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MEMORANDUM OF AGREEMENT
ON COLUMBIA RIVER ESTUARY HABITAT ACTIONS
BETWEEN THE STATE OF WASHINGTON, THE BONNEVILLE POWER
ADMINISTRATION, THE U.S. ARMY CORPS OF ENGINEERS, AND
THE U.S. BUREAU OF RECLAMATION

I. INTRODUCTION

This agreement for estuary habitat actions (“Estuary MOA” or “Agreement”) confirms joint commitments of the Bonneville Power Administration (“BPA”), the U.S. Army Corps of Engineers (“Corps”) the U.S. Bureau of Reclamation (“Reclamation”) (collectively, “Action Agencies”) and the State of Washington (“Washington” or “State”) (collectively, the “Parties”) regarding habitat actions to be undertaken to conserve salmon and steelhead through improvement of conditions in the Columbia River estuary, consistent with the Lower Columbia River Recovery plan,¹ the Estuary Recovery Plan Module, and the 2008 Biological Opinions (“BiOps”) for the Federal Columbia River Power System (“FCRPS”)² and Upper Snake Projects (“Upper Snake”),³ and the Harvest BiOp.⁴

The Parties have also initiated good faith negotiations of a comprehensive long-term Memorandum of Agreement (“long-term Agreement” or “long-term MOA”) to address issues associated with the effects of the FCRPS and Reclamation’s Upper Snake Projects, on the fish and wildlife resources of the Columbia River Basin, including implementation of 2008 Biological Opinion for the FCRPS and Upper Snake Projects. This Estuary MOA is not intended to constrain or otherwise limit the scope of Parties’ negotiations concerning a long-term Agreement. In particular, the Parties recognize that the Action Agencies’ commitments in this Estuary MOA are part of their broader commitments to implement all-H actions to mitigate federal hydropower effects, consistent with the 2008 BiOps under the Endangered Species Act (“ESA”) and the Northwest Power Act (“NPA”).

¹ Lower Columbia River Salmon Recovery and Fish and Wildlife Subbasin Plan, issued by the Lower Columbia Fish Recovery Board on December 15, 2004, and adopted as an interim recovery plan for the Washington portion of the ESU recovery plan in February 2006 by NOAA Fisheries.

² For purposes of this Agreement, the FCRPS comprises 14 Federal multipurpose hydropower projects. The 12 projects operated and maintained by the Corps are: Bonneville, the Dalles, John Day, McNary, Chief Joseph, Albeni Falls, Libby, Ice Harbor, Lower Monumental, Little Goose, Lower Granite, and Dworshak dams. Reclamation operates and maintains the following FCRPS projects: Hungry Horse Project and Columbia Basin Project, which includes Grand Coulee Dam.

³ For purposes of this Agreement, the Upper Snake River Projects (Upper Snake) are Minidoka, Palisades, Michaud Flats, Ririe, Little Wood River, Boise, Lucky Peak, Mann Creek, Owyhee, Vale, Burnt River and Baker.

⁴ Consultation on Treaty Indian and Non-Indian Fisheries in the Columbia River Basin Subject to the 2008-2017 *U.S. v. Oregon* Management Agreement, issued by NOAA Fisheries on May 5, 2008.

II. BIOLOGICAL OPINION COMMITMENTS

The Parties reaffirm their position that the FCRPS and Upper Snake BiOps (including hydro operation, configuration, and water management provisions) satisfy ESA requirements during their terms. This includes the overarching hydro performance standards, supported by adaptive management, as set out in the BiOps and Biological Assessment.⁵

In implementing this Estuary MOA, the Parties commit to collaborate within the framework of the FCRPS BiOp. This includes annual reporting and comprehensive evaluations (including consideration of population and evolutionarily significant unit [“ESU”] status) in 2013 and 2016, all-H diagnosis, and identification of modified actions and contingencies.

III. ESTUARY HABITAT COMMITMENTS

A. Biological Value of Estuary Habitat Projects

The Parties agree that projects to protect, improve, and restore estuary habitat will yield important biological benefits. The Columbia River estuary represents one of three major environments supporting the life cycle of Columbia Basin salmon and steelhead. All of these salmon and steelhead stocks spend time in the estuary before migrating to the ocean. The Columbia River estuary has been significantly altered and degraded by human activities, and innumerable scientific studies and communications from notable regional scientists confirm that protection and restoration of this habitat will yield biological benefits for all listed salmonids in the Columbia River Basin. In addition, by improving ecological conditions and processes, the estuary habitat actions under this Agreement will also benefit numerous other fish and wildlife species that rely on estuary habitat at some point in their lifecycle. This includes non-listed salmon and steelhead, smelt (eulachon, whitebait, surf, night, and longfin), sea-run cutthroat trout, Pacific lamprey, and green and white sturgeon, among others. Enhancement of wetlands and riparian areas also provide important habitat for a variety of birds, including bald eagle, peregrine falcon and a variety of waterfowl species.

The actions being undertaken by the Parties in the estuary (including on the ground actions and research, monitoring and evaluation) support the estimated ESU survival benefits of 6 and 9% (for stream type and ocean type fish, respectively) over the term of the FCRPS BiOp. Although this Estuary MOA is not required under the 2008 FCRPS

⁵ The hydro performance standards referenced here, as well as hydro targets and metrics, are described in the Main Report, Section 2.1.2.2 of the Action Agencies’ August 2007 FCRPS Biological Assessment (FCRPS BA), pages 2-3 through 2-6, and the FCRPS BiOp at RM&E Strategy 2 (Hydro) and RPA 52 (pages 72-76 of 98). The adaptive management referenced here, including reporting and diagnosis, are described in Section 2.1 of the FCRPS BA, with population/ESU progress monitoring addressed in RM&E Strategy 1 (Status Monitoring) and RPAs 50 and 51 (pages 69-71 of 98).

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BiOp, the additional \$4.5 million annually of funding and actions provided under this Agreement will aid in the achievement of these benefits. The Parties are committed to using the estuary research, monitoring, and evaluation actions in the BiOp, in conjunction with the 2013 and 2016 comprehensive evaluations, to confirm the achievement of these benefits by 2018 within the framework of the FCRPS BiOp.

B. Overall Increased Estuary Commitments--\$40.5 million

As a result of the mutual commitments between BPA, the Corps, and Washington described below, the Action Agencies will be providing an increase in funding for all estuary habitat actions of approximately \$40.5 million over the nine year term of this MOA, summarized as follows:

	Pre-Estuary MOA			With this Estuary MOA			
Annual Planning Budgets (\$ million)							
	Habitat	RM&E	Estuary Total	Habitat	RM&E	Estuary Total	Increased Habitat Funding
BPA	3.5			5.3			1.8
Corps	2.0			4.7			2.7
BPA & Corps Combined		6.6			6.6		
Sub-Total	5.5	6.6	12.1	10.0	6.6	16.6	4.5
9-Year Total (\$ million)							
BPA & Corps Combined	49.5	59.4	108.9	90.0	59.4	149.4	40.5

Actual dollars figures will be higher, because these figures do not include the 2.5% inflation adjustment for BPA commitments.

This MOA addresses the additional funding from BPA and the Corps for estuary habitat projects of \$4.5 million annually committed to Washington. The remaining \$5.5 million combined BPA and Corps commitments for estuary habitat projects, which began prior to this MOA, will continue to be utilized with other governmental and non-governmental entities in Oregon and Washington, including the Lower Columbia River Estuary Partnership (“LCREP”). The \$6.6 million annually for estuary research, monitoring, and evaluation (“RM&E”) will similarly be utilized with governmental and non-governmental entities.⁶

⁶ There is an additional \$1.2 million (annual) from system-wide RM&E activities benefitting the estuary that is not included in the table above; RM&E amounts may vary to reflect changes in scope over time.

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Any funds provided to Washington or the Estuary Partnership through the stimulus packages under the American Recovery and Reinvestment Act of 2009 or other subsequent Acts, may provide additional biological benefits, but will not affect the funding commitments in this Agreement.

C. Funding for Estuary Habitat Improvements

C.1 General Principles:

- For purposes of this Agreement, the Columbia River estuary is defined as the area from the mouth of the Columbia River, including the plume, upstream to the limit of tidal influence (including tidally influenced areas of tributaries) at Bonneville Dam at River Mile 146.
- Estuary habitat projects funded under this Estuary MOA are linked to biological benefits based on limiting factors for ESA-listed fish at the ESU level. Estimated survival benefits based on habitat improvements will be determined for each project utilizing the process and methodology specified in the FCRPS BiOp. See Attachments 1 and 2. (Attachment 1 is the spreadsheet showing projects and estimated planning budgets; Attachment 2 provides brief project narratives, ESUs and limiting factors being addressed, and estimated survival benefits of the actions).
- Washington, acting through the Washington Department of Fish and Wildlife (“WDFW”), will either sponsor or coordinate the projects or actions funded under this Agreement for the benefit of salmon and steelhead in support of the FCRPS BiOp, consistent with the Northwest Power and Conservation Council’s (“Council”) Fish and Wildlife Program implementation in Washington. WDFW will coordinate the projects with the Lower Columbia Fish Recovery Board (“LCFRB”), and LCREP (which includes the State of Oregon), and other estuary action partners of the Action Agencies.
- The Parties endorse the National Oceanic and Atmospheric Administration (“NOAA”)-modified LCREP ecosystem criteria⁷ for estuary habitat projects (Attachment 3), and will apply these criteria (subject to any subsequent modifications made by NOAA in coordination with LCREP to reflect results of RM&E) in the process of selecting projects for this MOA.
- Projects funded under this Agreement are consistent with subbasin plans now included in the Council’s Program and ESA recovery plans. More specific linkages to these plans will be documented as a function of the BPA contracting process.
- Projects may be modified by mutual agreement over time based on biological priorities, feasibility, science review comments, or based on results in habitat and survival improvements.

⁷NOAA modified the broader LCREP ecosystem criteria to more specifically address ESA-listed salmon and steelhead.

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- Parties agree to report the results of implementation of this MOA through the annual reporting process under the FCRPS BiOp.
- The Parties acknowledge that there may be multiple projects in various phases of planning, design, and construction in any given year. The Parties agree to meet annually to discuss which projects will receive funding in that fiscal year for the Corps projects addressed in this MOA.

C.2 BPA Funding for Estuary Habitat Actions

- New Funding: BPA is committing to an increase of \$1.8 million per year of estuary habitat funding beginning in fiscal year 2010. These funds will be utilized by Washington to:
 - Provide the cost share for projects to be submitted to the Corps pursuant to the Water Resource Development Act of 2000 (“WRDA 2000”) Section 536, Lower Columbia River and Tillamook Bay Ecosystem Restoration, Oregon and Washington (see description below);
 - Provide cost-share for restoration of shoreline and shallow water habitat to benefit salmon and steelhead in the estuary under the Corps’ Beneficial Use of Dredge Material program;
 - Address any planning and development and operation and maintenance costs for Corps projects addressed in this MOA; and
 - Fund other estuary habitat projects as mutually agreed.
- The BPA funding will be available for (in priority order):
 - Non-federal cost share for Corps projects under this MOA;
 - To cover operation O&M costs (O&M) for Corps projects under this MOA; and
 - Additional estuary habitat projects.
- Up to 20% percent of the BPA funds will be available per year for “transaction costs” which means costs to develop proposed projects, identify willing project sponsors, coordinate and develop the basic elements of these proposals, initiate and respond to science review and otherwise plan for project implementation.
- In order to reflect the heavier emphasis on initial planning steps in the first two years of the MOA, BPA will execute an umbrella contract with Washington’s designated implementing agencies, providing up to \$250 thousand each year for transaction costs.
 - Upon completion of planning, development and execution of partnering agreements for estuary projects for implementation under this Agreement, any additional transaction costs (if any) will transition from the umbrella contract to the Corps projects addressed in this Agreement.
 - The Parties will cooperate with the Corps to ensure that costs incurred prior to the start of the Corps’ processes are to perform tasks needed to develop a proposal that addresses provisions of the Corps’ authorities.

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- The Parties also agree to cooperate to minimize these transaction costs to maximize available funds for the non-federal cost share and leveraging Corps appropriations for Corps projects under this Agreement.
- Of the \$1.8 million commitment, \$1.3 million is based on the Corps' commitment, below, to assume some of BPA's estuary RM&E commitments. The remaining \$0.5 million commitment will be added to the Fish and Wildlife Program budget. However, the Parties share a preference that the 0.5 million per year will be funded from within BPA's existing Fish and Wildlife Program, and will cooperate in good faith to seek that outcome.

C.3. Corps Funding for Estuary Habitat Actions

- Under this Agreement the Corps will seek a \$2.7 million annual increase in federal appropriations for the Corps 536 Program. This is based on the increase from BPA available to the State of Washington to cost share in increased estuary habitat work.⁸ Two existing Corps authorities to create estuarine habitat are Section 536 of the WRDA 2000 ("536 Program") and Section 204 of the WRDA of 1992 (Beneficial Use of Dredge Material)("Section 204 Program").
- Under Section 536 (WRDA 2000), the Corps can construct ecosystem restoration projects for the lower Columbia River estuary to protect, monitor and restore fish habitat. This authority requires a non-Federal cost share sponsorship, in which the sponsor pays 35% and the Corps is responsible for 65% of the total costs to plan and construct the projects. The non-Federal sponsor (or local sponsor) is responsible for all lands, easement and rights-of-ways, of which value will be credited toward the local (non-Federal) cost- share. In addition, the local sponsor is responsible for all future operation and maintenance costs. (See Attachment 4 for more details of this authority and a flow chart for the Section 536 process.)
- A feasibility study to formulate an estuary habitat project under the Corps' 536 Program is cost shared equally (50 percent/50 percent) between the Corps of Engineers and the non-Federal sponsor. 100 percent of the non-Federal share may be contributed as in-kind products or services. The feasibility study results in recommendations for the design and construction of the habitat actions, and identifies the responsibilities of the Federal and non-federal sponsor during design and construction.

⁸ Corps funds are subject to annual appropriations. The Corps, through its Northwestern Division, will request and work to obtain appropriations sufficient to fund its commitments under this Estuary MOA, and will keep the Parties apprised of the status of its appropriations request. The other Parties will support the Corps' efforts to obtain this funding. BPA will maintain its \$1.8 million estuary habitat commitment even if the increased appropriations request is not immediately successful, provided the Corps continues to use best efforts to obtain the increased appropriations.

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- Under Section 204 (WRDA 1992), the Corps can cost share with willing local sponsors the incremental costs above the least cost Federal standard to create estuarine habitat (beneficial use) from material dredged for a federal navigation project. Incremental costs could result from increased distances to disposal site, requiring different equipment or special handling/rehandling techniques or additional features to help stabilize dredged material at a placement site. The Corps will pay 75% of the incremental costs and the sponsor is required to pay the remaining 25%.
- The Corps will consult with Washington to ensure that Corps projects and related RM&E implemented under these authorities will contribute to the objectives of this Agreement, including projects (or types of projects) identified for funding.

C.4. Estuary RM&E Funding.

- The Corps and BPA currently fund approximately \$6.6 million annually of RM&E in the estuary to support implementation of the FCRPS BiOp. (*See II.B. above*).
- As part of its commitments to implement the Reasonable and Prudent Alternative (RPA) actions of the 2008 FCRPS BiOp, the Corps and BPA are funding RM&E (RPA actions 58- 61). Under this Estuary MOA, the Corps agrees to fund up to \$1.3 million annually of the on-going RM&E work through its Columbia River Fish Mitigation Project (“CRFM”) starting in Fiscal Year 2010, through the duration of this MOA. This work will include the study of “Historic Habitat Food Web Linkages” (NOAA and others) and the “Ecology of Juvenile Salmon in Tidal Freshwater in the Vicinity of the Sandy River Delta” (Pacific Northwest National Lab).
- In regional coordination processes, WDFW will support these estuary RM&E actions for priority funding under the CRFM.
- This shift in funding will not change the commitment by the Corps and BPA to implement the estuary RM&E. Any changes in scope for the two RM&E projects identified above will be coordinated and mutually agreed by the Corps and BPA.
- With the Corps’ commitment to fund through CRFM up to \$1.3 million in RM&E commitments that had been provided by BPA, BPA will provide an equivalent amount, \$1.3 million, to Washington to serve as the matching cost share from Washington or other entities in Washington (as project sponsor) to the Corps, for habitat work in the estuary.

C.5. Contingency

If, despite its best efforts, Washington does not identify sufficient viable estuary habitat projects to utilize all 536 Program funds contemplated in this Estuary MOA for two consecutive years, the Parties agree that the Corps and BPA may seek additional project sponsors, for projects in Washington or Oregon, to utilize the available appropriations and the ‘freed’ cost share funds provided by BPA.

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D. General Provisions For All Projects

D.1. All projects funded pursuant to this Agreement shall:

- Be consistent with the Council's Program (including sub-basin plans), as amended, otherwise compliant with the NPA's science and other review processes; applicable ESA recovery plans; and applicable data management protocols adopted by the Action Agencies.
- Be consistent with BPA's then applicable policies, including but not limited to BPA's *in lieu* policy and BPA's capital policy.
- Report results annually (including ongoing agreed upon monitoring and evaluation) via PISCES and/or other appropriate databases.
- Remain in substantive compliance with any applicable implementing project contract terms, including but not limited to 536 Program or Section 204 WRDA partnering agreements.
- Be subject to any necessary permits and approvals for actions on federal lands.

D.2. In addition, Washington shall:

- Provide estimated habitat and survival benefits from the project to listed salmon and steelhead based on key limiting factors and determined using the process and methodology specified in RPA 37 of the FCRPS BiOp, in cooperation with the Corps and BPA;
- Prior to implementation, bring projects through the expert regional technical group process prescribed in RPA 37 to confirm projected benefits and, in the event that there are differences between the results of the expert panel process and Washington's original benefit estimate, the Parties will reconcile the difference and develop final benefits through technical collaboration;⁹ and
- Support and defend these estimates of habitat and survival benefits with available and relevant scientific, policy, and legal information.

D.3. The Parties will coordinate their RM&E projects with each other and with regional RM&E processes (particularly those needed to ensure consistency with the FCRPS BiOp RM&E framework), as appropriate and agreed to among the Parties.

D.4. For actions on federal lands, Washington will consult with the federal land managers, and discuss necessary permits and approvals.

D.5. For projects where the State of Washington is a sponsor, before project approval, the Parties will meet to discuss and address projected operation and maintenance requirements and any potential liability exposure arising from project implementation. Operation and maintenance costs may be paid for as agreed by the Parties, on a project-

⁹ BPA and the Corps will provide assistance to WDFW for technical support in the expert regional technical group process, on request.

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by-project basis, from the BPA portion of the funding in this MOA. Risk management issues will also be discussed and addressed by the Parties as needed, prior to project selection.

E. Council and ISRP Review

E.1. As described in Section III.C.1, above, projects funded by BPA pursuant to this Agreement shall be consistent with the Council's Program and follow the NPA's science and other review processes.

E.2. The Parties recognize that the Council's Program is a maturing program, which through several decades of implementation has established a continuing framework for mitigating the impacts of hydroelectric development in the Columbia River Basin. The Parties acknowledge that nothing in this Agreement precludes any Party from making recommendations to the Council about modifications to the Council or ISRP review processes to facilitate project implementation under this Agreement or generally. The guidelines for ISRP review developed by the Council in consultation with the ISRP, BPA, and the Accord parties, for review of the Columbia Basin Fish Accords projects will be used for review of the projects under this Estuary MOA. Washington will ensure that any needed ISRP science review is timely and occurs before a project partnering agreement is drafted to implement a project under the Corps' Programs. If the ISRP review process cannot accommodate the timing requirements for Corps projects funded under this Estuary MOA, the Parties may propose a programmatic approach for ISRP review to the Council.

F. Replacement Projects

F.1. General Principles:

- The Parties agree that a project identified in this Agreement may not ultimately be implemented or completed due to a variety of possible factors, including but not limited to:
 - Problems arising during regulatory compliance (e.g., ESA consultation, National Environmental Policy Act ("NEPA"), the (Washington) State Environmental Policy Act ("SEPA"), National Historic Preservation Act ("NHPA") review, Clean Water Act permit compliance, etc);
 - The project does not meet BPA's *in lieu* policy or does not meet BPA's capital policy;
 - New information regarding the biological benefits of the project (e.g., new information indicating a different implementation action is of higher priority, or monitoring or evaluation indicates the project is not producing its anticipated benefits);
 - Changed circumstances (e.g., completion of the original project or inability to implement the project due to environmental conditions); or
 - Substantive non-compliance with the implementing contract, including but not limited to 536 Program or Section 204 WRDA partnering agreements.

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- Should a project not be implemented due to one or more of the above factors, the Action Agency and WDFW, in consultation with the LCFRB, LCREP, NOAA Fisheries, and other estuary action partners of the Action Agencies, will promptly negotiate a replacement project.

F.2. Replacement Projects:

- A replacement project(s) should be the same or similar to the project(s) it replaces in terms of target species, limiting factor, mitigation approach, geographic area and/or subbasin and biological benefits.
- A replacement project(s) should have the same or similar planning budget as the project(s) it replaces (less any expenditures made for the original project(s)). Such budget must address carry-forward funding whose amount and calculation will be subject to the Parties' mutual agreement.

G. Adaptive Management

In the implementation of this MOA, the Parties will work together on an adaptive management basis, consistent with the FCRPS BA and the collaborative framework of the FCRPS BiOp, including but not limited to the following:

G.1. Regular Feedback and Review

The Parties will meet at least annually to review implementation of this Estuary MOA and its progress, and to discuss actions needed to maintain or improve steady implementation and to attain the predicted biological benefits of the Agreement.

G.2. New Information/Changed Circumstances

In addition to project-specific adaptation through replacement project(s) described above, the Parties may mutually agree to adaptively manage this shared implementation portfolio on a more programmatic scale based on new information or changed circumstances. For example, if during implementation of this MOA, new information or changed circumstances indicate the habitat focus of this MOA is no longer the most effective type of activity to meet the estuary performance standards the Parties can, if mutually agreed, shift the BPA commitments in this MOA to a different programmatic approach.

G.3. Additional Work and Funding

As part of the comprehensive evaluations in 2013 and 2016, the Parties will review results under this Agreement and will determine whether additional work is needed to achieve ESU survival benefits of 6 and 9% (for stream type and ocean type Chinook, respectively) within the framework of the FCRPS BiOp. Based on this review, if

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additional work is needed to achieve these benefits, the Parties will discuss whether the Action Agencies should seek and commit additional actions or funding.

H. Inflation and Budget Matters

H.1. Inflation

Beginning in fiscal year 2011, BPA will provide an annual inflation adjustment of 2.5 percent. In implementing this provision, BPA will add the inflation adjustment, compounded, to expense budgets beginning in 2011, but will not subsequently adjust project budgets as the schedule of that work changes.

H.2. Expense Planning versus Actuals, and Project-Year Budgets

H.2.a. BPA will plan to contract at the full amounts described in this Estuary MOA. Due to a variety of factors outside of BPA's control, however, BPA's actual expenditures may be less. (Historically, the average difference between BPA's planned expenditures for implementing the expense component of its Council Fish and Wildlife Program, and BPA's actual spending—what BPA is invoiced and pays under individual implementing contracts—is about 7%; that is, BPA plans to expend 100 dollars, but it will be invoiced and pay 93 dollars). When under-spending occurs, funding can be made available in other years and for other projects by mutual agreement per Section III.H.3, below. If total BPA expense spending under this Agreement is less than 93% of the planned amount in any one year, BPA, the Corps, and Washington will meet to discuss possible actions to remove the impediments to achieving the Agreement's full implementation and spending.

H.2.b. BPA's financial commitments and project budgets identified in Attachment 1 are described in fiscal-year terms, but BPA fish and wildlife program contracts are not necessarily aligned to the fiscal year (FY). As a result, the expense budgets in Attachment 1 will be interpreted as project-year (PY) budgets. This means that the project (as implemented through a BPA-issued contract or contracts) can start anytime during the federal fiscal year (Oct 1 – Sep. 30) and use that PY budget for the full implementation period (usually one year).

H.3. Budget Management

Washington may request an adjustment of the PY budget (through requests for transfers, reschedules, or preschedules) for any individual project so long as the Agreement level planning budget--the roll up of the individual project-year budgets--does not exceed 120% of the original planning budgets after the inflation adjustment (see Attachment 1).

Transfers of budgets between projects may be allowed through mutual agreement so long as the transfer is consistent with the Agreement-level budget cap (above), and BPA and

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Washington mutually agree on the revised focus. (BPA will not likely agree to a budget transfer that moves dollars away from habitat work or other on-the-ground work.)

If Washington is able to complete work below a project budget, leaving obligated funds unspent for a project when the contract is closed, those funds will be made available to Washington for re-allocation if mutually agreed by BPA. Through mutual agreement those unspent funds may be rescheduled to the same project or transferred to another Agreement project so long as the adjustment is consistent with the Agreement-level budget cap.

In addition, BPA and Washington may, by mutual agreement, adjust the 120% cap for those projects that involve the acquisition of interests in land or water from willing sellers, to accommodate the uncertainties of negotiations with sellers. In order to exceed the 120 percent cap for such circumstances, Washington shall give BPA at least six months notice of the potential need for such an extension, and provided further that BPA may decline to make the adjustment to avoid a “bow wave” of spending in any given year, or towards the end of this MOA’s terms, or on any other reasonable ground, including consideration of how any such adjustments would affect cost-share opportunities with the Corps’ 536 Program under this MOA.

H.4. Costs of environmental and regulatory reviews

In order to implement the projects identified in this Agreement, BPA, the Corps and/or Washington may need to undertake a variety of environmental and regulatory reviews, including, but not limited to those under NEPA, the NHPA, the ESA, and the Clean Water Act. Unless otherwise mutually agreed, the costs of these review processes will be taken out of the funding commitments of this Agreement, regardless of whether Washington or BPA undertakes the work. Thus, for example, if an Environmental Assessment or an Environmental Impact Statement under NEPA is needed for one or more projects, the costs of that work will be subtracted from the relevant budget under this Agreement. The Parties agree to coordinate in advance on budgeting for these environmental and regulatory reviews.

**IV. LITIGATION, GOOD FAITH, DISPUTE
RESOLUTION AND OTHER PROVISIONS**

A. Effects on Litigation

The Parties will discuss the appropriate means of alerting the district court in *NWF v. NMFS* of this Agreement (if needed) and will undertake any agreed-upon approach.

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B. Good Faith Implementation and Support

Best effort good-faith implementation and support of this Estuary MOA is the general duty to which all Parties agree to be bound. Nonetheless, the Parties understand that from time to time questions or concerns may arise regarding a Party's compliance with the terms of this Agreement. In furtherance of the continuing duty of good faith, each Party agrees that the following specific actions or efforts will be carried out:

B.1. On a continuing basis, each Party will take steps to ensure that all levels of its government/institution is made aware of the existence of this Agreement and the specific commitments and obligations herein, and emphasize the importance of meeting them;

B.2. Each Party will designate a person to be initially and chiefly responsible for coordinating internal questions regarding compliance with the Agreement;

B.3. Each Party will make best efforts to consult with other Parties prior to taking any action that could reasonably be interpreted as inconsistent with any part of this Agreement. To assist in this, the Parties will designate initial contact points. The formality and nature of the consultation will likely vary depending circumstances. The initial contact points are initially charged with attempting to agree on what form of consultation is required. In some instances, the contact between initial contact points may suffice for the consultation, while in others, they may need to recommend additional steps. The Parties agree that consultations should be as informal and with the least amount of process necessary to ensure that the Parties are fulfilling the good-faith obligation to implement and support the Agreement.

B.4. If a Party believes that another Party has taken action that is contrary to the terms of the Agreement, or may take such action, it has the option of a raising a point of concern with other Parties asking for a consultation to clarify or redress the matter. The Parties will endeavor to agree upon any actions that may be required to redress the point of concern. If after raising a point of concern and having a consultation the Parties are unable to agree that the matter has been satisfactorily resolved, any Party may take remedial actions as it deems appropriate, so long as those remedial actions do not violate the terms of the Agreement.

C. Changed Circumstances, Renegotiation/Modification, Withdrawal

C.1. The Parties acknowledge that NOAA Fisheries has issued a final BiOp for the FCRPS as of May 5, 2008, and that there is litigation regarding this BiOp.

C.2. If any court, regardless of appeal, finds that the FCRPS or the Upper Snake Project BiOp or agency action is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law, and subsequently remands either BiOp to NOAA Fisheries, this

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Agreement shall remain in force, subject to the provisions of this Section IV.C.2. If any court, regardless of appeal, finds that either BiOp or agency action is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law, the Parties will seek to preserve this Estuary MOA, and will meet promptly to determine the appropriate response as described below:

- (a) In the event that a portion(s) of this Agreement is in direct conflict with the court order or resulting amended BiOp, the Parties shall meet and agree on an appropriate amendment to that section, or, if such amendment is not possible under the terms of the court order or resulting amended BiOp, then a substitute provision shall be negotiated by the Parties.
- (b) If the court-ordered FCRPS operations or resulting amended BiOp require additional actions that are either financially material to an Action Agency or that materially constrain the Corps or Reclamation from meeting FCRPS purposes, Section IV.C.3 shall apply.
- (c) The Parties will participate in any court-ordered process or remand consultation in concert with Sections IV.B and IV.C.
- (d) The Parties intend that determinations of materiality will only be made in cases of great consequence.

C.3. In the event of the occurrence of any of the material effects in Section C.2, or in the event of material non-compliance with the Agreement not resolved by dispute resolution, the affected Party or Parties shall notify the other Parties immediately and identify why the event is considered material. The Parties shall utilize dispute resolution if there is a disagreement as to whether the event is material. In addition, prior to any withdrawal, the Parties shall first make a good faith effort to renegotiate mutually agreeable modifications to the Agreement. If renegotiation is not successful, the affected Party may notify the other Parties in writing of its intent to withdraw by a date certain. If renegotiation is not successful, at the time the withdrawal is effective, all funding commitments and/or other covenants made by the withdrawing Party cease, and the withdrawing Party shall have no further rights or obligations pursuant to the Agreement. A withdrawing Party reserves any existing legal rights under applicable statutes, including all arguments and defenses, and this Agreement cannot be used as an admission or evidence in support of or against any such argument or defense.

C.4. The provisions of this Agreement authorizing renegotiation, dispute resolution, withdrawal, or challenge in appropriate forums provide the sole remedies available to the Parties for remedying changed circumstances or disputes arising out of or relating to implementation of this Agreement.

C.5. Any Party may withdraw or request renegotiation for reasons other than those enumerated above subject, however, to the provisions in Section IV.C.3.

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C.6. If one Party withdraws from the Agreement, any other Party has the option to withdraw as well, with prior notice.

C.7. Savings. Notwithstanding Section IV.C.3, in the event of withdrawal, BPA will continue providing funding for projects necessary for support of FCRPS BiOp commitments (as determined by the Action Agencies), and may provide funding for other on-going projects or programs that the Parties mutually agree are important to continue.

D. Dispute Resolution

D.1. Negotiation

I.a. The Parties shall attempt in good faith to resolve any dispute arising out of or relating to implementation of this Estuary MOA in accordance with this section prior to administrative, judicial or other formal dispute resolution procedures. The purpose of this Section IV.D.1 is to provide the Parties an opportunity to fully and candidly discuss and resolve disputes without the expense, risk and delay of a formal dispute resolution.

I.b. If the Parties are unable to resolve the dispute through informal dispute resolution, then the dispute shall be elevated to negotiating between executives and/or officials who have authority to settle the controversy and who are at a higher level of management than the person with direct responsibility for administration of this Agreement. All reasonable requests for information made by one Party to the other will be honored, with the Action Agencies treating “reasonable” within the context of what would be released under the Freedom of Information Act.

I.c. In the event a dispute over material non-compliance with the Agreement has not been resolved by negotiation, the affected Party may seek to withdraw, without further renegotiation, in accordance with Section IV.C.3, and may pursue any other remedy provided by law.

D.2. Mediation

In the event the dispute has not been resolved by negotiation as provided herein, the disputing Parties may agree to participate in mediation, using a mutually agreed upon mediator. To the extent that the disputing Parties seeking mediation do not already include all Parties to this Agreement, the disputing Parties shall notify the other Parties to this Agreement of the mediation. The mediator will not render a decision, but will assist the disputing Parties in reaching a mutually satisfactory agreement. The disputing Parties agree to share equally the costs of the mediation.

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E. Modification

The Parties by mutual agreement may modify the terms of this Estuary MOA. Any such modification shall be in writing signed by all Parties.

V. MISCELLANEOUS PROVISIONS

A. Term of Agreement

The term of this Estuary MOA will extend from its effective date through midnight on September 30, 2018, unless amended by mutual agreement of the Parties.

B. Relationship Between This Agreement and Implementing Intergovernmental Agreements

The Parties will enter into separate and discrete intergovernmental agreements to implement this Estuary MOA. Once issued, those intergovernmental agreements will govern all activities addressed in those agreements. For example, the provisions of this MOA regarding changed circumstances, renegotiation and withdrawal (Section IV.C) would not govern disputes in a Corps partnering agreement or BPA contract. Similarly, if a Party were to withdraw from this MOA pursuant to Section IV.C, this would not automatically terminate any implementing intergovernmental agreements; any decision to terminate an implementing intergovernmental agreement would be pursuant to that agreement's termination provisions.

C. Applicable Law

All activities undertaken pursuant to this Agreement must be in compliance with all applicable laws and regulations. No provision of this Agreement will be interpreted or constitute a commitment or requirement that the Action Agencies or Washington take action in contravention of law, including the APA, ESA, CWA, NEPA, Federal Advisory Committee Act, Information Quality Act, or any other procedural or substantive law or regulation. Federal law shall govern the implementation of this Agreement and any action to enforce its terms.

D. Authority

Each Party to this Agreement represents and acknowledges that it has full legal authority to execute this Agreement.

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E. Effective Date & Counterparts

The effective date of this Agreement shall be the date of execution by the last Party to provide an authorized signature to this Agreement. This Agreement may be executed in counterparts, each of which is deemed to be an executed original even if all signatures do not appear on the same counterpart. Facsimile and photo copies of this Agreement will have the same force and effect as an original.

F. Binding Effect

This Agreement shall be binding on the Parties and their assigns and successors. Each Party may seek dispute resolution in accordance with Section IV.D, or to withdraw in accordance with Section IV.C.3 if the dispute is not resolved.

G. No third party beneficiaries are intended by this Agreement.

H. All previous communications between the Parties, either verbal or written, with reference to the subject matter of this Agreement are superseded, and this Agreement duly accepted and approved constitutes the entire Agreement between the Parties.

I. Waiver, Force Majeure, Availability of Funds

I.1. The failure of any Party to require strict performance of any provision of this Agreement or a Party's waiver of performance shall not be a waiver of any future performance of or a Party's right to require strict performance in the future.

I.2. No Party shall be required to perform due to any cause beyond its control. This may include, but is not limited to fire, flood, terrorism, strike or other labor disruption, act of God or riot. The Party whose performance is affected by a *force majeure* will notify the other Parties as soon as practicable of its inability to perform, and will make all reasonable efforts to promptly resume performance once the *force majeure* is eliminated. If the force majeure cannot be eliminated or addressed, the Party may consider withdrawal pursuant to Section IV.C.3.

I.3. The actions of the Corps and Reclamation set forth in this Agreement are subject to the availability of appropriated funds. Nothing in this Agreement shall be construed to require the obligation or disbursement of funds in violation of the Anti-Deficiency Act.

J. Notice

J.1. Any notice permitted or required by the Good Faith provisions of this Agreement, Section IV.B, may be transmitted by e-mail or telephone to a Party's initial contact points, as that person is defined pursuant to the Good Faith provisions.

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J.2. All other notices permitted or required by this Agreement shall be in writing, delivered personally to the persons listed below, or shall be deemed given five (5) days after deposit in the United States mail, addressed as follows, or at such other address as any Party may from time to time specify to the other Parties in writing. Notices may be delivered by facsimile or other electronic means, provided that they are also delivered personally or by mail. The addresses listed below can be modified at any time through written notification to the other Parties.

Notices to BPA should be sent to:

Vice President, Environment Fish & Wildlife
Mail Stop KE-4
Bonneville Power Administration
P.O. Box 3621
Portland, OR 97208-3621

Notices to the U.S. Army Corps of Engineers should be sent to:

U.S. Army Corps of Engineers, Northwestern Division
Chief, Planning, Environmental Resources and Fish Policy Support Division
1125 NW Couch Street
Suite 500
P.O. Box 2870
Portland, OR 97208-2870

Notices to the U.S. Bureau of Reclamation should be sent to:

Deputy Regional Director
Bureau of Reclamation
Pacific Northwest Region
1150 N. Curtis Rd., Suite 100
Boise, ID 83706

Notices to the State of Washington should be sent to:

Southwest Regional Director
Washington Department of Fish and Wildlife
2108 Grand Boulevard
Vancouver, WA 98661

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K. List of Attachments

Attachment 1—Excel spreadsheet showing projects and funding commitments

Attachment 2—Narrative description of projects, and benefits to ESUs

Attachment 3—LCREP ecosystem criteria

Attachment 4—Corps 536 Program Authority & Flow Chart

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SIGNATURES

Stephen J. Wright
Administrator and Chief Executive Officer
Bonneville Power Administration

Date

William E. Rapp, P.E.
Brigadier General, US Army
Division Commander

Date

J. William MacDonald
Regional Director
U.S. Bureau of Reclamation
Pacific Northwest Region

Date

Christine Gregoire
Governor
State of Washington

Date

Phil Anderson
Interim Director
Washington Department of Fish and Wildlife

Date

#	PROJECT TITLE	Estimated Cost (2009 Dollars)	2010	2011	2012-2013	TOTAL
	Total BPA+Corps Budget Target (Not including 2.5% Inflation on BPA \$1.8M annual commitment)		\$4,500,000	\$4,500,000	\$31,500,000	\$40,500,000
1a	WDFW Umbrella project -- WDFW Component	\$160,000 / Year	\$160,000	\$160,000		\$320,000
1b	Lower Columbia Fish Recovery Board (LCFRB) Component	\$90,000 / Year	\$90,000	\$90,000		\$180,000
2	Abernathy Tidal Restoration	\$300,000	\$300,000			\$300,000
3	Germany Tidal Restoration	\$630,000	\$350,000	\$287,000		\$637,000
4	Lower Kalama Tidal Restoration	\$200,000	\$200,000			\$200,000
5	Acquisition of Chaney Parcel at Wood's Landing and Restoration of Chum Salmon Spawning Tributary	\$1,250,000	\$800,000	\$461,250		\$1,261,250
6	Ft Columbia Tidal Reconnection	\$1,000,000	\$1,000,000			\$1,000,000
7	Fish - Hump Island Restoration	\$500,000	\$500,000			\$500,000
8	Paradise Point Wetland Enhancement	\$400,000	\$400,000			\$400,000
9	Austin Point LWD Complexing	\$200,000	\$200,000			\$200,000
10	Elochoman Tidal Restoration	\$600,000	\$500,000	\$102,500		\$602,500
	Budget for other Projects, selected from menu, including but not limited to the following, which will be further scoped beginning in FY 10:			\$3,399,250	\$31,500,000	\$34,899,250
11	Willow Grove Tidal Restoration	To Be Determined				
12	Shillapoo Wildlife Area/Post Office Lake Setback Levees	To Be Determined, estimated over \$2 million				
13	Duncan Creek Fish Passage Restoration	To Be Determined				
14	Pile Dike Removal	To Be Determined				
15	Burke Island Hydrology Improvements	~\$300,000				
16	Lower Washougal Delta Habitat Complexing	~\$200,000				
17	Lower Kalama Delta Habitat Complexing	~\$400,000				
18	Chinook River Estuary Restoration	To Be Determined				
19	Lower Cowlitz Tidal Restoration	~ \$6 million (rough)				
20	Lewis River Acquisition	To Be Determined				
21	Port of Kalama Off-channel Wetland Enhancement	To Be Determined				
22	Cottonwood/Howard Island Tidal Channel Connection	To Be Determined				
23	Barlowe Point Beach Nourishment	To Be Determined				
	Totals:		\$4,500,000	\$4,500,000	\$31,500,000	\$40,500,000

WDFW Estuary MOA Limiting Factors and Benefits of Proposed Projects -- Qualitative Summary.

#	Project	Description	Location	Landowner	Notes	Primary Limiting Factors Addressed	Target ESU/DPS	Benefits to Stream Type ¹ ESU/DPS (Low, Medium, High)	Benefits to Ocean Type ² ESU/DPS (Low, Medium, High)
2	Abernathy Tidal Restoration	IMW Treatment Plan identifies two projects in the tidal reaches of Abernathy Cr (1A and 2A). The projects would enhance 500' of off-channel habitat and 2200' of mainstem through ELJ, LWD, riparian enhancement, and floodplain reconnection. Conceptual designs have been completed for these projects.	Tidal reaches of Abernathy Cr	WDFW	Explore opportunities for creation of chum spawning habitat.	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs); water temperature (cold water refuge). Subbasin: reduced off-channel habitat opportunity; reduced habitat complexity; reduced riparian; reduced spawning and rearing habitat availability.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in side-channel and reconnected wetland habitats. Spring chinook, coho and steelhead populations would benefit by improved access to deeper pools with cover and main channel habitats. Subbasin populations of chum, Chinook, coho and steelhead would benefit by improved spawning and/or rearing habitat. Increased macrodetrital input would benefit all species using the lower estuary.	H	H
3	Germany Tidal Restoration	IMW Treatment Plan identifies two projects in the tidal reaches of Germany Cr (2A, 2B, 2C). The projects would enhance 600' of mainstem habitat, stabilize 350' of eroding bank, and enhance 7 acres of riparian area. Conceptual designs have been completed for these projects.	Tidal reaches of Germany Cr	CLT	Explore opportunities for creation of chum spawning habitat.	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs); water temperature (cold water refuge). Subbasin: reduced off-channel habitat opportunity; reduced habitat complexity; reduced riparian; reduced spawning and rearing habitat availability for chum, coho and Chinook .	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in side-channel and reconnected wetland habitats. Spring chinook, coho and steelhead populations would benefit by improved access to deeper pools with cover, and main channel habitats. Subbasin populations of chum, Chinook, coho and steelhead would benefit by improved spawning and/or rearing habitat. Increased macrodetrital input would benefit all species using the lower estuary.	H	H
4	Lower Kalama Tidal Restoration	LCFEG recently completed a Lower Kalama Off-channel Habitat Assessment that identified five projects in the tidal reaches of the Kalama. Three of these scored in the fundable range when subjected to the LCFRB criteria (KRL 0.1, KRR 0.7, and KRL 1.4). These projects would create or enhance existing off-channel habitat. Conceptual designs and cost estimates have been completed for KRR 0.7.	Tidal reaches of Kalama R.	Port of Kalama, WDFW	Explore opportunities for creation of chum spawning habitat.	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs); water temperature (cold water refuge). Subbasin: reduced off-channel habitat opportunity; reduced habitat complexity; reduced riparian; reduced spawning and rearing habitat availability	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in side-channel and reconnected wetland habitats. Chum would also benefit through construction of spawning channels. Spring chinook, coho and steelhead populations would benefit by improved access to deeper pools with cover, and main channel habitats. Subbasin populations of chum, Chinook, coho and steelhead would benefit by improved rearing habitat. Increased macrodetrital input would benefit all species using the estuary. Cold water refuge habitat would be provided for outmigrating juveniles and migrating adults.	H	H

WDFW Estuary MOA Limiting Factors and Benefits of Proposed Projects -- Qualitative Summary.

#	Project	Description	Location	Landowner	Notes	Primary Limiting Factors Addressed	Target ESU/DPS	Benefits to Stream Type ¹ ESU/DPS (Low, Medium, High)	Benefits to Ocean Type ² ESU/DPS (Low, Medium, High)
5	Acquisition of Chaney Parcel at Wood's Landing and Restoration of Chum Salmon Spawning Tributary	Acquire 2.29 acre property located within the Wood's Landing Columbia River chum salmon spawning site. It has old growth cedar forest and has a segment of an essential habitat, Erskine's Creek, that supports the chum spawning springs to the east -- in front of a parcel currently owned by Columbia Land Trust. The parcel is crucial both for its microclimate /hydrological support for the habitat as a whole, but also for its stream segment and riparian values. This parcel contains the last unprotected habitat for the genetically distinct "I-205 population" of chum salmon. If protected, restoration efforts could bring salmon back up Erskine's Creek, where they historically spawned. Site also has Native American cultural values and functioning riverine wildlife community.	Mainstem Columbia River at Woods Landing chum salmon spawning site (upriver of I-205 Bridge).	John Chaney	Potential partners include: Columbia Springs Environmental Education Center, the City of Vancouver, the Columbia Land Trust, the Yakama Nation, the U.S. Army Corps of Engineers, and a steering committee of officials that focus on cultural resource values (Wana Pa Koot Koot).	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs); exotic plants; water temperature (cold water refuge). Subbasin: reduced off-channel habitat opportunity; reduced habitat complexity; reduced riparian; reduced spawning and rearing habitat availability.	This project is intended to benefit chum salmon by constructing an engineered spawning channel on Erskine Creek, a spring fed tributary along the margins of the Columbia River. Fall Chinook, spring chinook, steelhead and coho would also benefit by improved access to a cold water refuge and rearing habitat with complex cover along the margins of the mainstem Columbia.	L	H
6	Ft Columbia Tidal Reconnection	Replace culvert to allow reconnection of salt water tidal wetland and provide fish passage into wetland.	Mainstem Columbia near Ft. Columbia State Park	State Parks and private		Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs)	This project is intended to target primarily ocean type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in shallow sloughs and wetland habitats. Increased macrodetrital inputs through improved tidal exchange would benefit all species using the lower estuary.	M	H
7	Fish - Hump Island Restoration	Modify dredge spoils to improve flushing flows within the Hump - Fisher Island embayment; plant additional riparian vegetation (Hump Island); revegetate meadow on Fish Island (5-10 acres); remove piling/add LWD.	Hump / Fisher Island near Willow grove	WDFW		Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced in-channel habitat opportunity (flow-related and sediment/nutrient-related estuary habitat changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs); exotic plants; piling and predatory fish/bird habitat.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in shallow sloughs and wetland habitats along Hump and Fisher Island. Spring chinook, coho and steelhead populations would benefit by improved access to deeper, main-channel estuarine habitats, and improved flow conditions through reconnection. Reduced predation on all populations would result from removing piling and adding complex hiding cover. Increased macrodetrital inputs and sediment processes would benefit all species using the lower estuary.	H	H

WDFW Estuary MOA Limiting Factors and Benefits of Proposed Projects -- Qualitative Summary.

#	Project	Description	Location	Landowner	Notes	Primary Limiting Factors Addressed	Target ESU/DPS	Benefits to Stream Type ¹ ESU/DPS (Low, Medium, High)	Benefits to Ocean Type ² ESU/DPS (Low, Medium, High)
8	Paradise Point Wetland Enhancement	Restore and enhance approximately 1000 lineal feet of side channel habitats within a tidally influenced forested/emergent/scrub-shrub wetland complex; construct mainstem LWD structures to increase juvenile rearing and adult holding habitat during low tributary flows, low Columbia River flows, and periods of low tide.	Confluence of North Fork and East Fork Lewis River	WDFW	Consider future flow augmentation from CPU's proposed Paradise Point wellfield; restoration would compliment conservation banking efforts on Morgan Property, at the North Fork Lewis River mouth.	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs); water temperature (cold water refuge). Subbasin: reduced off-channel habitat opportunity; reduced habitat complexity; reduced riparian; exotic plants; reduced access and fish passage during low flow/tide conditions.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in side-channel and reconnected wetland habitats. Chum would potentially benefit through construction of spawning channels. Spring Chinook, coho and steelhead populations would benefit by improved access to deeper pools with cover, and main channel habitats. Subbasin populations of chum, Chinook, coho and winter and summer steelhead would benefit by improved rearing habitat. Increased macrodetrital input would benefit all species using the estuary. Cold water refuge habitat would be provided for outmigrating juveniles and migrating adults.	H	H
9	Austin Point LWD Complexing	Restore riparian habitat and construct ELJs on the right bank of the North Fork Lewis River at the confluence with the Columbia River, to provide instream cover and complexity, and cold-water refuge for outmigrating salmonids.	Right bank of the North Fork Lewis, at the Columbia River confluence	WDFW	Restoration would complement conservation banking efforts on Morgan Property, at the North Fork Lewis River mouth, across from project site; investigate options for off-channel habitat creation other WDFW lands in project vicinity.	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs); exotic plants; water temperature (cold water refuge). Subbasin: reduced off-channel habitat opportunity; reduced habitat complexity; reduced riparian; reduced rearing habitat availability.	This project is intended to target both in basin and out of basin ocean type and stream type populations. All species would benefit from increased access to deeper pools with complex cover along the margins of the mainstem Columbia. Cold water refuge habitat would be provided for outmigrating juveniles and migrating adults.	H	H
10	Elochoman Tidal Restoration	CLT was funded to purchase 200 acres of high quality intertidal forested riparian and wetland habitat along the Elochoman River and Elochoman Slough. The property is adjacent to the JBH Refuge and 210 acres already owned by CLT on Nelson Creek. The property includes over 7000' of off channel habitat. Potential restoration activities on the property include culvert removal, tidegate removal, road abandonment, invasive treatment, and riparian enhancement.	Mouth of Elochoman R	CLT		Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs); exotic plants.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in shallow sloughs and wetland habitats. Spring chinook, coho and steelhead populations would benefit by improved access to deeper, main-channel estuarine habitats. Increased macrodetrital inputs and sediment processes would benefit all species using the lower estuary.	M	H

WDFW Estuary MOA Limiting Factors and Benefits of Proposed Projects -- Qualitative Summary.

#	Project	Description	Location	Landowner	Notes	Primary Limiting Factors Addressed	Target ESU/DPS	Benefits to Stream Type ¹ ESU/DPS (Low, Medium, High)	Benefits to Ocean Type ² ESU/DPS (Low, Medium, High)
11	Willow Grove Tidal Restoration	CLT has recently purchased over 200 acres of intertidal wetland and off-channel habitat along the Columbia River and Coal Creek. Potential restoration activities include restoration of native wetland communities, invasive control, and enhancing the hydrologic connection of the site to the mainstem, possibly via Fisher slough.	Mainstem Columbia near Coal Clough	CLT		Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs); exotic plants.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in shallow sloughs and wetland habitats. Spring chinook, coho and steelhead populations would benefit by improved access to deeper, main-channel estuarine habitats. especially with reconnection to Fisher Slough. Increased macrodetrital inputs and sediment processes would benefit all species using the lower estuary.	M	H
12	Shillapoo Wildlife Area/Post Office Lake Setback Levees	Construct setback levees at Shillapoo Wildlife Area and Post Office Lake to reconnect historic Columbia River floodplain (Note: Further discussions with WDFW, COE and USFWS needed to determine feasibility and scope and scale of project).	Shillapoo Wildlife Area and Post Office Lake	WDFW, DOT (Right of Way), USFWS		Estuary: Reduced off-channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs)	This project is intended to target primarily ocean type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability reconnected wetland and slough habitats. Increased macrodetrital inputs and sediment processes would benefit all species using the lower estuary.	L	H
13	Duncan Creek Fish Passage Restoration	Modify existing dam and outlet structure and construct a backwater elevation control berm/roughened channel to improve steelhead, coho and chum passage during Columbia River low flow periods.	Mouth of Duncan Creek at the Columbia River Confluence	WDFW, Skamania Landing Owners Association		Estuary and Subbasin: reduced adult access/passage.	This project would target both Columbia River chum and coho by improving passae conditions at the Duncan Creek dam.	L	H
14	Pile Dike Removal	Remove pile dike structures based on existing and ongoing assessment work, to increase availability and access to side channel and wetland habitats, and reduce adverse changes on sediment and nutrient dynamics.	To Be Determined	To Be Determined		Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced in-channel habitat opportunity (flow-related and sediment/nutrient-related estuary habitat changes); competition and predation; reduced plume habitat opportunity (flow related and sediment/nutrient-related plume changes; food source changes (reduced macrodetrital inputs); exotic plants; piling and predatory fish/bird habitat.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased access to rearing habitat in shallow sloughs and wetland habitats. Spring chinook, coho and steelhead populations would benefit by improved access to deeper, main-channel estuarine habitats. All populations would benefit by reducing predatory fish habitat. Increased macrodetrital inputs and sediment processes would benefit all species using the lower estuary.	H	H
15	Burke Island Hydrology Improvements	Remove or modify sand deposits at the upstream entrance to Burke Island to improve flow conditions and habitat access to backwater areas and sloughs.	Upstream end of Burke Island	Port of Woodland (verify ownership)		Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced in-channel habitat opportunity (flow-related and sediment/nutrient-related estuary habitat changes); reduced plume habitat opportunity (flow related and sediment/nutrient-related plume changes; food source changes (reduced macrodetrital inputs); piling and predatory fish/bird habitat.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased access to rearing habitat in shallow sloughs and backwater areas along Burke Island. Spring chinook, coho and steelhead populations would benefit by improved flushing flows and access to deeper water rearing habitats. Increased macrodetrital inputs and sediment processes would benefit all species using the lower estuary.	H	H

WDFW Estuary MOA Limiting Factors and Benefits of Proposed Projects -- Qualitative Summary.

#	Project	Description	Location	Landowner	Notes	Primary Limiting Factors Addressed	Target ESU/DPS	Benefits to Stream Type ¹ ESU/DPS (Low, Medium, High)	Benefits to Ocean Type ² ESU/DPS (Low, Medium, High)
16	Lower Washougal Delta Habitat Complexing	Construct ELJs on the Lower Washougal river delta at the Columbia River confluence to provide instream cover and complexity, and cold-water refuge for outmigrating juvenile salmonids and migrating adults.	Washougal River at the confluence with the Columbia River	DNR		Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); water temperature (cold water refuge). Subbasin: reduced off-channel habitat opportunity; reduced habitat complexity; reduced adult holding habitat; reduced rearing habitat availability.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability and complexity in the Washougal River delta. Spring chinook, coho and steelhead populations would benefit by improved access to deeper pools with cover, and main channel habitats. Subbasin populations of chum, Chinook, coho and steelhead would benefit by improved rearing habitat. Cold water refuge habitat would be provided for outmigrating juveniles and migrating adults.	H	H
17	Lower Kalama Delta Habitat Complexing	Construct ELJs on the Lower Kalama river delta at the Columbia River confluence to provide instream cover, complexity and holding; cold-water refuge for outmigrating juvenile salmonids and migrating adults; and to reduce predation by pinnipeds during low flow conditions.	Kalama River at the confluence with the Columbia River	DNR, Port of Kalama	Also explore opportunities for creation of low-water migration pathways via dredging or other means.	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); water temperature (cold water refuge). Subbasin: reduced off-channel habitat opportunity; reduced habitat complexity; reduced adult holding habitat; reduced rearing habitat availability predation.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability and complexity in the Kalama River delta. Spring chinook, coho and steelhead populations would benefit by improved access to deeper pools with cover, and main channel habitats. Subbasin populations of chum, Chinook, coho and steelhead would benefit by improved rearing habitat. Cold water refuge habitat would be provided for outmigrating juveniles and migrating adults. Improved upstream passage through the delta would also reduce predation by pinnipeds.	H	H
18	Chinook River Estuary Restoration	Project would include additional acquisition of estuarine wetland contiguous with previous acquisitions. The project would re-establish the hydrologic link between the river channel and the floodplain over the entire acquisition area, including the removal of tidegates at the mouth of the Chinook, and setback levee construction.	Mouth of the Chinook River		Need to reinitiate discussions with affected property owners; High benefits to in-basin stocks, including chum, coho and Chinook.	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced plume habitat opportunity (sediment/nutrient-related plume opportunity); food source changes (reduced macrodetrital inputs). Subbasin: reduced off-channel habitat opportunity; reduced access/fish passage; reduced riparian; exotic plants.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in shallow sloughs and wetland habitats. Spring chinook, coho and steelhead populations would benefit by improved access to deeper, main-channel estuarine habitats. Subbasin populations of chum, Chinook, coho and steelhead would benefit by improved passage. Increased macrodetrital inputs and sediment processes would benefit all species using the lower estuary.	H	H

WDFW Estuary MOA Limiting Factors and Benefits of Proposed Projects -- Qualitative Summary.

#	Project	Description	Location	Landowner	Notes	Primary Limiting Factors Addressed	Target ESU/DPS	Benefits to Stream Type ¹ ESU/DPS (Low, Medium, High)	Benefits to Ocean Type ² ESU/DPS (Low, Medium, High)
19	Lower Cowlitz Tidal Restoration	The Lower Cowlitz River and Floodplain Habitat Restoration Project Siting and Design report identifies 6 potential projects in the tidal reaches of the Lower Cowlitz and Coweeman Rivers (1.0L, 0.5R, C3.5R, C4.0B, 3.0L, 4.5R). These projects include removal of dredge material, riparian enhancement, side channel creation and/or enhancement, riprap removal, and LWD placement. (Note: when scored by LCFRB, these projects did not all fall within the fundable range, but out-of-basin/estuary benefits were not included at that time).	Tidal reaches of Lower Cowlitz and Coweeman	Various	Opportunities for beneficial use of dredged materials	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs) Subbasin: off-channel habitat opportunity; riparian; water temperature (cold water refuge)	This project is intended to target primarily ocean type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in shallow wetland habitats adjacent to the mainstem Cowlitz. Subbasin stream type populations (spring Chinook, winter steelhead, coho) would also benefit by increased rearing and foraging habitat. Increased macrodetrital inputs would benefit all species using the estuary.	M	H
20	Lewis River Acquisition	Clark Co is proposing to acquire a large parcel of floodplain forest along the left bank of the mainstem Lewis near Mud Lake. This property also has potential for future side channel and floodplain reconnection.	Mainstem Lewis River	Private	Acquisition would compliment conservation banking efforts on Morgan Property, at the North Fork Lewis River mouth	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs). Subbasin: reduced off-channel habitat opportunity; reduced habitat complexity; reduced riparian; water temperature.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in shallow sloughs and wetland habitats along Mud lake and the Lewis River channel margins. Coho would benefit by improved access to off-channel habitats and . Subbasin populations of chum, Chinook, coho and winter and summer steelhead would benefit by increased complexity near the mouth of Mud Creek.	M	M
21	Port of Kalama Off-channel Wetland Enhancement	Restore and enhance tidal slough channel habitats at the Port of Kalama's Northport mitigation site; remove or modify pile structures.	Port of Kalama's Northport Mitigation Site	Port of Kalama	Discussions with Port of Kalama needed to determine level of interest; restoration would compliment existing and ongoing wetland mitigation efforts on Port of Kalama property.	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); food source changes (reduced macrodetrital inputs); exotic plants; piling and predatory fish/bird habitat.	This project is intended to target both ocean type and stream type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in side-channel and reconnected wetland habitats along the mainstem Columbia River. Spring chinook, coho and steelhead populations would benefit by improved access to deeper pools with cover and main channel habitats. Increased macrodetrital input would benefit all species using the lower estuary. Predation on all populations would be reduced through removal of piling and construction of complex hiding cover in off-channel areas.	M	H

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#	Project	Description	Location	Landowner	Notes	Primary Limiting Factors Addressed	Target ESU/DPS	Benefits to Stream Type ¹ ESU/DPS (Low, Medium, High)	Benefits to Ocean Type ² ESU/DPS (Low, Medium, High)
22	Cottonwood/Howard Island Tidal Channel Connection	Reconnect and construct backwater channels.	Cottonwood/Howard Island	Ports of Longview and Kalama, DNR (verify)	Need information from COE	Estuary: reduced off-channel habitat opportunity (flow related and bankfull elevation changes); reduced in-channel habitat opportunity (flow-related and sediment/nutrient-related estuary habitat changes); food source changes (reduced macrodetrital inputs); exotic plants; piling and predatory fish/bird habitat.	This project is intended to target primarily ocean type populations. Fall Chinook and Columbia River chum would benefit by increased rearing habitat availability in shallow sloughs and wetland habitats along Cottonwood/Howard Island. Increased macrodetrital inputs and sediment processes would benefit all species using the lower estuary.	L	H
23	Barlowe Point Beach Nourishment	Contour beach profile through beach nourishment to reduce fish stranding (Note: should be associated with subsequent effectiveness monitoring).	Barlowe Point	To Be Determined	Need information from COE	Estuary: fish stranding	This project is intended to reduce mortality to both ocean type and stream type populations from shipwake stranding.	H	H

Footnotes
¹: Stream Type Populations: Snake River Sockeye, Lower Columbia Coho, Upper Columbia Steelhead, Snake River Steelhead, Lower Columbia Steelhead, Mid Columbia Steelhead, Upper Willamette Steelhead, Lower Columbia Spring Chinook, Snake River Spring/Summer Chinook
²: OceanType Populations: Columbia River Chum, Snake River Fall Chinook; Upper Willamette Chinook, Lower Columbia Fall Chinook

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ATTACHMENT 3



Criteria for Identifying and Prioritizing Habitat Protection and Restoration Projects on the Lower Columbia River and Estuary*

Modified by NOAA to be more ESA specific

Ecosystem Criteria

1) Habitat Connectivity

This criterion recognizes that habitat connectivity is a landscape level concept. It emphasizes linkages between habitat areas that provide a variety of functions **ESA-listed salmonids** at various stages of their life cycle (**juvenile, yearling, and adult**) and that gradual alteration of landscapes through natural succession and retrogression allow species that require a variety of habitat components to disperse and survive. In the Lower Columbia, historic changes have limited or cut off **listed salmonids'** access to resources needed for their development **and migration**. Specific emphasis on species with narrow ecological requirements **such as salmonids will be prioritized**. Upland habitat areas adjacent to drainage ways, existing protected/restored sites, and areas offering diverse habitat types, function, and successional stages should also be considered.

2) Areas of Historic Habitat Type Loss

Land use activities such as diking, filling, **pile dike field development**, and shoreline hardening have removed many of the shallow, peripheral wetlands along the Lower Columbia, isolating the river from its floodplain. This criterion recognizes that historic wetland types such as emergent and forested wetlands that are particularly important for salmonids, have been greatly diminished. These habitats promote networks of physical complexity such as shallow, dendritic channels and backwater sloughs. **NMFS' Northwest Fisheries Science Center has emphasized the need to connect historic habitats that have been disconnected from the mainstem system that are important to ESA-listed salmonids.**

3) Improvement in Ecosystem Function

This criterion acknowledges that some restoration actions can result in greater enhancement of ecosystem functions than others. This criterion emphasizes that location of a project may in some cases be more important than size of the project. **This is especially the case for dike removal projects that can open backwater habitat back up for salmonid access. This criterion also emphasizes the need to closely evaluate the quality and long-term sustainability of the project.**

4) Adequate Size and Shape

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Size refers to reach length and the size of the potential habitat within a reach. In general, larger size enhances habitat stability, increases the number of salmonid species that can potentially use the site, makes it easier to find by migratory species such as salmonids, and increases within-habitat complexity.

5) Level of Complexity

This criterion refers to the number and interspersions of different types of habitats within a given restoration reach or area. As the number of habitats increase, so do the number of salmonid species that can occupy an area, and the number of functions supported by an area. Higher complexity potentially results in higher biodiversity. It is recognized that some restoration efforts, such as a chum channel, may not strive for habitat complexity.

6) Accessibility For Target Species

Accessibility refers to unencumbered access by Columbia River for ESA-listed salmonid species that utilize estuary habitat. Projects that allow or enhance access of these species to important habitats would potentially enhance the feeding, rearing, and refuge functions of the site are preferred. This criterion acknowledges the need to restore habitat for those threatened and endangered species, whose populations are at precariously low numbers and who might benefit from improved near-shore habitat conditions.

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ATTACHMENT 4

**SEC. 536. LOWER COLUMBIA RIVER AND TILLAMOOK BAY ECOSYSTEM RESTORATION, OREGON
AND WASHINGTON.**

(a) IN GENERAL- The Secretary shall conduct studies and ecosystem restoration projects for the lower Columbia River and Tillamook Bay estuaries, Oregon and Washington.

(b) USE OF MANAGEMENT PLANS-

(1) LOWER COLUMBIA RIVER ESTUARY-

(A) IN GENERAL- In carrying out ecosystem restoration projects under this section, the Secretary shall use as a guide the Lower Columbia River estuary program's comprehensive conservation and management plan developed under section 320 of the Federal Water Pollution Control Act (33 U.S.C. 1330).

(B) CONSULTATION- The Secretary shall carry out ecosystem restoration projects under this section for the lower Columbia River estuary in consultation with the Governors of the States of Oregon and Washington and the heads of appropriate Indian tribes, the Environmental Protection Agency, the United States Fish and Wildlife Service, the National Marine Fisheries Service, and the Forest Service.

(2) TILLAMOOK BAY ESTUARY-

(A) IN GENERAL- In carrying out ecosystem restoration projects under this section, the Secretary shall use as a guide the Tillamook Bay national estuary project's comprehensive conservation and management plan developed under section 320 of the Federal Water Pollution Control Act (33 U.S.C. 1330).

(B) CONSULTATION- The Secretary shall carry out ecosystem restoration projects under this section for the Tillamook Bay estuary in consultation with the Governor of the State of Oregon and the heads of appropriate Indian tribes, the Environmental Protection Agency, the United States Fish and Wildlife Service, the National Marine Fisheries Service, and the Forest Service.

(c) AUTHORIZED ACTIVITIES-

(1) IN GENERAL- In carrying out ecosystem restoration projects under this section, the Secretary shall undertake activities necessary to protect, monitor, and restore fish and wildlife habitat.

(2) LIMITATIONS- The Secretary may not carry out any activity under this section that adversely affects--

(A) the water-related needs of the lower Columbia River estuary or the Tillamook Bay estuary, including navigation, recreation, and water supply needs; or

(B) private property rights.

(d) PRIORITY- In determining the priority of projects to be carried out under this section, the Secretary shall consult with the Implementation Committee of the Lower Columbia River Estuary Program and the Performance Partnership Council of the Tillamook Bay National Estuary Project, and shall consider the recommendations of such entities.

(e) COST-SHARING REQUIREMENTS-

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(1) STUDIES- Studies conducted under this section shall be subject to cost sharing in accordance with section 105 of the Water Resources Development Act of 1986 (33 U.S.C. 2215).

(2) ECOSYSTEM RESTORATION PROJECTS-

(A) IN GENERAL- Non-Federal interests shall pay 35 percent of the cost of any ecosystem restoration project carried out under this section.

(B) ITEMS PROVIDED BY NON-FEDERAL INTERESTS- Non-Federal interests shall provide all land, easements, rights-of-way, dredged material disposal areas, and relocations necessary for ecosystem restoration projects to be carried out under this section. The value of such land, easements, rights-of-way, dredged material disposal areas, and relocations shall be credited toward the payment required under this paragraph.

(C) IN-KIND CONTRIBUTIONS- Not more than 50 percent of the non-Federal share required under this subsection may be satisfied by the provision of in-kind services.

(3) OPERATION AND MAINTENANCE- Non-Federal interests shall be responsible for all costs associated with operating, maintaining, replacing, repairing, and rehabilitating all projects carried out under this section.

(4) FEDERAL LANDS- Notwithstanding any other provision of this subsection, the Federal share of the cost of a project carried out under this section on Federal lands shall be 100 percent, including costs of operation and maintenance.

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