencies,						
Sturgeon	93		specific	STU-10.2		agencies, tribes						
					STU-10.3 Continue interim hatchery production, including							
1					100-percent PIT-tagging of hatchery sturgeon and 100-							
					percent PIT-tagging and sonic tagging of broodstock collected in the upper Columbia River							
			Upper-Columbia		conected in the upper columbia kiver	Action agencies,						
Sturgeon	93		specific	STU-10.3		agencies, tribes						
			Mainstem and		The action agencies, in coordination with agencies and	Action agencies,						
Lamprey	95		tributary habitat	LAMP 5	tribes, shall:	agencies, tribes						
					LAMP 5.1 Implement instream habitat projects in a manner that minimizes mortality to lamprey by consulting the Best							
			Mainstem and		Management Practices for Pacific Lamprey	A -tii						
Lamprey	95		tributary habitat	LAMP 5.1	γ ,	Action agencies, agencies, tribes						
zamprey	- 33		tributury nubitut	E tivii 3.1		ageneres, enses						
					LAMP 5.2 Continue to identify, protect, and restore habitat							
					areas and ecological functions, such as stream channel							
			Mainston and		complexity and function, that are associated with	A -11'						
Lamprey	95		Mainstem and tributary habitat	LAMP 5.2	productive spawning, resting, rearing, and migrating	Action agencies, agencies, tribes						
Lampley	93		tributary riabitat	LAIVIF J.Z	таптргеу	agencies, tribes						
			Mainstem and		LAMP 5.3 Install appropriate and effective juvenile lamprey	Action agencies,						
Lamprey	95		tributary habitat	LAMP 5.3	screening for tributary water diversions	agencies, tribes						
								-				
1												
1 . '				1	The action agencies, in coordination with agencies and	Action agencies,						
Lamprey	95		Monitoring	LAMP 7	tribes, shall:	agencies, tribes						
1												
1					LAMP 7.1 Create a monitoring framework to report on the	Action agencies,						
Lamprey	95		Monitoring		status of lamprey in the basin on a regular basis	agencies, tribes						
			···o	1								
1												
1					LAMP 7.2 Conduct occupancy and distribution surveys	Action agencies,						
Lamprey	95		Monitoring	LAMP 7.2	where lamprey abundance is unknown	agencies, tribes						

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
Strategy	reamber	Thoney	Action Type	Humber	General Measures	Responsible Entity	Gilgonig.	Timename	1014111	ivinestones	rioducts	Status
					LAMP 7.3 Develop tags suitable for adult and juvenile	Action agencies,						
Lamprey	95		Monitoring	LAMP 7.3	lamprey monitoring and evaluation needs	agencies, tribes						
					The action agencies, in coordination with the agencies and							
					tribes, shall evaluate the potential role of lamprey							
					propagation and translocation as a way to mitigate for lost							
					lamprey production when passage and habitat							
					improvements alone are insufficient to restore lamprey	Action agencies,						
Lamprey	96		Propagation	LAMP 8	populations	agencies, tribes						
						282						
					The action agencies, in coordination with agencies and	Action agencies,						
Lamprey	96		Other	LAMP 9	tribes, shall:	agencies, tribes						
				1		3 3, 3 3 3 3						
						Action agencies,						
Lamprey	96		Other	LAMP 9.1	LAMP 9.1 Complete a loss assessment for lamprey	agencies, tribes						
•					LAMP 9.2 Determine the potential effects of climate change							
					on lamprey, including the effects of increasing water							
					temperatures and changing runoff regimes on lamprey							
					energetics and performance							
Lamanuari	96		Other	1444003		Action agencies,						
Lamprey	96		Other	LAMP 9.2	LAMP 9.3 Consider vulnerability of lampreys to toxin	agencies, tribes						
					accumulation in water and sediment and to chemical spills,							
					and the exacerbation of such risks in the vicinity of							
					mainstem hydroelectric dams	Action agencies,						
Lamprey	96		Other	LAMP 9.3	,	agencies, tribes						
Lumpicy	30		Other	D ((V)) 3.3	LAMP 9.4 Include Pacific lamprey in the tables of measures	ugeneres, tribes						
					associated with the Upper Willamette Conservation and							
					Recovery Plan for Chinook Salmon in Appendix O.	Action agencies,						
Lamprey	96		Other	LAMP 9.4		agencies, tribes						
				2	If non-native fish species are to be used to achieve	<b>5</b> ,					If non-native fish	
					mitigation for hydropower system impacts, the agencies						species are	
			Monitor and control		and tribes shall conduct an environmental risk assessment						introduced, these	
			non-native species		of potential negative impacts on native fish species prior to						shall be managed to	
Non-native and			introduction and		introduction.						maximize the use of	
Invasive Species	47	High	dispersal	NNI-5		Agencies and tribes					available existing	
					Agencies and tribes shall apply existing and new scientific							
					research to identify situations (species, times, sizes, and							
			Removal and		places) where increased removal of non-native fish would							
Non-native and			eradication of non-		be most effective in increasing native fish populations.							
Invasive Species	47	High	native species	NNI-6		Agencies and tribes						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
0,			7, -		Agencies and tribes shall minimize non-native fish impacts		- 0- 0-					
					to native fish species by using appropriate invasive fish-							
					removal methods (e.g., gill net, chemical control,							
					electrofishing, changes in fishing regulations, sport reward							
					programs, etc.) and monitor their effectiveness. Lethal take							
					to control non-native predators or competitors, consistent							
					with state and federal law, is appropriate when non-lethal							
			Removal and		methods of control are not successful and the adverse impacts to salmonids and native fish species or their							
Non-native and			eradication of non-		habitat are significant.							
Invasive Species	47	High	native species	NNI-7	inabitat are significant.	Agencies and tribes						
mvasive species		111811	Hative species	ININI 7		Agencies and tribes						
					The agencies and tribes shall prioritize non-native species							
			Removal and		control actions to ensure program funds are spent to							
Non-native and			eradication of non-		address the most significant threats, including predation,							
Invasive Species	47	High	native species	NNI-8	competition, and hybridization.	Agencies and tribes						
					To facilitate compliance monitoring, agencies and tribes							
			General measures for		will monitor their hatchery programs for compliance with							
Fish Propagation			R,M, assessment, and		federal, state, and other relevant requirements and will							
Including Hatchery			reporting on hatchery		make this information readily available.							
Programs	79		effectiveness	HAT 13		Agencies, tribes						
					The goals, objectives, timelines, benchmarks and							
1					experimental framework for reintroduced populations will							
Hatcheries for					be developed by the agencies and tribes and submitted to the Council.							
Reintroduction	82		General Measures	HFR 2	the council.	Agencies, tribes, Council						
Implement Adaptive					Decree ille will are use that all assertion is a real assert							
Implement Adaptive Management	102	High	Monitoring	M-2	Bonneville will ensure that all monitoring projects report the accuracy and precision of their data.	Bonneville		Annual				
ivialiagement	102	nigii	ivioriitoriiig	IVI-Z	the accuracy and precision of their data.	Bonnevine		Alliludi				
					Bonneville should continue to support and require the use							
					of Monitoring Resources , which is sponsored by the Pacific							
Implement Adaptive					Northwest Aquatic Monitoring Partnership, to share							
Management	102	High	Monitoring	M-3	information about how data are collected.	Bonneville	Ongoing					
					Consistent with the goals and objectives section of this							
					program, Bonneville should report annually on the number							
					of juvenile fish released each year; the number of adults							
					that contribute to harvest, are used for broodstock, and are							
					present on the spawning grounds for all hatchery programs							
					that receive Bonneville funding. Bonneville also should							
					provide support to ensure that all managers have the capacity to collect this data and should support regional							
					processes that standardize the data, facilitate reporting,							
					and make this data publicly accessible.			Annually. The first				
								report should be				
Implement Adaptive								submitted in			Annual Report from	
Management	102	High	Monitoring	M-4		Bonneville	New	December 2014.			BPA	
					Bonneville should require project sponsors to ensure data							
					are secured in appropriate regional data bases if those data							
Implement Adaptive					contribute to program and regional reporting needs.							
Management	103	High	Monitoring	M-5		Bonneville						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
Implement Adaptive Management	104	High	Research	RES-4	Bonneville will report annually to the Council on the publications resulting from program research  Bonneville should ensure that data associated with broad categories of information (fish abundance, productivity,	Bonneville		Annually		Annual Report from BPA	Publications resulting from program research Data users should be able to find	
Implement Adaptive Management	105	High	Data Management	DM-1	genetic diversity, geographic distribution, habitat conditions) are identified and accessible from a single, centralized website. Data users should be able to find references, data descriptions, and links to all the data collected in the program on fish abundance in such a website.	Bonneville					references, data descriptions, and links to all the data collected in the program on fish abundance in such a website.	
Implement Adaptive					Bonneville should ensure that all information about anadromous fish is summarized by specific life-cycle stages					Specific anadromous fish information is summarized by lifecycle stage; information is made accessible from a single gateway location.	Summarized anadromous fish life- cyle information is available from a single gateway	
Management	105	High	Data Management	DM-2	and made accessible from a single gateway location.  Bonneville should contract for complete data products (e.g., annual population estimates for adult and juvenile spring Chinook in the Entiat) and not only collaborative processes and preliminary data collection (e.g., redd counts or weir counts of fish). And when Bonneville pays for the development of standards or protocols the contracts should include a viable strategy for adoption.	Bonneville					location BPA-funded data products; adoption of standards and protocols for data products	
Implement Adaptive Management	105	High	Data Management	DM-3		Bonneville						
		Ü			Bonneville should require all research, monitoring, and evaluation projects, including hatchery programs, to report annually, providing an electronic summary of their results and interim findings, as well as the benefits to fish and wildlife. A high priority is to separate research reports from monitoring reports. The former should address hypotheses and critical uncertainties and the latter should provide important data about implementation, status, and trends. As appropriate, action effectiveness should be reported as part of research and monitoring reports.					summary of results, interim findings, and benfits to fish and wildlife; research reports are separate from monitoring reports; research	Electronic summary of the results and interim findings, including benefits to fish and wildlife, for all research, M&E, and hatchery programs	Council meeting. Template memo attached: http://www.nwcoun cil.org/media/71484 17/2.pdf; Some project sponsors are
Implement Adaptive										reports include		using the template
Management	105	High	Reporting	RPT-1		Bonneville	Ongoing	Annually		hypotheses and		for reports this year,

		I										
	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					Bonneville should require all research, monitoring, and					Annual reports for	Electronic summary	Template was
					evaluation projects, including hatchery programs, to report					all research, M&E,	of the results and	presented to the
					annually, providing an electronic summary of their results					and hatchery	interim findings,	Council at the 4
					and interim findings, as well as the benefits to fish and					programs to include		
					wildlife. A high priority is to separate research reports from					•	fish and wildlife, for	_
					monitoring reports. The former should address hypotheses and critical uncertainties and the latter should provide					interim findings, and benfits to fish and	and hatchery	Template memo attached:
					important data about implementation, status, and trends.					wildlife; research	programs	http://www.nwcoun
					As appropriate, action effectiveness should be reported as					reports are separate		cil.org/media/71484
					part of research and monitoring reports.					from monitoring		17/2.pdf; Some
										reports; research		project sponsors are
Implement Adaptive										reports include		using the template
Management	106	High	Reporting	RPT-2		Bonneville	Ongoing	Annually		hypotheses and		for reports this year,
					AFM- 2.1 Develop and increase opportunities for							
					consumptive and non-consumptive resident fisheries for							
					native, introduced, wild, and hatchery-reared stocks that							
Anadromous Fish					are compatible with the continued persistence of native resident fish species and their restoration to near historic							
Mitigation in					abundance							
Blocked Areas	84	High	All blocked areas	AFM- 2.1	as a madrice	Bonneville						
Diotilea i ii eas	<u> </u>		7 III DIOCINCO OI COS	7.1.11. 2.12		Domicinic						
Anadromous Fish												
Mitigation in					AFM -2.2 Consider passage projects to benefit native							
Blocked Areas	84	High	All blocked areas	AFM -2.2	species	Bonneville						
Anadromous Fish					AFM- 2.3 Expand and rebuild native fish numbers in							
Mitigation in					blocked areas where habitat exists or can feasibly be							
Blocked Areas	84	High	All blocked areas	AFM- 2.3	restored or improved	Bonneville						
					AFM- 2.4 Address anadromous fish losses with resident fish							
Anadromous Fish					and wildlife, as appropriate, where full mitigation cannot							
Mitigation in					be accomplished with resident fish alone							
Blocked Areas	84	High	All blocked areas	AFM- 2.4		Bonneville						
Anadromous Fish												
Mitigation in					AFM- 2.5 Protect and improve degraded fish habitat							
Blocked Areas	84	High	All blocked areas	AFM- 2.5	consistent with the habitat sub-strategy	Bonneville						
					Allocation of habitat units. Bonneville shall work with the agencies and tribes for habitat acquired as mitigation for							
					lost habitat units identified in Table C-4, which shall be							
					acquired in the subbasin in which the lost units were							
					located unless otherwise agreed by the fish and wildlife							
			Specific measures for		agencies and tribes in that subbasin.							
Wildlife Mitigation	73		habitat units	WL 6		Bonneville						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					Habitat enhancement credits. Habitat enhancement credits							
					should be provided to Bonneville when habitat							
					management activities funded by Bonneville lead to a net							
					increase in habitat value when compared to the level							
					identified in the baseline habitat inventory and subsequent							
					habitat inventories. This determination shall be made							
					through the periodic monitoring of the project site using							
					the HEP methodology. Bonneville shall be credited for habitat enhancement efforts at a ratio of one habitat unit							
					credited for every habitat unit gained.							
					credited for every habitat unit gamed.							
			Specific measures for									
Wildlife Mitigation	73		habitat units	WL7		Bonneville						
					Bonneville shall locate and operate hatcheries to re-							
					establish salmon and steelhead where they have been							
Hatcheries for					extirpated, and substitute for extirpated salmon and							
Reintroduction	82		General Measures	HFR 1	steelhead in blocked areas.	Bonneville						
Resident Fish					Where feasible, Bonneville shall preserve, enhance, and							
Mitigation	88		General Measures	RFM 1	restore native fish in native habitats.	Bonneville						
					Bonneville shall develop interim fisheries where native							
					fisheries have been lost, or where native populations and							
Resident Fish					habitats are actively being recovered, and need protection.							
Mitigation	88		General Measures	RFM 2		Bonneville						
					In areas where losses may be most effectively mitigated by							
					acquiring interests in real property, Bonneville shall acquire							
					fish habitat equal to the quality of habitat lost through the							
					acquisition of appropriate interests in real property at a							
					minimum ratio of 1:1 mitigation to lost distance or area							
Resident Fish					[see guidance for resident fish settlements].							
Mitigation	88		General Measures	RFM 3		Bonneville						
					Once loss assessments are completed and adopted by the							
					Council, the Council encourages Bonneville to negotiate							
Resident Fish					settlement agreements, as described in Appendix K.							
Mitigation	88		General Measures	RFM 5		Bonneville						
-					Bonneville shall continue to support projects directed at							
					other native freshwater species and the progression of							
					these projects from a research and assessment phase into a							
Resident Fish					restoration and monitoring phase							
Mitigation	88		General Measures	RFM 6		Bonneville						
					Bonneville shall support efforts to address all limiting							
					factors affecting resident fish. This might include efforts to							
					eradicate and suppress non-native species, research on							
					critical uncertainties, impacts from ongoing operation of							
Resident Fish					the hydrosystem, and other impacts.							
Mitigation	88		General Measures	RFM 7		Bonneville						
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	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					Bonneville shall support evaluating the size of non-native							
					fish populations to determine the potential effect of							
					predation and implement a predator management							
					program where appropriate in the Columbia Basin, for							
Resident Fish					example Lake Roosevelt.							
Mitigation	88		General Measures	RFM 8		Bonneville						
					EPP 1.1 Bonneville should fund any new fish and wildlife							
					obligations from identifying savings within the current							
					program and as necessary, from additional expenditures.							
					Savings from the current program should not compromise							
			Bonneville funding for		productive projects that are addressing needs identified in							
			emerging program		this program.							
Investment Strategy	116		priorities	EPP 1.1		Bonneville						
vestment strategy	110		priorities	LI 1.1	EPP 1.2 Prior to every rate case Bonneville should report to	Domicvinc						
			Bonneville funding for		the Council how it plans to budget for implementation of							
			_		the fish and wildlife program.			Dalantaa				
	44.0		emerging program	EDD 4.3	and non-different programm	D		Prior to every rate				
Investment Strategy	116		priorities	EPP 1.2	DROT 2.1 Dennoville Dewar Administration	Bonneville		case				
					PROT 3.1 Bonneville Power Administration o Shall not acquire power from hydroelectric projects							
Appendix F. Future					located in protected areas. The Council believes that the							
hydropower electric					Long-Term Intertie Access Policy's reliance on protected							
development and					areas is consistent with the Council's power plan and Fish							
licensing, and			Implementing		and Wildlife Program as they apply to fish and wildlife in							
protected areas	166		Protected Areas	PROT 3	the Columbia River Basin. The Council continues to	Bonneville						
·					RFSA 1.1 The Bonneville Power Administration will require,							
					wherever possible, that resident fish mitigation agreements							
					through habitat acquisitions include a management plan							
					with clear objectives; a plan for action over time; a							
Appendix K.					committed level of funding that ensures long term							
Resident fish					maintenance to sustain the stated mitigation objectives;							
mitigation					and provisions to ensure effective implementation with							
settlements			RFSA	RFSA 1	periodic monitoring and evaluation.	Bonneville						
					For Bonneville-funded hatchery programs, Bonneville shall							
					locate and operate propagation actions to complement the							
					present and future management activities of the region's							
			General measures for		agencies and appropriate Indian tribes, including							
Fish Propagation			R,M, assessment, and		complements to habitat improvements by supplementing							
Including Hatchery			reporting on hatchery		native fish populations.							
Programs	78		effectiveness	HAT 1		Bonneville						
					Bonneville should support the use of standardized							
			General measures for		performance measures by the agencies and tribes to							
Fish Propagation					inform effectiveness of various propagation strategies in							
Fish Propagation Including Hatchery			R,M, assessment, and reporting on hatchery		meeting intended hatchery goals.							
	70		effectiveness	HAT 3		Ponnovilla						
Programs	78		enectiveness	патэ		Bonneville					Report from the	
											project sponsors to	
					For projects assessing species and habitat conditions in						provide information	
					intensively monitored watersheds, Bonneville will require						on the condition of	
					the project sponsors to provide information on the						these watersheds at	
Implement Adaptive					condition of these watersheds at least every three years in	Bonneville and IMW		At least every three			least every three	
Management	103	High	Monitoring	M-9	a format that can be used by the Council.	projects (Council)	Ongoing	years			years in a format	
						. , , ,					.,	

	Page			Sub-Action			New or		_			
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					Bonneville and its partners should continue to explore whether a programmatic approach for monitoring would							
Implement Adaptive					be more cost-effective and efficient.	Daniel III. and II.						
Implement Adaptive	102	l II ala	Manitarina	NA 0	Se more dost emediate and emidlent	Bonneville and its	0					
Management	103	High	Monitoring	M-8		partners	Ongoing				A cost-effective,	
					Bonneville and its partners should continue to transform						independent third-	
					the effort to evaluate action effectiveness from monitoring						party, standardized,	
					individual projects into a cost-effective, independent third-						and statistically valid	
					party, standardized, and statistically valid method for						method for	
Implement Adaptive					habitat projects and water transactions projects.	Bonneville and its					monitoring habitat	
Management	103	High	Effectiveness	E - 1		partners	Ongoing				projects and water	
g					Bonneville should identify preferred methods to guide	paranere	2g			BPA identifies	Council adopted	
					future data collection and report back to the Council					preferred methods,	methods for data	
					annually. The Council will request the ISAB or ISRP to					reports annually to	collection	
					review the methods identified by Bonneville, and based on					the Council; ISRP or		
					its review, the Council will adopt methods into the					ISAB review of		
Implement Adaptive					program.	Bonneville (Council,				products; NPCC		
Management	103	High	Monitoring	M-6		ISRP, ISAB)		Annually		adoption of		
A manadis C												Not clear at this
Appendix C Wildlife mitigation												time. Might be
priorities,					APP C-1 Bonneville and wildlife agencies and tribes:							discussed in WAC
construction and					Ensure that wildlife mitigation projects implemented in							this year.
inundation loss					fulfillment of this program consider the basinwide							
					implementation priorities described in Tables C-1, C-2 and							
assessments, and dam licensing					C-3, belowThe Council requests the Wildlife Advisory	Bonneville and wildlife				B. C. Citt.		
considerations	145		WL Mitigation	ADD C 1	Committee revisit and update the priorities, if necessary, and report to the Council	agencies and tribes; WAC	Ongoing	Nov-15	WAC	Priorities identified/affirmed	Papart to Council	
considerations	143		Reintroduction of	AFF C-1	and report to the council	VVAC	Ongoing	1404-13	WAC	identined/ammied	Report to Council	
			anadromous fish above		Phoned consumer by Division a science bound inhanced	Dannerilla valavant						
			Chief Joseph and Grand		Phased approach. Pursue a science-based, phased approach to investigating the reintroduction of	Bonneville, relevant federal action agencies,						
Anadromous Fish			Coulee dams to		anadromous fish above Chief Joseph and Grand Coulee	state and federal fish						
Mitigation in			mainstem reaches and		dams including juvenile and adult passage at the dams. The	and wildlife agencies and						
Blocked Areas	84	High	tributaries in the	AFM-3	phases shall include:	tribes						
			Reintroduction of									
			anadromous fish above			Bonneville, relevant						
			Chief Joseph and Grand			federal action agencies,						
Anadromous Fish			Coulee dams to			state and federal fish		To be completed no				
Mitigation in			mainstem reaches and			and wildlife agencies and		later than the end				
Blocked Areas	84	High	tributaries in the	AFM- 4	Phase 1 (to be completed no later than the end of 2016):	tribes		of 2016				
			Reintroduction of									
			anadromous fish above			Bonneville, relevant						
			Chief Joseph and Grand			federal action agencies,						
Anadromous Fish			Coulee dams to		AFM-4.1 Evaluate information from passage studies at	state and federal fish						
Mitigation in			mainstem reaches and		other blockages and from previous assessments of passage	_						
Blocked Areas	84	High	tributaries in the Reintroduction of	AFM-4.1	at Grand Coulee and Chief Joseph dams	tribes					D C C II	
					AFM-4.2 Investigate habitat availability, suitability and						Before funding new	
			anadromous fish above		salmon survival potential in habitats above Grand Coulee.	Bonneville, relevant					investigations,	
Anadromous Fish			Chief Joseph and Grand		This might include selective releases of salmon and steelhead. Investigate the scientific feasibility and possible	federal action agencies,					provide the Council with a report for	
Anadromous Fish			Coulee dams to			state and federal fish					consideration of	
Mitigation in	OF.	High	mainstem reaches and	tat availakiit	salmon and steelhead.	and wildlife agencies and					subsequent work to	
Blocked Areas	85	High	tributaries in the	tat availabilit		tribes						

	Dogo			Cub Astion			News					
Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
Anadromous Fish Mitigation in Blocked Areas	85	High	Reintroductions above Grand Coulee to mainstem reaches and tributaries in the United States	AFM-8	Bonneville and the relevant federal action agencies, working in collaboration with state and federal fish and wildlife agencies and tribes, shall investigate and, if warranted, implement passage and reintroduction of anadromous fish into suitable habitats within the United States. This shall include:	Bonneville, relevant federal action agencies, state and federal fish and wildlife agencies and tribes	Ongoing.	imenane	Totalii	Wilestones	Tiodacts	Status
Anadromous Fish Mitigation in Blocked Areas	85	High	Reintroductions above Grand Coulee to mainstem reaches and tributaries in the United States	AFM -8.1	AFM -8.1 Funding research associated with critical uncertainties at Chief Joseph and Grand Coulee dams required to inform Phase 1	Bonneville, relevant federal action agencies, state and federal fish and wildlife agencies and tribes						
Anadromous Fish Mitigation in Blocked Areas	85	High	Reintroductions above Grand Coulee to mainstem reaches and tributaries in the United States	AFM -8.2	AFM -8.2 Funding work required for Phases 2 and 3 based on Council recommendations	Bonneville, relevant federal action agencies, state and federal fish and wildlife agencies and tribes						
Wildlife Mitigation	72		General Measures	WL1	Bonneville shall work with the agencies and tribes on the following measures:	Bonneville, agencies, tribes						
Wildlife Mitigation	73		General Measures	WL 1.1	WL 1.1 Where appropriate prioritization exists and agreements exist on the methodology, complete wildlife loss assessments for losses caused by operation of the hydropower projects	Bonneville, agencies, tribes	Ongoing	Nov-15	WAC	Method for quantifying operational (perhaps		Will be discussed by WAC throughout spring and summer in
Wildlife Mitigation	73		General Measures	WL 1.2	WL 1.2 Develop and implement habitat acquisition and enhancement projects to fully mitigate for identified losses	Bonneville, agencies, tribes						
Wildlife Mitigation	73		General Measures	WL 1.3	WL 1.3 Coordinate habitat restoration and acquisition activities throughout the basin with fish mitigation and restoration efforts to promote terrestrial and aquatic area connectivity	Bonneville, agencies, tribes						
Wildlife Mitigation	73		General Measures	WL 1.4	WL 1.4 Maintain the values and characteristics of existing, restored, and created habitat  Bonneville and the fish and wildlife agencies and tribes will	Bonneville, agencies, tribes						
					complete wildlife loss mitigation agreements for at least the remaining construction and inundation losses by 2016. In addition, for each wildlife agreement that does not already provide for long-term maintenance of the habitat, Bonneville and the applicable management agency shall propose a management plan adequate to sustain the minimum credited habitat values for the life of the project.							
Wildlife Mitigation	73		General Measures	WL 3		Bonneville, agencies, tribes		By 2016				

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					Whenever possible, Bonneville shall work with the agencies							
					and tribes to ensure that wildlife mitigation shall take place							
					through long-term agreements that have clear objectives, a							
					plan for action over time, a committed level of funding that							
					provides a substantial likelihood of achieving and	Bonneville, agencies,						
Wildlife Mitigation	74		Long-term agreements	WL8	sustaining the stated wildlife mitigation objectives, and provisions to ensure effective implementation with	tribes						
vviidire iviitigation			Long-term agreements	VVLO	Bonneville, agencies, tribes, and other entities receiving	tribes					Reports - compiled	
					Bonneville funding will assist the Council in compiling data						data in the	
					in the appropriate format to inform the reports described	Bonneville, agencies,					appropriate format	
					in the reporting section.	tribes, and other entities					to inform the	
Implement Adaptive						receiving Bonneville					reports described in	
Management	106	High	Evaluation	EV-4		funding, Council					the reporting	
					Bonneville should continue working with the Council to					Reporting template	The Council will	
					implement a concise, useful template for annual reports for					that the Council and	continue to work	
					research and monitoring projects that can replace other					BPA agree on that	with Bonneville and	
					more cumbersome, more costly, and less useful reports for					results in the	the ISRP to identify	
Implement Adaptive					individual projects. The Council will continue to work with					identification and	and assemble the	
Management	106	High	Reporting	RPT-2	Bonneville and the ISRP to identify and assemble the	Bonneville, Council, ISRP	Ongoing	Annually		assembly of	information needed	
Wanagement	100	riigii	Reporting	INF 1-Z	information needed to produce an annual summary of Fish and wildlife agencies and tribes and Bonneville will	bonnevine, council, iSKF	Oligoling	Ailliually		information to	to produce an	
					reach agreement on how wildlife mitigation projects and							
					fish mitigation projects should be credited toward	Daniel III. Caland						
Wildlife Mitigation	73		General Measures	WL 4	identified losses.	Bonneville, fish and wildlife agencies, tribes						
Wildlife Mitigation	/3		General Measures	VVL 4	Funding entities such as Bonneville, NOAA Fisheries, and	wilding agencies, tribes					Aligned	
					Oregon Watershed Enhancement Board should align their						implementation	
					implementation metrics to share information about what,						metrics to share	
					and where, actions are funded in the basin. This will	Bonneville, NOAA					information about	
Implement Adaptive					improve their ability to work together to achieve cost	Fisheries, and Oregon					what, and where,	
Management	103	High	Monitoring	M-7	savings.	Watershed Enhancement Board					actions are funded	
ivialiagement	103	nigii	Widilitaring	IVI-7	Using all available water quality data, Bonneville and the	Elliancement Board					·	
					other federal action agencies should continue to identify							
					areas where aquatic habitat restoration projects							
					implemented under the program may be affected by toxic							
					contaminants and incorporate pollution reduction and							
					mitigation techniques into restoration projects when toxic							
					contamination is a concern.	Bonneville, other federal						
Water Quality	56		TOXICS	TOX-6		action agencies						
					Bonneville, the Corps, and the Bureau shall restore passage	Bonneville, US Army						
Resident Fish					for native resident fish where feasible, including at Albeni	Corps, Bureau of						
Mitigation	89		General Measures	RFM 9	Falls Dam.	Reclamation						
					TRM 1 Bonneville, the Corps, and the Bureau, in	Bonneville, US Army						
					collaboration with federal and state agencies and tribes,	Corps, Bureau, federal						
					shall report annually to the Council and the region on the	and state agencies and						
How the Program is					implementation of program measures.	tribes						
Implemented	113		Tracking Measures	TRM			New	Annually				
implemented	113	<u> </u>		111141			11011	, uniduly		ı	1	

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					Bonneville should continue to annually implement and					BPA ~implement	Scoping of focused	
					evaluate the base predator-control program and, where	Barrer III. The control				and evaluate the	pikeminnow removals at other	
					warranted, expand northern pikeminnow removals to	Bonneville; The action				base predator-	mainstem dams in	
					other mainstem dams in the lower Columbia River (for example: expand the program to include northern	agencies; NOAA Fisheries				control program and, where	the lower Columbia	
Predator			Management of		pikeminnow removals at McNary and Bonneville dams).	and the fish and wildlife agencies and tribes,				warranted, expand	River will be based	
Management	49	High	predator fish	PM-4	pixelilililow removals at wichary and bonnevine dams).	Council		Annually		northern	on evaluations and	
Wanagement	43	riigii	predator fish	F IVI-4		Council		Ailliually			End date identified	
					Donner ille akarıldı anarına that all santırata far sasarıdı						in all Bonneville-	
Implement Adaptive					Bonneville should ensure that all contracts for research						funded contracts for	
-	104	High	Research	DEC 2	projects, including those covered by funding agreements, identify an end date.	BPA	2011	BPA contracting			all research projects.	
Management	104	підіі	Research	RES-3	If quagga and zebra mussels become established in the	DPA	new	BPA CONTracting			, ,	
			Domovaland		Columbia Basin, BPA and other federal agencies, along with							
			Removal and		FERC-licensed utilities, shall support regional rapid-	BPA and other federal						
Non-native and			eradication of non-		response efforts.	agencies, along with						
Invasive Species	48	High	native species	NNI-9	BPA and other federal agencies should assist the Northwest	FERC-licensed utilities,						
					states' efforts to prevent the establishment of quagga and							
Non mother and					zebra mussels.							
Non-native and			B		Zebra mussers.	BPA and other federal						
Invasive Species	47	High	Prevent establishment	NNI-3	The County of the Post and MOAA Fish of the Land	agencies, NW States						
					The Council calls on the Bureau and NOAA Fisheries to work with the relevant federal and state fish and wildlife							
Mainstem					agencies and tribes to evaluate alternative operations and	Bureau, NOAA, relevant						
Hydrosystem Flow					report back to the Council. The following principles should	federal and state fish						
and Passage			Grand Coulee Dam		guide this evaluation:	and wildlife agencies and						
Operations	64		Operations	MSH 11	Buide tills evaluation.	tribes						
					MSH 11.1 Explore the optimum operations at Grand							
					Coulee to provide improved conditions and survival for all							
Mainstem					the fish important to the program, including salmon and	Bureau, NOAA, relevant						
Hydrosystem Flow					steelhead migration and rearing needs in the lower	federal and state fish						
and Passage			Grand Coulee Dam		Columbia River, Hanford Reach fall Chinook spawning and	and wildlife agencies and						
Operations	64		Operations	MSH 11.1	emergence, and resident species in the reservoir that are	tribes						
Mainstem						Bureau, NOAA, relevant						
Hydrosystem Flow						federal and state fish						
and Passage			Grand Coulee Dam		MSH 11.2 Refilling the reservoirs by the end of June	and wildlife agencies and						
Operations	64		Operations	MSH 11.2	remains a high priority.	tribes				<u> </u>		
					MSH 11.3 As much as possible within current operating							
					constraints, manage the reservoir and dam discharges to							
Mainstem					minimize fluctuations and ramping rates and produce	Durani NOAA iili						
Hydrosystem Flow					steady flows across each season and each day.	Bureau, NOAA, relevant						
and Passage			Grand Coulee Dam			federal and state fish and wildlife agencies and						
Operations	64		Operations	MSH 11.3		tribes						
Орегация	04		Орегалопз	141311 11.3	The CEERP, along with the Council's estuary and Lower	tribes						
					Columbia subbasin plans and locally developed recovery							
					plans, will guide implementation, monitoring, and							
					evaluation of habitat actions in the estuary.							
					,							
Estuary	68		General Measures	EST 1		CEERP						

	Page			Sub-Action			New or		_			
Strategy	Number	Priority	Action Type	Number	General Measures The Council will convene a work group comprising action	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					agencies and agencies and tribes with expertise in fish							
					screens, fishways and traps, hatcheries, lands, and habitat							
					actions, to define and develop a long-term maintenance							
					plan and process. This work group will be assisted by the							
					IEAB, the Wildlife Advisory Committee, Fish Screening			Quarterly Progress	O&M sub-			
Investment strategy	199	High		IS- 3	Oversight Committee, and federal action agencies. The	Council	New	Report	committee			
					Annual symposiums will be convened by the Council to							
					ensure collaboration and efficiencies are achieved by all							
					parties seeking to protect past investments in fish and							
					wildlife by Bonneville and the action agencies under the			Annual				
Investment strategy	200	High		IS- 5	program.	Council	New	Symposiums		Annual Symposium		
					The Council will review the accomplishments of intensively							
					monitored watersheds and the Integrated Status and							
					Effectiveness Monitoring Project to ensure that it is cost-							
Implement Adaptive					effective and produces useful results.			During project				
Management	104	High	Research	RES-5		Council		review		Council review		
					The Council supports continued research and life cycle						Life cycle modeling	
					modeling to inform decision makers of the biological						that informs	
					benefits they could expect from implementing or						decision makers of	
Implement Adaptive					synchronizing different suites of measures across the life						the biological benefits they could	
Management	106	High	Evaluation	EV-3	cycle.	Council				TI 0 11 111		
					Step 2					The Council will	The Council will	
					As soon as practicable, the Council will determine which of these to consider as program objectives, as well as					determine which of these to consider as	conduct a program	
					considering needed modifications to existing goal					program objectives,	if it is determined	
					statements, objectives, and indicators. The Council will					as well as	that adopting the	
					conduct a program amendment process if it is determined						objectives should be	
					that adopting the objectives should be considered.					modifications to	considered.	
Identify and			Other anadromous and							existing goal		
Organize Objectives	34	High	resident fish objectives	OBJ-4		Council	New			statements,		
					Consistent with the Council's quantitative objectives for							
					adult salmon and steelhead, the Council will collect,							
Identify and					organize, and review biological objectives for wild fish.							
Organize Objectives	81	High	Wild Fish	WF 2		Council	New					
					The Council continues to encourage, monitor, and promote							
					public awareness of pertinent climate change research and							
					information and assess how it should influence program							
					mitigation efforts.							
Climate Change	59	High		CC-14		Council						
					The Council will continue to coordinate regional						The Council will	
					stakeholder groups and partnerships on the issue of non-						continue to assist	
					native invasive species, particularly those species that pose						with regional	
					the greatest risk to the Columbia Basin ecosystem and the						communication, coordination and	
Non-native and					regional hydropower system.						public outreach	
Invasive Species	48	High	Regional coordination	NNI-11		Council	Ongoing				efforts in the	
											Regular reports	
					The Council will support the collaborative work of the						from that group on	
Non-native and					PSMFC 100th Meridian Initiative-Columbia Basin Team and						the following items:	
Invasive Species	48	High	Regional coordination	NNI-12	request regular reports	Council		Regular Reports			current regional	

Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
Strategy	Number	Priority	Action Type	Number	The Council will assist regional entities with legislative	Responsible Littly	Oligoling:	Timetrame	Forum	ivillestolles	Fiducts	Status
					efforts to prevent the invasion and control the spread of							
Non-native and					non-native invasive species in the Columbia Basin.							
Invasive Species	48	High	Regional coordination	NNI-13		Council						
					The Council will identify subhasia plans most in peed of an							
Subbasin Plans	108	High			The Council will identify subbasin plans most in need of an update.	Council						
					The Council will consider primary mainstem habitat							
Habitat	42	High	Mainstem Habitat	HAB 2	measures including: HAB 2.1 Coordinating actions with the flow measures	Council						
					intended to improve ecosystem function in the mainstem							
Habitat	42	High	Mainstem Habitat	HAB 2.1		Council						
Habitat		111611	Wallistelli Habitat	11/10 2.1	HAB 2.2 Enhancing the connections between the mainstem	Council						
					sections of the Columbia and Snake rivers and floodplains,							
					side channels, and riparian zones							
Habitat	42	High	Mainstem Habitat	HAB 2.2		Council						
					HAB 2.3 Continuing actions to reconnect the river to its floodplains wherever possible in the mainstem, with special							
					emphasis on the estuary and lower Columbia River							
Habitat	42	High	Mainstem Habitat	HAB 2.3		Council						
					HAB 2.4 Protecting and enhancing mainstem riparian areas							
					and wetlands to protect aquatic conditions and form a							
					transition to floodplain terrestrial areas and side channels							
Habitat	42	High	Mainstem Habitat	HAB 2.4		Council						
					HAB 2.5 Identifying, protecting, enhancing, and restoring							
Habitat	42	High	Mainstem Habitat	HAB 2.5	the functions of alluvial river reaches in the mainstem	Council						
					HAB 2.6 Excavating, creating and reconnecting additional							
Habitat	43	High	Mainstem Habitat	HAB 2.6	backwater sloughs, alcoves, and side channels to the main channel	Council						
						200						
					HAB 2.7 Dredging/excavating lateral channels that have							
Habitat	43	High	Mainstem Habitat	HAB 2.7	silted in	Council						
Habitat	43	High	Mainstem Habitat	HAB 2.8	HAB 2.8 Creating more shallow-water habitat	Council						
					HAB 2.9 Identifying, protecting, restoring, and managing							
Habitat	43	Ui ah	Mainston Habitat	нар з о	thermal refugia for salmonid use during high water-	Council						
Habitat	45	High	Mainstem Habitat	HAB 2.9	temperature periods	Council						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					HAB 2.10 Acquiring and protecting lands adjacent to the							
Hebitet	42	11:-1-	Mainston Habitat	UAD 2.10	mainstem critical to protecting habitat areas and local	Carracil						
Habitat	43	High	Mainstem Habitat	HAB 2.10	water quality  HAB 2.11 Where feasible, reconnecting protected and	Council						
					enhanced lower tributary habitats to protected and							
					enhanced mainstem habitats, especially in the area of							
Habitat	43	High	Mainstem Habitat	HAB 2.11	productive mainstem populations	Council						
					HAB 2.12 Increasing the amount of spawning habitat for mainstem core populations of Chinook, coho, chum, sturgeon, and lamprey							
Habitat	43	High	Mainstem Habitat	HAB 2.12		Council						
Strongholds	44		General Measures	STR 2	Consider for stronghold recognition areas designated by states and tribes in accordance with state law	Council						
Strongnoids			General Wicasares	5 <u>2</u>	states and thises in accordance with state in	ocuno.						
					Inventory existing actions that have occurred and are							
					occurring within identified stronghold areas as identified by							
Strongholds	45		General Measures	STR 4	the respective states of the Council	Council						
					Support fish habitat improvement actions implemented							
Strongholds	45		General Measures	STR 5	within strongholds	Council						
					Support actions intended to eradicate non-native and							
Strongholds	45		General Measures	STR 6	invasive species from, or prevent their introduction into, stronghold areas	Council						
Mainstem	45		General Measures	31110	Idaho Power Company's Hells Canyon hydropower	Council					A new FERC license,	Relicensing
Hydrosystem Flow					complex, consisting of three hydroelectric projects on the					Just getting to and	currently on	application filed
and Passage			Hells Canyon Complex		mainstem Snake River, is currently undergoing Federal					end point in the	renewed one-year	with FERC in
Operations	64		project operations	MSH 12	Energy Regulatory Commission (FERC) re-licensing and ESA	Council	Ongoing	Unknown	FERC	relciensing process	licenses	December 2003.
Mainstem					The Council continues to recognize the value of an							
Hydrosystem Flow			Spill and other passage		experimental approach to salmon recovery in the Northwest. The Council supports the development of							
and Passage Operations	65		experiments	MSH 17	adaptive management experiments that address critical	Council						
Mainstem			experiments		The Council recognizes the need to transport migrating	Council						
Hydrosystem Flow					juvenile salmon and steelhead under certain river							
and Passage			Juvenile fish		conditions. The Council accepts this strategy as a means to							
Operations	66		transportation	MSH 18	achieve its biological objectives, where there are	Council						
Mainstem					The Council will investigate cost-effective power system strategies that improve ecosystem conditions for fish and							
Hydrosystem Flow and Passage			Power system		wildlife, relax operational constraints adverse to fish and							
Operations	67		Power system considerations	MSH 22	wildlife, and ensure the regional power system remains	Council						
- CPC: dtions	<u>, , , , , , , , , , , , , , , , , , , </u>		CONSIDERATIONS	17131122	EST 3.1 Work with partners in the estuary to establish	Council						
					biological objectives and estuary indicators for habitat							
					restoration and ecosystem function that will serve to							
Estuary	68		General Measures	EST 3.1	prioritize future actions.	Council						

	Page			Sub-Action			New or		_			1
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					The Council supports monitoring plume and nearshore				Ocean and Plume			l
					ocean conditions and in-river restoration actions to determine those actions of greatest benefit and to separate				Science and Management			1
					the effects of ocean-related mortality from that caused in				Forum			1
Plume and					the freshwater part of the life cycle.				Forum			1
Nearshore Ocean	70		General Measures	PLU 1	the restructer part of the me cycle.	Council	Ongoing	As necessary				<u> </u>
					The Council supports continued monitoring of the				Ocean and Plume			1
					Columbia River plume and ocean conditions, assessment of				Science and			i
					impacts on salmonid survival, and evaluation of the limits				Management			1
Plume and					of restoration potential in the basin given variable ocean				Forum			i
Nearshore Ocean	70		General Measures	PLU 3	conditions. Predicting future ocean conditions and	Council	Ongoing	As necessary				1
rearshore occan			General Measures	. 20 3	anadromous fish returns allows for adjustments to inland The Council supports coordination between ocean	Countri	0.180.118	7.5 11000554. 7	Ocean and Plume			
					scientists and state fish and wildlife agencies and tribes to				Science and			1
					identify key uncertainties and opportunities to improve				Management			1
					inriver management activities based on current ocean				Forum			1
Plume and					conditions.							i
Nearshore Ocean	71		General Measures	PLU 4		Council	Ongoing	As necessary				<del> </del>
					The Council supports efforts by the Ocean and Plume							1
					Science and Management Forum and science/policy							1
					exchanges to encourage coordination and communication							i
					between ocean researchers and fish and wildlife agencies							1
					and tribes. The Council will consider recommendations from the forum when making recommendations to				Ocean and Plume			i
					Bonneville regarding implementation of this strategy.				Science and			1
Plume and			6	5	bottnevine regarding implementation of this strategy.				Management			l
Nearshore Ocean	71		General Measures	PLU 5	The Council's research plan will identify critical	Council	Ongoing	As necessary	Forum			<del></del>
					uncertainties related to hatchery performance in the							1
			General measures for		Northwest. This includes determining the effectiveness of							1
Fish Propagation			R,M, assessment, and		hatchery programs in meeting their intended purposes and							1
Including Hatchery			reporting on hatchery		minimizing adverse impacts to natural-origin fish.							i
Programs	78		effectiveness	HAT 2		Council						1
i rogramo	,,,		General measures for	10/11/2		Council						
Fish Propagation			R,M, assessment, and									i
Including Hatchery			reporting on hatchery		The Council intends to use available reporting mechanisms							1
Programs	78		effectiveness	HAT 4	where possible.	Council						1
Trograms	70		Circuiveness	11/41	The Council continues to support PIT tagging and detection,	Council						
					coded wire tagging and recovery, acoustic and radio							1
					tagging and tracking, and genetic tagging and recovery.							İ
			General measures for		These all work together to help assure adequate							İ
Fish Propagation			R,M, assessment, and		effectiveness monitoring, and other monitoring as							İ
Including Hatchery			reporting on hatchery		necessary, throughout fish life cycles and across various fish							1
Programs	79		effectiveness	HAT 14	environments.	Council						1
					The Council will consider the needs of wild fish in all facets							
					of its fish and wildlife program including: hydrosystem							1
					passage, fish propagation facilities, climate change,							İ
					predation, strongholds, research, carrying capacity, and							1
Wild Fish	81		General Measures	WF 1	habitat actions.	Council						
					The Council will inform and involve the public including							
					elected officials through print, electronic, and social media;							İ
					documents posted on the Council website and made							İ
					available through public websites and libraries; updates of							1
Public Engagement	99		General Measures	PE 1	subbasin dashboards on the Council's website; comment	Council						
		1			1				1			

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Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
Strategy	Number	Filolity	Action Type	Number	General Measures	Responsible Littley	Oligoliig:	Timename	Torum	iviliestories	Fioducts	Status
					The Council will monitor the success of its outreach and							
Public Engagement	100		General Measures	PE 3	involvement efforts.	Council						
Wildlife mitigation					APP-C 3.2 Council							
priorities,					The Council will monitor the Federal Energy Regulatory							
construction and			WL Mitigation in dam		Commission licensing and relicensing proceedings and							
inundation loss	152		licensing decisions	APP C-3.2	comment or intervene where appropriate.	Council						
					Step 1						Identification of	
			Ecosystem function,		The Council will identify measureable objectives in the region. The data needed for these objectives should be						measureable objectives in the	
Identify and	25	115.6	habitat, and	001.5	available and not require extensive new data-gathering	G					region.	
Organize Objectives	35	High	hydrosystem objectives	OBJ-5	Step 2	Council	New			the Council will	The Council will	
					As soon as practicable, the Council will determine which					determine which	conduct a program	
					objectives to consider as program objectives. The Council					objectives to	amendment process	
					will conduct a program amendment process if it is					consider as program	· ·	
Identify and					determined that adopting the objectives should be					objectives.	that adopting the	
Organize Objectives	35	High		OBJ-6	considered.	Council	New				objectives should be	
					The Council will initiate an internal process to identify objectives and indicators for this topic [see program					~ initiate an internal		
					strategies: public engagement]. Once the process to					process to identify objectives and	conduct a program amendment process	
					produce objectives is completed, the Council will seek					indicators for this	if it is determined	
					public input to help identify the most useful objectives. The					topic ~ the	that adopting the	
					Council will conduct a program amendment process if it is					Council will seek	objectives should be	
Identify and			Public engagement		determined that adopting the objectives should be					public input to help	considered.	
Organize Objectives	36	High	quantitative objectives	OBJ-7	considered.	Council	New			identify the most		
J. J.			·		To support ongoing regional efforts to identify, assess and					Licotul objectives		
					reduce toxic contaminants in the Columbia River Basin, the							
					Council may initiate and will participate in, support, and							
					coordinate periodic science/policy workshops on							
					characterizing the state of the science related to toxic contaminant issues. The Council will also assist regional							
					parties in advancing public education and information on							
Water Quality	55		TOXICS	TOX-1	toxics issues.	Council						
					The Council urges Congress to provide funding, similar to							
					the funding provided to other Large Aquatic Ecosystems, to							
					protect and restore water quality in the Columbia River Basin, including efforts to:							
Water Quality	56		TOXICS	TOX-7		Council						
					TOX 7.1 Develop sensitive diagnostic indicators of chemical exposure and salmon health, such as biomarkers, for use in							
					field studies in the Columbia Basin							
Water Quality	56		TOXICS	TOX 7.1	2000	Council						
Tracer Quanty	30		TOAICS	10/.1		Council						
					TOX 7.2 Determine the extent to which toxics limit prey							
					quality and abundance in degraded habitats and otherwise							
Water Quality	56		TOXICS	TOX 7.2	affect the food web	Council						
					TOX 7.3 Improve understanding of contaminants of							
					emerging concern, such as endocrine-disrupting							
					pharmaceuticals and chemicals in personal care products,							
Water Quality	56		TOXICS	TOX 7.3	and their effects on salmonids, sturgeon, and lamprey.	Council						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
57		,	,,		Habitat units and the habitat evaluation procedure (HEP)		<u> </u>			Report on the		WAC has not
					methodology. The Council will continue to endorse habitat					continued use of		discussed byut will
					units as the preferred unit of measurement for mitigation					HEP methodology or		begin consideration
			0 10		accounting and the HEP methodology as the preferred					change in status of		of the matter in
1401 100 4000			Specific measures for		method for estimating habitat units lost and acquired. Parties to a wildlife mitigation agreement may develop and	0 "				HEP to Committee and Council from		April or May WAC meeting
Wildlife Mitigation	73		habitat units	WL 5	arties to a whalle mitigation agreement may develop and	Council	Ongoing	Nov-15	WAC	and council from	Report to Council	meeting
					The Council of the country of the co							
					The Council supports measures to implement the two eulachon conservation recommendations found in the							
Eulachon	97		General Measures	EULA 1	2014 Supplemental FCRPS Biological Opinion.	Council						
Edidenon			General Wiedsares	LODYI	Upon completion of a recovery plan for eulachon, the	Courten						
					Council will incorporate appropriate information regarding							
					eulachon into the program and reflect the importance of							
					this species and the need for protection and mitigation to							
					the extent affected by the hydrosystem. The Council will							
					consider developing the following:							
					o Biological objectives for eulachon population characteristics and habitat needs							
Eulachon	97		General Measures	EULA 2	o A high-level indicator for eulachon abundance	Council						
					The Council will work with Bonneville and the other action							
					agencies to ensure that past fish-and-wildlife-related							
					investments are kept current or properly decommissioned.							
Investment strategy	199	High		IS - 1		Council and Bonneville	New					
					The Council and the federal action agencies will work						Adequate funds for	
					together to ensure that federal agencies provide adequate funds for long-term maintenance for facilities where they						long-term maintenance for	
					have responsibility (such as NOAA Fisheries for Mitchell Act	Council and federal					facilities where they	
Investment strategy	200	High		IS - 4	hatcheries).	action agencies	New				have responsibility	
					The Council continues to require project sponsors to							
					consider and plan for different climate change scenarios							
					that could affect their work.	Council and project						
Climate Change	59	High		CC-15		sponsors						
					EPP 1The Council is providing the following guidance to	Council to Bonneville,						
					Bonneville, the other federal agencies, and the region in general as to which of these new measures are emerging	the other federal						
			Emerging Program	500.4	priorities for implementation in the next five years. During	agencies, and the region		. "				
Investment strategy	116		Priorities	EPP 1	Objectives that represent different perspectives on healthy	in general		Annually		This effort should	The final report will	
					and harvestable populations already exist. The Council will	Council will work with				include a review of	include, but not be	
Identify and			Objectives for adult		work with state and federal agencies and tribes in the	state and federal				agency and tribal	limited to, an	
Organize Objectives	33	High	salmon and steelhead	OBJ-1	region to collect, organize, review, and report on these	agencies and tribes in the region	New	By the end of 2015		management plans,	inventory of non-	
Organize Objectives		riigii	Samon and Sectificat	0531	The Council will work with the states, federal agencies, and		ivew	by the end of 2015		The Council,	Identification of	Potential indicators
					tribes to identify specific indicators for Bonneville-funded	Council will work with state and federal				agencies, and tribes		that should be
Identify and			Objectives for adult		hatchery programs that could be tracked and reported to	agencies and tribes in				will work with the	for Bonneville-	tracked include:
Organize Objectives	33	High	salmon and steelhead	OBJ-2	inform progress on meeting mitigation objectives (i.e.,	the region	New			Coordinated	funded hatchery	contribution to
-					Step 1						Survey, collect, and	
					Once the process to produce objectives for hatchery						organize existing	
					salmon and steelhead is completed, the Council will work						quantitative	
					with the fish and wildlife agencies and tribes to survey,						objectives for focal	
					collect, and organize existing quantitative objectives for focal species including lamprey, bull trout, eulachon, white	Council will work with					species including lamprey, bull trout,	
Identify and			Other anadromous and		sturgeon, kokanee, rainbow trout, and cutthroat trout.	the fish and wildlife					eulachon, white	
Organize Objectives	34	High	resident fish objectives	OBJ-3	, , , , , , , , , , , , , , , , , , , ,	agencies and tribes	New				sturgeon, kokanee,	
	<b>J</b>	6''	. Islaciic iisli objectives	0.53, 5		Special Control of the Co					J ,	

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
Implement Adaptive Management	106	High	Reporting	RPT-3	The Council, with the assistance of agencies, tribes and others, will periodically review and update the high-level indicators report to communicate accomplishments to Congress, the region's governors, legislators, and citizens of the Northwest. When the Council completes its work on biological objectives, it will update its high-level indicators to ensure they are consistent with these objectives.		Ongoing	Periodic review and update			When the Council completes its work on biological objectives, it will update its high-level indicators to ensure they are consistent with these	
Implement Adaptive					The Council, with the assistance of agencies, tribes and others, will maintain the program's dashboard and the HLI website report, and also will produce other reports as appropriate, such as one that tracks annual anadromous fish forecasts and actual run sizes. The Council expects others to provide data and reports to the Council on a regular basis and make them available to the public [see Reporting Appendix L for a list of Council-requested reports]. This will provide easy access for the public and allow the Council to review the accuracy of the pre-season run-size estimates.	Council, with the assistance of agencies,		Annually, and as			The Council expects others to provide data and reports to the Council on a regular basis and make them available to the public . This will provide easy access for the public and allow the Council to review the accuracy of the	
Management	106	High	Reporting	RPT-4		tribes and others	Ongoing	appropriate			pro coason run cizo	
Eulachon	97		Mainstem and hydrograph:	EULA 4.1	EULA 4.1 The Council, in collaboration with Bonneville, the Corps, NOAA Fisheries, and agencies and tribes, will help organize and facilitate a science/policy forum in 2015 to address the biological requirements of eulachon, combined with related inquiries into the relationship between flow, current hydropower dam operations, and the biological requirements of lamprey and sturgeon. The goal would be to report to the Council, NOAA Fisheries, and interested others on the state of the science, the reasonable next steps in the assessment process, and a recommendation for how to incorporate those steps into the recovery plan.	Council, Bonneville, US Army Corps, NOAA Fisheries, and agencies and tribes		2015, Science/policy forum				
Eulachon	98		Mainstem and hydrograph:	EULA 4.2	EULA 4.2 Monitor and report eulachon abundance at Bonneville Dam.	Council, Bonneville, US Army Corps, NOAA Fisheries, and agencies and tribes						
Eulachon	98		Mainstem and hydrograph:	EULA 4.3	EULA 4.3 Study the role of eulachon as an alternative prey for sea lions.	Council, Bonneville, US Army Corps, NOAA Fisheries, and agencies and tribes						
Eulachon	98		Ocean and estuary	EULA 5	Monitor and evaluate the importance of the tidal freshwater, estuary, plume and nearshore ocean environment to the recovery of eulachon in the Columbia River Basin.	Council, Bonneville, US Army Corps, NOAA Fisheries, and agencies and tribes						
Public Engagement	100		General Measures	PE 2	The Council, in partnership with Bonneville and other interested parties, will publicly recognize and acknowledge entities that provide good examples of productive partnerships across social and ecological boundaries.	Council, Bonnevillle, other interested parties						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
0,		,	,,		The Council continues to support the federal action	,	0 0					
					agencies' current reservoir operations at Libby and Hungry							
					Horse dams as set forth in the relevant biological opinions.							
					These include VARQ as well as spring and summer							
					operations developed as part of the 2003 Mainstem							
					Amendments. The Council encourages the action agencies							
					to remove any reference to these operations as							
					"experimental" in future biological opinions. The Council							
					supports continued investigations to refine operations at							
					Libby and Hungry Horse dams that improve conditions for							
					fish near those reservoirs and do not adversely affect fish in							
					the lower river, e.g., actions that help reservoir refill,							
					reduce the potential for uncontrolled spill, reduce							
					downstream flooding, and make operations mutually							
					beneficial for the United States and Canada. Montana Fish,							
					Wildlife & Parks should continue working with the							
					pertinent parties to discuss proposals for adjustments to							
Mainstem					winter and spring operations at Libby and Hungry Horse							
Hydrosystem Flow					dams including consideration of the potential impacts of							
and Passage			Libby and Hungry		winter operations at Libby Dam (including winter power	Council, federal action						
Operations	63		Horse operations	MSH 9	peaking) on the recovery of native fish species, the food	agencies	Ongoing					
					The Council and federal action agencies should coordinate							
					with other federal, state, and tribal entities, and regional							
					organizations such as the 100th Meridian Initiative-							
					Columbia Basin Team, to track and monitor data on							
					existing non-native invasive species distribution and							
					population trend assessments in the Columbia Basin and							
					encourage regional data sharing on rapid response,	Council, federal action						
					prevention, containment, control, eradication,	agencies, states, tribes,						
Non-native and					enforcement, and education and outreach efforts.	and regional						
Invasive Species	48	High	Regional coordination	NNI-14		organizations						
					The Council will work with federal and non-federal							
					operating agencies, federal and state fish and wildlife							
D. G. S. S. S. S. S. S. S. S. S. S. S. S. S.					agencies and tribes to review, update, and implement	Council, federal and non-						
Mainstem					procedures that accommodate power system and dam	federal operating						
Hydrosystem Flow					operation emergencies with the least impact on listed and	agencies, federal and						
and Passage			Power system		non-listed fish and with consideration of protection,	state fish and wildlife						
Operations	67		considerations	MSH 20	mitigation, and recovery objectives.	agencies and tribes						
					NNI-1 The Council, in coordination with the federal action							
					agencies, other federal, state and tribal entities, and							
					regional organizations such as the 100th Meridian Initiative-							
					Columbia Basin Team (hereafter referred to as the Council							
					and federal and other regional entities) should request							
					regional power producers to evaluate the invasive	Council foderal state						
Non-native and			Evaluate potential		potential and ecological risks of using non-native bioenergy	Council, federal, state,						
	46	⊔;~h	•	NNI-1	feedstock species, cultivars, and hybrids.	tribal, and other regional						
Invasive Species	46	High	adverse impacts	ININI-T		entities						
					NNI-2 The Council encourages federal and other regional	Council, federal, state,						
Non-native and					entities to prevent non-native and invasive species	tribal, and other regional						
Invasive Species	47	High	Prevent establishment	NNI-2	introductions by:	entities						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
Non-native and					NNI-2.1 Monitoring and managing the various pathways	Council, federal, state,						
Invasive Species	47	High	Prevent establishment	NNI-2.1	that could introduce additional aquatic nuisance species into the Columbia River Basin	tribal, and other regional entities						
ilivasive species	47	riigii	r revent establishment	ININI-Z.1	NNI-2.2 Developing and implementing strategies to	endices						
					suppress, reduce, or control non-native invasive fish							
					species where they are identified as a limiting factor and	Carrail fadaral atata						
Non-native and					are negatively impacting salmonids and native fish	Council, federal, state, tribal, and other regional						
Invasive Species	47	High	Prevent establishment	NNI-2.2	populations	entities						
musive openies		111611	Trevent establishment	14141 2.2		Citation						
					NNI-2.3 Develop strategies and public outreach tools to	Council, federal, state,						
Non-native and					educate the public about regional prevention and	tribal, and other regional						
Invasive Species	47	High	Prevent establishment	NNI-2.3	management of invasive species	entities						
,					The Council will continue to pursue opportunities to							
					implement the program in coordination with other federal,							
					state, tribal, Canadian, and volunteer fish and wildlife							
					restoration programs. The Council will continue to work							
					with national programs that influence our work in the							
					basin. The Council will coordinate with organizations							
					that track and monitor data on non-native species							
					distribution, climate change, and human population change at the Northwest regional scale. There are also ongoing	Council, federal, state,						
					efforts to monitor trends in Northwest habitat quality,	tribal, Canadian, and						
			Coordination with		ocean conditions, and fish and wildlife that the Council will	volunteer fish and						
Program			other regional		continue to track and participate in on an ongoing basis as	wildlife restoration						
Coordination	121		programs		it affects our program work. Continued coordination with	programs.						
					The Council will convene a work group of fish and wildlife							
					agencies and tribes, and Bonneville, to develop a	Council, fish and wildlife						
Resident Fish					standardized methodology for habitat loss assessments to	agencies and tribes,						
Mitigation	88		General Measures	RFM 4	assist areas that currently do not have the capacity to	Bonneville		Report Quarterly	Task Force			
					Work with fish and wildlife agencies and tribes and others							
					to keep up-to-date maps available for strongholds and							
					other areas in the basin that are managed for wild fish	Council, fish and wildlife						
Strongholds	44		General Measures	STR 3	stocks	agencies, tribes, others						
					The Council, in collaboration with the federal action							
					agencies, shall convene one or more science/policy workshops on climate change effects in the Columbia							
					Basin, including panels of climate change scientists, to	Co. 11 Co. 11 Halian III						
					inform an overarching climate change strategy for the	Council, in collaboration						
Climate Change	58	High		CC-13	Columbia Basin.	with the federal action agencies						
Simulate Change	30	111811		CC 13	To assist with updating its research plan, the Council will co-					The Council will		
					sponsor Columbia River science/policy conferences to					work with the		
					discuss scientific and technical developments in key policy					Independent		
					areas. The Council will work with the Independent Scientific					Scientific Advisory	Columbia River	
Implement Adaptive					Advisory Board and others to develop the agendas.					Board and others to	science/policy	Nothing scheduled
Management	104	High	Research	RES -2		Council, ISAB	ongong	As appropriate		develop the	conferences	at current time

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Stratogy	Page Number	Driority		Sub-Action Number	General Measures	Dosnonsible Entity	New or	Timoframa	Forum	Milestones	Products	Status
Strategy	Number	Priority	Action Type	Number	General Measures In consideration of best available scientific information the	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					Council will rely on information provided by the							
					independent science panels and the agencies and tribes							
					regarding hatchery science. The agencies and tribes will							
					continue and expand their investments in research,							
			6		monitoring and evaluation for the purpose of reducing							
51.5			General measures for		uncertainties and improving hatchery performance,							
Fish Propagation			R,M, assessment, and		including developing a better understanding of the benefits							
Including Hatchery			reporting on hatchery		and risks of hatchery programs.	Council, ISRP, ISAB,						
Programs	79		effectiveness	HAT 15		agencies, tribes				1) hasia with an		
						Council, ISRP/ISAB (with				begin with an update of how		
					The Council will, with federal and state fish and wildlife	federal and state fish		Beginning 2014,		previous research		Letter sent to
Implement Adaptive					agencies and tribes review and update its research plan	and wildlife agencies and	, .	then every three		funds were	Updated Research	ISRP/ISAB
Management	104	High	Research Reintroduction of	RES -1	every three years beginning in 2014.	tribes)	new/ongoing	years			Plan	2/23/2015
			anadromous fish above		Phase 2: AFM-5.1 Based on the results in the first phase, the Council							
Anadromous Fish			Chief Joseph and Grand		in collaboration with the other relevant entities will decide							
Mitigation in			Coulee dams to		how to proceed. Phase 2 activities may include one or	Council, other relevant						
Blocked Areas	85	High	mainstem reaches and	AFM-5	more of the following:	entities						
Diocked Aleas	83	riigii	Reintroduction of	AI IVI-3	Phase 3:	entities						
			anadromous fish above		AFM -6.1 Based on the results of Phase 2, the Council in							
			Chief Joseph and Grand		collaboration with the other relevant entities will decide							
			Coulee dams to		whether and how to proceed to implement and fund							
Anadromous Fish			mainstem reaches and		reintroduction measures as a permanent part of the							
Mitigation in			tributaries in the		program, including construction and operation of passage	Council, other relevant						
Blocked Areas	85	High	United States	AFM-6	facilities.	entities						
		Ü	anadromous fish above									
Anadromous Fish			Chief Joseph and Grand									
Mitigation in			Coulee dams to		AFM- 6.2 Monitor, evaluate, and adaptively manage the	Council, other relevant						
Blocked Areas	85	High	mainstem reaches and	AFM- 6.2	reintroduction efforts.	entities						
		_										
					The Council encourages scientists to develop an annual							
Plume and					index of ocean survival from Bonneville Dam back to							
Nearshore Ocean	71		General Measures	PLU 6	Bonneville Dam.	Council, Scientists	New	Uncertain				
Strongholds	44		General Measures	STR 1	Request states to identify stronghold areas	Council, States						
			anadromous fish above		AFM-4.3 As part of Phase 1, the Council will engage in							
Anadromous Fish			Chief Joseph and Grand		discussions with tribal, state, and federal agencies and							
Mitigation in			Coulee dams to		others regarding the purpose, scope and progress of	Council, tribes, state and						
Blocked Areas	85	High	mainstem reaches and	AFM-4.3	reintroduction efforts above Chief Joseph and Grand	federal agencies, others						
					The Council will encourage more aggressive efforts by the							
					Corps and others to make the fullest possible use of their							
Predator			Management of		existing authority to remove or manage avian predation that is impacting wild fish populations.	Council, U.S. Army Corps						
Management	50	High	predator birds	PM-6	mac is impacting who has populations.	of Engineers						

	Page			Sub-Action			New or				_	
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					EST 3.2 Receive from Bonneville and the Corps, a summary							
					report on the results of action-effectiveness, status, and trend monitoring and research uncertainties in March							
					2015. The report must provide information to help improve							
					and substantiate the effectiveness of habitat actions							
					implemented in the estuary by parties that do not monitor							
					their own habitat actions.	Council, U.S. Army Corps						
Estuary	68		General Measures	EST 3.2		of Engineers, Bonneville		Mar-15				
20000. y			Concrat Weasanes		EST 3.2 Receive from Bonneville and the Corps, a summary							
					report on the results of action-effectiveness, status, and							
					trend monitoring and research uncertainties in March							
					2015. The report must provide information to help improve							
					and substantiate the effectiveness of habitat actions							
					implemented in the estuary by parties that do not monitor							
					their own habitat actions.	Council, U.S. Army Corps						
Estuary	69		General Measures	EST 3.2		of Engineers, Bonneville						
					The Council encourages wildlife agencies and tribes to							
					monitor and evaluate habitat and species responses to							
					mitigation actions and develop a more standardized	Council, wildlife						
Wildlife Mitigation	73		General Measures	WL 2	approach to wildlife monitoring.	agencies, tribes						
					Working with the region, the Council will develop an						Development of an	
					evaluation process that considers new information to verify						evaluation process that considers new	
					or adjust assumptions, hypotheses, goals, biological objectives, strategies, measures, and indicators. This						information to verify	
Implement Adaptive					adaptive management approach will ensure program	Council, working with					or adjust	
Management	106	High	Evaluation	EV-1	accountability.	the region					assumptions,	
					The federal action agencies shall define the comprehensive							
					maintenance costs by fish and wildlife investment types for							
					both the direct and reimbursable aspects of the program.							
					Anticipated costs should be developed year by year within							
Investment strategy	199	High		IS- 2	a 20-year timeframe and be provided annually to the	Federal action agencies	New	Annual				
investment strategy	199	підіі		13- 2	Council.	rederal action agencies	IVEW	Alliludi				
					The federal action agencies should partner with and							
					The federal action agencies should partner with and support ongoing federal, state, tribal, and regional							
Toxics	56	High	Toxics	TOX 3	agencies' efforts to:	Federal action agencies						
. 555			10/1100	.0,.3	TOX-3.1 Monitor, assess and map high priority toxic	- 2221 at action agentics						
					contaminant hot spots in the Columbia River Basin and							
					evaluate their relationship, if any, to the development and							
Toxics	56	High	Toxics	TOX-3.1	operation of the hydrosystem	Federal action agencies						
					TOX-3.2 Identify and assess the effects of toxic							
					contaminants, alone or in combination with other							
					stressors, on native fish, including sturgeon and lamprey,							
					wildlife, and food webs in toxic hot spots in the Columbia							
Toxics	56	High	Toxics	TOX-3.2	River Basin	Federal action agencies						
Mainstem					The federal action agencies shall provide streamflows with							
Hydrosystem Flow					appropriate timing, quantity, and water quality to promote							
and Passage					productive populations of anadromous and resident fish, provide reservoir conditions to promote productive							
Operations	61		General Measures	MSH 1	provide reservoir conditions to promote productive	Federal action agencies						

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Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
Strategy	Number	Filolity	Action Type	Number	When making decisions regarding the timing and amount	Responsible Littley	Oligoling:	imename	Torum	Willestones	Floudets	Status
					of spill, the federal action agencies should give priority to							
					actions that (1) minimize impacts on returning adult fish;							
Mainstem					and (2) optimize in-river passage survival benefits for focal							
Hydrosystem Flow					species, with particular emphasis on those species that							
and Passage					cannot be or are not effectively transported.							
Operations	65		Spill	MSH 16		Federal action agencies						
					The federal action agencies shall evaluate the effects of flow regulation on near-shore plume characteristics and				Ocean and Plume			
					salmon and steelhead productivity, abundance, and				Science and			
Plume and	70		Company Managemen	DI I 2	diversity.	Fortend and a constant	0		Management			
Nearshore Ocean	70		General Measures	PLU 2		Federal action agencies	Ongoing	As necessary	Forum		Report to the	
											Council annually on	
Predator					The federal action agencies shall report to the Council						their respective	
Management	49	High		PM-2	annually on their respective predator-management efforts	Federal action agencies		Annually			predator-	
	.,	611		2	The federal action agencies should work cooperatively with	. Luciui accion agencies		, daily			Development and	
					NOAA Fisheries, U.S. Fish and Wildlife Service, states,						implementation of	
					tribes, and the Council to develop and implement	Federal action agencies,					systemwide	
					systemwide strategies to manage and reduce non-native	NOAA Fisheries, U.S. Fish					strategies to	
Predator			Management of		fish species that compete and feed on native fish (both	and Wildlife Service,					manage and reduce	
Management	50	High	predator fish	PM-5	anadromous and resident species) in the basin.	states, tribes, Council					non-native fish	
						Federal action agencies,						
						state and federal						
Predator			Management of		The federal action agencies should, in collaboration with	agencies, tribes, and						
Management	50	High	predator birds	PM-7	state and federal agencies, tribes, and other hydropower operators:	other hydropower operators						
Wanagement	30	Tilgii	predator birds	F IVI-7	PM -7.1 Continue efforts to reduce the number of Caspian	орегасогз						
					terns on East Sand Island in the lower Columbia River and	Federal action agencies,						
					estuary by implementing the U.S. Fish and Wildlife Service	state and federal						
					Caspian Tern Management Plan	agencies, tribes, and						
Predator			Management of			other hydropower						
Management	50	High	predator birds	PM -7.1		operators	Ongoing					
					PM -7.2 Develop a double-crested cormorant management						Development of a	
					plan encompassing additional research, development of a	Federal action agencies,					double-crested	
					conceptual management plan, and implementation of warranted actions in the lower Columbia River and estuary	state and federal					cormorant	
Predator			Management of		warranted actions in the lower columbia River and estuary	agencies, tribes, and					management plan, and implementation	
Management	50	High	predator birds	PM -7.2		other hydropower operators					of actions, if	
Wianagement	30	Tilgii	predator birds	FIVI -7.Z	PM-7.3 Implement the avian management plans (for	operators					Implement the avian	
					double-crested cormorants, Caspian terns, and other bird	Federal action agencies,					management plans	
					species) for Corps-owned lands and associated shallow-	state and federal					(for double-crested	
					water habitat areas in the mid-Columbia area that have	agencies, tribes, and					cormorants, Caspian	
Predator			Management of		been developed through the Corps and other processes for	other hydropower					terns, and other bird	
Management	50	High	predator birds	PM-7.3	predatory bird species in the Columbia River estuary. The	operators					species) for Corps-	
											Implementation of	
						Federal action agencies,					coordinated	
						state and federal					predator-bird	
Durast t			NA		PM- 7.4 Implement predator-bird management actions in	agencies, tribes, and					management actions in the	
Predator	F0	118 - 5	Management of	DN4 7.4	the Columbia River Basin in coordination with state and	other hydropower					Columbia River	
Management	50	High	predator birds	PM- 7.4	federal fish and wildlife agencies and tribes.	operators					Columbia Hivei	

	Dono			Cub Astion			News					
Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
Strategy	Number	Priority	Action Type	Number	Following the principles of adaptive management, the	Responsible Entity	Oligolings	Timetrame	Forum	ivillestolles	Products	Status
					federal action agencies, in collaboration with the Council,							
Mainstem					state, federal, and tribal fish agencies and the utilities, shall	Forter to the control of the						
Hydrosystem Flow					continue to investigate, develop, and implement flow and	Federal action agencies,						
					passage measures that improve fish life-cycle survival.	Council, state, federal,						
and Passage	62		C	NACI I E	passage measures that improve fish me cycle survival.	and tribal fish agencies						
Operations	62		General Measures	MSH 5	The Council successful and development of	and the utilities						
					The Council supports ongoing studies and development of assessment methods by the federal action agencies and							
					others. Further, the Council requests other entities to							
					collaborate with the federal action agencies on this work.	Federal action agencies,						
Climate Change	58	High		CC-12		and others						
					The federal action agencies, in cooperation with the	Federal action agencies,					Once developed and	
					Council, state and federal fish and wildlife agencies, tribes,	Council, state and				work group to: (a)	agreed upon, future	
					and others, should convene a technical work group to: (a)	federal fish and wildlife				determine the	predator-	
Predator					determine the effectiveness of predator-management	agencies, tribes, and			Technical Work	effectiveness of	management	
Management	49	High		PM-1	actions; and (b) develop a common metric to measure the	others			Group	predator-	evaluations funded	
					The federal action agencies, in collaboration with state,							
					federal, and tribal fish agencies, shall (1) design mainstem							
					fish passage actions to protect biological diversity by							
					benefitting a broad range of species, stocks, and life-history							
					types, not just listed species and not just salmon and							
					steelhead, and (2) favor solutions that best fit natural							
					behavior patterns and river processes and increase the							
Mainstem					likelihood of adult returns. To meet the diverse needs of							
Hydrosystem Flow					multiple species and allow for uncertainty, multiple	Federal action agencies,						
and Passage					passage methods are necessary at individual projects.	state, federal, and tribal						
Operations	61		General Measures	MSH 2		fish agencies						
						Federal action agencies,						
						EPA, other federal,						
					The federal action agencies, in cooperation with the EPA	tribal, regional, and state						
					and other federal, tribal, regional, and state agencies,	agencies						
Water Quality	55		TOXICS	TOX-2	should:							
					TOX -2.2 Monitor water quality parameters and implement	Federal action agencies,						
					water quality improvement measures to reduce toxic	EPA, other federal,						
					contaminants, as appropriate, to meet state, EPA-approved	tribal, regional, and state						
Water Quality	55		TOXICS	TOX -2.2	tribal, and federal water quality standards to improve the	agencies						
					TOX -2.2 Monitor water quality parameters and implement	Federal action agencies,						
					water quality improvement measures to reduce toxic	EPA, other federal,						
					contaminants, as appropriate, to meet state, EPA-approved							
Water Quality	56		TOXICS	TOX -2.2	tribal, and federal water quality standards to improve the	agencies						
water Quanty	30		TONICS	10/ 2.2	TOX -2.1 Support implementation of the regional 2010	Federal action agencies,						
					Columbia River Basin Toxics Reduction Action Plan. Both	EPA, other federal,						
					the WQP and the Toxics Reduction Action Plan are	tribal, regional, and state						
Water Quality			TOVICS	TOX -2.1	comprehensive regional documents containing water	agencies, Council						
Water Quality	55		TOXICS	10Λ-2.1	PM-10 The federal action agencies should fund federal,	Federal action agencies,						
					tribal, and state agencies to evaluate the extent of seal and	federal, tribal, state						
					sea lion predation on salmonids, sturgeon, and lamprey in	agencies						
			Management of		the lower Columbia River from below Bonneville Dam to	age.roles						
Predator			predator seals and sea		the mouth of the river.							
Management	51	High	lions	PM-10								

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
Strategy	Italiibei	THORITY	Action Type	Humber	PM-11 The federal action agencies, in collaboration with	Federal action agencies,	Oligoling.	micranic	Torum	Willestones	Troducts	Status
			Management of		the region's state and federal fish and wildlife agencies,	federal, tribal, state						
Predator			predator seals and sea		tribes, and others, should identify opportunities and	agencies, others						
Management	51	High	lions	PM-11	implement actions to reduce salmon, sturgeon, and							
Wanagement		111611	110113	1 141 11		Federal action agencies,						
						FERC, non-federal						
						project operators, EPA,						
						other federal, tribal,						
					The federal action according FEDC and the new federal	regional, and state						
					The federal action agencies, FERC, and the non-federal project operators, in cooperation with the EPA and other	agencies						
Water Quality	55		TDG and Tmperature	WQ3	federal, tribal, regional, and state agencies, should:							
water quality	33		TDG and Imperature	WQS	reactal, tribal, regional, and state agencies, should.	Federal action agencies,						
						FERC, non-federal						
						project operators, EPA,						
						other federal, tribal,						
					WO 2.1. Undate and implement the Water Quality Plan for	regional, and state						
					WQ 3.1 Update and implement the Water Quality Plan for Total Dissolved Gas and Water Temperature in the	agencies						
Water Quality	55		TDG and Tmperature	WQ 3.1	Mainstem Columbia and Snake Rivers (WQP)	·						
water Quality	33		TDG and Imperature	WQ 3.1	WQ 3.2 Monitor water quality parameters and implement							
					water quality improvement measures to reduce water							
					temperatures and TDG to meet state, EPA-approved tribal,	Federal action agencies,						
					and federal water quality standards to improve the health,	FERC, non-federal						
					condition, and survival of anadromous and native resident	project operators, EPA,						
					fish, as well as their related spawning and rearing habitat,	other federal, tribal,						
					in the Columbia Basin	regional, and state						
Water Quality	55		TDG and Tmperature	WQ 3.2		agencies						
											Improved runoff	
						Federal action agencies,					forecasting methods	
					Support the development of improved runoff forecasting	in coordination and					and techniques for	
					methods and techniques for Columbia River Basin	collaboration with					Columbia River	
Climate Change	57	High		CC-1	watersheds	others					Basin watersheds	
						Federal action agencies,					or early winter)	
						in coordination and					runoff forecasts for	
					Work to provide early (e.g., late fall or early winter) runoff	collaboration with					the Columbia River	
Climate Change	57	High		CC-2	forecasts for the Columbia River Basin	others					Basin	
						Federal action agencies,						
					Continue to encourage, monitor, and promote public	in coordination and						
					awareness of pertinent climate change research and	collaboration with						
					information and assess how it should influence program	others						
Climate Change	58	High		CC-3	mitigation efforts		Ongoing					
					Assess whether climate change effects are altering or are	Federal action agencies,						
					likely to alter critical river flows, water temperatures or	in coordination and						
					other habitat attributes in a way that could significantly	collaboration with						
					affect fish or wildlife important to this program, either	others						
Climate Change	58	High		CC-4	directly or by affecting the success of current mitigation							
					Evaluate the effectiveness and feasibility of possible actions	Federal action agencies,						
					to mitigate effects of climate change, including selective	in coordination and						
					withdrawal from cool/cold water storage reservoirs to	collaboration with						
					reduce water temperatures or other actions to create or	others						
Climate Change	58	High		CC-5	protect cool water refugia in mainstem reaches or							

	Page			Sub-Action			New or		_			<b>.</b>
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
						Federal action agencies, in coordination and						
						collaboration with						
						others						
				00.5	Identify and evaluate management and mitigation options							
Climate Change	58	High		CC-6	for fish and wildlife under various climate-change scenarios							
						Federal action agencies,						
					Assess and revise, if necessary, ongoing monitoring efforts	in coordination and collaboration with						
					to ensure collection of necessary data on key species	others						
Climata Changa	F0	l limb		66.7	responses, interactions, and productivity under future	ouners						
Climate Change	58	High		CC-7	climate scenarios	Federal action agencies,						
						in coordination and						
						collaboration with						
					land and the second back that we track and for an ideat find	others						
Climate Change	58	High		CC-8	Implement long-term habitat protections for resident fish and wildlife in the basin							
cilliate change	36	iligii		CC-0	and whalle in the busin	Federal action agencies,						
					Identify and implement a ctuateric surrential of the	in coordination and						
					Identify and implement a strategic expansion of the network of stations for surface weather and streamflow	collaboration with						
					observations in high-altitude mountainous areas of the	others						
Climate Change	58	High		CC-9	Columbia Basin							
Cimilate Citatings	30			003	Investigate the feasibility of mitigating climate change	Federal action agencies,						
					impacts in the estuary and plume through changes in	in coordination and						
					hydrosystem operations, including changes in flood-control	collaboration with						
					operations	others						
Climate Change	58	High		CC-10								
					Variations in regional climate and ocean conditions play a	Federal action agencies,						
					large role in the survival of anadromous fish and other	in coordination and						
					native species in the Columbia River Basin. Management	collaboration with						
					actions shall strive to help those species accommodate a	others						
Climate Change	58	High		CC-11	variety of climate and ocean conditions by providing a wide							
					The federal action agencies, other federal and state	Federal action agencies,						
					agencies, tribes, and the Council should continue to review,	other federal and state						
					evaluate, develop, and implement strategies to reduce	agencies, tribes, and the Council						
Non-native and		10.1	B. I		competition from non-native fish species with juvenile and adult salmonids.	Council						
Invasive Species	48	High	Reduce competition	NNI-10		Fodoral action constitution	Ongoing					
Mainstem					The federal action agencies, in collaboration with the state, federal, and tribal agencies and the Mid-Columbia Public	Federal action agencies, state, federal, and tribal						
Hydrosystem Flow					Utility Districts (PUDs), shall continue to reliably implement	agencies and the Mid-						
and Passage			Hanford Reach fall		operations to protect spawning and emergence of fall	Columbia Public Utility						
Operations	63		Chinook	MSH 8	Chinook in the Hanford Reach, consistent with the 2004	Districts (PUDs),	Ongoing	Report periodically				
Mainstem			Investigate the	17.5110	The federal action agencies, in collaboration with state,		Olibolita	epore periodically				
Hydrosystem Flow			potential to further		federal, tribal agencies, and others, should continue to	Federal action agencies,						
and Passage			improve ecosystem		investigate and adjust system water management to	state, federal, tribal						
Operations	64		function and floodplain	MSH 13	improve ecosystem functions in the mainstem, estuary, and	agencies, and others,						
Mainstem			Investigate the									
Hydrosystem Flow			potential to further			Federal action agencies,						
and Passage			improve ecosystem			state, federal, tribal						
Operations	64		function and floodplain	MSH 13 1	MSH 13.1 Reconnected floodplains related to river flows	agencies, and others,						
Operations	07	l	ranction and noodplain	171311 13.1	mon 13.1 Reconnected noodplains related to fiver flows	abelieies, alla otileis,						

	Page			Sub-Action			New or		_			
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
Mainstem			Investigate the									
Hydrosystem Flow			potential to further			Federal action agencies,						
and Passage			improve ecosystem		MSH 13.2 Enhanced Columbia River plume and near-shore	state, federal, tribal						
Operations	64		function and floodplain	MSH 13.2	ocean habitat	agencies, and others,						
Mainstem			Investigate the									
lydrosystem Flow			potential to further			Federal action agencies,						
and Passage			improve ecosystem		MSH 13.3 Reduced salt water intrusion during summer and	state, federal, tribal						
Operations	64		function and floodplain	MSH 13.3	fall	agencies, and others,						
Mainstem			Investigate the									
ydrosystem Flow			potential to further			Federal action agencies,						
and Passage			improve ecosystem		MSH 13.4 Fewer and shorter hypoxia and acidification	state, federal, tribal						
Operations	64		function and floodplain	MSH 13.4	events in the estuary	agencies, and others,						
Mainstem	-		Investigate the		,							
lydrosystem Flow			potential to further			Federal action agencies,						
and Passage			improve ecosystem			state, federal, tribal						
Operations	64		function and floodplain	MSH 12 5	MSH 13.5 Lower summer water temperatures	agencies, and others,						
Operations	04		Tunction and noodplain	101311 13.3	Wish 13.3 Lower summer water temperatures	agencies, and others,						
			Conoral Massures to									
			General Measures to									
			address total dissolved			Federal and non-federal						
Water Quality	54		gas and temperature	WQ 1	Federal and non-federal project operators should:	project operators						
					WQ 1.1 Continue real-time monitoring and reporting of							
					TDG and water temperatures measured at fixed monitoring							
					sites in the Columbia River Basin	Federal and non-federal						
Water Quality	54		TDG and Tmperature	WQ 1.1		project operators		In real time				
					WQ 1.2 Continue to develop and implement fish passage							
					strategies that produce less TDG, such as spillway flow							
					deflectors, spillway weirs and surface passage outlets,	Federal and non-federal						
Water Quality	54		TDG and Tmperature	WQ 1.2	including updates and improvements to the System Total	project operators						
					WQ 1.3 Collaborate to complete the water temperature							
					modeling capabilities in the mainstem Columbia River from							
					Grand Coulee to McNary dams to better assess the effect of	Federal and non-federal						
Water Quality	54		TDG and Tmperature	WQ 1.3	operations or flow depletions on summer water	project operators						
			,		PROT 6 Federal and state fish and wildlife agencies and							
					federal resource agencies shall incorporate pertinent							
					elements of the fish and wildlife program in the terms and							
ppendix F. Future			Federal land managers,		conditions they apply to projects exempted from licensing							
dropower electric			federal and state fish		under Federal Energy Regulatory Commission exemption	Federal land managers,						
levelopment and			and wildlife agencies		procedures. The Council also requests that federal land	federal and state fish						
licensing, and			and other state		managers incorporate the development provisions of this	and wildlife agencies and						
protected areas	170		agencies	PROT 6	program into their permit procedures related to	other state agencies						
					PROT 4.1 Shall review simultaneously all applications or							
					proposals for hydroelectric development in a single river							
					drainage, through consolidated hearings, environmental						1	
ppendix F. Future					impact statements or assessments, or other appropriate							
dropower electric					methods. This review shall assess cumulative							
development and			General		environmental effects of existing and proposed							
licensing, and			Implementation		hydroelectric development on fish and wildlife.	Federal project					1	
	170		Measures	PROT 4.1	·	operators and regulators					1	1

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Stratogy	Page	Driority	Action Type	Sub-Action Number	General Measures	Dosnonsible Entity	New or	Timoframo	Forum	Milestones	Droducto	Status
Strategy	Number	Priority	Action Type	Number	PM-12 When federal, state, or tribal managers determine	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					that predation by seals and sea lions is causing significant							
					adverse impacts to salmonids or other native fish, state and							
					federal fish agencies employing lethal and non-lethal							
					methods to manage predation shall continue the lethal							
			Management of		methods if non-lethal methods are not successful.							
Predator			predator seals and sea			Federal, state, tribal						
Management	51	High	lions	PM-12		managers						
					The federal action agencies should incorporate the							
					provisions of various total maximum daily loads (TMDLs) as							
					they are developed and approved into the regional Water							
					Quality Plan, particularly TMDL provisions containing							
Water Quality	55		TDC and Imporature	WO 4	allocations affecting federal hydropower projects in the Columbia River Basin.	Fodral action agencies						
Water Quality	33		TDG and Tmperature	WQ 4	The federal action agencies should partner with and	Fedral action agencies						
					support federal, state, tribal and regional agencies' efforts							
					to conduct targeted monitoring in the Columbia River Basin							
					of vulnerable native fish and wildlife species for specific,							
					high-priority toxic contaminants and other priority							
					contaminants of emerging concern, including in the middle							
					and upper Columbia reaches and in the Snake River, and							
					evaluate if toxic contaminants limit the reproductive	Fedral action agencies,						
					success of native fish.	federal, state, tribal,						
Toxics	56	High	Toxics	TOX 4		regional agencies						
Appendix C					APP C-3.1 Federal Energy Regulatory Commission	6						
Wildlife mitigation					Non-federal hydroelectric projects are licensed by the							
priorities,					Federal Energy Regulatory Commission. The Northwest							
construction and					Power Act and the Electric Consumers Protection Act of							
inundation loss			WL Mitigation in dam		1986 require the Federal Energy Regulatory Commission to							
assessments, and	152		licensing decisions	APP C-3.1	give equal consideration to the protection, mitigation of	FERC						
A					PROT 3.2 Federal Energy Regulatory Commission							
Appendix F. Future					o Under the Northwest Power Act, the Federal Energy							
hydropower electric					Regulatory Commission, and all other federal agencies							
development and					responsible for managing, operating, or regulating federal							
licensing, and			550.0		or non-federal hydroelectric facilities located on the							
protected areas	167		FERC	PROT 3.2	Columbia River or its tributaries are required to take	FERC						
Appendix F. Future					PROT 5 Shall require all applicants for licenses (including							
hydropower electric					license renewals, amendments, and exemptions) and preliminary permits in the Columbia River Basin to							
development and					demonstrate in their applications how the proposed							
licensing, and			Federal Energy		project would take this program into account to the fullest							
protected areas	170		Regulatory Commission	PROT 5	extent practicable. FERC also shall provide the Council with	FERC						
p. otottoa ai cao				313	The Council expects the Federal Energy Regulatory							Ongoing monitoring
			General		Commission, in the exercise of its licensing authority under							of FERC related
			Implementation		the Federal Power Act, to take the Council's hydroelectric							activities in
Protected Areas	53		Measures	PA	development standards and protected areas designations	FERC, Council, Bonneville	Ongoing	As necessary	None			protected areas.
Appendix F. Future			General Measures -	1.7	PROT 2 The Federal Energy Regulatory Commission, Corps	, council, bollicville	CIIBOIIIE	7.5 Hece33al y	110110			+
hydropower electric			Standards for new		of Engineers, Bureau of Reclamation and Bonneville shall							
development and			hydroelectric		not license, relicense, exempt from license, propose,	FERC, US Army Corps,						
licensing, and			development and		recommend, agree to acquire or wheel power from, grant	Bureau of Reclamation						
protected areas	164		licensing:	PROT 2	billing credits for, or otherwise support any hydroelectric	and Bonneville						
protected areas	104		ilicerianig.	FNOTZ	J. J. H. H. J. L. H. L. H. L. L. L. L. L. L. L. L. L. L. L. L. L.	and bonnevine	l			J.	J.	

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					PROT 2.9 Avoiding critical riparian habitat (as designated in							
Annondiy E Euturo			General Measures -		consultation with the fish and wildlife agencies and tribes)							
Appendix F. Future			Standards for new		when clearing, rip-rapping, dredging, disposing of spoils							
hydropower electric					and wastes, constructing diversions, and relocating							
development and			hydroelectric		structures and facilities	FERC, US Army Corps,						
licensing, and	465		development and	DDOT 2.0	PROT 2.10 Replacing riparian vegetation if natural	Bureau of Reclamation						
protected areas	165		licensing:	PROT 2.9	revegetation is inadequate PROT 2.14 Acquiring land or management rights, such as	and Bonneville						
hydropower electric			Standards for new		conservation easements, where necessary to compensate							
development and			hydroelectric		for lost wildlife habitat at the same time other project land	FERC, US Army Corps,						
licensing, and			development and		is acquired and including the associated costs in project	Bureau of Reclamation						
protected areas			licensing:	PROT 2.14		and Bonneville						
					PROT 2.1 Ensure that all licenses for hydroelectric projects							
Appendix F. Future			General Measures -		or documents that propose, recommend, or otherwise support hydroelectric development explain in detail how							
hydropower electric			Standards for new		the provisions of this section will be accomplished or the							
development and			hydroelectric		reasons why the provisions cannot be incorporated into	FERC, US Army Corps,						
licensing, and			development and		the project.	Bureau of Reclamation						
protected areas			licensing:	PROT 2.1		and Bonneville						
					PROT 1 The Federal Energy Regulatory Commission, Corps							
Appendix F. Future			General Measures -		of Engineers, Bureau of Reclamation and Bonneville shall							
hydropower electric			Standards for new		not license, exempt from license, relicense, propose,							
					recommend, agree to acquire or wheel power from, grant							
development and			hydroelectric		billing credits for, or otherwise support any hydroelectric	FERC, US Army Corps,						
licensing, and			development and		development in the Columbia River Basin without	Bureau of Reclamation						
protected areas	163		licensing:	PROT 1	specifically providing for these development conditions:	and Bonneville						
					PROT 1.1 Consultation with the fish and wildlife agencies and tribes and the Council throughout study, design,	FERC, US Army Corps, Bureau of Reclamation						
Appendix F. Future			General Measures -		construction, and operation of the project	and Bonneville, fish and						
hydropower electric			Standards for new		PROT 1.2 Development of specific plans for flows and fish	wildlife agencies and						
development and			hydroelectric		facilities prior to construction	tribes and the Council						
licensing, and			development and		PROT 1.3 Use of the best available means for aiding	tribes and the countri						
protected areas	163		licensing:	PROT 1.1	downstream and upstream passage of anadromous and							
·			,		PROT 1.6 Assurance that the project will not inundate the	FERC, US Army Corps,						
					usual and accustomed, traditional, or contemporary fishing	Bureau of Reclamation						
Appendix F. Future			General Measures -		places of any tribe without tribal approval PROT	and Bonneville, fish and						
hydropower electric			Standards for new		1.7Assurance that the project will not degrade fish habitat	wildlife agencies and						
development and			hydroelectric		or reduce numbers of fish in such a way that the exercise of	tribes and the Council						
licensing, and			development and		treaty or executive-order tribal rights will be diminished							
protected areas	164		licensing:	PROT 1.6	PROT 1.8 Assurance that all fish protection measures are							
					PROT 1.9 Assurance that the project developer will collect	FERC, US Army Corps,						
Appendix F. Future			General Measures -		data needed to monitor and evaluate the results of the fish	Bureau of Reclamation						
hydropower electric			Standards for new		protection efforts PROT 1.10	and Bonneville, fish and						
development and			hydroelectric		Assurance that the project will not degrade water quality	wildlife agencies and tribes and the Council						
licensing, and			development and		beyond the point necessary to sustain sensitive fish species (as designated in consultation with the fish and wildlife	unues and the Council						
protected areas	164		licensing:	PROT 1.9	agencies and tribes).							
protected dreas	237		neerianig.		PROT 2.1 Consulting with fish and wildlife agencies and	FERC, US Army Corps,						
					tribes and the Council throughout study, design,	Bureau of Reclamation						
Appendix F. Future			General Measures -		construction and operation of the project	and Bonneville, fish and						
hydropower electric			Standards for new		PROT 2.2 Avoiding inundation of wildlife habitat, insofar	wildlife agencies and						
development and			hydroelectric		as practical	tribes and the Council						
licensing, and			development and		PROT 2.3 Timing construction activities, insofar as							
protected areas	164		licensing:		practical, to reduce adverse effects on nesting and						<u> </u>	

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
Mainstem					The Fish Passage Center provides technical assistance and							
Hydrosystem Flow					information to the region's fish and wildlife agencies and							
and Passage					tribes, and the public, on matters relating to the program's							
Operations	62		General Measures	MSH 6	flow and passage measures. NOAA Fisheries and its	Fish Passage Center						
Mainstem												
Hydrosystem Flow					MSH 7.1 Assemble, organize, make publicly available, and							
and Passage					maintain the primary archive of the smolt monitoring							
Operations	63		General Measures	MSH 7.1	program data	Fish Passage Center						
Mainstem												
Hydrosystem Flow					MSH 7.2 Participate in the development of the annual							
and Passage					smolt monitoring program implementation plan, and assist							
Operations	63		General Measures	MSH 7.2	in the implementation of the program	Fish Passage Center		Annual				
					MSH 7.3 Assemble, organize and make publicly accessible,							
					data from other primary sources, and conduct analyses as							
Mainstem					requested to meet the information needs of the fish and							
Hydrosystem Flow					wildlife agencies, tribes, and public with respect to water							
and Passage					management, spill, and fish passage							
Operations	63		General Measures	MSH 7.3		Fish Passage Center						
					MSH 7.4 Provide technical information necessary to assist							
					the agencies and tribes in formulating in-season flow and							
Mainstem					spill requests that implement the measures in the Council's							
Hydrosystem Flow					program, while also assisting the agencies and tribes in making sure that operating criteria for storage reservoirs							
and Passage					are satisfied							
Operations	63		General Measures	MSH 7.4		Fish Passage Center						
					MSH 7.5 Provide the technical assistance necessary to coordinate recommendations for storage reservoir and							
Mainstem					river operations that, to the extent possible, avoid							
Hydrosystem Flow					potential conflicts between anadromous and resident fish							
and Passage					potential connects between anadromous and resident hish							
Operations	63		General Measures	MSH 7.5		Fish Passage Center						
Mainstem					MSH 7.6 Archive and make publicly accessible the data							
Hydrosystem Flow					used in developing all analytical results, associating the							
and Passage					specific data with the respective analyses							
Operations	63		General Measures	MSH 7.6		Fish Passage Center						
Mainstem					The FPC Oversight Board will annually review the FPC's							
Hydrosystem Flow					performance and help assure regional accountability, data management compatibility, and program consistency. The							
and Passage					Fish Passage Center functions include:							
Operations	63		General Measures	MSH 7	risiri assage center functions include.	FPC Oversight Board						
Орегация	- 55		Scheral Measures	1413117	Hatchery summary presentations should include adaptive	TTC OVELSIGHT BOOTU						
			Conord massives		management actions implemented or planned to improve							
Fish Dropposition			General measures for		effectiveness in meeting intended hatchery goals or							
Fish Propagation			R,M, assessment, and		changes in goals to meet broader basin management	Hataban, as such as						
Including Hatchery	70		reporting on hatchery effectiveness	<b>⊔∧</b> ∓ 11	strategies.	Hatchery operators and funders						
Programs	79		enectiveness	HAT 11	Hatchery program implementation, monitoring, and	iuilders						
					evaluation results for all hatchery programs in the							
			General measures for		Columbia River Basin should be made electronically							
Fish Propagation			R,M, assessment, and		available and hatchery operators and funders should							
Including Hatchery			reporting on hatchery		coordinate annual summary presentations to the Council.	Hatchery operators and						
Programs	79		effectiveness	HAT 10	, , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	funders, Council		Annual				
1106101113	,,		CHCCHVEHC33	11/1/10	1	runders, Council	l .	Amiuai		1		

	Page			Sub-Action		- "	New or		_			
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					To promote a diversified approach to hatchery							
					management, hatchery operators will aspire to improve hatchery program performance and, in coordination with							
			General measures for		agencies and tribes, will seek-out opportunities to test and							
Fish Propagation			R,M, assessment, and		monitor alternative hatchery strategies and approaches							
Including Hatchery			reporting on hatchery		and alternative hatchery practices.	Hatchery operators,						
Programs	79		effectiveness	HAT 12	and alternative natchery practices.	agencies, tribes						
						282						
Independent					The Independent Francois Advisory Board advisor the							
Scientific and					The Independent Economic Advisory Board advises the Council on the economics of issues within the Council's							
Economic Review	123		IEAB	IEAB-1	statutory responsibilities.	IEAB						
Economic Review	123		ILAD	IEAD-1	Advising the Council on the appropriate methods of	ILAD						
					economic analysis for proposed fish protection and							
					mitigation measures and projects as well as other issues							
					within the Council's statutory responsibilities. This advice							
					will include the appropriate role and limits of economic							
					analysis in making policy decisions and, where applicable,							
Independent					the associated economic costs and benefits of those							
Scientific and					decisions. The Independent Economic Analysis Board will							
<b>Economic Review</b>	125		IEAB	IEAB-2	fulfill this role by:	IEAB						
					IEAB 2.1 Interacting as an advisory committee with the							
					Council regarding methods of economic analysis for							
Independent					alternative fish recovery measures and other issues,							
Scientific and					including economic costs and benefits, within the Council's							
<b>Economic Review</b>	126		IEAB	IEAB 2.1	statutory responsibilities	IEAB						
					IEAB 2.2 Assisting the Council to evaluate new analytical							
Independent					tools, and advising on the most appropriate study designs							
Scientific and												
Economic Review	125		IEAB	IEAB 2.2		IEAB						
Independent												
Scientific and					IEAB 2.3 Helping to identify sources of information and							
Economic Review	125		IEAB	IEAB 2.3		IEAB						
Economic Neview	123		ILAD	ILAD 2.3	lata	ILAD						
Independent												
Scientific and					IFAD 2 A Desferois and Control of the Control							
	125		IFAD	IEAD 3.4	IEAB 2.4 Performing specific tasks assigned by the Council	IFAD						
Economic Review	125		IEAB	IEAB 2.4	on a cost reimbursement basis	IEAB						
Indones Issa												
Independent												
Scientific and	44-		15.5		IEAB 2.5 Assisting in the review and interpretation of study							
Economic Review	125		IEAB	IEAB 2.5	results	IEAB						
					The ISAB provides advice to the region on key scientific							
					issues affecting Columbia River Basin fish and wildlife with							
Indones Issa					the intent to avoid gridlock over scientific uncertainty,							
Independent					circumvent unnecessary additional research, and resolve conflicting advice and opinions on recovery issues and							
Scientific and					measures.	10.5						
Economic Review	123		ISAB			ISAB						
					Evaluate the fish and wildlife program on its scientific							
Independent					merits in time to inform amendments to the program and							
Scientific and					before the Council requests recommendations from the							
Economic Review	124		ISAB		region	ISAB						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
9.		•										
Independent					Evaluate NOAA Fisheries' recovery plans for Columbia River							
Scientific and					Basin stocks and aspects of the recovery process when							
Economic Review	124		ISAB		requested	ISAB						
Independent					Provide scientific advice and review of topics identified as							
Scientific and					critical to fish recovery and conservation in the Columbia							
Economic Review	124		ISAB		River Basin	ISAB						
					Evaluate the scientific merits of plans and measures							
Independent					proposed to ensure satisfaction and continuation of tribal							
Scientific and					treaty fishing rights in the Columbia River Basin and other							
Economic Review	124		ISAB		tribal efforts to restore and manage fish and wildlife	ISAB						
					Provide specific scientific advice on topics and questions							
					requested from the region or the ISAB and approved by							
Independent					majority vote of the Council's, NOAA Fisheries', and the							
Scientific and					tribes' representatives overseeing the ISAB's							
Economic Review	124		ISAB		administration.	ISAB						
					The ISRP will use the risk uncertainty matrix to assess							
Implement Adaptive					whether the level of monitoring is appropriate for the							
Management	102	High	Monitoring	M- 1	proposed project and measures.	ISRP	New					
Independent					The ISRP reviews individual projects in the context of the							
Scientific and					program and makes recommendations on matters related							
Economic Review	123		ISRP		to those projects.	ISRP						
			ISRP and peer review									
Independent			groups have									
Scientific and			responsibilities in three		Review projects proposed for Bonneville funding to							
Economic Review	124		areas:		implement the Council's program:	ISRP						
			ISRP and peer review									
Independent			groups have									
Scientific and			responsibilities in three									
Economic Review	124		areas:		Review program results:	ISRP						
			ISRP and peer review									
Independent			groups have									
Scientific and			responsibilities in three		Review projects funded through Bonneville's reimbursable	105 -						
Economic Review	124		areas:		program:	ISRP						
F. 1 B			General measures for									
Fish Propagation			R,M, assessment, and		The Council requests that NOAA Fisheries annually update							
Including Hatchery			reporting on hatchery		the Council on the status of ESA reviews for state and tribal	Non						
Programs	78		effectiveness	HAT 5	HGMPs.	NOAA		Annually				
					The Council requests that NOAA advise the Council on the							
			General measures for		utility of updating the list of reference streams first identified by the Ad Hoc Supplementation Workgroup that							
Fish Bronagation			R,M, assessment, and		are linked to distinct population segments (DPSs), and							
Fish Propagation			, , , , , , , , , , , , , , , , , , ,		populations within evolutionarily significant units (ESUs).							
Including Hatchery	70		reporting on hatchery	U A T 7	p-p-2-2-3-3 main evolutionally significant annes (£303).	NOAA						
Programs	78		effectiveness	HAT 7		NUAA						

Strategy	Page	Duianitus	Action Time	Sub-Action		Doggoogible Entity	New or	Time of some	Fam	Milestones	Dundunta	Status
Strategy	Number	Priority	Action Type General measures for	Number	General Measures The Council also requests NOAA share with the Council the	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
Fish Propagation			R,M, assessment, and		results of NOAA status reviews of Columbia Basin salmon							
Including Hatchery			reporting on hatchery		and steelhead ESUs and DPSs as the reviews are							
Programs	78		effectiveness	HAT 8	completed.	NOAA						
					If NOAA Fisheries identifies actions for eulachon							
					restoration, the Council will consider those as potential							
					measures that may be implemented through proposed							
					projects after science review and a Council							
Eulachon	97		General Measures	EULA 3	recommendation to Bonneville.	NOAA, Council						
					Each of the four Northwest states should continue to							
			Monitor and control		implement the preventative strategies in their respective state aquatic nuisance species management plans and							
			non-native species		coordinate their prevention efforts closely with the other							
Non-native and			introduction and		Northwest states and British Columbia							
Invasive Species	47	High	dispersal	NNI-4		Northwest states	Ongoing					
midding opened			u.spersu.			Troit time St States	<b>3</b> 1.gamg					
					All entities receiving funding for coordination of program activities must develop a work plan detailing the							
					coordination elements, objectives, deliverables, and							
					budget, as well as submit annual reports on this work,							
Program			Program coordination		based on the upcoming year's priorities as outlined in the	Regional Coordination						
Coordination	121		funding		annual forum.	entities		Annually				
					The Council, with input from the ISAB and ISRP, will request						data gathered over	
					evaluation of data gathered over several years, with the						several years, with	
					evaluation approach overseen by those that gathered the						the evaluation	
Implement Adaptive			E d de	51.0	data, to inform decisions and advance understanding	The Council, with input					approach overseen	
Management	106	High	Evaluation	EV-2	supported by these data.	from the ISAB and ISRP					by those that	
Predator			Management of		The Corps should continue to implement and improve avian-deterrent programs at all lower Snake and Columbia	U.S. Army Corps of						
Management	50	High	predator birds	PM-8	River dams.	Engineers	Ongoing					
Wallagement		111811	predator birds	1100	Three dams.	z.iig.ii.ee.i3	G.1.ge.11.g					
			Management of		PM-9.1 Take actions to improve the exclusion of sea lions at							
Predator			predator seals and sea		all main adult fish ladder entrances and navigation locks at	U.S. Army Corps of						
Management	50	High	lions	PM-9.1	Bonneville Dam.	Engineers	Ongoing					
				]								
				]		U.S. Army Corps of						
Water Quality	55		TDG and Tmperature	WQ 2	The Corps should continue to:	Engineers						
				]	WQ 2.1 Develop and use the SYSTDG model for estimating							
					TDG production to assist in real-time decision making for							
					spill operations, including improved wind forecasting	U.S. Army Corps of						
Water Quality	55		TDG and Tmperature	WQ 2.1	capabilities, as appropriate	Engineers						
					WQ 2.2 Develop and use the CE-QUAL-W2 model for							
					estimating mainstem Snake River temperatures and cold- water releases from Dworshak Dam on the North Fork							
					Clearwater River to assist in real-time decision-making for							
Water Ovelity	e-		TDC and Transmitter	WO 2 2	Dworshak summer operations	U.S. Army Corps of						
Water Quality	55		TDG and Tmperature	WQ 2.2		Engineers						
Mainstem Hydrosystem Flow					To honofit notice fish the Court thell to control							
and Passage					To benefit native fish, the Corps shall investigate	II C Army Corns of						
Operations	64		Albeni Falls Dam	MSH 10	infrastructure changes at Albeni Falls Dam and habitat enhancements in areas impacted by the dam.	U.S. Army Corps of Engineers						
Operations	U <del>4</del>	1	Ameni rans pani	IAI2LI TO	ermancements in areas impacted by the dain.	Liigiileeis				1		

	D			Cult Antique			Namas					
Strategy	Page Number	Priority	Action Type	Sub-Action Number	General Measures	Responsible Entity	New or Ongoing?	Timeframe	Forum	Milestones	Products	Status
Strategy	Number	Filolity	Action Type	Number	MSH 19.1 As a priority for the Corps' capital construction	Responsible Littley	Oligoliig:	Timename	Torum	ivillestolles	Fiouucts	Status
Mainstem					program, implement structural improvements to correct							
Hydrosystem Flow					adult fish-passage problems or improve reliability of adult							
and Passage					passage facilities and report to the Council on progress	U.S. Army Corps of						
Operations	66		Adult fish passage	MSH 19.1		Engineers						
Mainstem			The state of the s									
Hydrosystem Flow					MSH 19.2 Install adult PIT-tag detectors at key mainstem							
and Passage					projects or near the mouths of major tributaries that do	U.S. Army Corps of						
Operations	67		Adult fish passage	MSH 19.2	not have them	Engineers						
Mainstem			i i i i i i i i i i i i i i i i i i i		MSH 19.3 Improve fish-counting accuracy and utilize	0						
Hydrosystem Flow					known-origin PIT-tagged fish to evaluate adult survival							
and Passage					(conversion rates) through key reaches of the mainstem	U.S. Army Corps of						
Operations	67		Adult fish passage	MSH 19.3	Snake and Columbia rivers	Engineers						
Mainstem					MSH 19.4 Investigate the use of, or need for, surface flow	0						
Hydrosystem Flow					outlets during the winter months to provide a safer fallback							
and Passage					route for over-wintering steelhead and kelts	U.S. Army Corps of						
Operations	67		Adult fish passage	MSH 19.4		Engineers						
Operations	<u> </u>		7 to dit 11311 pussage	111011 2311		Linguiscers					Evaluation of the	
					The U.S. Army Corps of Engineers (the Corps) or Bonneville						extent of predation	
Predator					shall evaluate the extent of predation on lamprey at	U.S. Army Corps of					on lamprey at	
Management	49	High		PM-3	Bonneville and other upstream dams	Engineers or Bonneville					Bonneville and	
agement		g			The Corps and Bonneville should support and implement	Engineers of Bonnetine					Configuration and	COP is in draft and
Anadromous Fish			Reintroductions above		anadromous fish passage measures prioritized through the					\M/illamatta	Operations Plan	being reviewed by
Mitigation in			projects in the		Willamette River Basin Flood Control Project Biological	U.S. Army Corps of			WATER Steering	Willamette Biological Opinion	(COP) from the	NMFS and US Fish
Blocked Areas	86	High	Willamette River Basin	AFM-9	Opinion.	Engineers, Bonneville	Ongoing	May-15	Team	timelines	Corps and	and Wildllife
2.00.1007.11000			TTIII CEEC TII TEI BUSIII				- Grigering					** *
					The Corps and Bonneville shall implement in partnership							
					with fish and wildlife agencies and tribes and other	U.S. Army Corps of						
Estuary	68		General Measures	EST 2	organizations:	Engineers, Bonneville						
,				-	EST 2.1 Assessments of opportunities for floodplain	0 ,						
					reconnection and removal or lowering of dikes and levees							
					that block access to habitat, or installing fish-friendly tide	U.S. Army Corps of						
Estuary	68		General Measures	EST 2.1	gates for habitat reconnection, protection, and restoration	Engineers, Bonneville						
					EST 2.2 Effectiveness monitoring of habitat-restoration	,,c						
					actions using a programmatic approach to mirror							
					effectiveness monitoring elsewhere in the Columbia Basin	U.S. Army Corps of						
Estuary	68		General Measures	EST 2.2		Engineers, Bonneville						
,	-				EST 2.3 A long-term, continuous, status and trend	, , , , , , , , , , , ,						
					monitoring and evaluation program for salmon, steelhead,							
					and Pacific lamprey migration and survival that shall	U.S. Army Corps of						
Estuary	68		General Measures	EST 2.3	include monitoring habitat in the lower Columbia River,	Engineers, Bonneville						
					EST 2.4 Research and evaluation on the effects of flow	,						
					regulation, dredging, and water quality (Including toxics) on							
					estuary habitat and food webs to better understand the	U.S. Army Corps of						
Estuary	68		General Measures	EST 2.4	relationship between estuary ecology and salmon and	Engineers, Bonneville						
hydropower electric			Bureau of Reclamation,	25, 2.7								
development and			and any other federal			Engineers, Bureau of						
licensing, and			agency studying or		PROT 7 Shall provide opportunity for Council review and	Reclamation, and any other federal agency						
protected areas	171		proposing hydroelectric	PROT 7	comment.	studying or proposing						
protected areas	1/1	ı	Thi ohosing Hydroelectific	FNOT /	comment.	studying or propositig	l		1		1	

Ctuata au	Page	Duiauitus	Action Trees	Sub-Action Number	General Measures	Dosnovsiklo Entitu	New or	Time of some	Fa	Milestones	Duaduata	Chahua
Strategy	Number	Priority	Action Type	Number	PM-9.2 Continue to support land- and water-based	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
					harassment efforts by NOAA Fisheries, the Oregon and							
			Management of		Washington departments of fish and wildlife, and tribes to	U.S. Army Corps of						
Predator			predator seals and sea		keep sea lions away from the area immediately	Engineers, NOAA-f,						
Management	50	High	lions	PM-9.2	downstream of Bonneville Dam.	ODFW, WDFW, tribes	Ongoing					
· · · · · · · · · · · · · · · · · · ·		6	110113	1101312	To maintain and improve juvenile fish passage survival, the		21.828					
					Corps, in collaboration with state, federal, and tribal fish							
					agencies shall select the most biologically effective							
					combination of passage routes at each mainstem dam							
					(including a spill level that does not exceed interim TDG							
					standards or variances) which, when combined with other							
Mainstem					passage routes, maximizes juvenile fish survival and							
Hydrosystem Flow					minimizes adult fish migration and fallback problems. In	U.S. Army Corps of						
and Passage					this effort, the Corps and its partners should:	Engineers, state, federal,						
Operations	65		Juvenile fish passage	MSH 15		and tribal fish agencies						
					MSH 15.1 Continue to refine the operation of surface							
					bypass systems at all federal mainstem dams. The focus							
					should be on developing the most effective training-spill							
					patterns at mainstem dams to improve juvenile fish							
Mainstem					passage and survival while not affecting adult passage.							
Hydrosystem Flow					Surface passage structures and outlets are important tools to achieve the dual goals of safe juvenile fish passage and	U.S. Army Corps of						
and Passage					long-term compliance with Clean Water Act total dissolved	Engineers, state, federal,						
Operations	65		Juvenile fish passage	MSH 15.1	gas standards.	and tribal fish agencies						
Mainstem					MSH 15.2 Relocate juvenile fish bypass outfalls in those							
Hydrosystem Flow					circumstances where there are problems with predation,	U.S. Army Corps of						
and Passage					tailrace egress, or other factors contributing to juvenile fish	Engineers, state, federal,						
Operations	65		Juvenile fish passage	MSH 15.2	injury or mortality.	and tribal fish agencies						
Mainstem			Tarrenne nen passage									
Hydrosystem Flow						U.S. Army Corps of						
and Passage					MSH 15.3 Install new, fish-friendly turbines or optimize	Engineers, state, federal,						
Operations	65		Juvenile fish passage	MSH 15.3	turbine operations to improve juvenile fish survival.	and tribal fish agencies						
Mainstem			Tarrenne nen passage		, , , , , , , , , , , , , , , , , , , ,							
Hydrosystem Flow						U.S. Army Corps of						
and Passage					MSH 15.4 Continue to investigate ways to reduce descaling	· ·						
Operations	65		Juvenile fish passage	MSH 15 4	of juvenile sockeye.	and tribal fish agencies	Ongoing					
Operations			Javenne nan passage	101311 13.4	The Corps, in collaboration with the state, federal agencies	and triburnish agencies	Oligonia					
					and tribes, should continue to implement improvements to							
					the adult fish passage facilities at mainstem dams to							
					benefit salmon and steelhead, Pacific lamprey, white							
					sturgeon, and bull trout. In particular, cool water releases							
					from storage reservoirs should continue to be used to							
					facilitate adult migration. Emphasis should also be placed							
					on research, monitoring, and evaluation; increased							
					accuracy of fish counts; assessment of conversion rates of							
					all adult fish species of interest, including lamprey, through							
					key mainstem reaches; installation of PIT-tag and radio-tag							
					detectors; evaluation of escapement numbers to spawning							
Mainstern					grounds and hatcheries; research into water temperature							
Mainstem					and spill effects on fish passage; and the connection							
Hydrosystem Flow					between fish passage design and fish behavior. In	U.S. Army Corps of						
and Passage			A deals finds and a second	NACII 40	particular:	Engineers, state, federal,						
Operations	66		Adult fish passage	MSH 19		and tribal fish agencies						

	Page			Sub-Action			New or					
Strategy	Number	Priority	Action Type	Number	General Measures	Responsible Entity	Ongoing?	Timeframe	Forum	Milestones	Products	Status
Anadromous Fish Mitigation in Blocked Areas	85	High	Transboundary reintroduction	AFM-7	AFM - 7: The United States should pursue a joint program with Canada, with shared costs, to investigate and, if warranted, implement the reintroduction of anadromous fish on the mainstem Columbia River to Canadian spawning	United States, Canada						
Wildlife Mitigation	75	6	Wildlife Advisory Committee	WL 9	The Council recognizes the ongoing difficulties in addressing wildlife operational losses. At the same time the Council recognizes the progress that has been made in addressing this issue as the result of pilot projects on the	Wildlife Advisory Committee	Ongoing	Nov-15	WAC	Method for quantifying operational (perhaps	Report to Council or operational losses	Will be discussed by WAC throughout a spring and summer in
Wildlife Mitigation	75		Wildlife Advisory Committee	WL 9.1	WL 9.1 The need for additional HEP reports and future HEP Team funding	Wildlife Advisory Committee	Ongoing	Nov-15	WAC	Report on the continued use of HEP methodology or change in status of	Report to Council	WAC has not discussed byut will begin consideration of the matter in
Wildlife Mitigation	75		Wildlife Advisory Committee	WL 9.2	WL 9.2 The diminishing need for HEP on new acquisitions as Bonneville completes construction and inundation mitigation	Wildlife Advisory Committee	Ongoing	Nov-15	WAC	Report on the continued use of HEP methodology or change in status of	Report to Council	WAC has not discussed byut will begin consideration of the matter in
Wildlife Mitigation	75		Wildlife Advisory Committee	WL 9.3	WL 9.3 Current regional need for follow-up HEP capacity to track project agreement compliance on many properties. That need may be influenced by (1) long-term settlements for operation and maintenance, (2) technology advances	Wildlife Advisory Committee	Ongoing	Nov-15	WAC	Report on the continued use of HEP methodology or change in status of	Report to Council	WAC has not discussed byut will begin consideration of the matter in
Wildlife Mitigation	75		Wildlife Advisory Committee	WL 9.4	WL 9.4 The need for new methods to assess operational losses that incorporate the results of ongoing pilot projects. This could include technical testing and evaluation of operational loss models and methodologies, or other	Wildlife Advisory Committee	Ongoing	Nov-15	WAC	Method for quantifying operational (perhaps	Report to Council or operational losses	Will be discussed by WAC throughout spring and summer in