Habitat Expansion Agreement

Working Definitions of Evaluation, Selection, and Approval Criteria

This document provides working definitions of the evaluation, selection, and approval criteria found in the Habitat Expansion Agreement (HEA). These definitions were developed by the Steering Committee to aid in the process of selecting actions for inclusion in the Habitat Expansion Plan (HEP).

HEA Evaluation Criteria

This section presents working definitions for the 17 Evaluation Criteria (items a–q contained in Section 4.1.1 of the HEA). These definitions form the basis for the Steering Committee's application of the Evaluation Criteria to the list of potential actions. Section 4.1.1 states: "The Licensees shall use the following non-exclusive and non-prioritized Evaluation Criteria to screen potential habitat expansion action(s) and develop a preliminary list of viable actions."

(a) favorable feasibility (technically feasible; supported by accepted science; low potential for disease and other risks; proven actions are favored over experimental actions);

Actions/projects should have a high likelihood of success. The type of action should be technically feasible, with a proven track record of results in similar settings. There should be a high degree of scientific support both in terms of the feasibility of the action and its potential contribution to the Habitat Expansion Threshold (HET).

(b) adequate scale of expansion of spawning, rearing and adult holding habitat (one or more larger contiguous gains is favored over numerous smaller gains; increased habitat is favored over enhanced habitat);

The HEP should focus sufficient effort to make measurable and meaningful improvement in habitat for spring-run Chinook salmon. This requires that projects be large enough to actually solve problems limiting existing habitat potential. Several small, independent projects may not actually solve current problems and hence would provide less benefit than a larger, potentially integrated project that focuses on critical limiting factors. Similarly, the greatest potential for the HEP to make meaningful change may involve focusing projects on a limited number of watersheds rather than spreading projects out across many watersheds.

(c) favorable sustainability of action;

The intent of the HEA is to create "permanent" solutions to problems, or at least to provide benefits through the term of a typical Federal Energy Regulatory Commission license (i.e., up to 50 years). Where possible, projects should address the root cause of current habitat constraints rather than dealing with their symptoms or surface expression. Once implemented, projects ideally would be self-sustaining (i.e., requiring a minimum amount of maintenance over the long term). In conjunction with criterion (e), projects providing volitional access for fish to currently unoccupied habitat would likely be considered more sustainable than passage projects requiring high levels of human intervention.

(d) favorable cost-effectiveness and economic feasibility (including consideration of costs necessary to operate and maintain the expansion);

Project funding under the HEA will include capital cost, operations and maintenance (O&M), and project administration. Projects that show efficient use of funds for these cost elements will be favored. One measure of cost effectiveness is the estimated net increase in the population of spawning fish (i.e., the contribution toward the HET) versus the total cost of the action. Projects that include cost sharing, labor sharing, or other measures that allow the HEP to leverage funds, while making meaningful change, would also be favored.

(e) minimal human intervention needed to achieve access to expanded spawning, rearing and adult holding habitat (volitional access is favored over that which requires a high degree of human intervention);

Projects that provide access into habitat currently blocked to anadromous passage will be evaluated relative to the amount of human intervention (e.g., annual maintenance) required. For example, a project that removes a barrier to allow free access (requiring no further maintenance) would be favored over a trap-and-haul project that requires annual collection and transport of fish.

(f) favorable spatial separation from other populations or runs to maintain genetic diversity by minimizing interbreeding;

A priority within the HEA is the segregation of habitat for spring-run and fall-run Chinook salmon (see Section 4.2.3[d]). In the Central Valley, introgression of fall- and spring-run Chinook salmon has been identified as a potential factor limiting spring-run Chinook. In many cases, this is due to the spawning of hatchery-produced fall-run Chinook in areas where spawning of spring-run Chinook occurs. To address this problem, projects that encourage the separation of fall- and spring-run Chinook will be considered favorable under this criterion. Separation may be achieved either through physical barriers or through the development of habitat conditions (expansion or enhancement) that favor spring-run fish over fall-run fish. For example, projects that expand or enhance habitat for spawning in upper portions of a watershed favored by spring Chinook would be more desirable than projects enhancing spawning conditions in lower reaches favored by fall Chinook.

(g) favorable spatial separation from other spawning streams to minimize population impacts of a stream-specific adverse event (geographic distribution is favored over centralization);

A priority within the HEA is the development of a new, geographically separate, self-sustaining population of spring-run Chinook (see Section 4.2.3[c]). NMFS has identified presently viable spring

Chinook populations in Mill, Deer, and Butte Creeks—a part of the Northern Sierra Nevada diversity group delineated by the Central Valley Technical Recovery Team (Lindley et al. 2007). NMFS recovery efforts call for development of additional viable spring-run populations. In conjunction with criterion (b), a number of projects might need to be concentrated in a single watershed to result in sufficient environmental change to support an additional population.

(h) acceptable length of time to implement (earlier gains are favored over later gains);

Sacramento River spring-run Chinook salmon are in need of immediate assistance to support their recovery. Thus, factors important to the success of a project include not only the length of time to implement the project but also the length of time to realize benefits. Thus, "shovel-ready" projects that can be implemented in the near future will be favored. The more favorable projects will be those that need minimal additional public process, particularly related to permitting, zoning, or land use issues. In addition, projects that benefit spring-run Chinook within a relatively short period of time (e.g., 10 years or less) will be favored. The environmental and biological benefits of many habitat restoration actions occur only after extended periods. For example, sufficient recovery of riparian forests to address temperature, water quality, and channel needs may require timeframes from decades to centuries to realize. While such projects will not be excluded from consideration, projects that can be implemented sooner and realize benefits within a relatively short period will be preferred.

(i) favorable local/political support;

To provide benefits in the desirable time frame (criterion [h]) and to make best use of available funds (criterion [d]), it is important that HEP projects have public support. Primary public support stakeholders include affected land owners, management agencies, Resource Conservation Districts (RCDs), and watershed conservancies. "Public support" means that no legal or regulatory condition would prohibit the project from occurring (e.g., a water right, or a zoning issue) and that affected land owners and watershed entities support the project. An extended public review process is outside the purview of the HEA. Proposed projects should be vetted with watershed councils; RCDs; and other local, state, and federal agencies. To the maximum extent possible, permitting concerns, land ownership, and required access should be identified in the evaluation of potential actions.

(j) consistency with NMFS Viable Salmonid Population guidance, ESA recovery goals and recovery plan (as available), and expected contribution to species recovery (higher consistency and greater contributions are favored);

The NMFS Viable Salmonid Population (VSP) concept provides direction for characterization of salmonid populations listed under the Endangered Species Act (ESA) (McElhany et al. 2000). The VSP concept underlies most NMFS ESA recovery planning. Elements of VSP thinking are woven throughout the HEA (e.g. criteria [f] and [g]). VSP is also incorporated as part of the HEA conceptual framework. However, VSP does not provide specific criteria for recovery; these are left to recovery planners (e.g., Lindley et al. 2004). Based on VSP and its application to salmon recovery, projects should contribute to the following: (1) abundance, through contribution to the HET; (2) productivity, by increasing the quality of existing and new habitat for spring-run Chinook; (3) biological diversity, by enhancing the breadth of habitat and by discouraging interbreeding of fall- and spring-run Chinook (criterion [f]); and (4) spatial diversity, by promoting development of additional viable spring-run Chinook populations in the Sacramento River Basin (criterion [g]).

(k) balance of benefits to Spring-Run and Steelhead (actions that provide a balance of benefits to both Spring-Run and Steelhead are favored over actions that primarily benefit one species; if multiple actions are undertaken, a combination of actions that provides a balance of benefits to both Spring-run and Steelhead is favored);

The HET provides a numeric habitat goal for spring-run Chinook salmon as the priority species of the HEA and states that "expansion of habitat for spring-run typically accommodates steelhead as well" (see Section 2.2). Spring-run Chinook and steelhead populations often overlap and are found in similar habitats within the same watersheds. Hence, enhancement and expansion of habitat to meet the HET numeric threshold for spring-run Chinook should also benefit steelhead. While habitat requirements for spring-run Chinook and steelhead are similar, they are not identical. For example, the two species are separated by adult return timing and juvenile and adult life history. However, projects that meet the common habitat requirements of spring-run Chinook and steelhead and contribute to the restoration of both species will be favored.

(l) consistency with other resource uses such as water supply, public safety, flood control, recreation, and power production;

Projects should identify potential conflicts with other uses of the affected watershed and seek to avoid or minimize adverse impacts to other resource uses. In conjunction with criterion (i), if a potential project is likely to impact other resource uses, there should be demonstrated support for the project from the affected stakeholders. Those projects that are most consistent with other resource uses and/or have support from affected stakeholders will be favored.

(m) favorable relative availability of appropriate stocks of Spring-Run and Steelhead for reintroduction;

The purpose of the HEP is to provide habitat for spring-run Chinook salmon and steelhead, with the expectation that fish will expand into new or enhanced habitat. This process of movement of individuals into expanded or enhanced habitat occurs when adult fish stray from their natal areas and spawn in non-natal habitat. Colonization of habitat provided under the HEP will be enhanced in watersheds with some existing remnant populations. Colonization of those watersheds with no spring-run Chinook and/or steelhead, or with no known historical occurrence of these species, would likely be slower without direct intervention (i.e., supplementation from nearby streams with naturally reproducing populations and/or hatcheries). Consequently, projects on streams with remnant populations or with nearby naturally reproducing populations will be favored over those requiring hatchery supplementation.

(n) low expectation for the action to be undertaken by the Licensees or others in the near future;

Projects required as part of other regulatory or legal proceedings are not eligible, as described under Section 3.2 of the HEA. If a project is not likely to be implemented by others within a reasonable period of time (e.g., 5 years), it may be considered.

(o) favorable potential to benefit other anadromous, catadromous, and resident fisheries affected by the Feather River Hydroelectric Projects;

Enhancement and expansion of habitat favors a community of co-evolved fish, invertebrate, and plant species. Projects that will provide identifiable benefits to other native fish species, including lamprey, sturgeon, resident trout, hardhead, Sacramento sucker, and pikeminnow, among others will be favored.

(p) low expectation for adverse impact on listed species and destruction or adverse modification of critical habitat under the ESA (actions with low or no impact are favored); and

The HEA is intended to benefit listed spring-run Chinook salmon and steelhead. Projects should avoid or minimize adverse impacts to other ESA-listed fish, wildlife, amphibian, and plant species.

(q) low potential for an adverse impact on historic or cultural resources.

Projects should avoid or minimize adverse impacts to known historic and pre-historic cultural resources.

HEA Selection Criteria

This section presents working definitions for the four Selection Criteria (items a–d contained in Section 4.1.2 of the HEA). These definitions form the basis for the Steering Committee's application of the Selection Criteria to the list of Viable Actions. Section 4.1.2 states "After developing a preliminary list of viable habitat expansion action(s) using the Evaluation Criteria set forth in Section 4.1.1 above, the Licensees shall use the following non-prioritized Selection Criteria to select recommended habitat expansion action(s) for implementation:"

(a) contribution to achieving the Habitat Expansion Threshold;

The HEA calls for projects to expand the amount of habitat with characteristics necessary to provide spawning, rearing, and adult holding sufficient to support an additional 2,000 to 3,000 spring-run Chinook salmon in the Sacramento River Basin. Projects are expected to increase the habitat potential for steelhead as well. The contribution of projects to the HET will be defined by the estimated change in equilibrium abundance of spring-run Chinook in the Sacramento River Basin that results from expanding the quantity and quality of habitat available to spring-run Chinook and steelhead. The expansion of habitat potential will be structured to support the development of an additional viable population of spring-run Chinook in the Sacramento River Basin, support the separation of fall and spring runs of Chinook salmon, and be consistent with the Evaluation Criteria in Section 4.1.1.

(b) most cost-effective compared to other potential habitat expansion actions;

For each Viable Action, a rough estimate of its cost and contribution to the HET will be determined. Each Viable Action then will be ranked in terms of its cost effectiveness (i.e., the cost of the action versus its contribution to the HEA). Refer to the discussion of favorable cost effectiveness in Evaluation Criterion (d).

(c) feasibility (action[s] can reasonably be accomplished);

As stated in Evaluation Criterion (a), actions/projects must have a high likelihood of success (i.e., they must be highly feasible). The term "feasibility" is being interpreted broadly to include the concepts

described for four Evaluation Criteria: (a) technical feasibility, (d) economic feasibility, (i) favorable political and local support, and (l) consistency with other resource uses.

(d) timing (action[s] can be accomplished in a reasonable period of time).

As noted in Evaluation Criterion (h), factors important to the success of a project include not only the length of time to implement the project but also the length of time to realize benefits. Thus, the HEP will favor "shovel-ready" projects that can be implemented in a reasonable period of time (e.g., less than 5 years). The more favorable projects will be those that need minimal additional public process, particularly related to permitting, zoning, or land use issues. In addition, projects that benefit spring-run Chinook within a relatively short period of time (e.g., 10 years or less) will be favored.

NMFS Approval Criteria

This section presents working definitions for the six NMFS Approval Criteria (items a–f contained in Section 4.2.3 of the HEA). These definitions are being considered as part of the Steering Committee's selection process. Section 4.2.3 states: "In determining whether to approve the Final Habitat Expansion Plan, NMFS shall review information submitted by the Licensees, comments by other Parties and directly affected and responsive third parties, and any other relevant information, and consider the extent to which the habitat expansion action(s) recommended in the Plan meet the following Approval Criteria."

(a) estimated to meet the Habitat Expansion Threshold;

As stated in Selection Criterion (a), the proposed projects must expand habitat to support 2,000 to 3,000 spring-run Chinook salmon. It is assumed that the Steering Committee and NMFS will agree on a readily available quantification method to define the contribution of the proposed projects to the HET. Refer to selection criterion (a) for further discussion on the HET.

(b) assures necessary testing, operation, and maintenance;

Each proposed project must include a funding mechanism for a period of time equivalent to the life of a typical FERC license (i.e., up to 50 years). The HEP will describe any proposed O&M and other necessary actions, as well as the associated funding mechanism, for a period of 50 years.

(c) supports establishing a geographically separate, self-sustaining population of Spring-Run;

As discussed in Evaluation Criterion (g), the proposed projects should support development of a viable population of spring-run Chinook salmon within the Sacramento River Basin, in addition to those that already exist in Mill, Deer, and Butte Creeks. The proposed actions need to provide habitat that is of sufficient quantity (e.g., watershed size of 500 km^2 or greater as a guideline) and quality, and sufficiently separate to support a self-sustaining population of spring-run Chinook.

(d) supports segregating Spring-Run habitat from Central Valley fall-run Chinook salmon;

As discussed in Evaluation Criterion (f), the proposed projects should support segregation of spring-run and fall-run Chinook salmon populations. Segregating the two runs can involve creating a segregation barrier or enhancing habitat for spring-run over fall-run Chinook.

(e) meets the requirements for eligible habitat expansion action(s) pursuant to Section 3 of this Agreement;

As indicated in Section 3 of the HEA: (1) a variety of action types can fulfill the HEA (e.g., dam removal, dam re-operation, creation or enhancement of fishways, and water temperature/flow improvement); (2) the proposed actions must ensure future O&M and include functional start-up testing as needed; and (3) actions identified in other venues are eligible for consideration provided that what is implemented under the HEA results in an expansion of habitat over any existing requirements and commitments. As stated in Evaluation Criterion (n), projects required as part of other proceedings or with a high likelihood of being implemented within 5 years will not be favored and may be considered ineligible.

(f) expected to be implemented within a reasonable period of time.

Refer to discussion of Evaluation Criterion (h).

References

Lindley, S. T. and others. 2004. Population structure of threatened and endangered Chinook salmon ESUs in California's Central Valley Basin. National Oceanic and Atmospheric Administration, National Marine Fisheries Service. (NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-360.) 56 pages.

Lindley, S. T. and others. 2007. Framework for assessing viability of threatened and endangered Chinook salmon and steelhead in the Sacramento-San Joaquin Basin. San Francisco Estuary and Watershed Science [online serial] Volume 5, Issue 1, Article 4.

McElhany, P., M. H. Ruckelshaus, M. J. Ford, T. C. Wainwright, and E.P. Bjorkstedt. 2000. Viable salmonid populations and the recovery of evolutionary significant units. U.S. Department of Commerce. (NOAA Technical Memorandum NMFS-NWFSC-42.) 156 pages.