

**National Oceanic and Atmospheric Administration - Restoration Center
General Consistency Determination – Southern California
California Coastal Commission**

January 27, 2016

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I. BACKGROUND AND OVERVIEW OF REPORT

The National Oceanic and Atmospheric Administration - Restoration Center (NOAA RC) is submitting this federal General Consistency Determination (CD) for its Community-based Restoration Program (CRP or “Program”) in compliance with Section 930.34 et seq. of NOAA federal consistency regulations (Title 15 CFR Part 930). Under Section 307(c)(1) of the Coastal Zone Management Act (CZMA), as amended, federal agency activities that may affect any land or water use or natural resource of the Coastal Zone are required to be consistent with the affected state’s coastal management program to the “maximum extent practicable.” Section 930.32 of NOAA’s regulations implementing the CZMA (15 CFR Part 930) defines “consistent to the maximum extent practicable” as “fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.”

The standard of review for federal consistency determinations consists primarily of the principal component of the California Coastal Management Program (CCMP), namely the policies of Chapter 3 of the California Coastal Act. This CD provides details on the role of NOAA RC, the CRP project selection process, types of qualifying projects, standard environmental protection requirements, regulatory processes, monitoring, and project follow-up. In addition, this CD provides an analysis of the Program’s consistency with the policies of the Coastal Act. Based on this analysis, NOAA RC has concluded that the Program is consistent to the maximum extent practicable with the policies of the CCMP and Chapter 3 of the Coastal Act. With this submittal, NOAA RC is seeking the California Coastal Commission’s concurrence with its determination.

The term of this federal CD will be for 10 years following the Commission's formal concurrence. A summary report analyzing the achievements and effectiveness of the CD, and making recommendations for any needed modifications for continuation of the CD beyond the 10-year term, will be submitted by NOAA RC to the Commission at the close of this term. The CD may be renewed for a second term of 10 years by agreement of the NOAA RC and Commission.

A) Purpose & Need for this Federal Consistency Determination

NOAA RC’s CRP has funded and provided technical assistance for habitat restoration projects along the coast of California since 1996. CRP projects benefit a range of coastal resources, including streams, floodplains, wetlands and estuaries, giving populations of threatened and endangered salmon and steelhead better conditions for spawning, rearing and migration, and improving conditions for other aquatic and riparian species.

For 19 years, from 1996 through 2014, a total of 375 CRP projects were completed in California; of which at least 20 had occurred in the Coastal Zone - an average of around one project per year. Where a Consistency Determination was not in place, projects were permitted under the Coastal Act through issuance of Coastal Development Permits (CDPs) by a certified Local Coastal Program (LCP) or by the California Coastal Commission (Commission).

There is a clear need for restoration efforts designed to improve riparian and aquatic habitat and water quality in Southern California. NOAA RC seeks to make the process of regulatory review and permitting of environmentally beneficial habitat restoration projects more efficient, while ensuring environmental protections are met.

In May 2013, the Commission unanimously approved a federal Consistency Determination (CD-021-13) for CRP activities in the Coastal Zone of the North and Central California Coasts, from the Oregon border through San Luis Obispo County. The rate of NOAA RC project implementation in the Coastal Zone increased significantly after creation of CD-021-13, with 12 projects thus far approved. Further, NOAA RC and its many restoration partners now actively seek to restore important coastal resources, as the more efficient approval process creates a higher likelihood that a project will be implemented and allows more resources to be applied towards on the ground coastal resource restoration.

This subsequent Consistency Determination by NOAA RC covers the remainder of the California coast, allowing environmentally beneficial projects in the Southern California counties of Santa Barbara, Ventura, Los Angeles, Orange and San Diego to be approved efficiently. This Consistency Determination is intended to reduce costs and time for Commission and local jurisdiction staff implementing certified LCPs and help to ensure that important restoration projects are planned, designed and implemented in a program-level (programmatic) fashion. Programmatic approval of CRP projects is consistent with Coastal Zone Management Act (CZMA) directives regarding administrative efficiency and effectiveness (14 USC §1452 (2) (G), (H), and (I)) as well as alternative regulatory review processes for environmentally beneficial activities (15 CFR §930.33(a) (4)) that protect, preserve, or restore natural resources in the Coastal Zone. This Consistency Determination supports the California Coastal Act's goals of ". . . protecting, enhancing and restoring coastal environmental quality and resources. . ." (Public Resources Code §30001.5) because it accelerates the pace of coastal restoration while employing substantive measures to protect the environment and other coastal resources.

NOAA RC will take the lead role of insuring that proposed restoration projects meet the environmental and coastal protection standards of the Commission, thereby reducing the amount of time spent on permitting individual projects. This programmatic approach will allow NOAA RC to focus more time on design, construction and other aspects of the technical assistance it provides to applicants, furthering coastal resource restoration goals.

NOAA RC is proposing this alternative regulatory process for environmentally beneficial projects that meet the standards of the Coastal Act as well as the federal Endangered Species Act and other federal and state fish and wildlife and water quality laws and regulations. Projects that are consistent with the terms of this review will be implemented with NOAA RC oversight, avoiding the need for in-depth LCP or Commission project-by-project review. This process gives the Commission the opportunity to programmatically review NOAA RC's clear, well-defined goals, processes, and procedures for consistency with the Coastal Act and the CCMP.

B) NOAA Restoration Center

NOAA RC is part of NOAA Fisheries' Office of Habitat Restoration, an agency of the U.S. Department of Commerce. NOAA RC operates from its headquarters in Silver Spring, Maryland, and from offices located throughout the nation, including three offices in California.

NOAA Fisheries' mission is to conserve and manage coastal and marine ecosystems and resources. NOAA RC carries out this mission by working with federal, state and local partners to implement habitat restoration and conservation projects that recover threatened and endangered species, rebuild and maintain managed fisheries stocks, and ensure that valuable natural resources are available to future generations of Americans. The need for NOAA's mission stems from a historical trend of habitat loss and degradation, and continued long-term threats to the sustainability of the nation's fishery resources. Coastal habitats are consistently stressed by natural forces such as storms, currents, and tides, as well as from man-made threats such as development, dredging, dams, coastal engineering and modification, and climate change. Approximately half of the original 11.7 million acres of coastal wetlands in the lower 48 states were lost between 1780 and 1978; in California, as much as 90% of tidal wetlands and salt marshes have been lost to development (Water Education Foundation 2000). These tidal areas as well as all environments that NOAA RC works to restore, function as valuable "carbon sinks" that absorb or contain more carbon than they emit.

Losses of riparian habitat in California are estimated to be from 85-98%, depending on the region (Katibah 1984, Dawdy 1989). Furthermore over 75% of commercial fisheries and 80-90% of recreational marine and migratory fishes depend on estuarine, coastal, and riverine habitats for all or part of their life cycles (National Safety Council 1998; NOAA 2002). Many streams that anadromous fish depend on have in-stream flows that have declined 30-50% from what they once were, and in some Southern California streams, flows during summer months have become nonexistent. Climate change is exacerbating the issue of low instream flows, and is an additional reason why water conservation projects are essential (NOAA RC 2015). Viable riparian, coastal and estuarine habitats, as well as adequate water quality, are required to maintain healthy fish stocks and ensure protection of threatened and endangered species and their habitats.

Projects supported nationally by NOAA RC vary in terms of their size, complexity, and geographic location, and often benefit a wide range of habitat types and a number of different species. Typical restoration activities currently supported by NOAA RC nationwide include, but are not limited to:

- Fish passage (small dam removal, culvert removal and replacement with bottomless arch culverts or bridges, by-pass channels, and nature-like fishways);
- Instream restoration projects including placement of Large Woody Debris (LWD) structures (divide logs, engineered log jams, digger logs, spider logs; and log, root wad, and boulder combinations), boulder structures (boulder weirs, vortex boulder weirs, boulder clusters, and single and opposing boulder-wing-deflectors), and placement of imported spawning gravel;
- Water Conservation Projects (rainwater catchment tanks, storage tanks, forbearance agreements, tailwater/irrigation collection ponds);

- Hydrologic/tidal reconnection (berm breaching, culvert/tidegate removal/replacement to allow tidal or natural flooding of wetlands, complete removal of levees and dikes or other impediments to historic/natural tidal flow or hydrology, floodplain reconnection, or creation/restoration of off-channel habitats);
- Shellfish restoration (creating, restoring, or rehabilitating shellfish and shellfish habitat);
- Coastal resiliency (salt marsh and barrier island restoration, and erosion prevention through living shorelines, or other methods leading to increased resiliency and protection of coastal communities while supporting ecological goals);
- Habitat adaptation (protecting or restoring habitat in transition zones to provide room for habitat migration with sea level rise);
- Anadromous fish habitat (supporting fish recovery by addressing land-based sources of pollution, recovery from disturbance, restoring natural systems, or controlling invasive species or other loss of habitat);
- Threatened and endangered species projects (restoring beaches and other coastal areas used by endangered/threatened species and marine mammals); and
- Riparian restoration/invasive species removal (control/removal of localized populations, re-establishing native vegetation, cattle exclusion fencing, monitoring for newly established species).

Several programs within NOAA RC carry out these types of projects.

This Consistency Determination comprises activities conducted by NOAA RC's Community-based Restoration Program (CRP) in the Coastal Zone of Southern California.

The following Program description contains the specific types and scope of projects included in the CRP, along with applicable resource protection and monitoring requirements.

II. NOAA RC COMMUNITY-BASED RESTORATION – CALIFORNIA PROGRAM DESCRIPTION

NOAA RC created the CRP in 1996 to encourage local efforts to restore fisheries habitat. NOAA RC's Southwest Region office manages projects in California and Pacific Islands, with supervisory staff located in Santa Rosa and field staff working from offices in Arcata, Santa Rosa, Long Beach and Hawaii. Similar to its other locations around the nation, the CRP's Southwest Region provides financial and technical assistance for habitat restoration projects that benefit natural resources under NOAA Fisheries', also known as the National Marine Fisheries Service (NMFS), jurisdiction in coastal or marine environments. In addition to performing on-the-ground restoration, the majority of these projects have an outreach or

education component to promote and enhance natural resource stewardship. One of the primary objectives of the CRP is to bring together citizen groups; public and nonprofit organizations; industry; corporations and businesses; youth conservation corps; students; colleges and universities; landowners; and local, state, and federal government agencies to implement habitat restoration projects to benefit living coastal, marine, and migratory fish resources. By promoting community involvement and stewardship of local projects, the CRP leverages between two and three times the federal investment through partner organization in-kind and matching contributions. NOAA RC also provides restoration science and technical guidance to partners, including assistance with environmental compliance and monitoring activities.

A) Geographic Scope of the Program and Consistency Determination

This Consistency Determination applies to NOAA RC's CRP work in the Coastal Zone of Southern California, from Santa Barbara County south to the Mexican border, including tidally influenced coastal estuarine areas.

B) Funding

The CRP receives two types of funds from the U.S. Congress - discretionary and nondiscretionary. Both types appear as line items in NOAA Fisheries' annual budget. Discretionary funds comprise the CRP's base funding levels, as well as a portion that supports activities under the Damage Assessment, Remediation and Restoration Program (DARRP) (which establishes natural resource damages under the Oil Pollution Act of 1990). The CRP uses these funds to implement various types of projects, including multi-year, umbrella partnerships with national and regional organizations that are funded on an annual basis. CRP funds also support staff and operations related to these partnerships and projects. CRP funds various organizations for habitat restoration projects.

Nondiscretionary funds are appropriated by Congress for specific organizations or purposes, and the CRP must use those funds only for the specific, line-item activities for which they are intended. Congressionally directed awards support individual cooperative agreements and grants, which in turn fund suites of individual restoration projects as sub-awards. Given the limited amount of funding available on a national level, NOAA RC staff leverages other funding sources to help supplement the funds needed to implement critically important restoration projects.

C) Technical Assistance and Project Oversight

NOAA RC staff is substantially involved with both funded and non-funded projects included in the CRP. Substantial involvement may include, but is not limited to, hands-on technical assistance; participation in feasibility studies, design plans, and construction oversight to ensure benefits are realized; support in development of appropriate monitoring protocols to ensure project performance can be evaluated; tracking the progression of restoration projects through site visits and progress report evaluation; and involvement in public meetings and events to discuss or highlight restoration activities.

D) Project Funding & Selection Process

Proposals selected for funding are primarily funded through cooperative agreements with project partners (e.g., local restoration practitioners, non-profits, land conservancies, etc.) who conduct outreach to willing landowners to collaborate on voluntary restoration projects on their properties. Multi-year cooperative agreement awards are also considered, and additional releases of Congressional funds may be used to fund selected proposals without further competition. Awards are dependent upon the amount of funds Congress makes available to NOAA for this purpose in annual budgets. Funds will be administered by NOAA RC. A new three-year federal funding opportunity is expected to be released by February 2016 and is anticipated to be at a similar, if not greater, level than for the previous three-year period.

Both funded projects as well as non-funded projects (those that receive only technical assistance from NOAA RC staff) are evaluated by NOAA RC biologists and other technical staff in the CRP project selection process. An example of a formal evaluation process for funded projects is described in detail in Attachment A, *National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Department of Commerce - Announcement of Federal Funding Opportunity*. Non-funded projects eligible for technical and regulatory assistance (including coverage under a NOAA Fisheries programmatic biological opinion [BO]) might receive help leveraging alternate funding sources and are prioritized separately by NOAA RC staff. Evaluation criteria are similar for both processes and include, but are not limited to, the following:

- **Importance and Applicability to Program Priorities** – Does the project support NOAA's goal to protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management? Restoration includes, but is not limited to: 1) activities that contribute to the return of degraded or altered marine, estuarine, coastal, and freshwater, anadromous fish habitats to functioning habitats, or 2) techniques that return target species to their historical habitats.
- **Project Benefits** – Level of benefits to listed or candidate species, or other species under NOAA's jurisdiction.
- **Technical/Scientific Merit** - Is the restoration activity or approach technically sound, and does it utilize appropriate restoration/conservation methods and include clear goals and objectives? Applications will be evaluated based on the extent to which the applicant has described a realistic and thorough implementation plan that demonstrates the project is feasible from a biological and engineering perspective, including whether the proposed approach is technically sound, safe for the public, and uses appropriate methods and personnel. The project should also account for adaptation to known or potential climate change impacts using the best scientific guidance available (e.g., CFPF 2014, NMFS 2012, etc.), measure progress towards broad goals and evaluate success with clearly identified, measurable objectives using adequate and meaningful pre- and post-implementation monitoring, and be technically self-sustaining (require a low or reasonable level of maintenance to continue functioning as designed).

- Qualifications of Applicant (or “Project Partner”) - Does the applicant possess the necessary education, experience, training, facilities, and administrative resources to support the proposed award and/or complete the project under the CRP? This includes restoration and conservation background with capacity/knowledge to conduct the scope and scale of the proposed work, as indicated by the qualifications and past experience of the project leaders and/or partners in designing, implementing and effectively managing and overseeing projects that restore marine and coastal habitats, especially those benefitting listed or managed species (as demonstrated by resumes, past project experience, and accomplishments of the key technical and financial staff).
- Cost Effectiveness - Is the budget realistic and commensurate with the project needs and time-frame for a comparable restoration project?
- Outreach, Education and Community Involvement - Does the proposed project(s) include community involvement and broad community support demonstrated by a diversity of partners and/or sponsorship from local entities, state and local governments, and/or members of Congress? Does the proposal include public outreach as it relates to the proposed restoration, including plans to disseminate information on: 1) restoration goals and results; 2) sources of funding and other support provided, such as the involvement of partners; and 3) the potential for the proposed restoration to encourage future restoration and protection of marine and coastal habitats or complement other local restoration or conservation activities?

All projects must be proposed in an application explaining the project design, construction details, benefits, applicable surveys, environmental protection measures, project partners, monitoring, and funding sources.

E) Regulatory Framework

All restoration projects receiving NOAA RC funding and/or technical assistance must be permitted by federal, state and local regulatory agencies before project implementation can occur. To improve project applicants’ navigation through this complex process, NOAA RC staff provides applicants with assistance applying for and completing the required permits and authorizations. The following describes the primary regulatory processes that apply to projects covered by the CRP.

1. ESA Consultation and EFH Conservation Recommendations

A key component of the regulatory process includes consultation with the U.S. Fish and Wildlife Service (FWS) and intra-agency consultation with NMFS under section 7 of the Endangered Species Act (ESA), for projects that may affect threatened and endangered species and designated critical habitat. Consultation with NMFS also may include, as appropriate, analysis of potential effects to Essential Fish Habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act.

Section 7 of the ESA directs all federal agencies to participate and actively cooperate in the conservation and recovery of listed threatened and endangered species. Federal agencies -- including NOAA RC, which conducts environmentally beneficial activities such as habitat

restoration, and the Army Corps of Engineers (Corps), which permits projects affecting aquatic habitat under section 404 of the Clean Water Act -- must ensure that any actions they authorize, fund or carry out are not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitat for these species. Section 7 consultations can be conducted informally, concluding with a written agreement or letter specifying how project impacts will be avoided or minimized, or formally, with a BO that includes mandatory terms and conditions and an incidental take statement issued by NMFS or FWS.

Since the completion of programmatic BOs for the North and Central California Coasts, many of the restoration projects in those regions which receive NOAA RC funding or technical assistance have utilized these programmatic BOs to meet the ESA section 7 consultation requirement. These programmatic consultations were written to facilitate the review and authorization of multiple projects of similar scope and purpose, and to encourage implementation of more restoration projects using a more efficient ESA section 7 consultation process.

The programmatic BOs provide ESA section 7 coverage for NOAA RC-funded or authorized projects and projects that fit the parameters of the BOs that require a Clean Water Act section 404 permit from the Corps (almost all CRP projects require Corps permits). Projects that do not meet the standards for these programmatic BOs – due to their size, proposed methods or materials, or any other reason – can be reviewed through NMFS’ individual project section 7 consultation process, or through other existing programmatic BOs.

To facilitate the section 7 consultation process, project proponents must provide NOAA RC and Corps with a detailed project description that includes proposed designs and materials, location and habitat surveys, environmental protection measures, monitoring and reporting plans, and other information. This process is expected to be a cooperative effort to analyze potential effects of a project or program of multiple projects, and to agree on project designs and protection measures that avoid and minimize impacts to listed species and their habitat.

2. NOAA RC Programmatic Biological Opinions

Since 2006, a programmatic BO for the Central Coast (*Santa Rosa Office Biological Opinion*) has been used for most NOAA RC projects (over 65 projects thus far) affecting salmonid habitat from Mendocino County south to San Luis Obispo. Recognizing the value of this BO’s programmatic approach for ESA section 7 consultations, in 2012 NOAA RC and Corps completed a second programmatic BO with NMFS for projects affecting salmonid habitat on the North Coast from the Oregon border to Mendocino County (*Arcata Office Biological Opinion*).

A new programmatic BO from the NMFS Long Beach Office was signed December 23rd, 2015 and will be used for most NOAA RC projects affecting salmonid habitat in Southern California (See Attachment B).

This programmatic BO for Southern California authorizes up to 150 salmonid habitat restoration projects over a 10-year period. The following types of projects are covered by this BO:

- Instream habitat improvement
- Instream barrier modification and fish passage improvement
- Bioengineered stream bank stabilization and riparian habitat restoration
- Upslope watershed restoration
- Small dam removal
- Off-channel / Side-channel habitat
- Water conservation

These restoration practices closely follow detailed technical descriptions found in the California Department of Fish and Wildlife *Salmonid Stream Habitat Restoration Manual* (<http://www.dfw.ca.gov/fish/resources/habitatmanual.asp>), NMFS' *Guidelines for Salmonid Passage at Stream Crossings* (<http://swr.nmfs.noaa.gov/hcd/NMFSSCG.PDF>), NMFS *Fish Screening Criteria for Anadromous Salmonids* (http://www.habitat.noaa.gov/pdf/salmon_passage_facility_design.pdf) and other recognized restoration manuals and sources – documents which guide many riparian habitat restoration projects in California.

All projects proposed for coverage under a programmatic BO must comply with detailed environmental protection measures, including project-type prohibitions (e.g., no gabion baskets or concrete-lined channels, use of treated lumber within stream channels, or water diversions except to facilitate project installation, etc.; limitations on project size and extent of invasive vegetation removal; seasonal work timing; fish relocation and stream dewatering requirements; and measures to minimize disturbance of sensitive habitat and degradation of water quality from construction activities). Construction monitoring and post-project monitoring and reporting requirements follow standard procedures established by California Department of Fish & Wildlife (CDFW) as part of its Fisheries Restoration Grant Program (FRGP), and are detailed in programmatic BOs issued for the FRGP.

3. Species Recovery Plans

There are currently 28 distinct populations of listed Pacific Salmon (salmon and steelhead), and all are experiencing significant declines or are nearly extinct. NMFS is required by the ESA to develop recovery plans for the conservation and survival of these listed species. The recovery planning process is guided by section 4 of the ESA, as well as NMFS policies and regulations.

Recovery plans provide roadmaps for the many governmental and non-governmental entities that must work together to take small and large actions to improve habitat conditions so the species' populations can rebound. The ESA specifies that recovery plans must include: (1) a description of management actions necessary for the conservation and survival of the species; (2) objective, measurable criteria which would result in the species being recovered to the point it could be removed from the threatened and endangered list; and (3) estimates of time and costs required to achieve this goal and the intermediate steps necessary to reach that

goal. Key to the recovery plans is a robust “threats assessment” that determines the major threats to each species of salmon and steelhead and its habitat, and provides the basis for determining site-specific actions necessary for population recovery by each species.

Beginning in 2000, technical recovery teams composed of experts from state and federal agencies and academic institutions were formed by NMFS, commencing formal processes to develop recovery plans for each listed species of salmon and steelhead. Quantitative and qualitative information has been gathered and evaluated by the technical recovery teams and additional stakeholders. Conditions and threats have been evaluated for each life history stage of each species, and specific recovery actions specified by watershed. The plans are required by the ESA to include estimates of the time and cost it will take to implement the recovery actions and recover the listed species, but they provide no funding.

NMFS has completed and published the Southern California Steelhead (SCS) Final Recovery Plan (January 2012) for salmonids occurring within the geographic area of this Consistency Determination.

Projects moving forward under the CRP in Southern California will focus on implementation of this recovery plan. Restoration efforts are focused in priority watersheds identified in the recovery plan, but projects are not exclusively limited to these areas. See below for a list of key limiting factors and high priority population watersheds in the region.

Priorities for Southern California Steelhead

Key Limiting Factors:

- Loss of diversity in habitats, life histories, genetic vigor, and ecological processes
- Simplification and loss of estuarine and off-channel or floodplain habitats
- Flows and water temperatures affecting all life stages
- Loss of riparian habitat and instream cover affecting juvenile rearing and outmigration
- Loss of floodplain habitat affecting juvenile rearing and outmigration
- Levee maintenance actions that reduce the conservation value of migration and rearing corridors
- Predation
- Juvenile fish injury and mortality at unscreened or poorly screened water diversions
- Degraded water quality from agricultural and urban runoff
- Fish passage impediments/barriers for immigrating adults

Priority Populations or “Watersheds:”

Diversity Strata	So. Calif. Steelhead Populations	Priorities
Monte Arido Highlands	Santa Maria River	B
Monte Arido Highlands	Santa Ynez River	A
Monte Arido Highlands	Ventura River	A
Monte Arido Highlands	Santa Clara river	A
Conception Coast	Goleta Slough Complex	A
Conception Coast	Mission Creek	A

Conception Coast	Carpinteria Creek	A
Conception Coast	Rincon Creek	B
Santa Monica Mts.	Arroyo Sequit	B
Santa Monica Mts.	Malibu Creek	A
Santa Monica Mts.	Topanga Creek	A
Mojave Rim	San Gabriel River	A
Mojave Rim	Santa Ana River	A
Santa Catalina Gulf	San Juan Creek	A
Santa Catalina Gulf	San Mateo Creek	A
Santa Catalina Gulf	Santa Margarita River	A
Santa Catalina Gulf	San Luis Rey River	A
Santa Catalina Gulf	San Dieguito River	B

The watersheds ranked priority “A” are highest priority for species recovery and may include key areas supporting monitoring and/or conservation hatchery programs. Watersheds ranked as a priority “B” are watersheds that may be needed for recovery but that are considered lower in priority, relative to “A” watersheds. The intent is not to exclude watersheds but request that priority “A” watersheds are weighted more heavily if competing with priority “B”. Steelhead restoration and recovery efforts must be occurring across all groups to make meaningful strides in the recovery of the species.

4. NEPA

The National Environmental Policy Act (NEPA) requires documented, formal consideration of the environmental impacts of major federal actions, as well as analyses of the potential impacts associated with alternatives to the action, before a federal agency implements policies, programs, plans, and projects. NEPA applies to all federal agency actions that have the potential to affect the quality of the human environment.

Actions conducted or led by NOAA must also comply with NOAA Administrative Order (NAO) 216-6, which describes NOAA's policies, requirements, and procedures for complying with NEPA and the implementing regulations.

NOAA RC previously completed a Program Environmental Assessment (PEA) and associated Finding of No Significant Impact (FONSI) for the CRP in 2002 (see Attachment C). From 2002 onward, NOAA RC has analyzed the potential impacts of individual projects by tiering from the PEA and FONSI to streamline NEPA compliance for the projects it conducts. With steady growth of NOAA RC and the number and scope of its projects, in 2006 NOAA RC developed a Supplemental PEA (SPEA) to ensure continued compliance with NEPA and other applicable laws and regulations (Attachment D). As NOAA RC's restoration program has continued to evolve, NOAA RC determined that the PEA, FONSI and SPEA were becoming outdated and should be replaced with a Program Environmental Impact Statement (PEIS). The PEIS simplifies NOAA RC's NEPA compliance process (eliminating duplicative NEPA documentation for many projects), and supports program-level decision making within NOAA RC. The Final PEIS was issued in June 2015. Environmental protection measures from the

Final PEIS (Attachment E) are incorporated into Section J, *Table 1 – NOAA RC Summary of General Project Requirements and Protection Measures for Coastal Resources*.

5. Coordination with Regulatory Agencies/Permitting Requirements

US Army Corps of Engineers

Section 404 of the Clean Water Act requires approval for any discharge of dredged or fill material into Waters of the U.S., extending to the ordinary high water mark, or when adjacent wetlands are present, to the limit of the adjacent wetlands. A section 404 permit issued by the Corps is required for all restoration projects involving any kind of material placed into the stream channel. Section 10 of the Rivers and Harbors Act of 1899 requires approval for any work in, over, or under navigable waters of the U.S. A section 10 permit issued by the Corps is required for all restoration projects that involve any modification of navigable waters.

Applicants for all projects which are funded by NOAA RC, or which receive NOAA RC technical assistance, must complete the section 404/section 10 permit process with the Corps' Regulatory Division, through the Los Angeles Corps District, which has jurisdiction along the Southern California coast.

National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (FWS)

The ESA provides for the conservation of species that are endangered or threatened with extinction throughout all or a significant portion of their range, and the conservation of the ecosystems upon which they depend. NMFS and FWS share responsibility for implementing the ESA, with FWS managing terrestrial and freshwater species and NMFS managing marine species, including anadromous salmonids (ocean species that return to rivers to spawn). Federal action agencies are required to consult with NMFS and/or FWS under section 7 of the ESA on any action authorized, funded or undertaken that may affect endangered or threatened species. As described above, consultation with NMFS has been completed by NOAA RC and Corps on a programmatic basis for coastal California, through BOs and incidental take statements issued by the Santa Rosa, Arcata, and Long Beach Offices.

Consultation with FWS is completed almost exclusively on an individual basis for all NOAA RC restoration projects, resulting in a BO and incidental take statement, or an informal letter of concurrence. Exceptions to this would occur only in limited circumstances: A project could be reviewed for potential effects to California red-legged frog or California tiger salamander under an existing programmatic BO and incidental take statement for these species; and/or a project occurring in a county where a coordinated permit program has a completed programmatic BO and incidental take statement; or through an established program for FWS habitat restoration projects, which could be developed in the future.

State Water Resources Control Board/Regional Water Quality Control Board

California's Water Quality Certification Program, implementing section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act, is under the jurisdiction of the State Water Resource Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Boards). The State and Regional Water Boards regulate discharge of fill and dredged material into federal and state waterways, including wetlands, headwaters and riparian areas.

NOAA RC applicants with projects that may affect federal or state waters must receive a section 401 Water Quality Certification, and in some cases additional Waste Discharge Requirements, to comply with section 401 and Porter-Cologne. These permits are issued by the State Water Board or appropriate Regional Water Board.

Applicants with projects that qualify may choose to utilize the State Water Board's 2012 General Order for Clean Water Act Section 401 Water Quality Certification for Small Habitat Restoration Projects (an interim reissuance of the expired 2007 Small Habitat Restoration General Order). This Order authorizes projects that qualify for CEQA Categorical Exemption 15333 (projects 5 acres or less in size), with an additional limitation that the project area cannot exceed a cumulative total of 500 linear feet of stream bank or coastline. An updated General Order for Small Habitat Restoration Projects, including prescribed Waste Discharge Requirements (WDRs) and new program provisions, is currently being considered for development by the State Water Board.

California Department of Fish and Wildlife

Under section 2080 of the California Fish and Game Code, the California Endangered Species Act (CESA) prohibits take of any species listed by the California Fish and Wildlife Commission as endangered or threatened. CESA allows for take incidental to otherwise lawful projects, and emphasizes early consultation to avoid potential impacts to rare, endangered and threatened species and to develop appropriate mitigation planning to offset project-caused losses of listed species populations and their essential habitats.

Applicants for NOAA RC restoration projects must receive either a section 2081 incidental take permit or a section 2080.1 Consistency Determination (documenting consistency with a federal incidental take statement) from CDFW for compliance with CESA.

Section 1602 of the California Fish and Wildlife Code requires a project applicant to notify CDFW of any proposed activity that may substantially modify a river, stream or lake. Notification is required for any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel, including ephemeral streams and watercourses with subsurface flow. It may also apply to work within the floodplain of a body of water.

If the project applicant or CDFW determines that the proposed activity may affect a river, stream, or lake, including ephemeral streams and watercourses with subsurface flow, a Lake or Streambed Alteration (LSA) Agreement must be prepared. An LSA agreement includes reasonable conditions necessary to protect those resources. Before issuing an LSA, CDFW must comply with the California Environmental Quality Act (CEQA).

If a project has, or is eligible for, a General Order for section 401 Water Quality Certification for Small Habitat Restoration Projects, as described above, the applicant may apply to CDFW using the 2014 Habitat Restoration and Enhancement Act (AB 2193) Program. This new law provides for a faster and simpler approval process for qualified voluntary habitat restoration projects, as an alternative to obtaining a section 2081 incidental take permit and section 1602 LSA.

California Coastal Commission

Federal Consistency Determination CD-021-013, approved by the Commission in 2013, applies to CRP activities in the Coastal Zone from the Oregon border through San Luis Obispo County. With this new Consistency Determination, NOAA RC is providing the information necessary to extend its finding of federal consistency with the California Coastal Act and CCMP for CRP activities in the Coastal Zone of Southern California, so that projects do not need to obtain a separate Coastal Development Permit (CDP) or individual consistency determination.

Under the authority of the California Coastal Act of 1976, the Commission, in partnership with coastal cities and counties, plans and regulates the use of land and water in the Coastal Zone. Development activities, which are broadly defined by the Coastal Act to include (among others) activities that change the intensity of use of land or public access to coastal waters, generally require a coastal permit from either the Commission or the local government. The Commission is designated to administer the federal CZMA in California.

California Environmental Quality Act (CEQA)

CEQA applies to all discretionary actions proposed or approved by a California public agency, including private projects requiring discretionary government approval. CEQA helps to guide CDFW, State and Regional Water Boards, the Commission, and local agencies during issuance of permits and approval of projects. Any public agency (state or local) may be a CEQA lead agency or have CEQA obligations. NOAA RC project applicants must ensure that CEQA is complied with for their projects, through an exemption (Categorical Exemption 15333 for Small Habitat Restoration Projects or another exemption), a Negative Declaration (ND) or Mitigated Negative Declaration (MND), Environmental Impact Report (EIR), or through an existing programmatic ND, MND, or EIR for a local coordinated permit program or other restoration program.

Local Plans and Policies

NOAA RC project applicants must comply with all applicable city and county regulations and codes, including those issued by local planning, public works and other departments. All required city and county permits must be obtained by the applicant before a NOAA RC project can be implemented.

F) Project Partners

NOAA RC recognizes that with multiple threats facing the coastal environment, no single organization can succeed at habitat restoration alone. In addition, restoration is often not a success without the partnership of coastal communities and community organizations. NOAA RC funds projects directly and through partnerships with national and regional organizations. They also work with a number of restoration project partners who implement projects on the ground. The following provides a list of key partners who fund and/or implement NOAA RC habitat restoration projects in Southern California:

- American Rivers
- Association of National Estuary Programs
- California Conservation Corps

- California Department of Fish and Wildlife
- California Department of Parks and Recreation
- California State Parks
- California Trout (CalTrout)
- Cachuma Operations and Maintenance Board
- California Coastkeeper Alliance
- Cleveland National Forest
- Ducks Unlimited
- Land Trusts
- Los Padres National Forest
- Mountain Restoration Trust
- National Association of Counties
- Ojai Valley Land Conservancy
- Resource Conservation Districts (RCDs)
- Restore America's Estuaries
- Santa Clara River Steelhead Coalition
- Santa Monica Bay Restoration Foundation
- South Coast Habitat Restoration
- South Coast Steelhead Coalition
- State Coastal Conservancy
- The Nature Conservancy
- Tri-County Fish Team
- Trout Unlimited

G) NOAA RC Project Summaries and Examples

NOAA RC has been providing technical assistance and funding for restoration projects since 1996. The following table describes habitat types and acres restored by projects in California to highlight the many successful projects and partnerships that NOAA RC has participated in and to give examples of the types of projects that may occur under this Consistency Determination.

Summary of California Projects (1996-2014)

Habitat Types	Number of Projects	Acres Restored
Instream/Riparian	277	2,000
Tidal Wetlands	37	7,820
Uplands/Pond/Freshwater Wetlands	24	706
Oyster Reef/Submerged Aquatic Vegetation/Kelp	37	142
TOTAL	375	10,668

In addition, the table below provides a brief summary of projects approved to date under the existing Consistency Determination (CD-021-13 – May 2013) for the CRP, which covers program activities in the Coastal Zone from San Luis Obispo County north to the Oregon border. For anadromous fish restoration activities in Southern California, the Southern California Steelhead Recovery Plan (NMFS 2012) will be used to help prioritize and plan anadromous fish restoration projects, as discussed in Section E.3, above.

Projects Approved to Use CD-021-13

Project	County	Habitat Type Restored
Strawberry Creek Fish Passage Barrier and Invasive Species Removal	Humboldt	Fish Passage/Instream Habitat/Riparian
Ten Mile River Coho Habitat Rehabilitation	Mendocino	Instream Habitat/Riparian/Cattle Exclusion
Newman Gulch Fish Passage Barrier Removal	Mendocino	Fish Passage/Instream Habitat
Sheephouse Creek Sediment Reduction	Sonoma	Upland Road Sediment
Green Gulch Creek Habitat Enhancement	Marin	Instream Habitat/Riparian
Waukell Creek Off-Estuary Habitat Enhancement, Lower Klamath Phase II	Del Norte	Instream Habitat/Tidal Wetlands
Martin Slough Tide Gate Improvement	Humboldt	Fish Passage/Tidal Wetlands
Lower Beith Creek Stream Restoration	Humboldt	Instream Habitat/Riparian
Gazos Creek Rural Road Sediment Reduction	San Mateo	Upland Road Sediment
Pilarcitos Creek Rural Roads Improvement	San Mateo	Upland Road Sediment
San Gregorio Creek Streamflow Enhancement – Repetto Farm Pond	San Mateo	Streamflow Enhancement
Big Sur River Fish Passage – Riverside Campground Bridge Replacement	Monterey	Fish Passage

The completed project descriptions below provide a more in-depth look at CRP restoration activities in the Coastal Zone of Southern California. These are examples of projects that

potentially could have been approved under a general consistency determination, had one been in place at the time of project approval.

Example Projects in Southern California

Topanga Creek Berm Removal

As part of the American Recovery and Reinvestment Act (ARRA) of 2009, the Santa Monica Mountains Resource Conservation District revegetated the Rodeo Grounds Berm area, restoring over 12 acres of floodplain function and riparian habitat. The project improved 3,000 feet of channel connectivity; increased critical passage opportunities to four miles of high quality habitat; increased summer rearing habitat, over-winter habitat and spawning locations for endangered steelhead; and removed almost 12 acres of invasive and exotic vegetation. The project allowed for natural re-adjustment of sediment transport and bed loads in Topanga Creek and the downstream lagoon. This project also included debris and non-native tree removal activities at the project site funded by the California Conservation Corps Recovery Act award.

Upper Newport Bay Eelgrass Restoration

Starting in 2012, the Orange County Coastkeeper was granted CRP funds to restore eelgrass (*Zostera marina*) in Upper Newport Bay at Newport Beach. The restoration site is located along the main channel side of DeAnza Peninsula. The grantee is working to restore up to one acre of eelgrass, will explore new eelgrass restoration techniques, and will monitor restoration success over a four-year period.

Carpinteria Creek Watershed - Pinkham Fish Passage Improvement

This project was led by South Coast Habitat Restoration as part of the CRP with additional funding provided by the California Coastal Conservancy. A concrete road crossing acted as a barrier to Southern California steelhead passage on Carpinteria Creek. Flooding in the past had occurred at the site and had washed away valuable property as well as part of the previous crossing. In 2013 the project was completed by replacing the problematic crossing with a clear span bridge, restoring fish passage at the site. The site was planted with native riparian vegetation, and instream wood and boulder structures were installed to improve 0.5 miles of instream habitat around the fish passage site.

Alamitos Bay Olympia Oyster Restoration – Long Beach

This CRP project, led by California State University Fullerton, is using Coastal Conservancy funds to restore a native Olympia oyster, *Ostrea lurida*, to Alamitos Bay near the City of Long Beach. The project is using nonviable oyster shells to augment the amount of hard substrate available for recruiting oyster spat. During the Olympia oyster's reproductive season, homeowners and school groups will suspend strings of dead oyster shell from floating docks throughout Alamitos Bay, and allow locally produced oyster larvae to recruit to the shells. After a grow-out period, the shells from the shell strings will be concentrated into "community" oyster bed at the Jack Dunster Marine Reserve.

Long Point Palos Verdes Kelp Restoration

From 2010-2013, the Santa Monica Baykeeper (SMBK) (now the Los Angeles Waterkeeper) partnered with the CRP and the Association of National Estuary Programs to restore historic kelp beds off the Palos Verdes Peninsula. SMBK staff and volunteers relocated hundreds of thousands of sea urchins from targeted areas and transplanted kelp to aid in the recovery of 3.7 acres of kelp forest.

Arroyo Sequit Creek Steelhead Barrier Removal

In partnership with American Rivers and the CRP, California State Parks removed significant barriers to endangered Southern California steelhead migration within the Arroyo Sequit watershed, located in northern Los Angeles County. Removal of the two Arizona dry weather crossings (in 2015) and replacement with a bridge, as well as removal of one additional check dam further upstream (in 2014) provided immediate access to 4.5 miles of spawning and rearing habitat. This project was selected by the Obama administration in 2011 as one of 14 projects in the nation to be fast-tracked for federal permitting and implementation.

H) General Exclusions from this Determination

All projects included under the Program must involve voluntary, on-the-ground habitat restoration resulting in physical habitat modifications and beneficial ecological impacts for federal trust species. The following projects will be excluded from this action due to their scope, complexity, or potentially controversial nature and individual project review from the Coastal Commission or the approved Local Coastal Program will be sought:

- Non-voluntary projects that constitute: a) legally required mitigation for the adverse effects of an activity regulated or otherwise governed by local, state or federal law; b) projects that constitute restoration for natural resource damages compelled by federal, state or local law; and/or c) projects that are required by a separate consent decree, court order, statute or regulation.
- Projects NOAA RC determines to be inconsistent with NOAA RC goals or standards, or an accepted practice of CDFW and NMFS, or other applicable restoration practices and guidelines.
- Projects determined to be inconsistent with section 7 of the ESA.

I) Qualifying Project Types and Activity-Specific Protection Measures

NOAA RC project types fall into three general categories and include Salmonid Habitat Restoration Projects, Estuarine Restoration (Marsh, Submerged Aquatic Vegetation and Shellfish (oysters) Restoration, and Coastal Kelp and Shellfish (abalone) Restoration.

A number of NOAA RC projects included in the CRP are salmonid habitat restoration projects such as biotechnical stream bank stabilization, riparian revegetation, instream restoration, water conservation, fish passage barrier removal, and invasive species removal. NOAA RC also conducts a variety of estuarine habitat restoration projects designed to restore and enhance seagrass beds, mudflats, salt marsh, brackish marsh and other tidally influenced

habitats. Nearshore coastal habitats such as rocky reefs and kelp forests have also been the focus of restoration efforts.

For all projects NOAA RC funds or for which it provides technical assistance, NOAA RC requires that all regulatory conditions must be met and all stated environmental protection measures implemented to reduce the potential for ancillary environmental impacts; proposed monitoring and reporting procedures must also be followed to help ensure project success. A summary of general conditions, NOAA RC review procedures, and environmental protection measures and monitoring/reporting are described in Section J, *Table 1 – NOAA RC Summary of General Project Requirements and Protection Measures for Coastal Resources*.

1. Salmonid Habitat and Related Upland Restoration Projects

Salmonid habitat and related upland restoration projects are intended to restore degraded salmonid habitat through improving stream cover, pool habitat and spawning gravel; removing or modifying barriers to fish passage; ensuring adequate flows; and reducing or eliminating ongoing erosion or sedimentation impacts. Salmonid habitat restoration projects authorized through the CRP must be designed and implemented consistent with the techniques and minimization measures presented in CDFW's *California Salmonid Stream Habitat Restoration Manual*, NMFS's *Guidelines for Salmonid Passage at Stream Crossings*, NMFS *Fish Screening Criteria for Anadromous Salmonids*, or other appropriate restoration manuals all of which contain extensive guidance on effective implementation of habitat restoration practices and pre- and post-construction protection measures.

These projects are reviewed and authorized by NMFS under section 7 of the ESA and the Magnuson-Stevens Fishery Conservation and Management Act (as discussed earlier under the Regulatory Framework section).

Additional engineering and fish passage specialist review may be required for projects including, but not limited to: fish passage at stream crossings, culvert retrofit and replacement, new and retrofitted fish ladders/fishways, removal of flashboard dam abutments and sills, debris basin removal, creation or connection of off-channel habitat features, installation of fish screens, removal of small dam involving special or complex conditions, and placement of weirs in concrete lined channels. Project or program specific BOs may include additional applicable requirements.

In addition to following applicable protection measures specified in Section J, *Table 1 – NOAA RC Summary of General Project Requirements and Protection Measures for Coastal Resources*, general measures for instream work will be implemented and flows will be diverted around the project worksite as described in the 2015 NMFS Long Beach Office Programmatic BO for Restoration Projects, for projects qualified to utilize the BO. Applicable protection measures will be followed as specified in the BO sections, *Requirements for Fish Relocation and Dewatering Activities* and *Measures to Minimize Loss or Disturbance of Riparian Vegetation*. Additional measures, or modified measures, may be imposed by NOAA RC as needed to protect natural resources.

Salmonid habitat restoration activities included in the CRP for this Consistency Determination are listed below, as well as additional activity-specific resource protection measures, above and beyond those described in Section J, *Table 1 – NOAA RC Summary of General Project Requirements and Protection Measures for Coastal Resources*.

1. Instream Habitat Structures and Improvements

Instream habitat structures and improvements are intended to provide predator escape and resting cover, increase spawning habitat, improve migration corridors, improve pool to riffle ratios, and add habitat complexity and diversity. Specific techniques for instream habitat improvement include placement of: 1) cover structures (divide logs, engineered log jams, digger logs, spider logs; and log, root wad, and boulder combinations); 2) boulder structures (boulder weirs, vortex boulder weirs, boulder clusters, and single and opposing boulder-wing-deflectors); 3) log structures (log weirs, upsurge weirs, single and opposing log-wing-deflectors, engineered log jams, and Hewitt ramps); and 4) imported spawning gravel. Implementation of these types of projects may require the use of heavy equipment (e.g., self-propelled logging yarders, excavators, backhoes, helicopters), however, hand labor will be used when possible.

Large woody material (LWM) may also be placed in the stream channel to enhance pool formation and increase stream channel complexity. Projects will include both anchored and unanchored logs, depending on site conditions and wood availability.

Supplemental Protection Measures for Instream Habitat Structures and Improvements

In addition to applicable environmental protection measures described under Section J, *Summary of Environmental Compliance Requirements and NOAA Project Review*, the following measures apply to instream habitat structures and improvements:

Flow Diversion Measures: If it is necessary to divert flow around the work site, either by pump or by gravity flow, the suction end of the intake pipe shall be fitted with fish screens meeting CDFW and NMFS (NMFS, 2008b) criteria to prevent entrainment or impingement of small fish. Any turbid water pumped from the work site itself to maintain the site in a dewatered state shall be disposed of in an upland location where it will not drain directly into any stream channel, or it will be treated to filter suspended materials before flowing back into the stream.

Turbidity Measures: Any work with equipment within the stream channel shall be performed in isolation from the flowing stream. If there is any flow when the work is done, the project proponent shall construct cofferdams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to downstream of the downstream dam. The cofferdams may be constructed from many different materials and methods to meet the objective; for example, clean river gravel or sand bags, which may be sealed with sheet plastic. Foreign materials such as sand bags and any sheet plastic shall be removed from the stream upon project completion. In some cases, clean river gravel may be left in the stream, but the cofferdams must be breached to return the stream flow to its natural channel. To minimize effects to aquatic species, stream diversion shall be in place for the shortest duration necessary to complete in-stream project activities.

When cofferdams are installed, debris racks will be placed at the bypass pipe inlet. Bypass pipes will be monitored a minimum of two times per day, seven days a week, during the construction period. The contractor or project applicant shall remove all accumulated debris. Bypass pipe diameter will be sized to accommodate, at a minimum, twice the summer baseflow.

Cofferdams will be removed so surface elevations of water impounded above the cofferdam will not be reduced at a rate greater than one inch per hour. This will minimize the risk of beaching and stranding of fish as the area upstream becomes dewatered.

2. Barrier Modification for Fish Passage Improvement

Barrier modification projects are intended to improve salmonid fish passage by providing access to historically available upstream spawning and rearing habitat that is currently blocked or obstructed. Projects may include those that improve fish passage through existing culverts, bridges, and paved and unpaved fords through replacement, removal, or retrofitting structures. These practices may include the use of gradient control weirs upstream or downstream of barriers to control water velocity, water surface elevation, or provide sufficient pool habitat to facilitate jumps, or interior baffles or weirs to mediate velocity and provide increased water depth. Weirs may also be used to improve passage in flood control channels (particularly concrete-lined channels). Implementing these types of projects may require the use of heavy equipment (e.g., self-propelled logging yarders, mechanical excavators, backhoes), however, hand labor will be used when possible.

Removing barriers to fish passage will help mitigate the effects of climate change (e.g., increased number and intensity of drought events, habitat loss or alteration, etc.) to threatened and endangered fish species by increasing connectivity of river and stream networks.

Supplemental Protection Measures for Fish Barrier Modification

In addition to applicable environmental protection measures described under Section J, *Summary of Environmental Compliance Requirements and NOAA Project Review*, the flow diversion and turbidity measures, as described above, in Section I.1, are also applicable to barrier modification projects.

3. Riparian Habitat Restoration and Bioengineering

Riparian habitat restoration projects are intended to improve salmonid habitat through increasing stream shading to lower water temperatures, recruitment of LWD, bank stability, the number of plants and plant groupings, and benthic invertebrate production. Riparian habitat restoration projects may include natural regeneration, livestock exclusionary fencing, bioengineering, and revegetation.

Bioengineering and revegetation to reduce instream sediment will improve fish habitat and fish survival by increasing fish embryo and alevin survival in spawning gravels, decreasing injury to juvenile salmonids from high concentrations of suspended sediment, and minimizing the loss of, or reduction in size of, pools from excess sediment deposition. The proposed activities will reduce stream sedimentation from bank erosion by stabilizing stream banks with appropriate site-specific techniques including: boulder-stream bank stabilization structures, log-stream bank stabilization structures, tree revetment, native plant material revetment, willow wall

revetment, willow siltation baffles, brush mattresses, checkdams, brush checkdams and water bars.

Supplemental Protection Measures for Riparian Habitat Restoration and Bioengineering

In addition to applicable environmental protection measures described under Section J, *Summary of Environmental Compliance Requirements and NOAA Project Review*, the flow diversion and turbidity protection measures, as described above in Section I.1, are also applicable to riparian habitat and bioengineering projects.

4. Upslope Watershed Restoration

Upslope watershed restoration projects are intended to reduce delivery of sediment to anadromous salmonid streams. Road-related upslope watershed restoration projects include decommissioning, upgrading, and storm proofing. Implementation of these types of projects may require the use of heavy equipment (e.g., self-propelled logging yarders, mechanical excavators, backhoes), however, hand labor will be used when possible.

5. Removal of Small Dams

Dam removal is conducted to restore fisheries access to historic habitat for spawning and rearing and to improve long-term habitat quality and proper stream geomorphology. Types of eligible small dams include permanent, flashboard, debris basin, and/or seasonal dams that are standalone barriers with the characteristics listed below.

This covered activity only includes small dam removal projects that will form, naturally or with excavation, a channel of natural grade and shape upstream of the dam. Dam removal projects will: 1) release a volume of sediment that will have minimal effects on downstream habitat, and 2) be designed to create a channel that provides the same hydraulic conditions and habitat for listed fish as the natural channel. Implementing small dam removal projects may require the use of heavy equipment (e.g. mechanical excavators, backhoes, etc.) and in some cases explosives. Some small dam removals can be accomplished with hand tools such as jackhammers.

Supplemental Protection Measures for Small Dam Removal

In addition to applicable environmental protection measures described under Section J, *Table 1 – NOAA RC Summary of General Project Requirements and Protection Measures for Coastal Resources* and the flow and turbidity measures listed in Section I.1 above, the following measures apply to small dam removal:

All construction will take place out of the wetted channel either by implementing the project from the bank and out of the channel or by constructing coffer dams, relocating aquatic species found within the project reach, and dewatering the channel. The Long Beach Office programmatic BO limits disturbance of riparian vegetation for site access for removal of small dams to no more than 250 linear feet (125 feet on each side of the channel). All disturbed areas will be revegetated with native grasses, trees, or shrubs.

Technical information on sediment volume, project reach geomorphology, downstream spawning areas, and channel and hydraulic grade are required in the project proposal for review by NOAA RC. Depending on the complexity of the project, additional technical

information including: hydraulic modeling, sediment modeling, geomorphic assessments, analysis of hydrologic conditions, and a detailed assessment of habitat conditions may also be required in the project proposal.

Small dam removal projects such as those in urbanized streams, base level dams (where head cuts could be sent up multiple tributaries), and dams located in heavily incised channels will receive additional engineering review.

Flow diversion and turbidity protection measures, as described above in Section I.1, are also applicable to small dam removal.

Any use of explosives for small dam removal must be justified due to site-specific conditions including equipment access difficulties. Explosives use must be conducted in dry or dewatered conditions and potential harm to steelhead and other aquatic life, and human health and property, from the explosives blast and pressure waves must be analyzed. Application of the NMFS Long Beach Office programmatic BO for ESA section 7 coverage of small dam removal projects with proposed use of explosives requires additional detailed effects analysis and protection and information measures. Project applicants are required to provide project designs to NOAA technical monitors prior to project approval and implementation. Data requirements and analysis to be provided with dam removal project design should attempt to meet NMFS 2011 Anadromous Salmonid Passage Facility Design (NMFS 2011 Guidelines). If proposed project designs do not meet the NMFS 2011 Guidelines, a project proponent can request an alternative project design be approved at the discretion of NOAA RC and NMFS engineers if a clear benefit to fish passage can be shown. Applicants will be required to implement the NOAA RC Fish Passage Barrier Removal Performance Measures and Monitoring Worksheet (Attachment F) that includes regionally appropriate fish passage criteria for fish passage projects, and which have been incorporated into the data needs described below.

6. Creation of Off-Channel/Side Channel Habitat

Types of side-channel or off-channel restoration activities eligible for the CRP include:

- Connection of abandoned side-channel or pond habitats to restore fish access;
- Connection of adjacent ponds, remnants from aggregate excavation;
- Connection of oxbow lakes on floodplains that have been isolated from the meandering channel by river management schemes, or channel incision;
- Creation of side-channel or off-channel habitat with self-sustaining channels; and
- Improvement of hydrologic connection between floodplains and main channels.

Restoration projects in this category may include removal or breaching of levees and dikes, channel and pond excavation, constructing wood or rock tailwater control structures, and construction of large wood material (LWM). Implementation of these types of projects may require the use of heavy equipment (e.g., self-propelled logging yarders, mechanical excavators, backhoes), and creation of temporary access roads.

Supplemental Protection Measures for Off-Channel and Side-Channel Habitat

In addition to applicable environmental protection measures described under Section J *Summary of Environmental Compliance Requirements and NOAA Project Review*, the following measures apply to off-channel and side-channel habitat projects:

Technical information on water supply (channel flow/overland flow/groundwater), water quality, and water reliability; risk of channel change; and channel and hydraulic grade is required in the project proposal for review by NOAA RC. Application of the NMFS Long Beach Office programmatic BO for ESA section 7 coverage of off-channel and side-channel projects may require additional early collaboration with NMFS, topographic and hydraulic surveys and analyses, monitoring and reporting, and other protection and information measures.

In addition, the flow diversion and turbidity protection measures must be applied, as described above in Section I.1.

Project Restrictions

Projects that involve the installation of a flashboard dam, head gate or other mechanical structure are not eligible for the Program. Off-channel ponds constructed under this Program will not be used as a point of water diversion. Use of logs or boulders as stationary water level control structures will be allowed.

7. Water Conservation Projects

In addition to applicable environmental protection measures described under the Section J, *Summary of Environmental Compliance Requirements and NOAA Project Review*, the following measures apply to water conservation projects.

Projects that involve surface diversions will only be considered for existing diversions that are compliant with State and federal water law. Storage reservoirs will not be greater than 10 acre-feet in size. Flow measuring device installation and maintenance may be required for purposes of accurately measuring and managing pumping rate or bypass conditions set forth in this document or in the water right or special use permit.

All pump intakes will be screened in accordance with NMFS Southwest Region's *Fish Screening Criteria for Salmonids*. Stockwater ponds and wells will be located at least 100 feet from the edge of the active channel and should be designed to avoid stranding of juvenile salmonids during flood events. Application of the NMFS Long Beach Office programmatic BO for ESA section 7 coverage of water conservation projects may require additional early collaboration with NMFS, topographic and hydraulic surveys and analyses, monitoring and reporting, and other protection and information measures.

a. Developing Alternative Supply or Off-stream Storage

This category covers ponds that meet conditions of the supplemental protection measures listed below. They can be for alternative supply or off channel water storage for other water conservation opportunities.

Many riparian fencing projects, designed to keep livestock from damaging riparian areas, necessitate the development of off-stream watering areas for livestock. These include ponds that have been excavated and are filled either by rainwater, overland

flow, surface diversions, or groundwater (either through water table interception or pumping). The CRP also covers water lines, watering troughs, and piping used to provide groundwater to livestock, so as to achieve the overarching goal of protecting aquatic habitat.

Off-stream storage may be created for landowners with appropriate water rights in order to manage the time of year water is taken off of a river/stream, so as to optimally protect habitat.

b. Tailwater Collection Ponds

Tailwater is created in some agricultural irrigation operations (flood, sprinkler) as unabsorbed irrigation water flows off the field back into the stream. Restoration projects to address tailwater input involve constructing tailwater capture systems to intercept tailwater before it enters streams. Water held in capture systems, such as a pond, can be reused for future irrigation purposes, therefore reducing the need for additional stream diversions and helping to provide for adequate freshwater habitat.

Supplemental Protection Measures for Tailwater Collection Ponds

In addition to applicable environmental protection measures described under the Section J, *Summary of Environmental Compliance Requirements and NOAA Project Review*, the following measures apply to tailwater collection ponds:

Tailwater collection ponds that do not incorporate return channels to the creek will be located at least 100 feet from the edge of the active channel and should be designed to avoid stranding of juvenile salmonids during flood events.

c. Water Storage Tanks

Water storage tanks are used to provide storage to reduce the impact on fish from water taken from streams or groundwater during low water periods. Water storage tanks can be filled through rainwater catchment or by surface or groundwater flow. The California Water Plan supports the use of diverse water supplies in Southern California given the arid climate and flashy nature of storm events (CWP 2013).

Supplemental Protection Measures for Water Storage Tanks

In addition to applicable environmental protection measures described under Section J, *Summary of Environmental Compliance Requirements and NOAA Project Review*, the following measures apply to water storage tank projects.

All pump intakes will be properly screened in accordance with NMFS Fish Screening Criteria. Water conservation projects that include water storage tanks and a Forbearance Agreement for the purpose of storing winter and early spring water for summer and fall use, require registration of water use pursuant to California Water Code § 1228.3 and consultation with CDFW. Diversions to fill storage facilities during the winter and spring months shall be made pursuant to a Small Domestic Use Appropriation (SDU) filed with the State Water Board, as applicable.

Project Restrictions

All water storage tank projects will be required to be accompanied by a Forbearance Agreement for at least 5 years, which will provide temporal and quantitative assurances for pumping activities that result in less water withdrawal during summer low flow period. The low flow threshold, measured in cubic feet per second (cfs) and based on the season of diversion and season of storage, will be determined by NOAA RC on a site by site basis. Water storage capacity for the water diversion forbearance period must be of sufficient capacity to provide for all water needs during that time period. For example, if the no-pump period is 105 days (August to November), the diverters must have enough storage to cover any domestic, irrigation, or livestock needs during that time.

d. Piping Ditches

Piping projects consist of constructing a pipe to transport irrigation water instead of using a ditch, thereby reducing evaporation and absorption of water. Water saved by these projects will remain in the stream for salmonid and other habitat benefits.

Supplemental Protection Measures for Piping Ditches

In addition to applicable environmental protection measures described under Section J, *Summary of Environmental Compliance Requirements and NOAA Project Review*, the following measures apply to piping ditches.

Only water conservation piping projects that result in a decrease in the stream flow diversion rate with a permitted instream dedication of the water saved are included in the Program. Landowners will enter an agreement with NOAA RC or the Corps stating that they will maintain the pipe for at least 10 years.

Applicants must demonstrate that they intend to dedicate water for instream beneficial use by filing a *Petition for Instream Flow Dedication* (California Water Code § 1707, 1991) and make progress towards instream dedication.

8. Fish Screens

This category includes the installation, operation, and maintenance of fish screens provided they meet the NMFS *Fish Screening Criteria for Anadromous Salmonids*. Installing a fish screen usually involves site excavation, forming and pouring a concrete foundation and walls, installation of a fish bypass pipe or channel, and installation of the fish screen structure. Heavy equipment is typically used for excavation of the screen site and bypass. If the fish screen is placed within or near flood prone areas, typically rock or other armoring is installed to protect the screen.

9. Headgates and Water Measuring Devices

Measuring devices are typically installed with the head gate to allow water users to determine the volume of water diverted. Headgate installation projects must clearly demonstrate habitat restoration benefits. While no headgates are allowed for off-channel pond creation, headgates are necessary for measuring water conservation efforts.

Supplemental Protection Measures for Headgates and Water Measuring Devices

In addition to applicable environmental protection measures described under Section J, *Summary of Environmental Compliance Requirements and NOAA Project Review*, the following measures apply to headgates and water measuring devices.

The application must include instream and ditch/pump hydraulic calculations showing there is sufficient head to divert maximum diversion flow and bypass flow at minimum stream flow, taking into consideration head losses at flow measurement devices, fish screens, pipes, open ditches, and headgates.

Measuring devices must be approved by the California Department of Water Resources (DWR) for watersheds with DWR water master service. Otherwise, measuring devices must conform to the *2001 U.S. Bureau of Reclamation Water Measurement Manual* (BOR 2001).

Design drawings must show structural dimensions in plan, elevation, longitudinal profile, and cross-sectional views, as well as important component details.

10. Invasive Species Control Projects

Invasive aquatic and wetland plant species can reduce biodiversity of native plants and habitat and food sources for native species, as well as alter entire ecosystem processes. Today, invasive species pose one of the dominant environmental threats to biological diversity, second only to habitat destruction (Lawler et. al. 2006), and are cited as a cause of endangerment for 49 percent of the species listed under the federal ESA (Wilcove et. al 1998).

Control methods for invasive species are often multifaceted and may include a combination of physical, mechanical, biological, cultural, and chemical techniques. Individual populations within a treatment area may receive several different types of treatments or a single treatment depending upon highly localized factors and the treatment plan that is designed. This integrated approach also includes assessments of risk, identification of thresholds for action, and planning to reach the most desired outcome.

Supplemental Protection Measures for Invasive Species Removal

In addition to applicable environmental protection measures described under the Section J, *Summary of Environmental Compliance Requirements and NOAA Project Review*, the following measures apply to invasive species removal projects.

Along with hand and mechanical removal, targeted herbicide use is a common method for invasive vegetation removal projects. Herbicide use is restricted in accordance with approved application methods and best management practices (designed to prevent exposure to non-target areas and organisms). Any herbicide considered for control of invasive plants must adhere to all regulations and obtain necessary permits. Herbicides will be registered for use in California and applied by a licensed applicator under all applicable state and local permits. A project area may be treated several times per year, often for multiple years, to control regrowth of the invasive plant.

Herbicides may be applied to control established stands of non-native species including Arundo, Tamarisk, Vinca, Ivys, Brooms and other species. Where it is necessary to use

herbicides to control established stands of exotics or to control the invasion of exotics into restoration plantings, the herbicides must be applied according to registered label conditions. When herbicides are used near waterways, an approved herbicide that is safe to use near aquatic habitats will be utilized. Methods that do not require surfactants will be used when possible. In situations where surfactants are necessary, products used will be limited to those determined to be the least toxic to aquatic and marine/estuarine organisms. To the greatest extent feasible, herbicides will be applied directly to target species by backpack sprayer or hand application to minimize exposure to non-target species. Herbicide tracers (i.e., spray pattern indicators) should be used whenever possible to track herbicide application progress. Herbicides will not be applied when winds exceed 5 miles per hour, during a rain event, or when rain is forecast within 24 hours.

11. Sediment Removal

Sediment accumulation in streams from either natural or anthropogenic processes (e.g., excessive stream bank erosion, rural and forest road-related erosion, upland development impacts) can alter normal flow patterns, bury or suffocate aquatic species eggs, entrap or demobilize fish, cause flooding, block migratory fish from reaching spawning areas, and otherwise adversely affect the aquatic environment. Sediment removal projects are undertaken to alleviate these situations and restore natural flow regimes. Such projects undertaken by the CRP, generally associated with other project types such as small dam removal, upslope restoration or bank stabilization, are typically small in scale and do not involve major dredging operations, but would involve the use of heavy equipment (e.g., front-end loaders and dump trucks) to haul the sediment to a disposal location.

NOAA RC funds fish passage barrier removal projects (small dams, fords, culverts, etc.) that may require sediment excavation behind the structure to avoid downstream sediment impacts. In addition, NOAA RC implements projects that excavate sediment to create new tidal or riverine channels to restore tidal and off channel habitats. Projects may also remove sediment from other sources, such as major land erosion or forest roads. The sediment is usually excavated down to the design channel grade and sediment is either trucked off site or if a suitable site exists, stored onsite, outside of the floodplain, with implementation of appropriate erosion control measures.

2. Estuarine and Coastal Restoration: Wetland, Submerged Aquatic Vegetation, Oysters, Living Shorelines, Kelp and Rocky Reefs

1. Wetland Restoration

NOAA RC funds many kinds of wetland restoration activities. These activities include the removal or addition of substrate to create the desired elevation for wetland vegetation and fish habitat. Techniques include removing sediment and possibly vegetation to achieve intertidal elevations, introducing appropriate sediments such as dredged material to achieve the required elevation, and planting native vegetation. Other techniques include berm or levee breaching or modification for tidal flow. Most often, the goal is to achieve an intertidal wetland, but frequently the project is designed to result in a mosaic of habitats including shallow subtidal, intertidal, and upland habitats.

a. Sediment Removal and Material Placement

Historically, loss of wetlands has resulted from filling and conversion of marsh habitats to uplands. This conversion was sometimes for the purpose of creating buildable upland areas, but frequently, dredge spoils from waterways were piled on marsh habitats for disposal purposes.

A characteristic restoration project to remove dredged spoils from the natural substrate would involve using heavy machinery to remove/relocate the unwanted or contaminated sediment. The first task to remove unwanted/contaminated sediment is often to remove upland vegetation that has grown into the area. Ideally grubbing of native wetland vegetation is done to be used for revegetation of the project site. The area is excavated, generally via heavy machinery unless the project footprint is small enough to be done with hand tools, to an elevation determined by project designers based on the overall goals of the project. Creation of gentle slopes will allow for the most natural transition of habitats and is most likely to create the largest range of habitat types in response to sea-level rise (Fejtek et. al 2014).

In cases where the wetland has subsided and native marsh vegetation has been inundated, frequently due to water impounded by dikes or culverts and increasingly due to sea level rise, various techniques may be used to raise the level of the marsh. In areas fully converted to open water, local subtidal sediments may be used to raise the elevation, either across a large area behind a retaining dike, or in a pattern of mounds designed to provide a variety of elevations and slow water velocities, further trapping sediment to build elevation naturally. In both cases, the typical equipment used is a dredge with heavy construction equipment used to distribute dewatered sediment to the appropriate elevation. A final technique involves spraying a thin layer of dredge spoil over an existing vegetated marsh. This technique is used when the marsh is failing to keep up with sea level rise and/or subsidence, but still has critical rooted vegetation that would be smothered by deploying sediment in a traditional manner.

In any of the techniques above, native vegetation may be planted, either because a local native vegetation source is not available, or because project managers wish to jump-start vegetation growth and involve citizens in planting efforts. Native plants may be sourced from local nurseries, or from healthy donor marshes.

In general these wetland restoration projects vary in size from a few acres to hundreds of acres. Based on their environmental impacts, some projects may fit under a NOAA RC programmatic NEPA document, however at times NOAA RC must adopt another agency's EIS to move forward with funding and implementation.

The length of time between initiating sediment placement/removal and when active restoration efforts are complete will vary due to the size of the restoration site and the season in which the work was begun. Frequently, only a few weeks or months are required to remove the upland vegetation and soil, but planting cannot be completed until the appropriate tidal cycles or growing season begins. For this reason, active restoration activities may last over a year, even at smaller sites.

b. Levee Modification and Removal

In California, NOAA RC implements culvert or levee (berms, dikes, etc.) removal, breaching or modifications to return surface water flows, either riverine or tidal, to a more natural regime, thereby increasing available habitat to fish and other coastal resources and increasing carbon sequestration and storage capacity. Most of the levee removals or breaching are associated with wetland restoration projects. Funded projects primarily benefit salt marsh, freshwater tidal marsh and may enhance connections between estuaries and their watersheds.

NOAA RC funds levee and berm modification or removal projects to help restore the natural flow and hydrology to affected areas and reconnect additional fish habitat that has been blocked. These projects typically involve several components, including but not limited to the following:

- Physical removal of the levee, berm, or plug materials, which are typically earthen or concrete, using heavy equipment;
- Use of heavy equipment to breach the levee;
- Filling of ditches and canals behind levees; and/or
- Channel construction and modification.

In order to minimize the impacts from this activity, unless it is being used to fill man-made features such as ditches or canals, nonnative fill material originating from outside the floodplain will be removed to an upland site. The berm or levee shall always be breached at the downstream end of the project and/or at the lowest elevation of the floodplain to ensure the flows will naturally recede back into the main channel, thus minimizing any risk of fish entrapment.

In many cases, non-native species are removed from the area where tidal flows would enter following breaching of the levee or berm. Native plants are planted along the perimeter of the restoration site where there is the expectation of successful re-establishment.

Most of the levee modification projects funded by NOAA RC have been levee breaches. The height of the levee can range from two to ten feet and its breaching can allow up to 600 acres of tidal water coverage to occur. Levee breaches funded by NOAA RC do not border housing or commercial developments. As with the wetland restoration projects discussed above, levee breaching may fit under the NOAA RC programmatic EA or PEIS. At times NOAA RC must adopt another agency's EIS to move forward with funding and implementation.

Standard Protection Measures for Wetland Projects

Wetlands projects follow standard protection measures listed in Section J, *Table 1 – NOAA RC Summary of General Project Requirements and Protection Measures for Coastal Resources*, including, but not limited to, flagging sensitive areas, on-site erosion controls, on-site pollution prevention controls, methods to reduce soil compaction, seasonal work periods, adequate training of volunteers, and planting and installing vegetation standards.

2. Submerged Aquatic Habitat Restoration

Submerged Aquatic Vegetation (SAV) restoration involves transplanting or seeding subtidal habitats in bays and estuaries with seagrasses. SAV is usually planted to provide nursery and feeding habitat for a variety of aquatic fish and other organisms. In addition, SAV provides fish and other marine species hiding places from predation and competition. SAV beds help stabilize bay sediments, making it easier for additional SAV or other stable substrate dependent organisms, such as oysters, to establish. Most of the SAV restoration in California has been to eelgrass (*Zostera marina*), which can live in fully marine to brackish waters. Other SAV restoration with species such as surf grass (*Phyllospadix sp.*), which lives in the outer coast, and widgeon grass (*Ruppia maritima*), which is found in more brackish waters, have not been implemented yet by NOAA RC in California.

In general, SAV projects funded by NOAA RC convert open water and unvegetated open bottom to seagrass beds. While all habitat types are valuable for conservation, the loss of seagrass habitat is particularly significant; SAV has experienced a 40% decline worldwide. In some areas, SAV beds are still fairly intact, while other areas have declined up to 90%. (Fonseca et al 1998). In most locations, seagrass colonization is too prone to being disrupted by the disturbances mentioned above to count on a sufficient natural recolonization rate (Fonseca et al 1998). Therefore, NOAA RC often provides technical and financial support to restoration projects for the purpose of creating or reestablishing SAV where it does not currently exist.

SAV habitat is also frequently impacted by boaters, whose propellers dig into the bottom, tearing up sea grass meadows, creating readily identifiable bare spots called “prop scars.” Larger vessels that run aground on shallow flats also cause damage to SAV beds. A small injury to an SAV bed may be enlarged by a storm event that takes advantage of the instability caused by the original damage. Also, SAV beds die off due to poor water quality and high turbidity.

Restoration is accomplished by direct planting of live plants in bare root, plug or mat form, either by hand or with mechanical methods. In some cases, seeds are distributed via seed buoys. At times the planting area is enhanced with sediment (i.e. prop scars are filled to allow for improved SAV growth) to provide nutrients and proper elevations for the transplants.

NOAA RC has been conducting eelgrass planting and seeding restoration in California for 10 years with a variety of organizations in San Francisco Bay and in Southern California. Currently restoration projects average less than an acre up to four acres at any given site. Eelgrass restoration sites include various locations within Upper Newport Back Bay and off the Channel Islands National Park in Southern California.

Standard Protection Measures for Submerged Aquatic Vegetation

Measures to protect both the donor beds and the newly restored beds will be implemented. SAV plants or seeds are usually collected from existing SAV beds, which can cause minor disturbances to the beds and their substrate, and temporarily reduce the number of individuals or seeds in the existing population. For all geographic areas, no more than five percent of the

below ground biomass of an existing donor bed will be harvested for transplanting purposes. Plants harvested will be taken in a manner that thins an existing bed without leaving any noticeable bare areas. Harvesting of flowering shoots for seed buoy techniques will occur only from widely separated plants and only a certain percent of the donor stock can be used per year. This percent is site dependent and prior to restoration requires intimate knowledge of the genetics and population dynamics of the donor site.

All efforts to reduce any potential turbidity while at the site are implemented. In most cases restoration takes place during low tide and turbidity is avoided. If divers and boats are used, the boat propellers are lifted and divers enter the SAV area outside the bed.

3. Shellfish Habitat and Shellfish Restoration and Creation

NOAA RC funds many kinds of shellfish restoration projects. In California, funded projects primarily focus on native oysters (e.g. *Ostrea lurida*) but may also restore other shellfish species such as hard clams, scallops and abalone. Techniques can be grouped into two types: placement of shellfish substrate and introduction of shellfish. These types are implemented separately, or at the same restoration site, depending on the needs of the locality.

Shellfish substrate is placed to encourage oyster larval recruitment. Restoration sites are subtidal or intertidal on un-vegetated, soft bottom estuarine areas. Rarely, substrate may be placed on hard substrate that represents former reef habitat, but only if the hard substrate is not currently producing oysters at a sustainable level. Natural substrate (oyster or clam shells) is preferred due to the oysters' affinity for it, but is not always available. Shells are most often deployed loose or in plastic mesh bags. Artificial substrate is used when there is not enough shell substrate available to create larger reef areas or when the bottom substrate is unstable and substantial sinking of the reef is likely to occur. Common artificial substrates include limestone rock and baycrete (e.g. Reef Balls, Oyster Castles, etc.). Regardless of type, most substrate is deployed from a boat or barge, but in some shallow water situations, restoration practitioners and community volunteers may carry the substrate to the reef location.

Restoration efforts also include releasing live shellfish in the restoration area if the local population is not large enough to produce viable larvae or has been fully extirpated from the area. Oysters may be released as single oysters, or already attached to substrate as spat on shell. Non-reef-forming organisms such as clams and abalone are released as individuals, but may be caged to reduce predation and facilitate research efforts. Rearing shellfish prior to release occurs in land-based or near-shore aquaculture facilities. Some shellfish are purchased from commercial facilities, but some funding recipient organizations run their own facilities as well.

The preliminary step to either of these restoration techniques may include the use of a shellfish rearing facility. These facilities consist of land-based tanks or floating cages. Rearing facilities are used to spawn additional shellfish and make sure stocks are disease free before being placed in their new environment.

Native oyster restoration funded by the RC has taken place in Humboldt and San Francisco Bays in Northern California and Los Alamitos Bay and Newport bays in Southern California.

Restoration areas can be from under an acre in size up to three acres. Abalone restoration aimed at increasing the endangered white (*Haliotis sorenseni*) and black (*Haliotis cracherodii*) abalone species, by growing and out-planting the various life history stages of green abalone (*Haliotis fulgens*) as a proxy species has been implemented for recovery efforts at locations off shore in Southern California.

Standard Protection Measures for Oyster Restoration

Disturbance at a shellfish restoration site typically only lasts as long as is needed to deploy the substrate or shellfish. Most native oyster restoration projects are performed with small boats and divers and consist of 20 to 60 bags of shell material that are placed by hand. Larger amounts of substrate can usually be deployed in a day; loose shells are sprayed off barges with high pressure hoses or are placed with specialized hopper-conveyer belt systems built into the deployment vessel; other substrate (reef balls) is typically placed using heavy equipment loaded on the barge. Reefs are typically built prior to times of high spat set (larval settling). All shell material is placed in un-vegetated areas (i.e. not directly on seagrasses). Any shell material or structures that are not providing ecological services are removed.

Shell sources - Shell or other substance used for substrate enhancement will be procured from clean sources that do not deplete the existing supply of shell bottom. Shells will be left on dry land for a minimum of one month before placement in the aquatic environment. Shells from the local area will be used whenever possible.

Native species and disease - Shellfish will be species native to the project area. Any shellfish transported across state lines or grown through an aquaculture facility will be certified disease free.

4. Living Shorelines

Living shoreline projects use a suite of habitat restoration techniques to reinforce the shoreline, minimize coastal erosion, and maintain coastal processes while protecting, restoring, enhancing, and creating natural habitat for fish and aquatic plants and wildlife. The term “Living Shorelines” was coined because the approach provides living space for estuarine and coastal organisms. Strategic placement of native vegetation and natural materials or shell for native shellfish settlement enhance habitat values by creating new living space. The techniques also increase connectivity of wetlands and deeper intertidal and subtidal lands while providing a measure of shoreline protection. Design strategies using rock armoring, rock sill, groin, or breakwater installations are not covered under this CD.

In addition, California’s Climate Adaptation Strategy recommends the use of Living Shorelines as a potential adaptation method to reduce the need for engineered hard shoreline protection devices and to provide valuable, functional coastal habitat (CNRA 2014). The State Coastal Conservancy Climate Change Policy also supports the use of Living Shorelines for their ability to provide stronger estuarine habitat resiliency to future sea level rise and other climate-change related effects (SCC 2011).

At this time the only Living Shoreline projects in California with NOAA support and technical assistance are within San Francisco Bay at two locations. The goal of these projects is to

create biologically rich and diverse subtidal and intertidal habitats, including eelgrass and oyster reefs, as part of a self-sustaining estuary system that restores ecological function and is resilient to changing environmental conditions.

Standard Protection Measures for Living Shorelines

Protection measures for living shorelines include those mentioned above for wetlands, seagrasses and oyster restoration since many of the techniques are used simultaneously.

5. Kelp Forest Restoration

Kelp forests are important structural habitat components of the near shore marine environment that provide nursery and feeding grounds for thousands of marine species. They are also instrumental in the carbon sequestration process, which is important to maintaining healthy CO₂ levels in the environment.

Kelp forest restoration has been implemented in Southern California, where kelp forests have been reduced by 80% over the past century. Pollution and sedimentation runoff from nearby land-based human activities have harmed kelp forests. Overfishing, extinction, and reduction of natural sea urchin predators has eliminated large areas of kelp forest that once existed.

Kelp forest restoration involves out-planting and transplanting of various kelp life history stages. Spore bags are attached to the substrate to allow for dispersal and seeding of substrate. Transplanting of lab grown kelp or drift kelp is also utilized. In some projects, sea urchins are removed from planted or already established areas to increase survival and growth of the kelp forest. Kelp forest restoration aims to restore structural and functional attributes of kelp forests. Techniques of planting and predator removal tend to be similar in all areas where kelp restoration is done. Kelp restoration primarily focuses on giant kelp (*Macrocystis pyrifera*), but different geographic regions could benefit from kelp restoration techniques with other kelp/algal species which may have different starting conditions and depth requirements.

Kelp forest restoration occurs in subtidal environments with hard substrate for kelp holdfast attachment. NOAA RC has worked with the California Coastkeeper Alliance both in Los Angeles and Orange Counties to help restore beds along the coast. Most kelp restoration projects are very labor intensive and therefore the overall footprint of restoration is small, typically one to three acres.

Standard Protection Measures for Kelp Restoration

In all cases, kelp restoration is performed by hand by registered, certified, and specially trained divers. There is very little sedimentation that occurs with this type of restoration, but all restoration practitioners minimize turbidity and sedimentation based on considerations such as access to the project, size of restoration effort, duration, or sediment characteristics.

All vessel operators must be licensed and establish vessel corridor routes to avoid kelp beds and establish anchor lines to avoid hard bottom areas or kelp beds.

J) Summary of Environmental Compliance Requirements and NOAA Project Review

NOAA RC and Corps have established general requirements and environmental protection measures that must be implemented for projects to be included in the Program. NMFS BOs

also contain specific requirements for dewatering, riparian restoration, species protection, and more, as well as general project review procedures conducted by NOAA RC.

As part of NOAA RC's general review process, NOAA RC will evaluate individual projects and assess whether they can be covered under NOAA RC's Long Beach Office programmatic BO, applicable BOs for existing restoration programs that fall within the scope of activities covered by the CRP (e.g., existing local permit coordination programs with pre-existing BOs), or whether a project should be reviewed through an individual ESA section 7 consultation because the project is outside the parameters of a BO and warrants separate analysis. NOAA RC will also screen applications for applicability to this federal Consistency Determination, applying criteria from the "General Exclusions" and "Qualifying Projects" sections of this report. All projects will be subject to applicable general project requirements, as well as project-specific conditions that NOAA RC and NMFS deem necessary in order to protect coastal resources. *Table 1 – NOAA RC Summary of General Project Requirements and Protection Measures for Coastal Resources* below summarizes NOAA RC general project requirements, natural resource protection measures, and NOAA RC project review process to ensure the protection of coastal resources.

Additional details on the protection measures listed below can be found in the NMFS Long Beach Office programmatic Biological Opinion for Restoration, NOAA Programmatic NEPA documents, and the earlier referenced CDFW *Salmonid Restoration Manual* and NMFS *Fish Screening Criteria and Fish Passage Criteria*.

TABLE 1 - NOAA RC SUMMARY OF GENERAL PROJECT REQUIREMENTS AND PROTECTION MEASURES FOR COASTAL RESOURCES

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
<p>General Requirements/ Project Limits</p>	<p>Application reviewed by NOAA RC biologists to determine whether project qualifies for NOAA RC Program, overall restoration benefit, ESA mandates met, avoidance of impacts to other coastal and marine resources. Must obtain all other agency permits to proceed.</p>	<ul style="list-style-type: none"> - In addition to general conditions, site specific conditions are required as needed for each project. - Voluntary restoration projects only; projects must clearly demonstrate habitat restoration benefits. - Engineering review required for complex projects - All other permits must be obtained before the project may commence - Contractors must be briefed in advance by qualified biologist on all protection measures - Impact evaluation criteria must be followed: first avoidance, then minimization, and mitigation. - Detailed success criteria required for revegetation projects - NOAA maintains tracking database to provide info on project monitoring and ensure compliance with all requirements - NOAA retains right of reasonable access to property to monitor effectiveness of project through life of signed landowner agreement - Monitoring and reporting required (see “monitoring, success criteria and reporting” section of the Table, below) <p><i>The NMFS Long Beach Office programmatic BO also specifies:</i></p> <ul style="list-style-type: none"> - Specific protection measures for species, water quality, and several other resources areas. - Limitations on number of projects implemented annually to avoid cumulative impacts - Maximum stream dewatering length: 500’

¹ Note: All projects are subject to site- and project-specific conditions, as specified in either the NOAA RC Long Beach Office programmatic BO, other programmatic BOs applicable for CRP projects, individual Section 7 consultations for CRP projects that require separate consultation, and addendums to these documents containing further conditions. NOAA RC and NMFS staff will determine which BO shall be applied or whether individual Section 7 consultation must be completed. This table contains general requirements from the following sources: NOAA RC NEPA EAs (2002, 2006), Long Beach Office programmatic BO, Program Environmental Impact Statement (PEIS) (June 2015), and NOAA RC.

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
		<ul style="list-style-type: none"> - Maximum staging area size: 0.5 ac - Consistency with CDFW Salmonid Stream Habitat Restoration Manual, CDFW Culvert Criteria for Fish Passage, CDFW/NOAA Fish Screening Criteria for Salmonids, Handbook for Forest and Ranch Roads (Weaver and Hagans). - Construction work window limited to June 1-November 30 with planting allowed beyond November 30. - Additional early collaboration with NMFS, topographic and hydraulic surveys and analyses, monitoring and reporting, and other protection and information measures may be required.
Water Quality	<p>NOAA requires both project-specific and general measures for WQ protection.</p> <p>Sec. 401 WQ Certification from SWRCB/RWQCB, 1600 Agreement or Habitat Restoration and Enhancement (HRE) Act/AB 2193 approval from CDFW, Army Corps Sec. 404 Permit, and compliance w/local ordinances also required.</p>	<ul style="list-style-type: none"> - Detailed water quality protection and erosion control requirements during and following construction. - Dewatering for in-channel work, with specific rules for how dewatering shall occur. - Retain as many trees and shrubs as feasible, emphasizing shade-producing and bank-stabilizing trees and brush. - Specific avoidance of impacts from poured concrete. - Specific requirements for access road maintenance and road decommissioning - Temporary erosion controls will be in place before any significant alteration of the action site and will be monitored during construction to ensure proper function. Turbidity curtains, hay bales, and erosion mats shall be used where appropriate. - Erosion and head cuts will be anticipated and minimized through grade control structures or bank re-contouring. - Confine vegetation and soil disturbance to the minimum area, and minimum length of time, as necessary to complete the action, and otherwise prevent or minimize erosion associated with the action. - Cease work under high flows or seasonal conditions that threaten to disturb turbidity reduction measures, except for efforts to avoid or minimize resource damage. - Mulch and seed exposed areas after ground-disturbance activities complete.

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
		<p><i>General On-Site Pollution Controls:</i></p> <ul style="list-style-type: none"> - Properly confine, remove, and dispose of construction waste, including every type of debris, discharge water, concrete, cement, grout, washout facility, welding slag, petroleum product, or other hazardous materials generated, used, or stored on-site. - All vehicles and other heavy equipment will (a) be stored, fueled, and maintained in a vehicle staging area set back from any natural waterbody or wetland; (b) inspected daily for fluid leaks before leaving the vehicle staging area. - Generators, cranes, and any other stationary equipment operated within 150 feet of any natural water body or wetland will be maintained as necessary to prevent leaks and spills from entering the water. - Use procedures to contain and control a spill of any hazardous material generated, used or stored on-site, including notification of proper authorities. - When local conditions indicate the presence of contaminated sediments is likely, soil samples will be tested for contaminant levels and precautions will be taken to avoid disturbance of or provide for proper disposal of contaminated sediments. - Equipment will always be refueled away from stream corridors, and operators are required to have a spill response plan in place in case of a leak. <p><i>The NMFS Long Beach Office programmatic BO also specifies:</i></p> <ul style="list-style-type: none"> - Use native plant species to revegetate ramps following use, preferably with a mulch or binder that will hold the soils in place while the vegetation is establishing. - If vegetation cannot be established for a particular ramp following use, apply temporary erosion-control mats or blankets, straw, or gravel as appropriate. - For ramps where sediment is already eroded and mobilized, temporary controls shall be installed. These may include: sediment-control fences, fabric-covered triangular dikes,

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
		<p>gravel-filled burlap bags, biobags, or hay bales staked in place.</p> <ul style="list-style-type: none"> - All mechanized equipment working in the stream channel or within 25 feet of a wetted channel shall have a double containment system for diesel and oil fluids. Hydraulic fluids in mechanical equipment working within the stream channel shall not contain organophosphate esters. Vegetable based hydraulic fluids are preferred. - Oil absorbent and spill containment materials shall be located on site when mechanical equipment is in operation within 100 feet of the proposed watercourse crossings. If a spill occurs, no additional work shall commence in-channel until (1) mechanical equipment is inspected by the contractor, and the leak has been repaired, (2) the spill has been contained, and (3) CDFW and NOAA RC are contacted and have evaluated the impacts of the spill. - Areas for fuel storage, refueling, and servicing of construction equipment must be located in upland location. - Use or storage of petroleum-powered equipment shall be accomplished in a manner to prevent the potential release of petroleum materials into waters of the state (Fish & Game Code 5650). - Prior to use, all equipment will be cleaned to remove external oil, grease, dirt, or mud. Wash sites must be located in upland locations so wash water does not flow into a stream channel or adjacent wetlands. - All construction equipment must be in good working condition, showing no signs of fuel or oil leaks. Prior to construction, all mechanical equipment shall be inspected on a daily basis to ensure there are no motor oil, transmission fluid, or coolant leaks. All leaks shall be repaired in the equipment staging area or other suitable location prior to resumption of construction activity.
Listed Species	<p>NOAA mission to protect species; integral part of project review.</p> <p>ESA section 7 consultations required with FWS and NOAA; CDFW CESA</p>	<ul style="list-style-type: none"> - Work windows for all listed species - Buffer distance from species required - Detailed fish capture and relocation and dewatering requirements; qualified biologist required; reporting all encounters with listed species. - Water quality, water quantity, sensitive habitat protection, and other general measures also serve to protect species. <p><i>The NMFS Long Beach Office BO also specifies:</i></p>

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
	compliance or Habitat Restoration and Enhancement (HRE) Act/AB 2193 approval also required.	- Work window of June 1 – November 30 with revegetation activities allowed beyond November 30.
Environmentally Sensitive Habitat Protection	Review projects for benefits to habitat and conditions required for avoidance of temporary and long-term impacts.	<p><i>General Measures for Reduction of Soil Compaction</i></p> <ul style="list-style-type: none"> - Existing access ways will be used whenever possible. Temporary access roads will not be built on slopes greater than 50%, where grade, soil, or other features suggest a likelihood of excessive erosion or failure. - Soil disturbance and compaction will be minimized within 150 feet of a natural waterbody or wetland. - All temporary access roads will be removed when the action is completed, the soil will be stabilized, and the site will be revegetated. - Temporary roads in wet or flooded areas will be restored shortly after the work period is complete. - Heavy equipment will be selected and operated in a manner that minimizes adverse effects to the environment (e.g., minimally-sized, low pressure tires, minimal hard turn paths for tracked vehicles, temporary mats or plates within wet areas or sensitive soils). - To the extent feasible, heavy equipment will work from the top of the bank, unless work from another location would result in less habitat disturbance. <p><i>Site Restoration</i></p> <ul style="list-style-type: none"> - Any large wood, mature native vegetation, topsoil, and native channel material displaced by construction will be stockpiled for use during site restoration. When construction is finished, all stream banks, soils, and vegetation will be cleaned up and restored as necessary to renew ecosystem processes that form and maintain productive fish habitats. Measures to ensure native vegetation or revegetation success will be identified and implemented. - Any stream bank area left barren of vegetation as a result of project implementation or maintenance shall be restored to a natural state by seeding, planting, or other means with native trees, shrubs, or grasses. - Barren areas shall typically be planted with a combination of willow stakes, native shrubs and trees and/or erosion control grass mix. - Native plant species shall be used for revegetation of disturbed and

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
		<p>compacted areas</p> <p><i>Planting or Installing Vegetation</i></p> <ul style="list-style-type: none"> - NOAA RC will ensure the use of an appropriate assemblage of species native to the action area or region, including trees, shrubs, and herbaceous species. - No more than 5 percent of the below ground biomass of an existing donor bed will be harvested for transplanting purposes. Thin existing beds without leaving any noticeable bare areas. Harvesting of flowering shoots will only occur from widely separately plants. <p><i>Invasive Species Spread Prevention</i></p> <ul style="list-style-type: none"> - Vehicles or equipment used to manage invasive plants should be cleaned of all debris before removing it from the treatment site to prevent the unintended spread of seeds, rhizomes or plant fragments to other areas. Biofouled debris bearing non-native species should be appropriately treated before moving to reduce the likelihood of introducing or spreading or invasive species. - Prevention measures are used to identify and minimize the risks of introducing non-native organisms during restoration activities <p><i>Adequate Training of Volunteers</i></p> <ul style="list-style-type: none"> - Training should be provided to ensure minimal impact to the restoration site by volunteers. Volunteers shall be trained in the use of low-impact techniques for planting, equipment handling, and moving around the restoration site to avoid unnecessary impacts to native flora and fauna. <p>Invasive Species Removal</p> <p><i>Herbicide Application Controls</i></p> <ul style="list-style-type: none"> - Use of herbicides in project areas will be conducted according to established protocols for the locality, as determined by a state-licensed herbicide applicator. Such protocols will include information and guidelines for appropriate use, timing, amounts, application methods, and safety procedures relevant to the herbicide application. - When herbicides are used near waterways, an approved herbicide that is safe to use near aquatic habitats will be utilized. Methods that do not require surfactants will be used when possible. In situations where surfactants are

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
		<p>necessary, products used will be limited to those determined to be the least toxic to aquatic and marine/estuarine organisms.</p> <ul style="list-style-type: none"> - Herbicides will not be applied when winds exceed 5 miles per hour, during a rain event, or when rain is forecast within 24 hours. <p><i>Additional Information and Guidelines</i></p> <ul style="list-style-type: none"> - For high-risk projects, additional measures shall be taken to ensure invasive species are controlled and removed. Additional information for inspection and cleaning methods can be found in NOAA RC Best Management Practices for Invasive Species at: http://www.habitat.noaa.gov/restoration/programs/invasivespecies.html. <p>Wetlands</p> <ul style="list-style-type: none"> - Wetlands projects follow standard protection measures listed through this table including, but not limited to, flagging sensitive areas, on-site erosion controls, on-site pollution prevention controls, methods to reduce soil compaction, seasonal work periods, adequate training of volunteers, and planting and installing vegetation standards. <p><i>The NMFS Long Beach Office programmatic BO also specifies:</i></p> <ul style="list-style-type: none"> - Flagging required around sensitive areas and buffers - Specific habitat data and surveys required as part of project application - Specific measures to minimize impacts to riparian vegetation - Tree size removal limits - Construction access point must minimize vegetation and soil disturbance and compaction <p>- See <i>Section N - Summary of Consistency with the California Coastal Management Program</i> for additional discussion on ESHA protection.</p>
Water Quantity	Any projects approved for NOAA RC Program that affect flows will conserve water for habitat.	<ul style="list-style-type: none"> - Existing diversions only; must be in compliance with SWRCB water rights requirements; only allowed if water conservation benefit for species. - Additional hydrological data/water flow data information required for water conservation projects.

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
		<ul style="list-style-type: none"> - Pipe developments must decrease stream diversion and include permitted instream flow dedication, and be maintained for at least 10 years.
Visual Resources	<p>Project evaluated for Consistency Determination applicability. Projects typically result in improved visual resources.</p> <p>Project applications are evaluated and ranked based on their level of community and landowner support.</p> <p>Also addressed through CEQA and local ordinances.</p>	<ul style="list-style-type: none"> - All other permits/approvals must be acquired before project commences. - Most projects result in a net benefit to visual impacts by restoring degraded habitat and vegetation. - See <i>Section N - Summary of Consistency with the California Coastal Management Program</i> for a more detailed discussion of visual resource protection.
Public Access	<p>Evaluated during application review process and community involvement.</p> <p>Projects ranked based on public/landowner support in coordination with local agencies and other stakeholders, as well as watershed studies and prioritized actions from Integrated Regional Water Management Programs.</p> <p>Also addressed through CEQA process and local ordinances.</p>	<ul style="list-style-type: none"> - All other permits/approvals must be acquired before project commences. NOAA's mission supports public access and recreation as long as it does not negatively impact listed species. - Some NOAA RC projects include public recreational access improvement components. Projects often include partners with shared mission of maintaining public access for educational and/or recreation purposes (US FWS, State Coastal Conservancy, etc.). - Project applications are evaluated and ranked based on their level of community and landowner support. - See <i>Section N - Summary of Consistency with the California Coastal Management Program</i> for a more detailed discussion of public access protection.

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
Estuarine and Marine Resources	Review projects for habitat/species benefits, and require avoidance of potential adverse impacts to estuarine habitat.	<ul style="list-style-type: none"> - Project/site specific protection measures required by NOAA RC; all measures for water quality/sensitive habitat/species listed above also apply in estuarine areas. - NMFS Long Beach programmatic BO is utilized where applicable and project specific BOs (with project specific protection measures) are developed as needed for estuarine and marine species. - Project- and species-specific conditions imposed by NOAA. - <i>Assessment, Research, and Monitoring Techniques</i> - Destructive sampling techniques (such as biomass sampling, benthic cores, fish capture, etc.) will only be used as part of an experimental design, tailored to require the fewest number of samples to achieve the desired purpose. All researchers will obtain biological sampling permits as required for their locality. All available information on sediment transport in the project area would be considered prior to barrier island and beach habitat restoration. - See <i>Section N - Summary of Consistency with the California Coastal Management Program</i> for a more detailed discussion of estuarine and marine resources protection. <p>Living Shorelines</p> <ul style="list-style-type: none"> - Protection measures for living shorelines include those mentioned for wetlands, sea grasses, and oyster restoration since many of the techniques are used simultaneously. <p>Kelp Restoration</p> <ul style="list-style-type: none"> - In all cases, kelp restoration is performed by registered, certified divers. All restoration practitioners must minimize turbidity and sedimentation based on considerations such as access to the project, size of restoration effort, duration, or sediment characteristics. All vessel operators are licensed and establish vessel corridor routes to avoid kelp beds and establish anchor lines to avoid hard bottom areas or kelp beds. <p>Submerged Aquatic Vegetation</p> <ul style="list-style-type: none"> - Measures to protect both the donor beds and the newly restored beds will be implemented. For all geographic areas, no more than five percent of the below

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
		<p>ground biomass of an existing donor bed will be harvested for transplanting purposes. Plants harvested will be taken in a manner to thin an existing bed without leaving any noticeable bare areas. Harvesting of flowering shoots for seed buoy techniques will occur only from widely separated plants and only a certain percent of the donor stock can be used per year. This percent is site dependent and prior to restoration requires intimate knowledge of the genetics and population dynamics of the donor site.</p> <ul style="list-style-type: none"> - All efforts to reduce any turbidity while at the site will be implemented. In most cases restoration takes place during low tide and turbidity is avoided. If divers and boats are used the boat propellers are lifted and divers enter the SAV area outside the bed. - Mooring locations and buoy installation - when barges and other boats must moor on site to accomplish restoration work, mooring locations will be chosen to minimize damage to existing healthy reefs or adjacent SAV beds. - Off-site sediment and dredge spoils are placed in a manner to minimize impacts to any existing vegetation. - Before dredged material is deposited, sediments must be tested for contaminants and analyzed for physical characteristics such as grain size and water content to ensure vegetation will successfully re-colonize the area. <p>Shellfish Restoration</p> <p><i>General</i></p> <ul style="list-style-type: none"> - Disturbance is typically short duration. Reefs are typically built prior to times of high spat set (larval settling). All shell material is placed in un-vegetated areas (i.e. not directly on seagrasses). Any shell material or structures that are not providing ecological services are removed. <p><i>Shell sources</i></p> <ul style="list-style-type: none"> - Shell or other substance used for substrate enhancement will be procured from clean sources that do not deplete the existing supply of shell bottom. Shells will be left on dry land for a minimum of one month before placement in the aquatic environment. Shells from the local area will be used whenever possible.

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
		<p><i>Native species and disease</i></p> <ul style="list-style-type: none"> - Shellfish will be species native to the project area. Any shellfish transported across state lines or grown through an aquaculture facility will be certified disease free. <p>Rock Breakwaters (<i>developed for habitat protection purposes</i>)</p> <ul style="list-style-type: none"> - All rock or shell breakwaters will be designed with appropriate ingress and egress for fish in consultation with local regulatory agencies.
Coastal Agriculture	<p>NOAA ranks projects based on public/landowner support, in coordination with local agencies and other stakeholders, as well as watershed studies and prioritized actions from Integrated Regional Water Management Programs.</p> <p>Projects evaluated for protecting the loss of valuable agricultural top soil, increasing the function and health of waterways and improving dependable water supplies for livestock. CEQA analysis evaluates for impacts to agriculture.</p>	<ul style="list-style-type: none"> - Protection measures to prevent erosion and sediment runoff must be implemented. - Projects evaluated for protecting the loss of valuable agricultural top soil, increasing the function and health of waterways passing, and improving dependable water supplies for livestock. - Although rare, conversion to estuarine or wetland uses are evaluated for their ability to buffer sea level rise due to climate change, thereby protecting adjacent agricultural lands. - All other permits/approvals must be acquired before project commences. - See <i>Section N - Summary of Consistency with the California Coastal Management Program</i> for a more detailed discussion of agricultural resource protection.
Cultural Resources	Evaluated during NOAA RC project review.	<ul style="list-style-type: none"> - NOAA RC complies with section 106 of the NHPA on an individual project basis. NOAA RC or designee will consult with SHPO and tribal officers for projects that may impact cultural or historic resources. NOAA RC has a staff Cultural Resource Specialist who is utilized as needed.

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
	<p>NOAA ranks projects based on public/landowner support, in coordination with local agencies and other stakeholders, as well as watershed studies and prioritized actions from Integrated Regional Water Management Programs.</p> <p>Also included in CEQA analysis.</p>	<p>- See <i>Section N - Summary of Consistency with the California Coastal Management Program</i> for a more detailed discussion of cultural resources protection.</p>
Cumulative Impacts	<p>NOAA RC reviews for avoidance of cumulative impacts.</p> <p>Also addressed in CEQA compliance by SWRCB/CDFW/local agencies.</p>	<p>- The NMFS Long Beach programmatic BO has restrictions to avoid cumulative impacts and specifies a limit of 15 projects per year.</p>
Monitoring, Success Criteria, and Reporting	<p>Pre- and post-construction and success monitoring, and annual reports required.</p>	<ul style="list-style-type: none"> - Pre- and post-construction monitoring plan required of all projects; monitoring protocol typically follows CDFW FRGP. - Pre-construction reporting is provided to Coastal Commission annually; subsequently qualifying projects funded later in the year will be reported to Coastal Commission on a project-by-project basis. - Success criteria are developed for each project. - Post-construction monitoring and reporting information including: <ul style="list-style-type: none"> - Photo-documentation; - As-built drawings; - Documentation of the required avoidance, minimization, and other environmental protection measures that were implemented; - Number (by species) of fish and wildlife relocated; - Any incidental injury or mortality; and

Resource Area	NOAA Review Process	NOAA Restoration Center Southwest Region - General Requirements and Protection Measures ¹
		<ul style="list-style-type: none"> - A description of whether the project is meeting success criteria for revegetation and other parameters. -Additional monitoring is required for off-channel/side-channel habitat, water conservation, wetlands, submerged aquatic habitat, living shorelines, and kelp forest restoration, as described in Section L, below.
<p>General Application and Review Process</p>	<p>NOAA RC directly involved in project review, funding (when available), technical assistance, design, protection measures, monitoring and reporting.</p> <p>NOAA also coordinates with other agencies on project permitting.</p>	<p><i>General Process:</i></p> <ul style="list-style-type: none"> - For projects not funded by NOAA RC, project review begins with a project application for Clean Water Act section 404 and/or Rivers and Harbors Act section 10 permit authorization with the Army Corps’ Regulatory Division. Qualifying restoration projects will then follow the general review process described below. - NOAA RC reviews project, assesses project qualifications and appropriateness for use of NMFS Long Beach Office programmatic BO or other BOs; after approval for Program inclusion, sends to CDFW biologist and RWQCB staff for review. Projects in the Coastal Zone are evaluated for coverage under this Consistency Determination. - NOAA RC is alerted to projects through project partnerships, funding opportunities, and through its involvement in technical assistance and project development. - Team of NOAA RC, NMFS, CDFW, and Corps assists NOAA RC with project oversight. - Projects submitted to other agencies and NMFS biologists for review and approval throughout the year, as applications come in. - All specific information requirements must be met before project is eligible to proceed under Program. - Evaluation of monitoring plans (including success criteria) and reports. - Help with adaptive management, if needed.

K) Application Submittal and Pre-Project Monitoring Requirements

Restoration project applications will be submitted by project proponents to NOAA RC, or to the Corps at the time of application for a Clean Water Act section 404 permit, Rivers and Harbors Act section 10 permit, or both. Projects will be reviewed and processed by NOAA RC as they are submitted by applicants.

Applications for NOAA RC funding or technical assistance, or a Corps permit, will be submitted to the Program using a standard application form available through NOAA RC. NOAA RC will evaluate which projects are consistent with the Program requirements and determine which NMFS consultation applies (NMFS Long Beach Office programmatic BO, another existing restoration BO that is applicable for the CRP, or a new, individual section 7 consultation). NOAA RC team will use a pre-established checklist to help determine if a proposed project is consistent with the parameters of the Program. Once projects have received initial project screening by NOAA RC, projects that do not fit Program requirements must be modified or further clarified and developed by the project proponent before they can be resubmitted for further consideration. For projects within the Coastal Zone, NOAA RC will also evaluate the project's eligibility for coverage under this Federal Consistency Determination.

The following list includes typical information that must be provided by Program applicants (with assistance from qualified biologists and other technical specialists) in order to fulfill CRP application requirements:

- Pre-project photo monitoring data (per CDFW's guidelines)
- Project problem statement, goals, objectives
- Watershed context
- Description of the type of project proposed and restoration techniques to be utilized (culvert replacement, instream habitat improvements, etc.)
- Project dimensions and engineering plans
- Description of construction activities (types of equipment, timing, staging areas or access roads required)
- If dewatering of the work site will be necessary, a description of temporary dewatering plan and methods, an aquatic species relocation plan, and identification of a qualified individual (verified by resumes or description of qualifications) who will be onsite to transport protected salmonids and be responsible for reporting on this information.
- Construction start- and end-dates
- Estimated number of creek crossings and type of vehicle
- Materials to be used
- If vegetation will be affected as a result of the project (including worksite access), provide a visual assessment of dominant native shrubs and trees, approximate species diversity, and approximate acreage of the vegetation to be removed and replaced.
- Description of existing site conditions and explanation of how proposed activities would improve or maintain these conditions for salmonids

- Description of key habitat elements (i.e., temperature; type: pool, riffle, flatwater; estimate of instream shelter and shelter components; water depth; dominant substrate type, etc.) for salmonids in the project area
- Description of applicable minimization and avoidance measures incorporated into the project
- A monitoring plan describing proposed compliance with all applicable monitoring and reporting requirements, including the source of funding for implementation of the monitoring plan.
- For projects which may result in incidental take of listed salmonids (or other listed species), specify the funding for implementation of all proposed and required environmental protection measures.
- A signed “checklist” of project conditions, verifying agreement by the project applicant.

L) Post Construction Monitoring and Reporting Requirements

1. General Requirements

Implementation monitoring will be conducted for all projects implemented under the Program. Project applicants are also required to conduct post-construction monitoring and to comply with all reporting requirements. Monitoring and reporting will include photo-documentation (consistent with the pre-construction monitoring requirements), as-built drawings (post-construction plans for engineered projects); documentation of the required avoidance, minimization, and other environmental protection measures that were implemented; number (by species) of fish and wildlife relocated; and any incidental injury or mortality that resulted from the project. The applicant(s) shall submit this information to NOAA RC within 6 months post-construction for inclusion in their internal annual reporting process, as described below.

A description of whether the project is meeting success criteria for revegetation and other parameters must also be submitted, starting at 6 months post-construction. Depending upon the type of project, a minimum of 1 year of monitoring is required. However, based upon funding availability, project goals, and federal, state and local agency monitoring requirements, more years of monitoring may be added. Fulfillment and completion of monitoring requirements is the responsibility of the project applicant. Regardless of the project’s post-construction monitoring period, NOAA RC engages and works collaboratively with partner agencies and project proponents if issues arise that could negatively affect project outcome and success.

2. Additional Monitoring Requirements for Certain Project Types

Off-channel/Side-channel Habitat Features

All off-channel/side-channel habitat projects included in the Program will require an additional level of physical and biological monitoring to improve scientific understanding of these types of restoration projects. In addition to the information collected during the pre-project monitoring and submittal requirements (above), the following information will also be provided to NOAA RC by Program applicants:

- Description of the type of off-channel feature and restoration techniques utilized

- Description of outlet control feature (if present)
- Pre-project and post-project information, following a full season of storm events and high flows, on the elevation of the inlet and outlet structures relative to the stream's 2-year flood level.
- If the off-channel feature becomes disconnected from the main channel at any time, a description of the flow level (cfs) at which this occurred. This will require checking the project site daily when the off-channel feature is in the process of becoming disconnected from the main channel.
- A description of any stranded fish observed. If there are salmonids stranded, the applicant will contact NMFS Long Beach office immediately to determine if a fish rescue action is necessary.

Projects will, as appropriate, include streamflow monitoring plans that provide sufficient information to demonstrate that the project will not negatively affect steelhead habitat. The project site will be monitored annually (and particularly after significant storm events) at a frequency agreeable to NMFS for the purpose of ensuring NMFS fish-passage guidelines are maintained at the inlet and outlet structures over time and newly created habitats are not stranding steelhead. The NOAA RC will include the results of this monitoring activity in the streamflow monitoring plan.

Water Conservation

Water Conservation projects will, as appropriate, include streamflow monitoring plans that provide sufficient information to demonstrate that the project will not negatively affect steelhead habitat.

Wetlands

Monitoring metrics for wetland restoration projects include:

- Amount of tidal exchange
- Elevation of the mudflat
- Accretion and subsidence
- Extent of channel formation and invasive species monitoring
- For adjacent water areas or areas exposed to tidal flow, fish monitoring is included. Fish can be monitored by using telemetry or by seining and trapping.

Submerged Aquatic Habitat

Planting or seeding SAV aims to re-establish habitat complexity and critical nursery areas for estuarine fish. SAV monitoring metrics include percent cover, number of plants per square meter, number of new recruits, and apical meristem growth. Water quality measurements include turbidity, temperature and dissolved oxygen. Additional ecosystem monitoring includes fish use (telemetry, minnow traps), and invertebrate collections. For most grants established by NOAA RC, one to two years of monitoring is required.

Living Shorelines

Before the project begins, bathymetric surveys are planned to establish baseline conditions. Other pre-project monitoring could include collecting sediment cores to assess benthic invertebrate species richness and density and observing bird, fish, and

epibenthic invertebrate use of the site before construction activities occur. Post restoration, biological monitoring of eelgrass and oysters will track growth rates, densities, and recruitment in the different treatments. Traps, suction sampling, and coring will be used to assess fish and invertebrate responses.

The physical processes monitoring focus on changes to waves, currents, and sedimentation/erosion rates at the larger scale experiment treatments only. Water properties will also be measured, including temperature, salinity, pH, dissolved oxygen, and turbidity.

Kelp Forest Restoration

Kelp is typically measured in biomass per square meter, or density of holdfasts per square meter. If urchins are removed, before and after counts are taken. Other metrics can include fish and invertebrate numbers within newly restored areas.

3. NOAA RC Annual Report and Annual List of Proposed Projects

NOAA RC will notify the Commission staff annually of selected projects, or on an as needed basis consistent with project timelines, so that staff can review them for compliance with this Consistency Determination prior to final NOAA RC approval and project implementation.

NOAA RC will prepare an annual report summarizing the results and status of all projects implemented under the Program during the most recent construction season, and results of post-construction implementation and effectiveness monitoring if appropriate. The annual report shall include a summary of the specific type and location of each project, project photos and the amount of habitat restored. NOAA will provide a copy of the annual report to the Coastal Commission for those projects within the Coastal Zone.

M) Assurance of Project Performance

NOAA RC has a long track record of effective restoration planning, as well as project coordination and implementation. The success of NOAA RC's Program stems from early coordination and staff involvement in design, funding, permitting, construction and post-project monitoring and compliance – for all projects NOAA RC funds, as well as those for which only technical assistance and oversight are provided. When NOAA RC is involved in a project at any level, staff biologists and other specialists communicate frequently with the project proponents during planning and design stages, coordinate closely during project implementation, and then remain involved to ensure that post-project compliance and effectiveness monitoring is carried out. In the CRP's 19-year history and the Damage Assessment, Remediation and Restoration Program's (DARRP) 22-year history, NOAA RC has never experienced a project implementation issue that was not resolved.

NOAA RC funds projects through individual grants signed with project applicants or through sub-awards under three-year grants. Through competitive solicitations, the CRP will partner with key restoration advocates that include the State Coastal Conservancy,

California Conservation Corps, Ducks Unlimited, Restore America's Estuaries and many others. These partnerships are generally funded to implement restoration projects for three years at a time. All grants allow project proponents to implement habitat restoration projects under their own oversight with close NOAA involvement and reporting to NOAA RC via the Grants Online website (www.grants.gov). Regardless of the funding structure, NOAA RC staff is in regular contact with the grantee on all aspects of planning, permitting, construction and monitoring throughout the life of the restoration project and the grant. Should an unanticipated construction or other technical problem arise, the grantee and NOAA RC staff work together to seek a remedy whether it is a project modification or need for additional funding.

1. Post-Project Performance

For NOAA RC projects, the project landowner and/or grantee are directly responsible for project implementation and performance, while NOAA RC staff closely monitor this work and the project outcome. Many grantees regularly monitor beyond the required the minimum monitoring period for a project to better understand the restored habitat's biological response and evaluate the overall resource conditions in the area following restoration. In addition, NOAA RC is currently in the process of developing an expanded monitoring program (Tier 2 - Effectiveness Monitoring) to evaluate selected projects that would provide key information to the body of restoration science knowledge.

It is expected that over time, a handful of habitat restoration projects may not function as designed or expected. This is not necessarily a negative outcome -- in some instances, restoration projects adjust to the environmental conditions encountered at the site and nothing is required to "put them back." A good example of this is where a project adapts to a natural high flow event, and the resulting shift in large wood placement or stream meander, though no longer the exact design planned for the project, is a successful outcome.

Where a project experiences a more significant complication (for example, a blocked culvert that results in significant erosion, or a failed or blocked fish passage weir or structure) NOAA RC is contacted, as well as any other permitting resource agency involved in the project (FWS, CDFW, Regional Water Quality Control Board) in order to rectify the problem. As stated above, there has not been an instance where an unanticipated problem was not satisfactorily resolved on a NOAA RC project. This is due to the considerable staff involvement in every aspect of project planning, implementation and monitoring, and due to the nature of the restoration partnerships NOAA RC projects rely on for their success. From the participating landowners, to their contract grantee partners at the local and state level, and through to NOAA RC staff working with these individuals, habitat restoration partnerships are a cooperative, team effort with strong motivation from all parties involved to ensure a successful outcome.

2. Ensuring Success for Non NOAA RC-Funded Projects

As NOAA's lead habitat restoration program, it is common for NOAA RC to be sought out to advise and assist the public and private sectors on restoration plans and projects for which we are not providing funding. On a selective basis, NOAA RC provides permit

assistance and substantive technical advice on projects in the Coastal Zone that it determines will facilitate the conservation and recovery of ESA-listed species and their habitats. NOAA RC only works with project applicants who clearly have the financial and administrative capacity to implement successful restoration projects.

In order for a project to receive this kind of assistance, and to be included in the coverage provided by the NMFS Long Beach Office programmatic BO for restoration projects, NOAA RC staff screens each project using a checklist that helps determine whether the project meets the intent and requirements of the programmatic BO. The screening is intended to eliminate projects that an applicant may believe qualify as habitat restoration, but that do not meet the NOAA RC's stated criteria. An example of a common non-qualifying project would be a stream bank stabilization project that utilizes rip-rap and has little or no biological function associated with the work and techniques proposed. In contrast, a qualifying bank stabilization project would be one where stabilization of eroding banks is achieved from a bioengineered design that provides clear habitat functions.

For projects on which NOAA RC is not the funder but has provided technical and permitting assistance, NOAA RC will track the project, along with the funding entity, to determine if the project is responding as designed and built. Similarly to NOAA RC funded projects, if a restoration project done in partnership with NOAA is failing to perform, NOAA RC will provide additional technical assistance to ensure the success of the project. This level of involvement ensures that NOAA's trust resources are properly managed and restored.

N) Summary of Consistency with the California Coastal Management Program (CCMP)

The Commission developed the CCMP pursuant to the requirements of the CZMA; the CCMP has been federally certified by NOAA Office for Coastal Management. A key policy component of the CCMP is Chapter 3 of the California Coastal Act. Below is a description of how NOAA RC's Program is consistent with the Act and the CCMP.

1. Public Access and Recreation

Habitat restoration and water conservation projects approved under the CRP will not interfere with public access and recreation, and depending on the project, may provide low-cost recreational opportunities in the form of new interpretive signage and other educational materials that promote natural resource stewardship and appreciation. NOAA RC's mission supports public access, and projects are evaluated and ranked based on their level of public and landowner support. Projects conducted on public land are implemented in conjunction with partners (e.g., U.S. FWS, Coastkeepers, etc.) who share the mission of maintaining public access for educational purposes. Projects on privately owned land are not likely to change opportunities for public access. Any effects on public access are expected to be short-term and temporary (i.e., during construction) from the restoration of riparian, wetland and estuarine habitats and other coastal resources.

Therefore, NOAA RC concludes that the proposed Program is consistent with the public access and recreation policies (§30213) of the CCMP.

2. Marine Resources/Water Quality/Environmentally Sensitive Habitat Areas (ESHA)

NOAA's CRP provides funding and technical assistance for high quality habitat restoration projects in coastal California. CRP projects will restore and enhance marine resources and ESHAs and will result in substantial benefits to habitat for anadromous fish and other aquatic species, water quality, coastal wetlands and the estuarine and marine environments. However, whenever work of this kind takes place, the potential exists for short-term disturbance or degradation of the environment due to incidental effects. The projects and activities approved for funding and/or technical assistance by NOAA RC are expressly designed to avoid long-term disturbance or degradation altogether, minimize any short-term adverse impacts, and restore coastal resources to a more naturally functioning state. In addition, implementation of the CRP's environmental protection measures, and all conditions required by NMFS programmatic Biological Opinions and other federal and state regulatory permits and approvals, will ensure that any short-term impacts that could result from implementation of CRP projects will not have significant adverse effects on riparian areas, wetlands, the marine environment, and water quality. The long-term benefits of the CRP in the Coastal Zone will enhance riparian vegetation and bank stability, provide additional habitat areas for foraging, breeding, and shelter, and improve water quality and aquatic habitats by decreasing sediment and other pollutants flowing to coastal waters.

Therefore, NOAA RC concludes that the proposed Program is consistent with the marine/water quality/ESHA policies (§30230, 30231, 30233 and 30240) of the CCMP.

3. Agricultural Resources

The CRP is expected to benefit agricultural lands through conservation efforts that enhance soil and water resources. The CRP will help maintain the long-term viability of farming, ranching, and grazing in the Coastal Zone by reducing the loss of valuable top soil subject to erosion, improving dependable water supplies for agricultural operations, and increasing the function and health of waterways passing through agricultural properties. The beneficial impacts of retaining significant amounts of soil on site that would otherwise be lost to erosion, and increasing the quality of waterways on agricultural land, greatly outweigh any very minor loss in areas of production. By improving the compatibility between agricultural land uses and the protection of sensitive habitat areas and waterways, the CRP will assist in preserving the long-term viability of both agricultural and natural resources. Minimal conversion of agricultural lands to non-agricultural use is expected under the CRP in Southern California.

Although a CRP project could result in the restoration and conversion of current and/or historic agricultural lands or anthropogenic fill into native salt and brackish marshlands and riparian floodplain habitat, these types of projects are proposed very infrequently. Since 1996, only two CRP projects involving the restoration and conversion of agricultural lands to wetlands and riparian habitat have been implemented in the Coastal Zone of California. This relatively minor loss of agricultural lands was offset by

important gains in coastal wetlands and riparian floodplain acreage – two of the coastal habitats most impacted by land uses in the Coastal Zone since 1850 (by conversion of natural habitat due to construction of dikes, levees, and channels; fill of habitat for roadways, railroad crossings, and flood control projects). In addition, some areas currently or historically used for agricultural production or other land uses are likely to be inundated by rising sea levels due to climate change, and their restoration to natural marshlands and floodplains would help to provide resiliency to coastal resources, including protection of higher elevation agricultural lands.

Therefore, NOAA RC concludes that the proposed Program is consistent with the agricultural resource policies (§30241, 30242 30243) of the CCMP.

4. Cultural Resources

NOAA RC fulfills the requirements of the National Historic Preservation Act (NHPA), Section 106 and ensures that potential effects of restoration activities are considered in the earliest planning stages for projects, as specified in Section J, *Table 1 – NOAA RC Summary of General Project Requirements and Protection Measures for Coastal Resources* and in NOAA RC NEPA documents (Attachments C, D and E). Should NOAA RC suspect that cultural resources are present at any project site, field personnel will conduct a records search and field survey to determine the extent and significance of the cultural resources, if any. NOAA RC consults with the appropriate State Historic Preservation Office (SHPO), tribes, and agencies to identify potential cultural resources and evaluates if they would be adversely affected by the proposed project. Project plans are revised accordingly to avoid adverse impacts to cultural resources.

Should the project applicant or any project partners uncover human remains in the course of a project, NOAA RC and project proponents will follow procedures established by the Native American Heritage Commission, including immediately stopping work in the area and notifying the County Coroner.

Therefore, NOAA RC concludes that the proposed Program is consistent with the cultural resources policies (§30244) of the CCMP.

5. Visual Resources

CRP projects will help to protect and improve scenic and visual qualities of coastal areas through restoration and enhancement of natural habitat. Minor changes to viewsheds may occur from re-establishment of native vegetation where it has not been present for some time and from construction and soil disturbance during and following project implementation.

However, these effects are expected to be temporary or minimized utilizing best management practices to protect visual resources, and will be offset by beneficial effects to scenic or visual resources accruing from the restoration of riparian, wetland and estuarine habitats and other coastal resources.

Therefore, NOAA RC concludes that the proposed Program is consistent with the visual resources policies (§30251) of the CCMP.

III. Attachments

- A. NOAA - Announcement of Federal Funding Opportunity, 2013.
- B. NMFS Long Beach Office Programmatic Biological Opinion, 2015.
- C. NOAA CRP Program Environmental Assessment (PEA), 2002.
- D. NOAA CRP Supplemental Program Environmental Assessment (SPEA), 2006.
- E. NOAA CRP Final Program Environmental Impact Statement (PEIS), 2015.
- F. NOAA RC Fish Passage Barrier Removal Performance Measures and Monitoring Worksheet, 2010.

IV. References

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