WEST COAST REGION CONSERVATION BANKING GUIDANCE

West Coast Region
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
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I. Introduction

National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) West Coast Region (WCR) supports the use of conservation banks and in-lieu fee (ILF) programs to fulfill mitigation and conservation responsibilities under the Endangered Species Act (ESA), the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Fish and Wildlife Coordination Act (FWCA), and other NOAA programs such as the Damage Assessment, Remediation, and Restoration Program (DARRP). Conservation banking is a tool for federal agencies, project applicants, and other entities to address the adverse effects of proposed actions on listed and other federally-managed species, and to support the recovery of listed species and their habitats. In this guidance, we explain conservation banks and ILF programs, and describe the concepts, values, and processes of establishing and using these tools to further NMFS's conservation priorities. We also recommend a process that NMFS may use for review of bank and ILF proposals, and conclude with our next steps for the conservation banking/ILF programs at NMFS WCR.

A conservation bank is a type of mitigation bank, typically a parcel of land containing natural resource values conserved, restored, created and managed in perpetuity for federal or state protected species and used to offset unavoidable impacts to comparable resource values occurring elsewhere on non-bank lands (Mead *in* Carroll *et al.* 2008). Conservation banks can provide large-scale ecological benefits, protect key habitat types, and support life-stage specific needs. They bring together funding, planning, long-term monitoring and management, plus assurances that the habitat values will be maintained in perpetuity.

In-lieu fee programs are similar to mitigation banks in that project proponents pay a fee to an ILF program sponsor who uses the fee to pay for the compensatory mitigation requirements for the project that generated the fee. The ILF program sponsor has many legal duties to ensure the mitigation successfully offsets the adverse effects that generated the fee. In the ESA context, action agencies and applicants remain ultimately responsible for the success of that mitigation under their ESA duties so the failure of mitigation purchased in an ILF transaction can result in reinitiating interagency consultation. NMFS supports the use of both conservation banks and ILF programs to advance species conservation, and therefore their use must result in a benefit to the recovery of targeted listed species and their designated critical habitats.

Banks and ILF programs can be attractive to project proponents and land managers because they can deploy mitigation and conservation in a market framework. That framework calibrates exchanges of habitat value created for a bank or ILF program to specific adverse project effects ("debits") with assurances that the debits are appropriately offset through a credit purchase. This type of transaction can relieve the burden of having an applicant construct and maintain mitigation, although for ESA purposes the applicant or action agency remains responsible for ensuring the mitigation occurs. Resource agencies benefit from the assurances banks and ILF programs provide through formal instruments that ensure funding and management of the mitigation in perpetuity. In addition, they consolidate and manage compensatory actions, as opposed to monitoring and maintaining multiple sites.

In this guidance, we provide background information and support for the use of conservation banks and ILF programs for WCR staff. The guidance should help NMFS staff address adverse effects of projects that NMFS typically reviews under the ESA and other programs. The guidance describes concepts, recommendations, and statements of preference, but it is not a rule or regulation, and the recommendations it contains may not apply to a particular situation based upon the individual facts and circumstances. The guidance does not change or substitute for any law, regulation, or any other legally binding requirement and is not legally enforceable. The use of non-mandatory language such as "recommend," "may," "should," and "can," is intended to describe NMFS' policies and recommendations.

The guidance describes the conceptual similarities and differences between NMFS's conservation banks and ILF programs and the U.S. Army Corps of Engineers' (COE) and the Environmental Protection Agency's (EPA) mitigation banking program as defined in the 2008 Mitigation Rule (73 FR 19594, April 10, 2008). In promulgating the 2008 Mitigation Rule, the COE and EPA assembled and integrated several past pieces of mitigation guidance and updated both agencies' mitigation policies. The 2008 Mitigation Rule establishes standards and criteria for the use of mitigation to offset unavoidable effects on waters of the United States from the issuance of COE permits under Clean Water Act (CWA) section 404 and other COE permits. To meet that purpose, the CWA 2008 Mitigation Rule identifies and establishes procedures and standards for mitigation banking and ILF programs for compensatory mitigation, where an applicant can offset unavoidable impacts to wetlands, streams, and/or other aquatic functions at their project site at an offsite mitigation bank.

In this guidance, we discuss how to integrate our conservation banking/ILF program with mitigation banks developed under the COE and EPA's CWA 2008 Mitigation Rule. NMFS supports the development and use of multiple resource banks (also called overlay banks), where a bank is developed to support a mix of legally-protected resources, such as ESA-listed species, MSA essential fish habitat, CWA section 404 aquatic resources, or DARRP injury restoration Figure 1). Multi-resource banks are advantageous because the increased opportunity to sell credits aids in the economic viability of a bank site, and banks that aim to restore and protect multiple ecological values may have a greater likelihood of being ecologically sustainable through time.

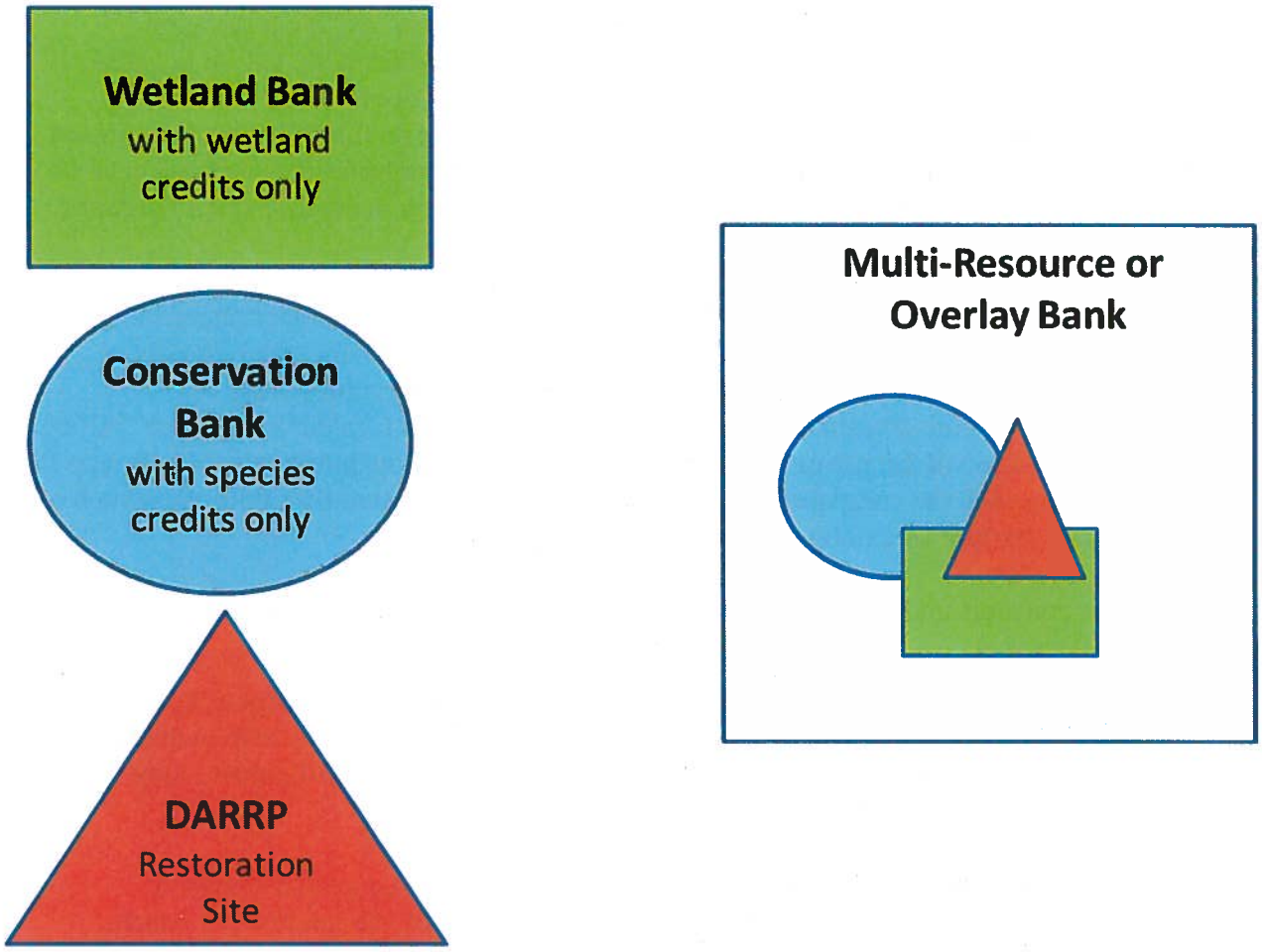

Figure 1. Banks, such as the ones depicted on the left, may offer one type of credit only. Multi-resource or overlay banks can offer different types of credits for offsetting impacts to species and their habitats. For example, a multi-resource bank may offer credits to offset lost wetland habitat, species credits for impacts to juvenile salmonids, and credits for injuries to juvenile salmonids and bald eagles through the DARRP program. The banker must be able to account for the different types of credits to ensure against selling credits more than once.

II. Mitigation Concepts

While the use of compensatory mitigation can differ under the CWA, ESA, and MSA, and other resource laws, the underlying banking concepts are similar. Banking as a mitigation tool brings together financial resources, planning, monitoring, long-term maintenance, and scientific expertise that might not be practicable or sustainable in smaller conservation or mitigation actions. Conservation banks and mitigation banks share many similarities, and the rules and policies guiding operations of mitigation banks can help inform the establishment and use of conservation banks.

Federal and state laws, regulations and policies define the term mitigation differently. In a broad sense, mitigation may include a range of measures from complete avoidance of adverse effects to compensation for unavoidable adverse effects by preserving, restoring or creating similar resources at onsite or offsite locations.

The CWA 2008 Mitigation Rule defines "compensatory mitigation" as "the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse effects which remain after all appropriate and practicable avoidance and minimization has been achieved." In this context, EPA and the COE present compensatory mitigation as a basic conservation strategy, part of a suite of measures designed to maintain habitat functions, not as an additional requirement.

The CWA 2008 Mitigation Rule sets out three approaches to applying compensatory mitigation. Because of the ecological benefits and financial assurances banks provide, the rule states a preference for banking, followed by ILF mitigation, followed by permittee-responsible compensatory mitigation. Permittee-responsible mitigation can be located "on-site" or "off-site" relative to the location of the permitted impact site. Mitigation through mitigation banks and ILF programs involves off-site compensation activities generally conducted by a third party such as an ILF program sponsor or a mitigation bank sponsor.

Although the concepts underlying mitigation banks and conservation banks are similar, there are some key differences:

- The goal of the CWA 2008 Mitigation Rule, including the development of mitigation banks, is no net loss of aquatic functions. However, the WCR conservation bank/ILF program goal is to result in a net benefit to listed species and their habitats, supporting the recovery of those species.

- The CWA 2008 Mitigation Rule lists preservation as the least attractive type of mitigation because it typically does not achieve the goal of "no net loss" of aquatic functions. In contrast, preservation may be the highest priority at a conservation bank, particularly if the preservation addresses limiting factors, maintains habitat connectivity, or provides life-stage specific needs may be the most important to further NMFS's conservation and species recovery priorities.

III. Conservation Banks

A conservation bank is a parcel of land containing natural resource values the banker has conserved, restored, created and managed in perpetuity for federal or state protected species. NMFS can work with bankers to define and quantify resource values contained within the bank credits the banker can sell to parties that need to compensate for the adverse effects of their activities, and to contribute to the conservation of protected species and their habitat.

Typically, bankers can use a conservation easement to manage the bank's resource values, ensuring the banker will conserve and managed those resources in perpetuity. Conservation banks also include operation and maintenance plans, long-term conservation plans, monitoring requirements, and financial and ecologically-based performance standards. A conservation bank provides long-term assurances that the bank sponsor will maintain the targeted resource values.

NMFS and banker quantify the total estimated values of the targeted habitat or other natural resources into total credits available at that bank. Similarly, NMFS, action agencies, and others

can quantify debits. In the ESA context, project proponents may meet their compensatory mitigation and conservation needs through the purchase of credits from a conservation bank. To do so, the Bank must provide benefits that are ecologically relevant to the adverse effects of the projects occurring in the bank service area,[1] and the Bank instrument must contain adequate assurances about the integrity and reliability of the banking program.

IV. In Lieu Fee Mitigation

The CWA 2008 Mitigation Rule governs CWA section 404 mitigation banks and ILF programs, and requires similar commitments for accountability and performance in both. Importantly, CWA section 404 ILF programs addressed in the 2008 Mitigation Rule are developed under the auspices of an Interagency Review Team (IRT), according to the processes set out at 33 CFR 332.8(b).

Some ILF programs developed under the CWA 2008 Mitigation Rule may also provide mitigation for ESA-listed and other managed species. U.S. Fish and Wildlife, NMFS, and other state or local agencies may participate when their trust resources are included, and provided the program is consistent with their statutory authorities. Alternatively, NMFS could consider ILF programs developed specifically for ESA-listed species.

Under the CWA 2008 Mitigation Rule, an ILF program provides a means of funding the restoration, establishment, enhancement, and/or preservation of aquatic resources for the purposes stated in 33 CFR 332.1 and 40 CFR 230.91. Like mitigation banking, an ILF program enables transactions involving fees collected from individual action proponents. Instead of resulting in an exchange of credits from a mitigation or conservation bank, the fees collected go to an ILF program sponsor (typically a governmental or non-profit natural resources management entity) who then becomes responsible for satisfying the compensatory mitigation requirements for the project that generated the fee.[2] Satisfying those requirements occurs when the ILF program sponsor uses fees collected from one or more project proponents to fund habitat projects offsetting the effects of the individual actions for which the fees were collected. Typically, the sites at which the program sponsor uses in lieu fees to create, restore, and/or enhance habitat conditions (habitat lift) are called "receiving sites." Under this structure, unlike banks, ILF programs mitigate project impacts after they occur.

Under the CWA 2008 Mitigation Rule, after assessment and collection of the fee, the ILF sponsor initiates a process for identifying and funding the appropriate mitigation projects in the ILF service area. The mitigation regulations cited above govern the time requirements for accomplishing the mitigation work. This temporal lag between the effects of the underlying action and accruing the benefits of the mitigation is one of two major differences between banking and ILF programs. The other is the fact that ILF programs rarely provide any specificity as to where or what mitigation will be funded until mitigation sites are identified by the ILF program sponsor.

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[1] Under Ninth Circuit case law, adverse effects to critical habitat designated under the ESA cannot be offset by conservation bank credits that are associated with non-critical habitat.

[2] Under the ESA, the applicant and/or action agency remains responsible for the associated mitigation although the implementation occurs through a third party.

Under the CWA 2008 Mitigation Rule, the ILF structure addresses the time lag and uncertainty of location through strict requirements ensuring the success of mitigation projects. Under those requirements, ILF sponsors bear serious responsibility for administering their programs.

NMFS WCR encourages participation in ILF programs developed under the CWA 2008 Mitigation Rule, where appropriate. Similar to use of conservation banks in the ESA context, ILF receiving sites must provide benefits that are ecologically relevant to the adverse effects of the project,[3] and there must be adequate mechanisms in place to provide assurances about the integrity and reliability of the ILF program. In addition, since ILF programs mitigate project impacts after they occur, the related consultation document should address any impacts to listed species and critical habitats associated with that delay.

V. Consistency with NOAA's Programs and Mission

NOAA's mission addresses science, service and stewardship. One prong of our mission requires us to conserve and manage coastal and marine ecosystems and resources, including the protection of endangered marine and anadromous species, and the protection and restoration of habitats and ecosystems. This authority lies, in part, within the ESA section 2(c)(1), which states that federal agencies shall seek to conserve endangered and threatened species and utilize their programs and authorities to fulfill the purposes of the ESA, including conservation of the ecosystems upon which listed species depend, and to provide programs for the conservation of these species. Section 7(a)(1) of the ESA also directs federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species.

Under the ESA, the term "conserve" means to use all means and procedures that are necessary to bring any endangered or threatened species to the point at which the protective measures of the ESA are no longer required (16 U.S.C. 1532(3)).

Section 7 Consultations

Conservation banking and ILF transactions may be incorporated into ESA section 7 consultations. NMFS WCR staff should assertively negotiate with project proponents to include conservation banks and ILF programs into proposed actions as a way to offset unavoidable effects of their actions and to address aggregate and synergistic[4] effects, especially for programmatic consultations.[5] Conservation bank or ILF programs effectiveness for species conservation is highest when incorporated into the proposed action or in a reasonable and prudent alternative (RPA). When incorporated in these ways, their beneficial effects can be analyzed and inform conclusions about jeopardy and adverse modification.

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[3] See fn. 2.

[4] Aggregate and synergistic effects are caused by activities and processes, but refer to the collective effects on a resource, including the sum of direct and indirect effects across space and time, as well as the combined effects that may be greater than the sum.

[5] NMFS supports incorporating conservation banks and ILF programs into the proposed actions for actions with both NLAA and LAA determinations of effect. However, the beneficial effects of a conservation bank or ILF program cannot be used to 'offset' adverse effects in order to reach an NLAA conclusion. An NLAA conclusion can only be reached if all adverse effects are insignificant or discountable..

Conservation credits in the environmental baseline
This box provides guidance on how the WCR applies the regulatory term "environmental baseline" in ESA section 7 consultations on proposed actions that include the purchase of conservation bank credits. Conservation banks present a unique factual situation, and this guidance reflects that.

When NMFS is consulting on a proposed action that includes conservation bank credit purchases, it is likely that physical restoration work at the bank site has already occurred and/or that a section 7 consultation occurred at the time of bank establishment. A traditional reading of "environmental baseline," might suggest that the overall ecological benefits of the conservation bank actions therefore belong in the environmental baseline. However, under this reading, all proposed actions, whether or not they included proposed credit purchases, would benefit from the environmental 'lift' of the entire conservation bank because it would be factored into the environmental baseline. In addition, where proposed actions did include credit purchases, it would not be possible to attribute their benefits to the proposed action, without double-counting. These consequences undermine the purposes of conservation banks and also do not reflect their unique circumstances. Specifically, conservation banks are established based on the expectation of future credit purchases. Conservation banks would not be created and their net beneficial effects would not occur in the absence of this expectation. In addition, in the situation addressed here, i.e., credit purchases as part of a proposed action, those credits will also be the subject of a future section 7 consultation.

For these reasons, it is appropriate to treat the beneficial effects of the bank as accruing *in connection with and at the time of specific credit purchases*, not at the time of bank establishment or at the time of bank restoration work. This means that, in formal consultations on projects within the service area of a conservation bank, the beneficial effects of a conservation bank should be accounted for in the environmental baseline only when and to the extent that credit sales have already occurred. More specifically, the environmental baseline section should mention the bank establishment (and any consultation thereon) but, in terms of describing beneficial effects, it should discuss only the benefits attributable to credits already sold. In addition, in consultations that include credit purchases as part of the proposed action, the proportional benefits attributable to those credit purchase should be treated as effects of the action. Conversely, where a proposed action does not credit purchases, it will not receive any direct offset associated with the bank. This approach preserves the value of the bank for its intended purposes, both for the value of the credits to the bank proponent and the net conservation value of the bank to listed species and their critical habitat.

The approach should be explained when conducting formal consultations on the *establishment* of a conservation bank. In particular, a biological opinion analyzing the establishment of a bank should explain the expectation that: (1) the beneficial effects of the bank will not be considered in the environmental baseline of future consultations except to the extent that credits have already been sold; and (2) the beneficial effects associated with the bank will otherwise be attributed to credit purchases included in future proposed actions.

Another option is for NMFS to include conservation banking or ILF features within the conservation recommendations section of a biological opinion. Conservation recommendations are discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat. In this context, conservation banking and ILFs provide programs to assist federal action agencies in meeting their ESA section 7(a)(1) and 7(a)(2) responsibilities,

and provide a regulated, monitored and managed approach to minimize adverse effects of their actions. In some specific circumstances, it may be appropriate to include conservation banking or ILF requirements in an incidental take statement prepared after interagency consultation. NMFS staff should seek General Counsel advice regarding the facts of a particular section 7 consultation. As WCR staff engages in more programmatic consultations, conservation banks and ILF programs become a more plausible tool for federal action agencies to offset unavoidable impacts, particularly aggregate and synergistic effects that accrue at the spatial and temporal scale that makes effects easier to analyze and quantify.

Section 10 Incidental Take Permits/HCPs

Section 10(a)(1)(B) of the ESA authorizes the issuance of permits for the incidental take of endangered and threatened species to non-federal entities for the implementation of habitat conservation plans (HCPs). The purpose of the HCP is to ensure that the HCP minimizes and mitigates the adverse effects of the permitted action on covered species to the maximum extent practicable and that the action does not appreciably reduce the survival and recovery of the species. The USFWS has incorporated ILF program elements into HCPs providing a precedent for that approach in NMFS's program.

MSA and FWCA Consultations

Similarly, federal agencies consult with NMFS under the MSA and the FWCA. The MSA provides for designation of essential fish habitat in federal fishery management plans; requires federal agencies to consult with NMFS on actions that they authorize, fund, or undertake that may adversely affect EFH; and requires NMFS to recommend measures that the federal agency can take to conserve EFH. The FWCA allows federal agencies to coordinate and provide recommendations with the federal and state fish and wildlife agencies regarding the impacts of water resource development projects[6] on fish and wildlife resources and to give wildlife conservation equal consideration with the water resource development project. The FWCA expressly includes compensation for unavoidable losses to fish or wildlife, and the cost of mitigation can be included in project costs. Conservation banking and ILF programs can be used to help meet the consultation/coordination objectives of these statutes by providing opportunities to mitigate for project impacts.

VI. Conservation Banking for Species of the West Coast Region

Many existing conservation banks and some ILF programs target terrestrial or aquatic species with a narrow home range. Conservation biology science supports the application of conservation banking and ILFs to highly migratory species, such as salmon and steelhead (Myers *et al.* 1987, Gaines *et al.* 2010). For example, there has been a recent movement to link marine reserves in networks that connect ecologically significant habitats for migratory species using tools such as marine spatial planning (Gaines *et al.* 2010), typically with the goal of increasing species abundance at a local level (Gaines *et al.* 2010). Marine spatial planners have

[6] Except for projects that impound water with a surface area of less than ten acres or "activities for or in connection with programs primarily for land management and use carried out by Federal agencies with respect to Federal lands under their jurisdiction" (FWCA 1958).

recognized that location, size, spacing, and configuration influences network effectiveness, and that optimal size and spacing of marine reserves in a network is strongly influenced by the spatial and temporal movement of the target species (Gaines *et al.* 2010). Similarly, banks can protect key habitats for listed species.

Gaines *et al.* (2010) also describe that habitat representation and replication are important considerations that are generally applicable to establishing a network of reserves. Reserve placement in all major marine habitats (*i.e.*, representation) is a key network feature for meeting conservation goals, because marine species tend to segregate by habitat and often use different habitats during different life stages. Placement of multiple reserves in each habitat (*i.e.*, replication) promotes persistence as described above, but also provides insurance against catastrophes.

In the NMFS WCR, the Area Offices have established banks and ILF programs to benefit listed salmonids (XI. Appendix I). For example, the Fremont Landing Conservation Bank has enhanced floodplain habitat and connectivity in the Sacramento River and now provides critical high flow refugia for outmigrating smolts. Some have involved multiple agencies and an IRT (for example, the Cosumnes Floodplain Mitigation Bank has four agency signatories), others have NMFS as the sole signatory to their instrument.

VII. Development and Establishment of Conservation Banks and ILF Programs

A. Goals and Objectives

Conservation banks and some ILF programs will provide an efficient and effective mechanism to offset the adverse effects of actions that may adversely affect species and ecosystems with the overall purpose of contributing positively to their conservation. In wetland mitigation banking, the objective is to replace the type and function of impacted wetlands achieving a standard of "no net loss". In conservation banking, the objectives can focus on limiting factors and habitat functions contributing to survival and recovery of protected species.

To achieve these ends, conservation banks (and some ILF programs) should make use of species recovery plans, conservation strategies, and other plans and information to develop the goals and objectives for establishing individual conservation banks. Recovery plans and conservation strategies typically identify high priority areas, threats, and conservation needs and actions. This information can help conservation bankers and NMFS evaluate whether the banking concept, geographic location, size, and management for the species is appropriate. Recovery plans and other conservation strategies can help guide NMFS in evaluating whether creation of a conservation bank or ILF program in a particular service area will contribute to the conservation of ESA-listed species.

B. Establishment

Agencies and banker can establish conservation banks and ILF programs using an agreement called an "instrument." The instrument is the legal document for the establishment, operation, and use of the conservation bank or ILF program. In California, templates for a variety of

banking documents have been developed and approved by several agencies[7]. The instrument typically includes several exhibits such as a prospectus, maps, conservation/habitat development/management plan, operations and maintenance plan, biological resource evaluation, real records and property assessment, credit system and release schedule, bank endowment and management account, the conservation easement, and other documents regarding the commitments and assurances of the banker and the agencies.

As mentioned earlier in this document, conservation banks can take several forms. These forms include conservation banks focused on species and their habitat, and multi-resource banks that address, for example, both CWA section 404 aquatic resources and listed species. The bank form (or ILF targeted listed species) will determine the need to engage an IRT, coordinate with an IRT, or the extent of needed or desired communication. Multi-resource banks and ILF programs that cover CWA section 404 aquatic resources must involve the IRT for compliance with the 2008 Mitigation Rule and CWA section 404. For multi-resource banks that include CWA 404 resources, NMFS and banker coordination with the IRT will help inform the development of the species elements of multi-resource bank while ensuring the bank meets CWA section 404 mitigation requirements.

Conservation banks focused on species habitat and related values (including those established for other processes such as DARRP compliance, for example) can be established outside of the IRT process. While not required, communication to inform the IRT of conservation bank content helps build relationships between NMFS, the banker and the IRT that could be beneficial later.

C. Site Selection and Eligible Lands

Conservation banks are typically market-based enterprises. Market demand and site availability drive bank site selection. Conservation bankers target areas where there is property with resource values and likely conservation and mitigation demands. Prospective conservation bankers have contacted NMFS after locating a piece of property with resource value potential, looking for NMFS feedback whether a conservation investment makes sense for that property. When approached for this type of feedback, NMFS should provide technical assistance that the banker can use to decide whether to proceed with a prospective bank. Technical assistance could include an analysis of NMFS consultations in the prospective geographic area (service area) where the conservation bank's or ILF program's credits may be used to compensate for a project's or program's adverse effects, and expected development or projects that may require mitigation. It should also consider the biological significance of a bank site under the overall context of species viability and other factors that define utility of the site to ESA-listed or other managed species in view of their conservation needs.

[7] In California, NMFS is signatory to a Memorandum of Understanding (MOU) with seven other agencies involved in banking, including the COE, EPA, and California Department of Fish and Wildlife. Among other things, the MOU directed the development of template documents to streamline agency review and approval of banks. Templates can be found on the following websites: COE SF District at http://www.spn.usace.army.mil/Missions/Regulatory/MitigationBanks.aspx, and California Department of Fish and Wildlife at http://www.dfg.ca.gov/habcon/conplan/mitbank/templates.html

A conservation strategy or other framework that identifies regional conservation goals, objectives, and criteria for restoration should guide site selection. NMFS, the IRTs, tribes, and others have many sources of information (such as recovery plans for ESA-listed species) to inform site selection and restoration designs that will promote the long-term survival and recovery of target species based on contributing to their specific ecological needs in certain locations. When providing technical assistance, NMFS WCR should consider geography and species-specific knowledge of a bank site under the overall context of species viability and other factors that define utility of the site to ESA-listed or other managed species in view of their conservation needs. The existence of designated critical habitat may be relevant because, as indicated above, NMFS should not seek to offset adverse effects to critical habitat with conservation bank credits from non-critical habitat. For landscape scale planning efforts such as county general plans or cooperative regional conservation plans, those plans can provide valuable sources to guide site selection. NMFS is already involved in such cooperative efforts in California (for example in the Sacramento - San Joaquin Delta), Oregon (for example in Portland Harbor), and Washington (for example in Puget Sound).

NMFS should encourage prospective bankers to select sites that contribute, if possible, to larger interconnected preserves with greater ecological value. Bank sites should be ecologically relevant and should address identified limiting factors, as identified in recovery plans or other technical documents that address conservation strategies. Consistency with recovery plans and other watershed-based plans can add credibility to the anticipated value of a proposed bank site. Banks should preserve, restore, and enhance ecosystem functions for the benefit of targeted, listed species relevant to the life history expressed in and around the prospective site. Conservation value evaluation will assist NMFS and conservation bank sponsors in developing ecologically meaningful crediting systems and performance criteria.

Bankers and ILF sponsors can establish conservation banks and ILF receiving sites on lands where managing agencies maintain or will maintain habitat in the future. Land used to establish conservation banks and ILF programs must not be previously designated for conservation purposes (*e.g.*, parks, green spaces, municipal watershed lands), unless the proposed designation as a bank would add additional conservation benefits. Where conservation values have already been permanently protected or restored under other federal, state, tribal, or local programs benefitting ESA-listed species, the bank design and credit system would need to demonstrate an ecological improvement that benefits the species that would not occur but for the establishment of the bank.

In 2000, NMFS developed the viable salmonid population (VSP) concept as a working framework for assessing species viability (McElhany *et al.* 2000). Under this framework, salmonid viability is determined using four basic parameters: (1) population abundance, (2) population growth rate, (3) population spatial structure, and (4) diversity. Although developed specifically for salmon and steelhead, the VSP concept can be readily applied to other species and is a useful framework to consider when evaluating how proposed conservation bank sites might affect the viability of individuals, populations, or evolutionary significant units (ESUs) and distinct population segments (/DPSs). (Cannon and Brown, *in* Carroll *et al.* 2008). Using the framework provides a useful tool in evaluating proposed sites and service areas.

D. Service Area

A service area defines the geographic area where the conservation bank's or ILF program's credits may be used to compensate for project debits (adverse effects). The service area should be ecologically relevant and based on the conservation needs of the target species. Service areas should not be larger than appropriate to ensure that the resources provided though the bank will effectively compensate for project or program impacts, and ultimately support aspects of species population viability for the populations of species that express life histories in the service area.

Generally, service areas should be limited to the appropriate scale, e.g. population, major population group or stratum, and not include the entire range of a species, ESU, or DPS. However, NMFS staff may consider exceptions to this general rule when they benefit the species, for example, for banks in estuaries or other locations that provide services for multiple populations or address key limiting factors. In certain limited situations, flexibility should be considered for projects outside the service area for a conservation bank, where the use of the bank will address adverse impacts to the target listed species or critical habitats adversely affected by the proposed project. Ultimately, NMFS staff should consider service area flexibility where species would benefit. NMFS, the banker, and the other relevant agencies or parties can negotiate conditions controlling out-of-service area flexibility.

E. Conservation Easement or other Protective Covenants

A conservation easement is a voluntary agreement that allows a landowner to limit the type or amount of development on their property while retaining private ownership of the land. Conservation easements and other similar covenants are used in conservation banking to guarantee that the lands within the conservation bank will remain as high functioning habitat, and not be developed or degraded at some future date. Any activities inconsistent with the purposes of the conservation bank are restricted under the easement. A conservation easement will capture and perpetually govern underlying commitments as conservation easements bind future owners.

F. Credit Systems

Every conservation bank and ILF program uses a credit system to evaluate the resources in the bank and create a currency on which to conduct conservation bank or ILF program transactions. Credits represent a unit of measure for the biological resources that the banker restores, establishes, enhances, or preserves at a bank or in-lieu project site (Bonnie and Wilcove *in* Carrol *et al.* 2008). There are many credit systems and evaluation models, with several varied methods presently in use or under consideration in the NMFS WCR. In California and Oregon, multi-resource banks have used acres of specific habitat types, or linear feet of stream with buffers. Washington State developed a credit/debit tool to support the CWA 404 mitigation banking and ILF program, and individual bank and ILF sponsors have developed credit/debit models in use specifically for their programs (e.g. the King County Mitigation Reserves Program and Hood Canal Coordinating Committee ILF). Those Washington credit/debit methods use combinations of multipliers or ratios, generally of area (typically acres) of resource types at the bank and project site, to evaluate transactions. For conservation banking in Oregon and Washington,

NMFS introduced the use of habitat equivalency analysis (HEA) as one model by which agencies and bankers can evaluate both credits and debits. This guidance includes a brief explanation of HEA inXII. Appendix II. The important challenge in determining which method works for a particular proposal is to ensure the method chosen is rational and ecologically relevant.

Bankers and agencies can quantify credits through various methods. Credits may be based upon a number of ecologically relevant criteria such as preserving or creating specific habitat types, or by quantifying ecologically relevant management activities such as changes in river flow or quantified improvements in migratory success or survival. Staff should ensure that bank preservation credits be based on the ecological value of the bank at the time the bank agreement is established. Because populations may vary in size due to natural dynamics, credits should not be based on the abundance of individuals. In general, NMFS staff can ensure consistency of the credit-debit currency by expressing and measuring credit and adverse effects using the same models or tools. For example, if a development project will permanently remove some amount of habitat acreage or linear feet of riparian habitat, then the bank's credits should be expressed in terms of acreage or linear feet of similar riparian habitat.

Quantifying the area of habitat loss and incorporating a temporal factor to account for the time it takes for new habitat to establish and replace the functions can be useful in the credit/debit method, if needed. One common method uses ratios of impact to mitigation credit. To avoid underestimating needed offsets, the Washington Department of Fish and Wildlife mitigation policy (1999) specifically requires ratios greater than one-to-one to account for temporal losses, uncertainty of performance, and differences in functions or values. In contrast, the HEA model is based on economic theory, incorporates temporal losses, and allows for comparison of different types of habitat at the credit and debit sites.

Finally, per provisions in the bank instruments, agencies control the release of credits available over time according to an agreed upon schedule tied to the achievement of financial and ecological performance criteria. Credit release may include an initial release, typically limited to a small percentage of the total eventual value of the bank. Initial releases provide a source for credit transactions that generate funds bank sponsors may use to continue habitat development and management on their bank sites. Additional credit releases occur by agreement provided in the instrument, typically after review and approval by the parties to the instrument and the IRT, if there is one. For multi-resource banks, the parties must agree on an accounting method to ensure bankers will not sell credits more than one resource impact, unless the resource impacts completely overlap (thus avoiding multiple sales of credits in inappropriate ways, i.e. "double dipping").

NMFS has established an inter-agency agreement with the COE to track credits via the Regulatory In-Lieu Fee and Banking Tracking System (RIBITS)[8]. The RIBITS provides online tracking of mitigation and conservation bank activity and ILF program activity, including contacts, service areas, credit ledgers, and bank documents. It allows NMFS (and USFWS) to approve pending transaction that affect credits for species and their habitats under the

[8] RIBITS is available at the following website: http://geo.usace.army.mil/ribits/index.html

jurisdiction of the Services. The system is transparent and accessible to staff, bankers and other stakeholders.

VIII. Guidance for Supporting Conservation Banking Proposals

This document provides guidance relevant to NMFS' review and support of stand-alone (non-CWA 404) conservation bank proposals.

The CWA section 404 mitigation bank process established in the CWA 2008 Mitigation Rules requires that bankers and agencies participate in the IRT process co-chaired by EPA and COE for proposed mitigation banks and ILF programs. As mentioned above, NMFS should consider participating in the IRT process for multi-resource banks that will contain both mitigation and conservation bank credits. Conservation banks established exclusively for ESA transactions and with no CWA section 404 mitigation credits do not need to adhere to the IRT process, but as noted in section VI above, communication with an IRT draws on the expertise of other agency partners and NMFS strongly recommends communication with the IRT chairs. In addition, some banks might be established where the agencies have an existing agreement (e.g. the California 8-agency MOU) to process proposals in a particular way and those agreements should be respected by NMFS staff.

We also recommend coordination with DARRP trustees when the conservation bank is an overlay of a DARRP restoration site. Typically, NOAA will be a trustee so coordination on the process components of the review and approval of a bank site should be smooth because the DARRP restoration site will already provide for the habitat and life-stage needs of the NMFS trust species.

A. Guidance for NMFS Administrative Process (internal)

The following sections provide guidance for reviewing and documenting support for conservation banking proposals. The process will vary depending on whether or not the proposed bank has a CWA section 404 element (i.e. a multi-resource bank with conservation credits).

1. Receipt and Assignment. Presently, NMFS has no standardized way of engaging new bank proposals and has done so in many ways. Generally, as NMFS's role in conservation bank development increases, NMFS will develop a standardized approach to the process of receiving and assigning bank projects to staff. Depending on whether a conservation bank proposal has a CWA section 404 nexus, an IRT chair might contact NMFS with a request to participate in the IRT. Bank sponsors might contact NMFS directly for conservation banks with no CWA section 404 nexus. Contacts might include simple requests for the opportunity to discuss a prospective project or a more formal request to review a prospectus or similar document describing their banking proposal to the appropriate Branch Chief. NMFS has also reviewed and signed an umbrella conservation program; in this document, the bank sponsor defines the context and terms for subsequent individual banks within the geography of the umbrella bank. The Branch Chief should work with staff to determine appropriate points of contact in other agencies

and tribes with a potential interest in the proposal, including, but not limited to the area IRT chairs.

2. Staff Review. For CWA section 404 mitigation banks that will cover mixed resources, lead staff should participate in the IRT. For conservation banks with no CWA section 404 connection, lead staff should engage the prospective bank sponsor directly. For banks based on other processes such as those driven by the DAARP, NMFS staff should generally coordinate with NOAA staff on the Trustee Council, and provide technical advice in support of the development of DAARP restoration sites. This greatly facilitates conservation bank overlay that will allow for the use of credits for both ESA transaction and DAARP restoration requirements. Staff should review and comment on all documents in the process, focusing on the ecological design and elements of conservation value of the proposed bank. Lead staff should coordinate and communicate with technical experts and other stakeholders to assure a prospective banker receives the best available scientific and technical input. Lead staff should also initiate, and work with their Branch Chief to assure complete tribal coordination as needed.

3. Management Review. Lead staff should work with the Branch Chief to ensure they brief NMFS Area Office Assistant Regional Administrator (ARA), as needed, during bank development, review, and documentation of NMFS' support.

4. Legal Review. Lead staff should engage NOAA General Counsel (GC) early in the bank development process, ensuring GC are prepared to identify legal issues (if any) concerning NMFS's rights, commitments, and liabilities where NMFS proposes to sign bank legal documents, and discuss these issues in advance of completing the bank instrument. Lead staff should coordinate GC review of the bank instrument in sequence with staff level and IRT (if there is one) review and revision.

5. Conservation Bank Support. The NMFS' support for a conservation bank can be signified by one of several methods ranging from a NMFS letter of support for District Engineer approval (for banks going through the IRT process), to NMFS signing the instrument (for conservation banks or multi-resource banks to which NMFS is a party). NMFS will signify support for a Conservation Bank by the area office ARA[9] signing the conservation banking instrument as a party to the agreement. After legal review and document completion, lead staff transmits the appropriate package of documents, through the Branch Chief, to the ARA. If staff have not already briefed the ARA, the transmittal memo should summarize the proposed location, function and purpose of the conservation bank; confirm that the GC (NOAA and DOC as appropriate) cleared the agreement; and describe the level of interagency and tribal review and cooperation that has contributed to the current agreement.

6. ESA/NEPA Compliance for Bank Support. NMFS' support for a conservation bank may create a nexus for NEPA review and ESA consultation, but this will depend on the specifics of the conservation bank, and the nature of NMFS' support. NMFS will comply

[9] The WCR is pursuing the delegation of signature authority for conservation banking documents; it is our intent that the signature authority for a bank instrument be delegated to the area office ARA.

with NEPA when supporting banking proposals. COE permit issuance to construct habitat improvements at the bank site or other federal agency associated with the establishment of a conservation bank might trigger NEPA review and ESA consultation. However, each banking agreement will require an internal NMFS section 7 consultation.

7. Use of the Bank. As appropriate and consistent with the implementation procedures used under the ESA and MSA, NMFS staff commonly inform project applicants and other federal action agencies of their avoidance, minimization, conservation and compensatory mitigation opportunities to offset the effects of certain proposed actions. NMFS staff should inform action agencies and project applicants of NMFS-approved conservation banks or ILF programs that may provide species or habitat mitigation or conservation services within their action area and encourage their use if it would lead to the best available biological result for the species. This does not mean that agencies are required to use NMFS-approved conservation banks, only that NMFS staff is encouraged to discuss such opportunities in the context of providing technical assistance, including in the context of ESA section 7 consultations.

B. Questions for NMFS Staff Reviewing Bank Proposals

The selection, review and support of banks should be considered in the context of the best available information regarding the conservation and recovery of listed species supported by restored and/or enhanced habitat conditions (habitat lift) created at the bank property. The following questions can assist NMFS staff working on proposals as they move forward with a banker toward bank or ILF program support. The questions help screen the biological or ecological value of the action, ensure consistency with regional conservation strategies, maintain coordination with other agencies, and evaluate the ability of the bank or ILF program to provide certain ecological offsets appropriate to debit projects in the service area.

1. Is the conservation bank or ILF program located in a high priority conservation area for NMFS target species as described in species recovery plans or other similar species conservation strategies? Is it within designated critical habitat?

2. Does the conservation bank or ILF program provide a clear conservation benefit to the target species?

3. Are the preservation and/or restoration plans for the proposed conservation bank or ILF program consistent with the strategies, goals or objectives within relevant species recovery plans or other similar species conservation strategies?

4. Are the proposed preservation and restoration actions technically and biologically or ecologically feasible?

5. Does the proposed conservation bank or ILF program provide preservation, restoration, or enhancement credits commensurate with the conservation and recovery needs of target species in the service area?
6. Are unavoidable effects expected within the proposed service area? In other words, is the bank likely to be financially and ecologically viable?

7. Does the conservation bank or ILF program credit release schedule include physical and/or biological performance criteria necessary to ensure that the bank will be meeting species and habitat goals and objectives?

8. Does the conservation bank or ILF program include sufficient dedication of resources to ensure that the physical and biological goals and objectives of the bank will be met in perpetuity?

9. Have other federal and/or state agencies been given adequate opportunity to participate as signatories to the ILF program or conservation bank and have they been advised of the bank's development as may be described in regional or statewide interagency banking coordination agreements or understandings?

C. Questions for NMFS Staff Considering Using Credits to Offset Unavoidable Impacts

NMFS staff reviews proposed project activities and programs and may negotiate with the action agency or project proponent to reduce the effects of the activity. This may include modifications to the activity to avoid or reduce effects, or terms and conditions required to minimize take to listed species and critical habitat. Often, however, a project will cause unavoidable impacts to listed species and their habitats. In that case, a conservation bank or ILF program may be the best option to offset those impacts. The following are some questions NMFS staff may answer as they consider the use of a conservation bank or ILF program.

1. Does the project have unavoidable impacts or contribute to aggregate or synergistic effects detrimental to the species?

2. Is the project proponent willing to consider compensation as part of the project description?

3. Is the lead federal action agency willing to include compensation as a permit condition?

4. Is there a conservation bank or ILF program with a service area that encompasses the action area and that addresses key limiting factors?

5. How much compensation is adequate to offset the impacts expected? How best to equate impacts to credits?

IX. Next Steps

A. Process Guidance. The WCR Conservation Banking Team will develop a process guidance document that tiers to this document; this new guidance will outline a recommended process and documentation for the engagement, review and use of conservation banks and ILF programs. We intend this document will aid NMFS as they engage and negotiate with bank sponsors and bank users.

B. Training and Support. The WCR Conservation Banking Team will provide training to WCR staff when requested. The training will focus on the following: (1) the process recommended for the review and support of future conservation banks and ILF programs; (2) a conceptual framework for using banks and ILF programs in ESA section 7 consultations and other ESA authorities; (3) ideas on the promotion of banks and ILF programs to potential bank sponsors and federal action agencies.

X. Literature Cited

Cannon, T. and H. Brown. 2008. Fish Banking. In: Conservation and biodiversity banking: a guide to setting up and running Biodiversity Credit Trading Systems. Edited by Nathaniel Carroll, Jessica Fox, Ricardo Bayon. Earthscan.

Carroll, N., Fox, J., and R. Bayon. 2008. Conservation and biodiversity banking: a guide to setting up and running biodiversity credit trading systems. Earthscan, London UK.

CNRA, CDFG, USACE, USFWS, NMFS, USEPA, USDA, NRCS. 2006. Memorandum of Understanding concerning mitigation and conservation banking in California.

CNRA, CDFG, USACE, USFWS, NMFS, USEPA, USDA, NRCS and SWRCB. 2011. Memorandum of Understanding concerning mitigation and conservation banking and in-lieu fee programs in California.

Fox, J. and A. Nono-Muncia. 2005. Status of species conservation banking in the U.S. Conservation Biology, vol. 19 no 4, pp. 996-1007.

Gaines, S., C White, M.H. Carr and S.R. Palumbi. 2010. Designing marine reserve networks for both conservation and fisheries management. Proceedings of the National Academy of Sciences. Vol. 107 no. 43 18286-18293.

King, D.M., and E.W. Price. 2006. Developing defensible wetland mitigation ratios: Standard tools for "scoring" wetland creation, restoration, enhancement, and conservation. Prepared for NOAA Office of Habitat Protection. Available at: http://www.kingeconomics.com/pubs/NOAA%20WetMitRatio.pdf.

McElhany, P; M.H. Ruckleshaus; M.J. Ford; T.C. Wainwright; and E.P. Bjorkstedt. 2000. Viable Salmonid Populations and the Recovery of Evolutionarily Significant Units. U.S. Department of Commerce, NOAA Technical Memorandum, NMFS-NWFSC-28. Available at: http://www.nwfsc.noaa.gov/assets/25/5561_06162004_143739_tm42.pdf

Myers, J.O, R.I.G Morrison, P.Z. Antas, B.A. Harrington, T.E. Lovejoy, M. Sallaberry, S.E. Senner, and A. Tarak. 1987. Conservation strategy for migratory species. American Scientist. Vol. 75, no. 1, pp. 18-26.

NRC (National Research Council). 2001. Compensating for Wetland Losses Under the Clean Water Act. National Academy Press ,Washington, DC.

Ray, Gary L. 2009. Application of Habitat Equivalency Analysis to USACE Projects. ERDC TN-EMRRP-EL-04. April 2009.

Scheerer P.D. and T.A. O'Niell. 2010. A species crediting methodology that supports conservation banking for an endangered floodplain minnow. Fisheries. Vol. 35(6), page 280.

Sommer, T. R., M. L. Nobriga, W. C. Harrell, W. Batham, and W. J. Kimmerer. 2001. Floodplain Rearing of Juvenile Chinook Salmon: Evidence of Enhanced Growth and Survival. Canadian Journal of Fisheries and Aquatic Science Volume 58: 325-333.

Stratus Consulting Inc. 2003. A Nationwide Survey of Conservation Banks. Prepared for the NMFS Northwest Fisheries Science Center. Available at: http://www.st.nmfs.noaa.gov/st5/documents/Stratus%20Consulting_Conservation%20Banking_Final.pdf

USACE. 2007. Programmatic biological assessment for the Sacramento River Bank Protection Project, Phase II. Final. Contract No. W91238-05-D-0009. Prepared by Stillwater Sciences, Davis, California for USACE, Sacramento District, Sacramento, California.

USFWS. 2003. Guidance for the establishment, use and operation of conservation banks. Memorandum to the regional administrators, regions 1-7, manager California Nevada operations. USDOI/USFWS, Washington D.C.

Washington Department of Fish and Wildlife. 1999. Requiring or recommending mitigation. POL-M5002. Available at: http://wdfw.wa.gov/hab/ahg/polm5002.htm.

XI. Appendix I

CURRENT STATUS OF CONSERVATION AND MITIGATION BANKING NOAA FISHERIES WEST COAST REGION AUGUST 2014

NOAA's National Marine Fisheries Service's (NOAA Fisheries) West Coast Region is currently engaged in a number of conservation banking activities including operation of established bank sites, developing new banks, developing regional and state-wide mitigation initiatives with state agencies, and interagency efforts to improve and maintain consistent coordination. A summary of these banking efforts is described below. Additional proposals for NMFS conservation banks are under review.

Fremont Landing Conservation Bank

- Located on a floodplain adjacent to the Sacramento River at the confluence of the Feather River in Yolo County, CA
- Established in 2006 by NMFS
- 100 acres
- NMFS targeted species: Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and California Central Valley steelhead
- Credits available for riparian floodplain forest, both riverbank shaded riverine habitat and off channel shaded riverine habitat
- Service area is defined by the Central Valley Chinook ESUs and Central Valley steelhead DPS. Including portions of Tehama, Shasta, Glenn, Butte, Colusa, Sutter, Yuba, Placer, Yolo, Solano, Sacramento, Amador, Contra Costa, San Joaquin, Calaveras, Alameda, Stanislaus, Tuolumne, Merced, and Mariposa Counties
- Contacts: Dylan VanDyne, NMFS Central Valley Office; Dylan.VanDyne@noaa.gov
  Julie Maddox, Wildlands Inc. (916) 435-3555; jmaddox@wildlandsinc.com

Blue Heron Slough Conservation Bank

- Location in the Snohomish River estuary, Everett, Washington
- Established by Addendum No. 1 to the Puget Umbrella Agree with Wildlands, Inc. in 2008; Addendum No. 1 revised in 2014.
- 354 acres (conservation easement covers 344 acres)
- NMFS species include Puget Sound Chinook salmon (Onchorhynchus tshawytscha), Steelhead (O. mykiss). Could also address habitat needs for Bull trout (Salvelinus confluentus)
- Credits derived in discount service-acre years using Habitat Equivalency Analysis based on importance of future (but presently non-existent) juvenile rearing habitat for salmon when the restoration is completed.
- Service area occupies a portion of Snohomish River Basin, through the Snohomish River estuary, and southward for a portion of the Puget Sound ending at the northern end of Vashon Island.
- Contacts: David Hirsh, NMFS Oregon Washington Coast Area Office; david.hirsh@noaa.gov; Julie Maddox, Wildlands Inc. (916) 435-3555

Liberty Island Conservation Bank

- Located at the southern end of the Yolo Bypass on the north east portion of Liberty Island in the Sacramento-San Joaquin River Delta in Yolo County, CA
- Established in 2010, by USFWS, CDFW, and NOAA Fisheries
- 186 acres
- NMFS targeted species: Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and California Central Valley steelhead
- Credits available for shaded riverine aquatic cover and apply to tidal channels and marsh, riparian and seasonal floodplain habitats
- Service area is defined by the legal boundaries of the Sacramento-San Joaquin River Delta, including portions of Yolo, Solano, Sacramento, San Joaquin, Contra Costa, and Alameda Counties
- Contacts: Brycen Swart, NMFS Central Valley Office; Brycen.Swart@noaa.gov
  Julie Maddox, Wildlands, Inc. (916) 435-3555; jmaddox@wildlandsinc.com

North Delta Fish Conservation Bank

- Located at the southern end of the Yolo Bypass adjacent to the Liberty Island Conservation Bank in the Sacramento-San Joaquin River Delta in Yolo County, CA.
- Established in 2013 by USFWS, CDFW, and NOAA Fisheries (Note, as of August 20, USFWS and CDFW are still reviewing)
- 811 acres
- NMFS targeted species: Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and California Central Valley steelhead
- Credits are available for shaded riverine aquatic cover, and apply to tidal channels and marsh, riparian and seasonal floodplain habitats
- Service area is defined by the legal boundaries of the Sacramento-San Joaquin River Delta
- Contacts: Brycen Swart, NMFS Central Valley Office; Brycen.Swart@noaa.gov
  Cindy Tambini, Wildlands, Inc. (916) 435-3555; ctambini@wildlandsinc.com

Cosumnes River Mitigation Bank

- Located on a floodplain adjacent to the Cosumnes River at the confluence of the Mokelumne River, in southern Sacramento County.
- Established in 2009, by Corps, EPA, CDFW and NOAA Fisheries
- 472 acres
- NMFS targeted species: California Central Valley steelhead and Central Valley fall-run Chinook salmon
- Credits available for shaded riverine aquatic habitat, riparian habitat and perennial and seasonal wetland habitats
- Service area is defined by the legal boundaries of the Sacramento-San Joaquin River Delta
- Contacts: Monica Guttierez, NMFS Central Valley Office; Monic.Guttierez@noaa.gov
  Travis Hemmen, Westervelt Ecological Services. (916) 646-3644;
  themmen@westervelt.com.

East Austin Creek Conservation Bank, Phase I

- Located on Austin Creek, a tributary to the lower Russian River in Sonoma County
- Established in 2010 by NOAA Fisheries
- 144 acres
- Phase 2 of the bank proposes future addition of an adjacent 296-acre parcel (440 acres total).
- NMFS targeted species: targets Central California Coast (CCC) coho and steelhead
- Credits for riparian and upland habitats that maintain natural stream processes
- Service area is a 2-tiered system. The primary service area includes the entire Russian River watershed, a portion of Mendocino County, most of Sonoma County, and all of Marin County, and may be utilized for mitigation and conservation. The secondary area includes the entire CCC coho and steelhead ESU/DPS, and may be used for conservation purposes.
- Contacts: Maura Eagan Moody, NMFS North Central Coast Office; Maura.E.Moody@noaa.gov
  Nancy Summers, East Austin LLC, (707) 833-5027, summersng@saber.net

Conservation Banks associated with the Portland Harbor Superfund Site

- Located in the lower Willamette River, Oregon
- The Portland Harbor trustees are working with numerous entities to develop restoration sites to settle NRDA liabilities. The first of those sites, Alder Creek, began construction in summer 2014.
- Some entities are interested in creating overlay banks with credits available for both NRDA settlements and ESA mitigation.
- Contact: Nancy Munn, NMFS Interior Columbia Basin Office, (503 231-6269, nancy.munn@noaa.gov

XII. Appendix II

Habitat Equivalency Analysis

Introduction

Information presented in this appendix was derived primarily from a NOAA document titled "Habitat Equivalency Analysis: An Overview" (Damage Assessment and Restoration Program NOAA Department of Commerce, March 21, 1995 (Revised October 4, 2000 and May 23, 2006)). Habitat Equivalency Analysis (HEA) was originally developed as a methodology to determine compensation for injuries to natural resources in Natural Resource Damage Assessments (NRDA) under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"; 42 U.S.C. § 9601 et seq.), the Clean Water Act (33 U.S.C. § 1251 et seq.) , the National Marine Sanctuaries Act (16 U.S.C. § 1431 et seq.), and the 1990 Oil Pollution Act ("OPA"; 33 U.S.C. § 2701 et seq.). The principal concept underlying the method is that the public can be compensated for past losses of habitat resources through habitat replacement projects providing additional resources of the same type. Natural resource trustees have employed HEA for groundings, spills and hazardous waste sites. Habitats involved in these analyses include seagrasses, coral reefs, tidal wetlands, salmon streams, and estuarine soft-bottom sediments. Increasingly, NMFS seeks to use HEA as a framework for evaluating the habitat content of conservation banks. HEA may also be a useful tool for producing information relevant to the ESA effects analysis of a proposed action that will make use of conservation bank transactions.

Natural Resource Damage Assessments and Habitat Equivalency Analysis

Completing a natural resource damage claim requires primary restoration of the damaged resources to baseline conditions, compensation for the interim loss of those resources until the restoration matures to baseline conditions, and the reasonable costs of performing the damage assessment. Ensure one-to-one replacement of services provided by the affected resources requires identifying and quantifying injury, developing primary and compensatory restoration actions, and scaling restoration to ensure replacement occurs. To scale restoration actions, NOAA uses HEA.[10]

For compensatory restoration actions, the scaling question is: what scale of compensatory restoration action will compensate for the interim loss of natural resources and services from the time of the incident until full recovery of the resources? There are two major scaling approaches: the valuation approach and the simplified service-to-service approach, which applies under certain conditions.

The HEA is an example of the service-to-service approach to scaling. In seeking to ensure a one-to-one replacement of lost habitat services with restoration project services NOAA uses HEA in assuming a one-to-one trade-off in the services the damaged or lost resources provide. For example, rather than focusing on replacing a lost acre of marsh with another acre of marsh, HEA enables the user to ensure that the services provided by that particular lost acre are replaced on a

[10] This description characterizes the process outlined in the natural resource damage assessment (NRDA) regulations implementing OPA (15 CFR Part 990) and in the proposed statutory changes to the CERCLA NRDA provisions (43 CFR Part 11).

one-to-one basis. The HEA thus enables the user to determine how many acres of less productive marsh would be needed to fully supply to services formerly supplied by the lost marsh. HEA is applicable so long as the services provided are comparable. The assumption of comparable services between the lost and restored habitats may be met when the proposed restoration action provides services of the same type and quality, and of comparable value as those lost due to injury. In this context, there is a one-to-one tradeoff between the resource services at the compensatory restoration site and the injury site. Therefore, the scaling analysis simplifies to determining the scale of a restoration action that provides a quantity of discounted replacement services equal to the quantity of discounted services lost due to the injury.

Habitat Equivalency Analysis Use in Conservation Banking

Following on the process used to evaluate natural resources damages, the damages from lost services caused by the development projects can be analyzed using HEA. However, instead of using HEA to scale restoration project service values to those damages, HEA can be used to ascertain the number of credits to be purchased from a conservation bank to replace the lost services on a one-to-one basis.

HEA and Credit Systems

Conservation bank credits quantify the conservation value of a bank in a currency that calibrates to the extent of habitat services provided in an already restored habitat for listed species. The NMFS Habitat Equivalency Model (HEA) accommodates initial habitat values, and calculates values for expected future habitat values using an Excel spreadsheet. The process for using the HEA spreadsheet for is explained in detail in other NMFS resources, such as the Washington State Habitat Office's Guidance for using the Blue Heron Conservation Bank, which provides the example for using the HEA spreadsheet described below.

The HEA thus provides a way to evaluate a site's value to a species in a manner that correlates ecological function of all habitats present before and after restoration, and quantifies the improved ecological function achieved through restoration. Necessary conditions for the applicability of HEA include that (1) a common metric (or indicator) can be defined for natural resource services that captures the level of services provided by the habitats and captures any significant differences in the quantities and qualities of services provided by injury and replacement habitats, and (2) the changes in resources and services (due to the injury and the replacement project) are sufficiently small that the value per unit of service is independent of the changes in service levels.[11] For conservation banking in NMFS's West Coast Region, Discounted Service-Acre-Year ("dSAY") was selected as the metric for evaluating the quantity and quality of services provided per unit of habitat. The calculation of debits and credits is the heart of the process. The process of evaluating project debits from adverse effects on habitat effects can be a relatively subjective exercise. To ensure consistent HEA use requires staff-wide coordination and familiarity with the basis for the bank's initial credit evaluation.

[11] A counterexample shows when this condition is not satisfied. Consider the value of harvesting another salmon when salmon are in abundant supply versus the value of another salmon when the harvest has failed in Alaska. The value of providing another pound of salmon may be substantially greater when the salmon are in scarce supply, all else equal.

Using the HEA Spreadsheet

The following steps cover the input of values in the HEA spreadsheet, enabling the calculation of habitat conservation debits in the same currency as the bank credits comprising the Blue Heron Conservation Bank in Snohomish County, Washington. The HEA spreadsheet will provide outputs in a number of dSAYs. Using the HEA tool, HCD program staff can discuss project effects and desired future conservation goals in terms of numbers of dSAYs.

The steps:

1. First, derive a value of the "Initial Value of the Habitat" input in the mini-HEA tool. The consultation biologist must determine the value of existing habitat in the action area for habitat types to be affected by the proposed action. For the Blue Heron Conservation Bank, NMFS developed a reference table as these values have already been assessed and approved by NMFS for the valuation of credits in the Blue Heron Conservation Bank. Referring to the bank's existing valuation and coordination with other staff will ensure consistency in this otherwise potentially subjective process step. Assign pre-project habitat values for each habitat type.

2. Next, derive a value for the "Years to a Fully Functioning Condition" input in the mini-HEA tool. The number of years required for the habitat types evaluated above to achieve fully functioning conditions:

    a. For projects causing habitat loss, always use 0.1. For restoration projects, evaluate using best professional judgment on the likely length of time the restored habitat will require to mature to fully functioning.

    b. Decide on the number of years to achieve recovery from construction impacts to post-project values (this is where the HEA helps evaluate the interim habitat services values important to scaling as mentioned above).

3. Next, the consultation biologist must derive post-project habitat values for the "Value of Restored Habitat" input in the mini-HEA. Complete this step each of the same habitat types evaluated in step 1. The post-project values reflect the maximum final value the habitat can reach after construction.

    a. This is the maximum (final) value that each habitat type is expected to attain. Determine the size of each habitat type. Again, for the Blue Heron Conservation Bank, NMFS prepared a table of assigned habitat values for the post-project habitat for each affected habitat type in the bank. The values will be different for different banks based on their derivation from the salmonids life history supported at the bank site.

    b. If the project involves major construction impacts that will degrade the habitat values below the post-project values assigned under 3a), you can assign post-construction values in addition to the post-project values. The post-construction values reflect the condition of the habitat caused by the effects of construction.

4. Calculate dSAYs by entering the values derived in each of the preceding steps. Enter existing and post-project habitat values, years till fully functioning conditions are achieved, and size of each habitat type in the HEA input tool.

5. Determine whether your project calls for crediting and/or discounting factors. Simply stated, certain factors can increase or decrease the overall value of a site. When calculating the overall ecological credit value for a site, the size, shape, habitat type, and location, among other things can increase or reduce the value of a restoration or impacted site.

    a. How Size Influences Crediting or Discounting. A single large site is superior to several smaller sites of equivalent total area because larger projects typically allow more diversity to develop and provide easier access to animals. Furthermore, a single, larger project would probably be more resistant to stressors and be more resilient following disturbances.

    b. How Habitat Type, Shape, and Location Influences Crediting or Discounting. It is highly desirable to avoid impacts to or restore specific types of habitats that are locally limiting and have been identified in recovery documents. For example, historically, there were about 7,500 acres of estuarine habitat in the Snohomish watershed east of the I-5 corridor. Currently, only about two percent of that amount (i.e., Otter Island) is fully functional. Blue Heron will add five percent more habitat when fully restored.