DRAFT
OROVILLE FACILITIES RELICENSING

GUIDANCE FOR STUDY OF CUMULATIVE IMPACTS AND IMPACTS ON SPECIES LISTED UNDER THE FEDERAL ENDANGERED SPECIES ACT

INTRODUCTION

The California Department of Water Resources (DWR), licensee for the Oroville Facilities, FERC Project 2100 (Project 2100), is preparing an Application for New License (Application) using the Alternative Licensing Procedures (ALP). The Application will include a Preliminary Draft Environmental Assessment (PDEA) and Biological Assessment (BA). This guidance will assist DWR and other members of the Collaborative Team to develop and implement study plans that address the project's cumulative impacts on all resources and its impacts on endangered or threatened species.

The National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), and federal Endangered Species Act (ESA), implementing rules, and official guidance documents establish their own requirements. Through the integrated steps described below, the study plans will address such requirements in a non-duplicative manner.

Cumulative impacts are the incremental impacts of relicensing Project 2100, when considered together with past, present, and future actions (including those of third parties) that affect the same resources.[1] Impacts on species listed under the ESA can be categorized as direct, indirect,[2] or cumulative.

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[1] The Council on Environmental Quality defines cumulative impact as the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such actions (40 CFR § 1508.7). The Guidelines for Implementation of the California Environmental Quality Act (2002) defines cumulative impacts as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Furthermore, "the individual effects may be changes resulting from a single project or a number of separate projects," and "the cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects." "Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." [cites] ESA defines "cumulative effects" to include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area. Federal actions that are unrelated to the proposed action are not considered because they require independent consultation pursuant to section 7 of the ESA. 50 CFR §402.02. Cumulative impacts can be categorized as additive or interactive. (CEQ 1997 Table 1-2) An additive impact emerges from persistent additions from one kind of source, whether through time or space. An interactive impact results from more than one kind of source. Piecemeal physical destruction of wetlands is additive; physical destruction of wetlands combined with damage from toxic substances is interactive.

[2] The Joint Regulations on Endangered Species (50 CFR §402.02) define indirect effects as "those that are caused by the proposed action and are later in time, but still are reasonably certain to occur". Direct effects are those that occur in the same place and at the same time and are a direct result of the proposed action.

DWR will design and implement study plans under this guidance in an iterative manner. Consistent with the Process Protocols and based upon the cumulative impact evaluations or study results, DWR may amend a study plan (for example, the definition of the geographic boundary for a project impact, as described in step 5) on the basis of study results or add a new study plan.

This guidance does not prejudge the interpretation of study results and specifically, the scope of DWR's duty to mitigate the project's cumulative impacts or its impacts on listed species. Such duty will be in the context of other regulatory actions[3] which have established a baseline for operation of the Bay-Delta and its upstream tributaries. Finally, this document does not interpret, amend, or supplant official guidance under NEPA, CEQA, and ESA.

STEPS FOR INTEGRATING THE FEDERAL ENDANGERED SPECIES ACT WITH THE OROVILLE RELICENSING PROCESS AND CONDUCTING CUMULATIVE IMPACT ANALYSIS

The following 9 steps have been identified for addressing the ESA[4] and cumulative impacts analyses[5]. The first four steps include 1) developing a comprehensive project description, 2) identifying both environmental and socioeconomic[6] resources potentially affected including direct, indirect, and cumulative effects, as well as interrelated and interdependent actions[7], 3) determining if a potential for impacts exists, and 4) identifying geographic[8] and temporal bounds. The remaining steps will assist in

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[3] Some of the more important regulations Project 2100 must comply with are the 1995 Water Quality Control Plan adopted by the State Water Resources Control Board for the Bay-Delta Estuary, which identified municipal and industrial, agricultural, and fish and wildlife beneficial uses for water of the estuary and specified objectives to protect these uses, and SWRCD Water Right Decision 1641 which implemented the objectives. In addition, Project 2100 must comply with Biological Opinions adopted for the Delta Smelt and Winter Run Salmon, which designated additional water quality and operational requirements.

[4] The procedural direction for assessing ESA impacts and implementing section 7 consultations is provided in the ESA, the regulations for implementing the ESA (50 CFR §402), the joint NMFS and U.S. Fish and Wildlife Service Endangered Species Act Handbook (Handbook), and the Interagency Task Force report on improving coordination of ESA section 7 consultation with the FERC licensing process (ITF). Additional background on these guidance documents can be found in Attachment 1.

[5] In conducting the cumulative impacts analysis, the Collaborative Team will consider employing a number of tools, including, but not limited to: CEQ's Principles of Cumulative Effects Analysis and FERC's guidelines for preparing environmental assessments, Section V.B. Cumulative Effects. Copies of these tools are presented in Attachment 2.

[6] Socioeconomic resources are defined in Section 1508.8 of CEQ's regulations.

[7] Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration.

[8] For ESA impact analyses, the geographic bounds is also termed the action area which is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.2).

compiling existing information and conducting studies, will facilitate the identification of additional study needs, and will aid DWR in preparing a Draft Biological Assessment (BA) that meets the expectations of the resource agencies. The first step will be undertaken once as a separate activity. The information from step 1 will aid in the development of the ESA and cumulative study plans.

Several of the steps are not sequential, but rather overlapping and iterative. In particular, Steps 2, 3, 4 and 5 will initially occur during study plan preparation, based on the information developed in step 1, other existing information and input from the scoping process. Steps 2, 4, and 5 will be reconsidered during implementation of the study program to ensure potentially affected resources are identified, that there is a potential for project effects on the potentially affected resource, and that the geographic bounds are appropriate.

Step 1. Comprehensive Project Information

The first step would be to provide comprehensive information about the project and it's setting as related to other projects in the general area. This will serve as background information for both the ESA and cumulative impact analyses study plans. Much of this information would be extracted and summarized from the Initial Information Package (IIP). The project information would focus on the Oroville Facilities and their ongoing operations. The Oroville Facilities include Lake Oroville, Oroville Dam, the Edward Hyatt Powerplant, the Thermalito Diversion Dam Powerplant, the Thermalito Pumping-Generating Plant, Thermalito Diversion Dam, the Thermalito Power Canal, the Thermalito Forebay, the Forebay Dam, the Feather River Fish Hatchery, and the Fish Barrier Dam. Since the proposed action is the relicensing of these facilities, other State Water Project (SWP) facilities and operations will be described in less detail than the Oroville Facilities, as part of the interrelated projects description (see below), to the extent that these SWP features are interrelated to the Oroville Facilities, FERC Project No.2100.

1) *project description and statement of the nature of existing water contracts* – Include a detailed description of the Oroville Facilities. Provide a list of existing water contracts for the Oroville Facilities including information on the parties involved, water quantity, and duration. Other aspects and the contracts themselves will not be provided unless there is a specific need identified for this information. The project description will provide necessary information to determine the level of scope needed in the study plans.

2) *statement of the nature, extent, and use of water rights by DWR in the operation of the Oroville project - DWR* has permitted water rights associated with the operation of Oroville Dam and, more broadly, the State Water Project. The nature of these rights, including downstream settlement agreements, will be discussed. These water rights are under the jurisdiction of the State Water Resources Control Board, and pursuant to Section 27 of the Federal Power Act, FERC and the relicensing process cannot affect or interfere with State water allocations or State water rights laws.

3) *statement of the nature of various Oroville Facilities project purposes that are subject to mandatory conditioning under FERC Project 2100 relicensing jurisdiction and related constraints* - Include electrical generation, recreation, fish and wildlife enhancement and instream flow requirements. Provide information on existing biological opinions such as for the delta smelt, salmon and steelhead and rely on this information for existing effects of the Oroville Facilities.

4) *description of the project area and DWR's title to, or rights to occupy private lands* - Provide the project boundary description as presented in the IIP. Land within the Oroville Project boundary is primarily state owned and managed, with a small portion being land managed by U.S. Forest Service and U.S. Bureau of Land Management. There are seven land and resource management plans that guide management of these lands. Describe the dates these plans were put in place and dates they are to be renewed. Any analysis should examine opportunities for incorporating new resource protection measures into these plans whenever possible. No privately owned lands exist within the Project boundary. Describe the project area, which is defined as the area in the immediate vicinity of the project, to provide context for the project boundary description.

5) *description of the operation of the Oroville facilities* - Provide a description of project operations and the effects on flows as described in the IIP. The description will include a discussion of the relationship between the timing of energy production and the requirement of the project to meet downstream and delta flow requirements, deliveries to local senior water rights holders, flood management maximum storage objectives and deliveries to the State Water Project contractors. The discussion will include a simplified "plumbing diagram" with an associated narrative describing the power plants, reservoirs, major diversions, the Feather River Fish Hatchery, associated facilities and the movement of water through these interconnected facilities. Pumped-storage operations will also be described. Tables and graphs will be used to characterize the minimum and maximum downstream flow requirements and maximum flood storage requirements and their influence on operations at different times of the year.

6) *description of the average annual energy generated by the project, firm capacity, ancillary services production and the role of the project in operating the SWP and the California power market* - Edward Hyatt and Thermalito Pumping-Generating plants, and Thermalito Diversion plant generate about 2,400 GWh in a median water year. Conditions vary with the annual runoff to the Feather River and generation has ranged from below 1,000 GWh in critically dry years to over 3,700 GWh in very wet years. The maximum or firm capacity rating can be diminished during periods of severe reservoir drawdown. To the maximum extent possible, energy is generated from the project during the on-peak hours. DWR attempts to confine the SWP pumping load to the off-peak hours, thus, allowing it to market surplus on-peak generation. This distinct ability to shift the majority of the pumping loads to the off-peak hours provides unique opportunities for negotiating long-term contracts and participating in California's energy and ancillary services markets. DWR will supply a description of long-term power contracts and its shorter-term energy and ancillary services transactions including the SWP load management capability and Oroville's significant contribution to the reliable operation of

the California Independent System Operator's electric transmission grid. DWR will also describe ongoing protective measures for raptors on those transmission and distribution lines that are part of the project.

7) *description of maintenance practices on project features* - Provide a description of maintenance of the Oroville Facilities, including project licensed transmission lines and lands. Describe specific written policy guidance, training required or provided, brochures etc. on protection of TES species. Focus would be on how project maintenance affects operations and the potential for affecting threatened and endangered and Forest Service sensitive species.

8) *description of State Water Project and its interrelationship with the Oroville Facilities* Provide a brief description of how the Oroville Facilities relate to other State Water Project facilities and projects. This information is not necessary for assessment of direct and indirect impacts, but it may be needed for the cumulative impacts analysis. Note that DWR Project No. 2426 is under a separate FERC license and only briefly will be addressed here. This project is located in the southern portion of the SWP and is not dependent upon the relicensing of Project 2100.

9) description of the effects of the current operation of the Oroville Facilities on the flow that enters, passes through, and exits the SWP - Explain how the water is used in the SWP, how SWP operations are controlled by an existing Water Quality Control Plan adopted for the Bay-Delta Estuary, water right decision and certain biological opinions and how these institutional constraints, including the Coordinated Operating Agreement provisions affect the operation of the Oroville Facilities.

10) *description of the operations of agencies/entities in the vicinity of the project that are related to project operations but are not subject to mandatory conditioning under FERC jurisdiction through the Project 2100 license* - Describe ongoing activities that: 1) are related to or are in the immediate vicinity of the project; and 2) have a direct bearing on the resource issues related to FERC's relicensing of Project 2100 but are not subject to FERC jurisdiction under the license for Project 2100. Examples of activities include the Oroville Dam water supply and flood management operations; uses of supplies by downstream water rights holders that receive water from the Thermalito Afterbay under downstream settlement agreements; and Department of Fish and Game hatchery activities that are not required by FERC conditions of approval. Information that is not subject to FERC jurisdiction will be considered in the cumulative impacts analysis.

<u>Step 2. Identify and Describe Potentially Affected Resources</u>

The ESA and cumulative impacts studies will focus on potentially affected resources. Potentially affected resources are currently grouped under environmental, recreational, socioeconomic and/or cultural resource areas. Potentially affected resources are resources singled out for consideration because of their importance and the possibility they may be impacted by operation and maintenance of Project 2100 under new license conditions. An initial list of potentially affected resources will be developed based upon

concerns presented during the scoping process, in comprehensive plans, and from comments and recommendations received from the Collaborative Team. Information on the effects of other projects (see step 5 below) on these potentially affected resources will be gathered during the relicensing study program for possible inclusion in the biological assessment and the final cumulative impact assessment presented in the APEA/DEIR. The potentially affected resources will be those then identified through study to be impacted directly or indirectly by the ongoing or potential relicensed operation and/or maintenance of Project 2100.

Each work group will review all relevant issues and identify those potentially affected resources in each of the resource areas that should be included in the initial list of potential affected resources. For environmental resources, cumulative impact areas identified for evaluation consist of geomorphology, water quality (e.g. - water temperature), aquatic resources (e.g. - fish passage and hatchery operations), terrestrial resources, and threatened, endangered, and proposed, aquatic and terrestrial species. For endangered, threatened, proposed or candidate species potentially affected by the project, DWR, with input from and in collaboration with USFWS, NMFS, USFS, and CDFG, will develop a comprehensive list of threatened, endangered, and special status (TES) species potentially occurring within the geographic bounds for analysis (see Step 4). Potentially affected critical habitat will also be identified (see Exhibit 1). (Note: Exhibit 1 also shows that a habitat suitability will be conducted prior to the effects analysis.)

Step 3. Compile list of existing scientific and commercial information as well as ongoing studies that are applicable to the affected ESA species and their respective designated critical habitat, and the cumulative impacts analysis.

1) Identify and summarize ongoing studies being conducted specifically for the Oroville relicensing process.

2) Identify and summarize existing and ongoing studies within the geographic bounds that are applicable to evaluating baseline conditions and project effects.

Step 4. Determine if Potential for Impacts Exists

The APEA/DEIR/ESA study program will determine which resources are directly or indirectly impacted by the ongoing and potential relicensed operation and/or maintenance of Project 2100, consistent with the impact evaluation requirements of NEPA, CEQA, and ESA. The cumulative impact studies will include each affected resource for which a potentially significant impact may occur, whereas the ESA studies will include each resource for which a measurable effect may occur. Further, the cumulative impact studies will include affected resources not significantly impacted when the less-than-significant impacts added to other development impacts that are less than significant impacts could result in significant impacts to the resource. Determinations on potential impacts to resources should be based on the record and should be accomplished through the collaborative process using agreed upon criteria, consistent with the impact evaluation

requirements of NEPA, CEQA, and ESA. Affected resources upon which potentially significant impacts may occur will be considered in the final cumulative impact analysis.

Step 5. Identify Geographic Bounds and Temporal Bounds for Analysis

The geographic boundary for each study in the APEA/DEIR program will be determined on a resource-by-resource basis, following the guidance provided by NEPA, CEQA, ESA and the FERC environmental document content requirements. The general focus will be the Feather River or Feather River basin. Typically, the studies will focus on the existing FERC boundary, and extend upstream of project waters to the next barrier to fish migration, and downstream in the Feather River to the confluence with the Sacramento River. However, the boundary for an individual study will be the point where the study may provide a reasonable measure of the project's potential impact on the potentially affected resource in question. FERC has also explained "In the environmental review process, practical limits must necessarily be established regarding the geographic area in which impacts of the proposed action are likely to occur, the scope of the analysis could otherwise be virtually unlimited."[9] The boundary may subsequently be adjusted on the basis of specific studies or new information, including a prior year's study results. If the new information indicates that the geographic bounds should be expanded or contracted, the applicable Work Group will discuss the basis for change and revise the geographic bounds as appropriate. We give two examples, based on existing information. The appropriate study boundary for impact on the stage of river flow appears to be the confluence with the Sacramento River. Since the relicensing process will not result in new entitlements to use water nor create new rights to export water, FERC relicensing of the Oroville Facilities does not appear to result in new development, or to induce growth in, State Water Project service areas. Thus, the appropriate boundary for impact on water supply will not likely extend south of the Delta or to the State Water Project service areas.

Even if there were changes to the water supply from the operation of the Oroville Facilities, the effects of such changes could not reasonably be evaluated. FERC has recognized the "problem of extending the geographic area of an environmental analysis so significantly that analytical methods might not be able to develop reliable estimates of impacts and mitigation measures." As FERC has explained: "In the environmental review process, practical limits must necessarily be established regarding the geographic area in which impacts of the proposed action are likely to occur; the scope of analysis could otherwise be virtually unlimited.[10]

For purposes of cumulative socioeconomic impacts, the geographic scope will include Butte County and other areas as determined in accordance with the steps described above.

DWR will consider historic activities including the effects of the past operations of the Oroville Facilities for both the ESA and cumulative impact studies.

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[9] Public Service Co. of New Hampshire, 68 FERC at 61,863-864, emphasis added.
[10] *Public Service Co. of New Hampshire, supra, 68 FERC at 61,863-864.*

Step 6. Identify other Development and Associated Resource Impacts

The studies will consider other past, present, and reasonably foreseeable future projects and activities that may have an impact on a potentially affected resource also affected by the license for Project 2100. This includes the past and present impacts of all state, federal, or private actions and other human activities, the anticipated impacts of all proposed federal projects that have already undergone formal or early section 7 consultation, and the impacts of state or private actions that are contemporaneous with the consultation in process (50 CFR 402.02).

Specifically, the developments to be considered will include: the non-hydropower functions of this project (water supply and flood control), other hydropower projects including their associated recreation and fish and wildlife facilities, logging, grazing, mining, and irrigation in the Feather River basin and other State Water Project facilities, which could impact the potentially affected resource. Future projects are considered to be reasonably foreseeable if the environmental documentation is available to confirm and reasonably quantify impacts to the potentially affected resources and/or there is a pending application when the environmental documentation is prepared for Project 2100. Such related projects or activities may be included even if they, or mitigation measures for their contributions to cumulative impacts, are not within the FERC's jurisdiction in this proceeding.

An initial step for understanding past and ongoing impacts on potentially affected resources will be the review and use of the best available scientific and commercial data including comprehensive plans and other regional studies, e.g., FERC documents, CALFED, CVPIA, Sacramento/San Joaquin comprehensive study, and the State Water Resources Control Board compliance and water rights requirements record for the Sacramento-San Joaquin Delta and Suisun Marsh. Use of such information is consistent with CEQ guidance that studies by other agencies should be used to analyze cumulative effects. Additional information to supplement the existing studies may be considered on a resource-by-resource basis based upon the nature of the resource issue.

Related future projects will be added, as needed, to complete the cumulative impact analysis, and will include an evaluation as to whether the additional information is necessary to comply with ESA**,** NEPA, CEQA, and the FERC environmental document content requirements.

Step 7. Acquire appropriate Federal research permits and conduct studies to determine the direct, indirect, and cumulative impacts.

Select field studies may result in a "taking" as defined by the ESA. To the extent possible, field studies potentially resulting in a taking should be identified in the study plans. For these studies, the following two actions should be undertaken.

1) Determine which studies are already permitted under previous or ongoing section 7 or section 10 permits.

2) Initiate consultation for proposed studies that are not permitted.

Step 8. Determine Overall Impact and Identify Potential Protection, Mitigation and Enhancement Measures

The studies will evaluate adverse and positive impacts. For purposes of the ESA the analyses will provide scientific and commercial data sufficient to determine whether Project 2100 will jeopardize the continued existence of any threatened or endangered species, will result in the incidental take of any such species or will adversely modify habitat determined to be critical for any threatened or endangered species. Based upon the determination reached, the studies will identify those measures that are within FERC's jurisdiction to include in a new license for Project 2100 that are necessary to eliminate jeopardy to species or adverse impacts to critical habitat, as well as reasonable and prudent measures necessary to minimize take. For purposes of addressing cumulative impacts, based upon the nature of the impacts identified, the studies will suggest measures to avoid, minimize, mitigate or reduce the severity of the negative effects or to enhance the resource. However, any environmental or socioeconomic mitigation measures included in the settlement agreement for Project 2100 should be limited to the project's proportionate share of the cumulative impacts.

Step 9. Document Determinations of Impact

The product of the ESA studies will be study reports and a draft Biological Assessment (BA) that will be submitted with the draft license application. If it is determined that Project 2100 may affect any listed species or any designated critical habitat, the BA should include proposed measures to reduce or eliminate the effect. The cumulative impacts analysis will be included in study reports and the findings will be documented in the APEA/DEIR.

Resource agencies will provide comments on whether the draft BA meets the requirements of the ESA and 50 CFR §402. Likewise, the Collaborative Team will provide comments on the APEA/DEIR. The resource agencies and the Collaborative Team are active participants in the ALP adopted for Project 2100. Those resource agencies responsible for implementing ESA are providing technical assistance to the DWR to assist them in meeting the requirements of the ESA and the ESA regulations.

REFERENCES

1. Guidelines for Implementation of the California Environmental Quality Act, State of California, Office of Planning and Research, 2002. (http://www.opr.ca.gov/publications/GeneralPlanning.shtml)

2. Preparing Environmental Assessments, Guidelines for Applicants, Contractors, and Staff, Federal Energy Regulatory Commission, Office of Energy Projects, March 14, 2001. (http://www.ferc.fed.us/hydro)

3. Cumulative Environmental Impacts Analysis, Federal Energy Regulatory Commission, circa 1992. (http://www.ferc.fed.us/hydro)

4. Considering Cumulative Effects Under the National Environmental Policy Act, Council on Environmental Quality, 1997. (http://www.whitehouse.gov/ceq/)

5. Interagency Task Force Report on NEPA Procedures in FERC Hydroelectric Relicensing, Prepared by the Work Group on the Coordination of Federal Mandates: Federal Energy Regulatory Commission, U.S. Department of the Interior, U.S. Department of Commerce, U.S. Department of Agriculture, Environmental Protection Agency, and Advisory Council on Historic Preservation, May 2000. (http://www.ferc.fed.us/hydro/docs/nepa_final.pdf)

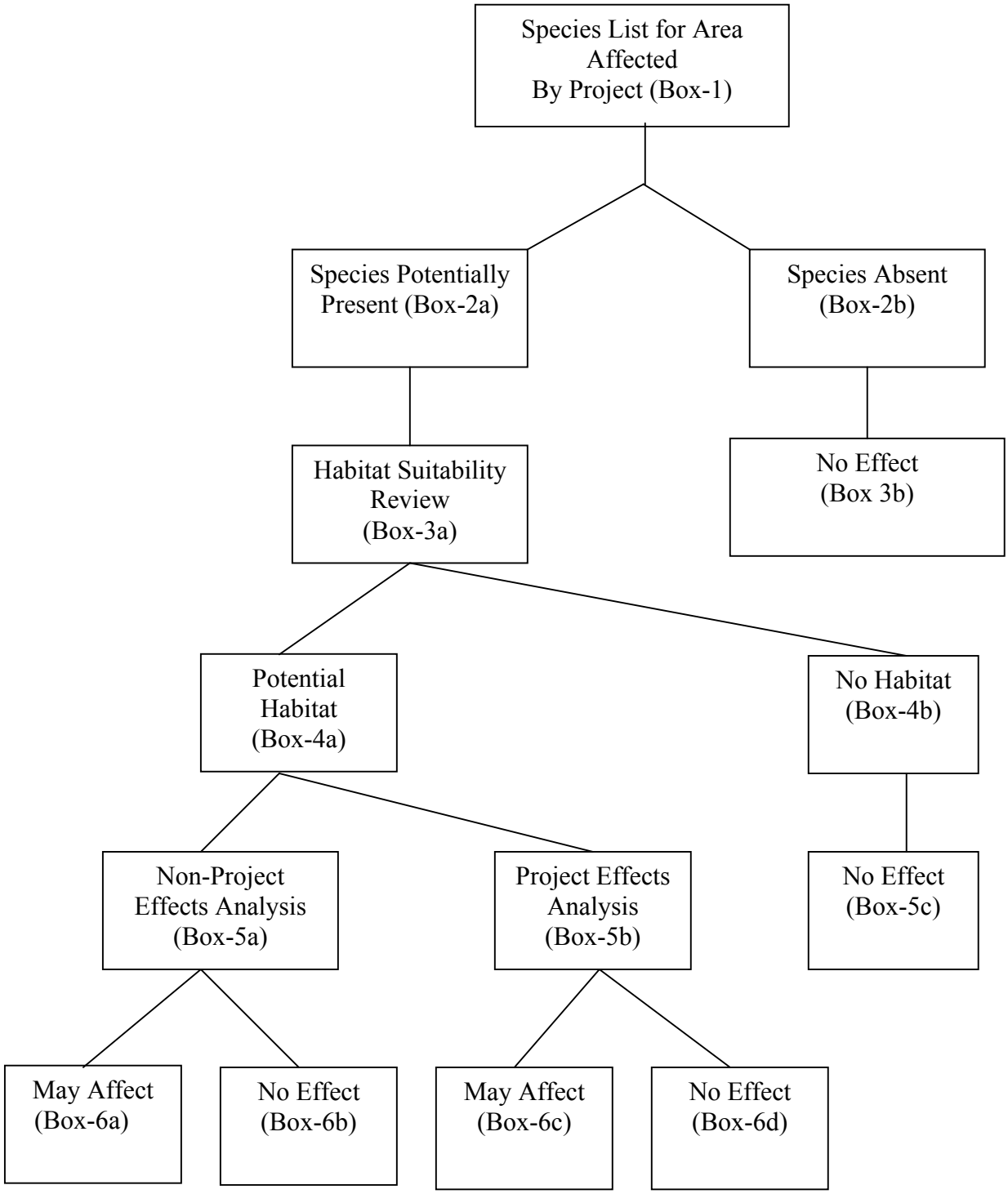
6. Endangered Species Act Handbook, National Marine Fisheries Service and U.S. Fish and Wildlife Service, 1997. (http://endangered.fws.gov/policies/)

7. Hydropower Licensing and Endangered Species, A Guide for Applicants, Contractors, and Staff, Federal Energy Regulatory Commission, December 2001. (http://www.ferc.fed.us/hydro)

8. Consideration of Compliance and Water Rights Requirements for the Sacramento-San Joaquin Delta and Suisun Marsh, California State Water Resources Control Board, November 20, 1992. (http://www.swrcb.ca.gov/)

Exhibit 1 – Habitat Suitability Review

The flow chart and process described below will be used to assess the suitability of habitat located within the geographic bounds.



Box 1. DWR, in collaboration with USFWS, NMFS, USFS, and CDFG, will develop a comprehensive list of threatened, endangered, and special status (TES) species potentially occurring in the Project action area. The action area for FERC Relicensing purposes is defined as the Oroville Facilities Project 2100 boundary as currently defined in the existing license, upstream of project waters to the next barrier to fish migration, and downstream in the Feather River to the confluence with the Sacramento River.
Box 2a. Existing information and sources indicate possible species presence within the action area. Proceed to habitat suitability review.
Box 2b. Existing information and sources indicate species are absent within the action area. No Project effect on species, no further work is necessary for this species as shown in Box 3b.
Box 3a. Assess existing habitat within the Project action area to determine if the habitat is suitable for TES species. This assessment will be based on the best available scientific and commercial information supplemented by field surveys developed and conducted as part of the environmental study plans for Project 2100.
Box 3b. The assessment in Box 1 indicated that the specific species is absent. No further work is necessary.
Box 4a. The results of the habitat suitability assessment performed in 3a indicate that there is suitable habitat present for particular species. Proceed to Effects Analysis described for Box 5a and Box 5b.
Box 4b. The results of the habitat suitability assessment performed in 3a indicate that suitable habitat is not present for particular species. No further work is necessary.
Box 5a. Determine how or if non-Project effects would potentially impact each species for which suitable habitat exists (determined in Box 4a) within the Project action area.
Box 5b. Determine how or if Project effects would potentially impact each species for which suitable habitat exists (determined in Box 4a) within the Project action area.
Box 5c. The results of the habitat suitability assessment preformed in 3a indicated that there is no habitat present for a particular species.
Box 6a. Effects analysis in Box 5a indicates that specific species may be negatively impacted by non-Project effects.
Box 6b. Effects analysis in Box 5a indicates that specific species will not be negatively impacted by non-Project effects. No further work is necessary for this species.
Box 6c. Effects analysis in Box 5b indicates that specific species may be negatively affected by the Project. Develop protection, mitigation and enhancement measures to avoid or reduce the severity of the negative effects.
Box 6d. Effects analysis in Box 5b indicates that specific species will not be negatively affected by non-Project effects. No further work is necessary for this species.

ATTACHMENT 1

REGULATORY BACKGROUND ON ENDANGERED SPECIES ACT AND GUIDANCE DOCUMENT SUMMARIES

Pursuant to Section (a)(2) of the Endangered Species Act, as amended (6 U.S.C. 1531 et sq.) (ESA), Federal agencies are required to consult with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), as appropriate, to ensure that any Federal action is not likely to jeopardize the continued existence of any threatened or endangered species, or result in adverse modification of critical habitat. FERC has determined that the issuance of a new hydroelectric license represents a new commitment of resources, and therefore, necessitates ESA section 7 consultation. If FERC determines that issuance of a hydroelectric license may affect a listed species or critical habitat, then formal consultation is required. The formal consultation process culminates with FWS and/or NMFS issuing a biological opinion (BO) that determines whether or not the proposed action jeopardizes the continued existence of the affected federally listed species. In formulating a BO, FWS and/or NMFS must use the best scientific and commercial data available.

To comply with the section 7 regulations (50 CFR §402.14(c)), an initiation package is submitted with the request for formal consultation and must include the following:

1. A description of the action being covered.
2. A description of the specific area that may be affected by the action.
3. A description of any listed species of critical habitat that may be affected by the action.
4. A description of the manner in which the action may affect any listed species or critical habitat, and an analysis of any cumulative effects. This should include interrelated and interdependent effects of the action, and may include effects outside the area directly affected by the action.
   - Direct Effects: Effects to listed species of designated critical habitat that occur during implementation of the project.
   - Indirect Effects: Effects to listed species that occur later in time or offsite, but are reasonable certain to occur.
   - Cumulative Effects: For purposes of the ESA, cumulative effects are defined as the effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within an action area of the Federal action subject to consultation (50 CFR 402.02).
5. Relevant reports, including any environmental impact statements, environmental assessments, biological assessments or other analysis prepared on the proposal.
6. Any other relevant studies or other information available on the action, the affected listed species, or critical habitat.

The joint NMFS and FWS ESA Handbook states that in determining the effect of ongoing water projects under the Federal Power Act (FPA), NMFS and the FWS should consider the following.

- The total effects of all past activities, including effects of the past operation of the project, current non-federal activities, and Federal projects with completed section 7 consultations, form the environmental baseline.

- To this baseline, future direct and indirect impacts of the operation over the new license or contract period, including effects of any interrelated and interdependent activities, and any reasonably certain future non-Federal activities (cumulative effects), are added to determine the total effect on listed species and their habitat.

The Interagency Task Force (ITF) describes procedures to integrate ESA consultation with the FPA licensing process. These procedures serve as general guidance for applicants, FERC staff, and resource agency staff. The ITF report addresses issues related to coordination of the ESA and the FPA, adequacy of information, and scope of effects of the proposed action. Appendix I of the ITF report outlines a means of streamlining the FPA hydropower licensing process with the ESA consultation process. This streamlining process involves early coordination that should include:

1. A description of the project, including maps and project drawings.
2. A description of the species that may be affected in the project's action area.
3. A list of existing scientific information/studies
4. Identification of needed scientific information/studies
5. Identification of activities that may be interrelated or interdependent with the proposed action.
6. Identification of effects of the project on listed and proposed species, including direct and indirect effects of the project, any interrelated and interdependent actions, as well as cumulative effects.
7. Potential conservation actions and operational criteria that can be incorporated into the project to avoid or minimize effects on listed and proposed species.
8. Information on the legal, economic, and technical feasibility of such actions and criteria.

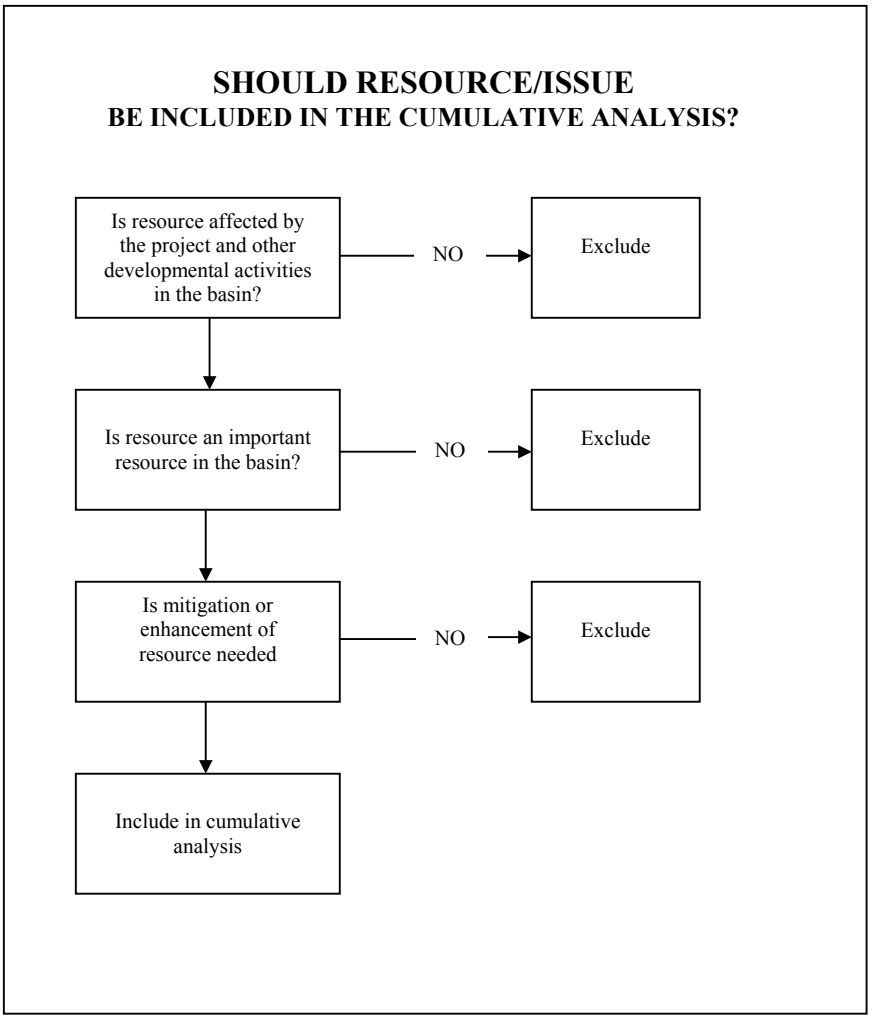
ATTACHMENT 2

PREPARING ENVIRONMENTAL ASSESSMENTS
GUIDELINES FOR APPLICANTS, CONTRACTORS, AND STAFF
Federal Energy Regulatory Commission
March 14, 2001

B. Cumulative Effects

In this section, you'll identify resources that will get a cumulative impacts analysis based on the scooping meeting, site visit, and comments on the scooping documents; the license application' and consultation with the agencies and nongovernmental organizations (NGOs). With that information, you'll determine the appropriate geographic and temporal scope of analysis for those resources. Below, we discuss (1) how to determine which resources need a cumulative effects analysis; (2) the geographic scope of the cumulative analysis and (3) the temporal scope of analysis.

(1) Selecting Resources for Cumulative Analysis: CEQ defines cumulative impacts as impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency or person undertakes the actions. Hydro projects can contribute to cumulative effects when their effects overlap with those of other activities in space, or time, or both. Effects can be either direct or indirect. Direct effects are those that occur in the same place and at the same time and are a direct result of the proposed action. For example, water quality might be affected by reduced spillage at the dam. Indirect effect can



occur at a distance from the proposed action, or the effects may appear some time after the proposed action occurs. For example, and upstream timber harvest area and upstream water sewage treatment plant may affect water quality, in addition to the effects on water quality from the proposed action. Scoping meetings, the application, agency correspondence, and agency and public interest in a particular resource will help you to define whether a resource is cumulatively affects.

When selecting resources for cumulative analysis, it can be very helpful to run the resource through a process such as the one at the right.

Additional guidance on defining cumulative analysis resources can found in Considering Cumulative Effects under the National Environmental Policy Act (Council on Environmental Quality, 1997), which is available on the web at http://ceq.eh.doe.gov/nepa/ccenepa/ccenepa.htm.

Example of a Cumulative effects section with a resource selected:

B. Cumulative Effects

According to the Council on Environmental Quality's regulations for implementing NEPA (§1508.7), an action may cause cumulative impacts on the environment if it's impacts overlap in time and/or space with the impacts of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities.

Based on our review of MHP's license application and agency and public comments, we have identified the coldwater fisheries resource as having potential to be cumulatively affected by the project in combination with other past, present and future activities. The coldwater fisheries resource was selected because irrigation, domestic water treatment and hydroelectric developments and diversions along the waterway have affected the fishery and habitat by altering the flow regime, blocking or delaying fish movement, and entraining fish into diversion canals or penstocks.

Example of a Cumulative Effects section with no resources selected:

B. Cumulative effects

According to the Council on Environmental Quality's regulations for implementing NEPA (§1508.7), an action may cause cumulative impacts on the environment if it's impacts overlap in time and/or space with the impacts of other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time, including hydropower and other land and water development activities. Through scooping, agency consultation, and our independent analysis we've identified no resources that would be cumulatively affected by continuing to operate the Angus Project. The project is located in a very small watershed with very little existing or planned future developmental activity other that the existing hydro project.

(2) Geographic Scope of Cumulative Analysis: As the CEQ says, without spatial boundaries, a cumulative effects assessment would be global, and while this may be appropriate for some issues such as global warming, it's not appropriate for most other issues. The scooping process, consultation, site visits, and the license application will help you identify resources that are cumulatively affected. Here, you should briefly describe how those resources are cumulatively affected and explain your choice of the geographic scope of analysis It's important to remember that no every resource will have the same geographic scope.

To determine spatial boundaries, consider the distance the impact can travel in the context of resource effects from other hydro and non-hydro activities that might affect a wide area. Specifically, you should determine the area(s) that will be affected by the proposed action (impact zone), list the cumulative effects resources within that area that could be affected by the proposed action, and determine the geographic area outside of the impact zone that is occupied by those resources. Finally, you should consider the management plans and jurisdictions of other agencies for the cumulatively affected resource.

For hydropower projects, the geographic scope may be the river basin or mainstem river for some resource such as anadromous fish, or the stream reach and surrounding lands for an endangered plant. You should describe the geographic scope for each cumulatively affected resource.

When defining your geographic scope, discuss the location of other hydro projects and other major developmental activities within the area (such as water withdrawals for irrigation or public water supply; a steam plant that discharges into the impoundment, a water sewage treatment plant located upstream of the project; or a paper mill located on the river that affects water quality). Include a schematic diagram of these developments and/or list them in a table. Briefly describe how your project interacts, affects, or is affected by, these other hydro and water resource developments. The length of discussion should reflect the significance of the interaction. Include details of the effects of these interactions in the environmental impacts analysis section.

Example of a geographic scope on analysis section:

1. **Geographic Scope**

There are about 44 other dams used for hydroelectric generation in the Copper River Basin. About half of these dams are located on the lower 80-mile-long part of the basin while the other half are located in the upper 70-mile-long part of the basin. An 80 mile-long segment of the river separates these two groups of dams.

These dams have cumulatively affected the fishery (anadromous fish species) and recreation (canoeing and kayaking) on the Copper River. In the fishery (Section V.B.2) and Recreation (Section V.B.5) sections of this DEA, we discuss the site-specific as well as the cumulative effects of relicensing the Angus Project on anadromous fish and recreational boating.

Since a series of dams in the lower reach of the Copper River block the access of several anadromous fish species, we limit our look at the cumulative fishery effects of the Angus Project to potential measures that would help restore fish populations in the basin.

To look at the cumulative impacts on boating recreation, we limit our analysis to the upper river-the 20 mile reach between the Falls and the city where there are eight existing dams.

(3) Temporal Scope of Analysis: The temporal scope includes a brief discussion of past, present, and future actions, and their effects on resources based on the new license term (30-50 years). In this section, you should highlight the effect on the cumulatively affected resources from reasonably foreseeable future actions (for example, the effect on wetlands from a planned timber harvest, or the effect on project operations from a proposed water withdrawal for a ski resort). You should discuss the past actions' effects on the resource in the affected environment section [for an example, see section C below].

Example of a temporal scope section:

2. Temporal Scope

The temporal scope of analysis includes a discussion of the past, present, and reasonably foreseeable future actions and their effects on water, fishery, and recreation resources. Based on the term of the proposed license, we will look 30-50 years into the future, concentrating on the effects on water, fishery, and recreational resources from reasonably foreseeable future actions. The historical discussion is limited, by necessity, to the amount of available information. We identified the present resource conditions base on the license application, agency comments, and comprehensive plans.

C. Proposed Action and Action Alternatives

This is the section of the EA that explains the effects of the action alternatives on a variety of environmental resources. It begins with a brief description of how the section is organized, and includes a brief discussion of resources that wouldn't be affected by the proposed action, and, therefore, won't get a detailed analysis. The discussion should explain why those resources did not get the more detailed analysis.

Example of the Proposed Action and Action Alternatives introduction paragraph:

In this section, we discuss the effects on the project alternatives on environmental resources. For each resource, we first describe the affected environment, which is the existing condition and baseline against which we measure effects. We then discuss and analyze the specific environmental issues.

MHC does not propose any new construction, modifications, or changes to the project itself that would cause land-disturbing activities. However, MHC does propose to periodically remove sediments from the reservoir. This issue is discussed in the Aquatic Resources Section (section V.C.1 – Sediment Removal).

There are no other issues dealing with geology and sold resources; therefore, we do not address them further.

For all resources that will be addressed, you should describe –by resource—(a) the affected environment, (b) your analysis of the proposed action and any other recommended alternatives or measures, and (c) any unavoidable adverse impacts. Use this format for all resource areas affected.

Table 1-2 Principles of Cumulative Effects Analysis (CEQ 1997)
1. Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions. The effects of a proposed action on a given resource, ecosystem, and human community include the present and future effects added to the effects that have taken place in the past. Such cumulative effects must also be added to effects (past, present, and future) caused by all other actions that affect the same resource.
2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, nonfederal, or private) has taken the action. Individual effects from disparate activities may add up to or interact to cause additional effects not apparent when looking at the individual effects one at a time. The additional effects contributed by actions unrelated to the proposed action must be included in the analysis of cumulative effects.
3. Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected. Environmental effects are often evaluated from the perspective of the proposed action. Analyzing cumulative effects requires focusing on the resource, ecosystem, and human community that may be affected and developing an adequate understanding of how the resources are susceptible to effects.
4. It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful. For cumulative effects analysis to help the decision maker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to affected parties.
5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries. Resources typically are demarcated according to agency responsibilities, county lines, grazing allotments, or other administrative boundaries. Because natural and sociocultural resources are not usually so aligned, each political entity actually manages only a piece of the affected resource or ecosystem. Cumulative effects analysis on natural systems must use natural ecological boundaries and analysis of human communities must use actual sociocultural boundaries to ensure including all effects.

6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.

Repeated actions may cause effects to build up through simple addition (more and more of the some type of effect), and the same or different actions may produce effects that interact to produce cumulative effects greater than the sum of the effects.

7. Cumulative effects may last for many years beyond the life of the action that caused the effects.

Some actions cause damage lasting far longer than the life of the action itself (e.g., acid mine drainage, radioactive waste contamination, species extinctions). Cumulative effects analysis needs to apply the best science and forecasting techniques to assess potential catastrophic consequences in the future.

8. Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accommodate additional effects, based on its own time and space parameters.

Analysts tend to think in terms of how the resource, ecosystem, and human community will be modified given the action's development needs. The most effective cumulative effects analysis focuses on what is needed to ensure long-term productivity or sustainability of the resource.