Mid-term Evaluation Of The Klamath River Basin Fisheries Restoration Program

Prepared For The Klamath River Basin
Fisheries Task Force

By

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Chapter 1

Executive Summary

This ***Mid-term Evaluation Of The Klamath River Basin Fisheries Restoration Program*** is the first in-depth evaluation of the Program since its launch in 1987. It may be the most comprehensive evaluation of any large-scale Pacific salmon restoration program undertaken to date. The two-state Klamath River basin covers ten million acres. Of that area the Klamath Fisheries Restoration Program addresses nearly 3,000,000 watershed acres. This evaluation covers not only the biological, but the institutional and political aspects of the Program.

The evaluation employs a number of methods, including the use of the Program's administrative databases, interviews of Program participants, field evaluation of the Program's restoration projects, and the use of information concerning other, comparable Pacific Coast fisheries restoration programs. The evaluation results are presented in the same order as they appear in the evaluation workplan, with each of the following chapters covering one of the workplan's nine basic tasks. A tenth chapter, an evaluation of both large and small hatchery operations in the Klamath basin, was developed at the request of the Klamath River Fish and Wildlife Office (KRFWO).

A selection of the major findings and recommendations scattered throughout the report are presented here.

Finding: Over its first 12 years the Task Force has made solid progress establishing an organizational structure to administer a fishery restoration program.

Successes include:

- Adopting a Long Range Plan setting long-term goals and objectives for restoring the basin's fish resources
- Developing a system for selecting restoration projects
- Expending over $4.6 million for fish and habitat protection, restoration and education projects
- Strengthening community-based restoration efforts through the creation and funding of CRMPs and supporting tribal fishery programs
- Improving coordination and communication among local, state and federal agencies with conflicting missions
- Improving communication among the diverse interests represented on the Task Force

Finding: The Task Force is now at a crossroads. The primary tasks of establishing a program have been completed and the less-controversial restoration projects have been undertaken. Fish production has declined during the life of the Task Force, however, and several anadromous stocks are now in some stage of listing for protection under the federal Endangered Species Act.

The Task Force adopted a goal of restoring the biological productivity of the Klamath Basin to provide for viable ocean and in-river fisheries by 2006. If the Task Force seriously intends to progress towards the goal, it must confront the more contentious issues that still divide the membership.

Finding: A consensus decision-making process was originally required by the Act and continues as the decision-making style for the Task Force even though amendments to the Act now leave it unclear as to whether it continues to be mandatory. In adhering to the consensus process Task Force members have learned how to protect their own self-interests through the power of the veto, but have not yet learned how to use consensus in a positive way to work through divisive issues.

The TF should give the consensus process a strong chance to succeed. The easier issues have been addressed in the first half of the Program's 20-year life and the TF now faces the more difficult issues of land and water use. The TF should clearly put the issue of a well-functioning consensus process on the table and consider the following

- Dedicating a workshop session in the near future to reviewing what a consensus process is supposed to be, and how it is supposed to function.
- Hiring a professional facilitator on an "as needed" basis to work through chronic issues such as the Upper Basin Amendment, issues of tribal vs. agricultural water rights, and alternative opportunities for water management.
- Making a conscious effort to recognize when issues need to be brought to a facilitator, and scheduling meetings for those specific purposes.
- Discontinuing Robert's Rules of Order and adopting a meeting style more consonant with a consensus process.

Finding: The Program's 1991 *Long Range Plan's* lengthy step-down structure of goals, objectives, polices, priorities, and specific recommended actions does not lend itself well to tracking and documenting progress made in the Plan's implementation.

The TF should adopt the revised *Long Range Plan* structure presented in Chapter 3 of this evaluation, including its method of coding all recommended actions, so that all future Program efforts (e.g. grant agreements, action minutes), may be coded and entered in a sortable database for easy annual progress reporting.

The TF should consider, as well, the incorporation of the emerging Coordinated Resources Management Planning (CRMP) sub-basin plans into the Program's *Long Range Plan.*

Finding: Chapter 2 of the 1991 *Long Range Plan*, in its lengthy discussion of fish habitat protection needs, proposes a series of actions the TF should promote to improve stream protection measures in the basin. To the extent such measures are within the control of the basin communities, many such actions have been undertaken. Still largely lacking, however, are those proposed stream protection actions which are the responsibility of out-of-basin interests, like the State Board of Forestry.

The TF should confer with the California Department of Forestry and Fire Protection, the California Board of Forestry, California Department of Fish and Game, and Fish and Game Commission concerning the continuing need for improved stream protection standards under the provisions of the State Forest Practice Act, Fish and Game stream modification regulations (F&G Code Section 1600 et seq.) and other stream protection laws.

Finding: The Salmon River Restoration Council has embarked on a highly promising watershed assessment and restoration planning process in concert with the Klamath National Forest. The Salmon River sub-basin area is dominated by National Forest ownership, as are many important watersheds in the mid-Klamath region.

The TF should foster the expansion of the stakeholder-based Salmon River sub-basin restoration planning process, by other watershed communities, into the balance of the federal land ownership-dominated watersheds of the mid-Klamath region.

Finding: The Program's *Long Range Plan* identifies the factors that limit fish production within the Restoration Program area. Because most of these "limiting factors" concern degraded water quality, the U.S. Environmental Protection Agency, the California State Water Resources Control Board and the North Coast Regional Water Quality Control

Board have all recognized the Long Range Plan as a comprehensive, basin-wide water quality restoration plan. That recognition lead to the Program's eligibility to receive over $1 million in non-point source pollution control *implementation* grant funds under Section 319(h) of the federal Clean Water Act. Those funds have been used for stream protection projects, to strengthen watershed education in the basin's public schools, to support community-based stream monitoring and to develop the Program's Klamath Resource Information System GIS program.

The Clinton Administration has requested $100 million for a federal fiscal year 2000 "Pacific Coastal Salmon Restoration Initiative", of which California State, local and tribal governments would receive $25 million. It appears very likely that Congress will approve, if not increase, the President's salmon restoration funding request.

The TF should approach the National Marine Fisheries Service and the California Resources Agency, at its earliest opportunity, with the proposal the *Long Range Plan* and Restoration Program be at least *tentatively* designated by the Service as the recognized program for the recovery of the basin's Endangered Species Act-listed salmon and steelhead -- in the same manner the Plan and Program were recognized earlier as the basin's water quality restoration platform by the State and federal Clean Water managers.

Whether or not such a proposed designation directs the Klamath River basin's share of the new Initiative's funding to and through the Restoration Program's grant process, entities using the new funds should be guided in their restoration projects by the provisions of the updated Plan.

Finding: Fish population monitoring is an absolutely essential element of any fisheries management or restoration program. The TF, to its credit, has devoted roughly 30% of its available restoration grant funds to fish monitoring projects. The Klamath Fishery Management Council (Council) has identified urgent needs for fish monitoring programs to guide its harvest recommendations to the Pacific Fishery Management Council and has turned to the TF to increase its monitoring commitment. The TF has had to deny the Council's monitoring funds request in order to stay on target with other major Plan-driven commitments, like the mainstem Klamath River instream flow studies.

The TF and Council must work together to identify a stable source of fish monitoring funding. The U.S. Bureau of Reclamation has, on occasion, stepped into the monitoring funding breach on the Trinity River side of the basin. Inasmuch as the Bureau's water operations effect fish conditions on both legs of the system - the Trinity and mainstem Klamath - the Bureau's project maintenance and operations budget represents one logical place to start in the search for a stable fish monitoring funding base.

Finding: Within the next several years Congress will address the question of re-authorizing the Klamath Act and continuing or augmenting its funding. Congressional delegations will expect to see a clear plan of action and willingness to make mid-course corrections before more resources are directed to the Klamath.

Task Force members should take pride that they have been asked to work on the complex problems of the Klamath Basin. But the Task Force faces the specter of having spent $20 million on fishery restoration efforts with only fisheries decline or extinction to show for it. If there is no personal or political will to make the Task Force succeed, it will fail in its goals.

Responsibility lies with each individual member and interest group to recognize the needs of Klamath fisheries and either work towards those goals or get out of the way. The alternative is the loss of a priceless natural resource during their watch.

The Klamath River Basin Conservation Area Fishery Restoration Program

Public Law 99-552, the "Klamath Act", was adopted by the Congress on October 27, 1986 for the purpose of authorizing a 20-year-long federal-State cooperative Klamath River Basin Conservation Area Restoration Program for rebuilding the river's fish resources. Congress observed that "floods, the construction and operation of dams, diversions and hydroelectric projects, past mining, timber harvest practices, and road-building have all contributed to the sedimentation, reduced flows, and degraded water quality which has significantly reduced the anadromous fish habitat in the Klamath-Trinity River system".

The Act, as amended in 1991, provides for a 16-member Klamath River Basin Fisheries Task Force (TF) and directs the U.S. Secretary of the Interior to cooperate with the Task Force in the development of the Restoration Program. The Task Force members are appointed by and represent the Governors of California and Oregon; the U.S. Secretaries of Interior, Commerce and Agriculture; the California counties of Del Norte, Humboldt, Siskiyou and Trinity; Klamath County, Oregon; the Hoopa Valley, Karuk, Yurok and Klamath native tribal fishers; anglers and commercial salmon fishermen.

The Task Force was organized and chartered as a federal advisory committee in 1987. In the winter of 1990-91 the Task Force completed development of a *Long Range Plan For The Klamath River Basin Conservation Area Fishery Restoration Program*. Among the *Long Range Plan's* many provisions was one that called for an annual report on the Program's progress and another that called for an evaluation of the Restoration Program every five years (LRP at Sections 7.4 b and a).

The Restoration Program is administered by the U.S. Fish and Wildlife Service from the Service's regional office in Portland, Oregon and from a field location, the Klamath River Fish and Wildlife Office (KRFWO), at Yreka, California. The last report relating Restoration Program activities to the Lo*ng Range Plan* was prepared by the KRFWO for federal fiscal year 1992. Inasmuch as eight, not five years have elapsed since the Plan's call for a five-year evaluation, this evaluation is referred to as a "mid-term" Program evaluation.

A significant portion of the Task Force's annual work involves the approval of approximately one-half million dollars in fish habitat and fish population restoration-related grants. The Task Force is assisted in this annual effort by a technical working group (TWG) of persons knowledgeable and interested in Klamath River fisheries restoration.

The Restoration Program's Mid-term Evaluation Project

The Mid-term Evaluation Project, the assessment called for in the 1991 *Long Range Plan*, was developed by a subcommittee of the TF with assistance from the KRFWO staff. The TF members and their U.S. Fish & Wildlife Service assistants identified the questions that needed to be answered and the wording of a contract workplan that would be followed by a consultant in the pursuit of needed answers. The Service advertised the contract opportunity in early 1997 and a contract was awarded to the successful bidders, Kier Associates, that spring.

The project workplan contains ten tasks, the first of which required the contractor to meet with the TF's mid-term evaluation subcommittee for a consultation concerning the ground rules for the project. The subcommittee's instructions translated briefly to "Pull no punches. This is your, the consultant's evaluation – not the Fish & Wildlife Service's nor the Task Force's." This, then, is the spirit in which this evaluation has been conducted.

Each chapter presents the findings and conclusions concerning a specific task, in the order in which they occur in the project workplan. Chapter 1, of course, has been devoted to this introduction. Task 10 concerns the preparation of this report. Chapters 2 through 9 each begin by reciting the language of the task addressed in it.

Chapter 2

2. Assess the degree to which the intent of the Klamath Act and the five general goals of the Long Range Plan have been met. Specifically assess the degree to which returns of natural anadromous fish stocks in the Klamath River have increased (or decreased) basin-wide and by sub-basin, where feasible.

The evaluation team employed three different methods to carry out Task 2. First, the minutes of 21 TF meetings, stretching from 1987 through 1997, were examined, the issues addressed by the TF in its meetings were inventoried, and the actions taken by the TF on each such issue was entered into a database (Appendix 2-1). The database was then used to evaluate the range of Klamath Act issues and *Long Range Plan* goals the TF addressed and how these issues were disposed of. The results of the inventory and assessment are discussed below and summarized in Tables 2-1 and 2-2.

Second, the evaluation team interviewed TF and Klamath Fishery Management Council members, members of the Technical Work Group (TWG), and others knowledgeable in the work of the TF and the progress of the Restoration Program. The results of these 35 interviews were entered into a database (Appendix 2-2) and are summarized below.

Finally, information concerning the status of fish stocks in the basin was acquired from the responsible agencies, tribes and other fisheries professionals interested in and knowledgeable about Klamath River basin fish stocks. That information is summarized below.

Program Evaluation as Measured by Meeting Agendas and Task Force Actions

The Klamath River Basin Fisheries Task Force generally meets four times per year in various locations throughout the basin. The agendas follow a pattern geared to the annual adoption of a workplan which awards restoration funds to specific projects. A Request for Proposals (RFP) is adopted by the Task Force indicating to bidders what types of projects are sought for the next fiscal year and how priorities will be determined. Proposals are then solicited, projects ranked and the workplan adopted at the June meeting.

One dimension for evaluating program success is to examine how the Task Force has spent its time in meetings and what actions have been taken. To do this the items on Task Force agendas have been divided into several broad categories (See Table 2-1, below, and Appendix 2-1, "Actions taken by the KRBFTF 1991-1997"). Although there is judgment in how agenda items are categorized, the list provides a general indication of the range of subject matter and Task Force effort as measured by the number of times various items are covered. It should be noted that the "Task Force business and procedures" category

includes the discussions pertaining to the annual workplan, and therefore cover many subtopics which are better evaluated in the project-specific analysis.

Table 2-1: KRBFTF Meeting Agenda Topics

AGENDA TOPIC	21 MEETINGS 1991-1997
TF business and procedures	47
- Adoption of Annual Workplans and revisions	9
Interagency Coordination	40
Flow	26
Upper Basin Amendment	23
IFIM	29
Fish Management	16
Hatchery Operations, Hatchery-Wild Stock issues, and Small-scale rearing	13
Trinity Restoration Program	14
Endangered Species Act	10
Public Education	9
Long Range Plan	9
Habitat Protection and restoration	9
Timber Harvest	7
Stock ID and specific stock protection	6
Ag.-private cooperation, CRMPs, FERC, GIS, KFMC, KPOP, Mid-Program Review, Mining, Water Quality, Legis. Coord.	7 or less agenda items each

TF business and procedures: Most Task Force meeting time is spent deciding how to spend restoration funds. Since its creation the Task Force has struggled with the challenge of deciding where to place scarce Restoration Program dollars in a basin as large as the Klamath, with so many different interest groups, landowners, kinds of impact, restoration needs and varied fish stocks. The pending listing of several stocks under the Endangered Species Act has only heightened the frustration.

The relative scarcity of restoration funds has resulted in continuous attempts through the years to revise the procedures used to solicit, rank, and award projects. In its attempts to increase the equity and rationality of project selection, the Task Force has discussed some aspect of the following at almost every meeting:

- What categories of projects should be solicited, from whom, and in what part of the basin
- How much funding should be budgeted for each category
- What point system should be used for ranking projects
- Who can participate in ranking

- The role of the Technical Working Group vis-à-vis the Task Force
- What to do with unspent funds, and how to adjust for budget shortfalls
- How to deal with carry-over projects and continuing support of the CRMPs
- How to deal with the large "budget grabbers" like Task Force administration, long term monitoring, and the IFIM flow study.

In answering the question "Does consensus work?" one of the measures most often cited by Task Force members is that, in spite of disagreements on one part of the process or another, a budget has been adopted each and every year. The rules on who can participate in ranking and voting now appear to meet with general approval. However the process of project categorization, ranking and prioritization continues to evolve, and will go through more changes as the TF focuses on sub-basin issues.

Other items within this category deal with how the TF meets its obligations for complying with the Klamath Act, including how to foster and account for the required non-federal match to restoration funds, and how to comply with provisions calling for preferential hiring of certain groups for restoration projects.

Interagency Coordination: The second most frequent meeting agenda item includes the update reports from agencies involved in the basin, including the U.S. Forest Service, California Department of Fish and Game, USFWS and the Department of the Interior. These reports serve to keep the Task Force informed on activities which influence fish restoration efforts. The reports are usually for information only, although in some cases the Task Force acts to send letters in response to the topics raised.

Flow: Because the U.S. Bureau of Reclamation presents a status report on flow and lake conditions at almost every TF meeting it has been separated out from the Interagency Coordination category. Since flow directly affects the competing needs of agricultural diverters and fish production the TF often engages in discussions regarding the need for greater USFWS participation in BOR decisions.

Upper Basin Amendment: The Upper Basin Amendment (UBA) has been on the agenda of almost all meetings during the evaluation period. Divisive sessions have consumed the Task Force's attention, and it remains a focus of unresolved concern.

The primary issues have included:

- whether the Upper Basin should be included within the purview of the Task Force
- what representation the Upper Basin interests should have on the Task Force
- the tensions between upstream agricultural water users and downstream fish production needs for improved water quality and quantity
- whether an amendment should be added to the Long Range Plan addressing goals, policies and objectives for the Upper Basin, and what form it should take.

The TF has spent extensive meeting time debating the issue, including the time of an UBA sub-committee. At some points the TF appeared to almost reach consensus, but a decision still remains elusive. Although the item continues to appear on TF agendas the opposing positions now appear to have hardened pending the outcome of decisions outside the Task Force's authority, such as the upper Klamath water adjudication process and the activities of the Hatfield committee. The TF should discuss whether it wishes to continue its thus-far fruitless debate over adoption of the proposed Upper Basin Amendment.

IFIM Study: Discussions regarding an instream flow study for the Klamath River continue as a recurrent agenda topic. Issues have dealt with:

- the need for the study
- the geographic area it should cover, e.g. the main stem below Iron Gate Dam, the tributaries of the Scott and Shasta, and the area above Iron Gate
- what technical elements it should include
- what agencies or consultants should be hired to participate in the study
- how much funding should come from the Task Force budget vs. other public and private entities
- What the role of the TWG and TF should be in shaping the study

Because the study is so expensive, the natural system so complex, and stakeholder fears concerning the implications of possible study results so strong, it has been difficult for the Task Force to move ahead with the study. In spite of the TF not reaching a consensus the TF Chairman, who represents the Secretary of the Interior, made an executive decision on behalf of the Secretary to begin contract negotiations for certain portions of the study, taking advantage of one-time funds that had become available. This "consensus over-ride", as it was perceived by some, was met with mixed reaction from Task Force members who suddenly were confronted with the reality that ultimately the TF serves as an advisory body to the Secretary, not as a final decision-maker.

Subsequently the TWG has invested extensive effort conducting a scoping study for the IFIM, and the decision-making for the scope of work, hiring of consultants, and study performance continues among the various agencies (e.g. USFWS, USGS/ NBS, and DFG) contributing to the effort. Because the study will compete for a large share of restoration dollars it will continue to have a prominent place on upcoming agendas.

Other topics: The remainder of agenda topics covers a range of ongoing issues in the basin. These include discussions concerning fish management and the status of various fish populations, concerns regarding hatchery vs. wild fish stocks, upslope watershed management, the impacts of land uses such as mining, agriculture, timber harvesting, the development of GIS capability for the Restoration Program, and public education concerning restoration efforts. Each of the topics relates to objectives in the Long Range Plan and thus contributes toward its implementation.

The goals of the Klamath Act and Long Range Plan

As stated in the Long Range Plan, the goals of the Act are summarized here:

Goal I: Restore, by 2006, the biological productivity of the Klamath River Basin in order to provide for viable commercial and recreational ocean fisheries and in-river tribal (subsistence, ceremonial and commercial) and recreational fisheries.

Goal II: Support the Klamath Fishery Management Council in development of harvest regulation recommendations that will provide for viable fisheries and escapement.

Goal III: Recommend to the Congress, state legislatures, and local governments the actions each must take to protect the fish and fish habitats of the Klamath River Basin.

Goal IV: Inform the public about the value of anadromous fish to the Klamath River region and gain their support for the Restoration Program.

Goal V: Promote cooperative relationships between lawful users of the Basin's land and water resources and those who are primarily concerned with the implementation of the Restoration Plan and Program.

Agenda items were classified according to which goal, or goals, they promote. As in the previous section there is discretion as to how individual items are categorized. Nevertheless the numbers provide a general sense of Task Force success.

Table 2-2: How TF Agenda Items Address the Long Range Plan Goals

Goal	Number of Agenda Items
I	240
II	18
III	45
IV	16
V	68

The greatest effort by the Task Force was directed to Goal I, restoring biological productivity, through its actions to adopt a Restoration Program workplan for each year. The lowest efforts (as measured by number of agenda items) were in Goal IV, Public Education and Goal II, KFMC cooperation.

Goal I - Restoring Productivity: The greatest effort of the Task Force and its guiding light for all agenda items has been directed to this goal of restoring the biological

productivity of the Klamath River Basin to provide viable fisheries. Discussion regarding how well this effort has been achieved so far is found in other sections of this report (see, especially, Task 5).

Goal II - KFMC support: The language of Goal II is fairly specific in directing the TF to support the KFMC in the development of harvest regulation recommendations. While a large portion of TF actions could be construed to contribute to the overall information base for developing harvest regulations, 1) the TF does not usually express specific intent of supporting KFMC harvest decisions, and 2) the transfer of information from the TF to the KFMC is primarily through informal channels via overlapping membership, attendance and staffing, minutes and word-of-mouth. Joint meetings of the two bodies have periodically occurred and should be continued, especially to underscore the linkage between the two bodies for those members who do not normally attend both groups. See also the discussion regarding the KFMC in Chapter 6.

Goal III- Intergovernmental recommendations: Actions to meet this goal were measured primarily by letters sent by the TF in support or opposition of some action. This goal was interpreted broadly to include communications with state agencies as well as legislative bodies. As shown in the prior section, the number of agenda items dealing with interagency communication is the second highest effort of the Task Force.

Goal IV - Public Education: Measuring the success of public education by the number of agenda items is deceptive. Most of the distinct effort towards public education was put forth in the early portion of the evaluation period with specific projects funded for curriculum development and distribution of a Restoration Program newsletter. Although other projects have now taken precedence, the findings of the "public awareness" portion of this evaluation in Chapter 9 indicate that the press coverage of fishery issues within the basin has increased overall, and in part this has been reinforced by the education fostered in the school curricula. Public education has also been promoted as the CRMPs continue to operate and bring landowners into the restoration process. While restoration funds have not been directed to specific education efforts in recent years, the TF should continue to be cognizant of this goal and not let all efforts become passive.

Goal V - Cooperative relationships: Actions pertaining to this goal include all the items concerning the formation, support and projects of the CRMPs and specific user groups, which serve as direct public outreach and education. Items also include the Private Landowner awards which acknowledge public-private cooperation in fishery restoration, letters sent to landowners soliciting information for specific purposes, and the interest-group meetings called to discuss issues such as Upper Basin Amendment and IFIM scoping. Numerous agenda items also deal with programs of other agencies, which result in cooperation directly or indirectly on, for example, the USFS forest planning process, the re-organization of federal agencies in the Ecosystem Restoration Office (ERO), and the Klamath Compact and KPOP process.

In sum, the Task Force has made substantial progress towards all the goals of the Klamath Act and Long Range Plan as measured by the time it has spent discussing and debating the

complexity of basin restoration issues. Although individual members express genuine frustration with Task Force progress in resolving specific issues or reaching final decisions, the nature of the restoration effort is such that decisions are never final, and new challenges continue to emerge. The Task Force has at least brought the wide range of issues to the table during its tenure and serves as a forum for debate and mutual education which otherwise would not exist.

Program Evaluation as Measured by Interviewing the TF, KFMC and Others

The majority of the interviews were conducted in person and lasted approximately two hours. Interviews were conducted by telephone when meetings could not be arranged. A "running list" of questions was used to prompt responses during interviews, but questions were open-ended and individuals were encouraged to express opinions regarding any area of concern. Anonymity was offered to respondents in the form of number-coded responses.

A total of 35persons were interviewed. Handwritten notes from the interviews were condensed and transcribed into tabular form. The condensation of the interviews organized by topic and interviewee is presented in Appendix 2-2.

Findings

The perceptions of the interviewees concerning the reasons for the declines of fish conditions in the Klamath River basin are summarized below. It is strongly recommended that readers read the interview summaries in Appendix 2-2 to gain a more complete view of the opinions expressed.

<u>Identifying the reasons for fisheries decline</u>

The findings here do not present a scientific analysis of the status of Klamath fish stocks. Rather, they relate to the perceptions of those interviewed, which are important because they underlie the decisions made by the participants in the Restoration Program.

Finding: The majority of Task Force members believe Klamath fisheries are more severely impacted by water quality and water management problems than by fish harvest or ocean factors. Differences in opinion lead to differences in how individuals set their priorities for action.

<u>The status of fish stocks</u>

While most respondents believe that fish stocks within the Klamath basin are threatened to some degree, there is not complete agreement on how severe the threats are. Most parties believe the recent proposed listings of various stocks under the federal Endangered Species Act are compelling evidence of the precarious status of Klamath fish. The summer 1997 fish kill on the mainstem of the river is also seen by many as a harbinger of future population crashes caused by worsening water quality conditions.

A few respondents, however, believe the downward trend is temporary and only part of a larger, natural cycle of population fluctuations which will rebound on its own at some time in the future. Some respondents consider ocean-based impacts to outweigh the effects of in-river impacts.

A concern of several respondents is the potential loss of genetic diversity of wild fish stocks that have evolved under the conditions of individual Klamath tributaries. While anadromous species as a whole are acknowledged to be resilient, and may be able to repopulate the Klamath system if conditions become more favorable, the concern is that restocking would occur from hatchery fish intermixed with remnant individuals from various wild populations, thereby diluting or eliminating the original genetic richness of the Klamath system.

Water supply and water quality

As recognized in the 1991 *Long Range Plan*, the causes of fish decline in the Klamath Basin are not attributable to any single source. However, the majority of responders now believe the primary in-river factor currently affecting fish is poor water quality combined with insufficient water quantity and loss of refugia in the mainstem, upper basin and tributaries at critical times of year.

Responders attribute decline in water quality to several factors, most importantly:

- High temperature and high nutrient return water from irrigated agriculture

- Loss of cold-water refugia along the length of the mainstem and tributaries, primarily due to

    1) warm-water discharges at the mouths of previously cold tributaries caused by warm agricultural return water;

    2) livestock grazing practices, which collapse banks, destroy riparian canopy and trample cold-water springs;

    3) drowning of cold-water springs and creek mouths by the reservoirs of Iron Gate and Copco dams;

    4) upslope erosion, which fills pools and clogs spawning gravels;

    5) Warm water and/or low dissolved oxygen releases from Iron Gate Dam.

- De-watering of tributaries by agricultural withdrawals

These factors interact to create conditions of low dissolved oxygen, high biochemical oxygen demand and stressful temperatures, which combined with the loss of cold-refugia severely stress fish during critical migration and summer rearing periods.

Fish passage

The direct blockage of fish passage caused by the Iron Gate and Copco dams continues to be recognized as a primary impact reducing spawning area in the Klamath Basin upstream of the dams. Responses from interviewees range from “this is a historical fact and we can’t do anything about it” to "the FERC relicensing studies should consider all alternatives, including possible dam removal."

Fish harvest and ocean impacts

Issues regarding fish harvest were specifically eliminated from this contract and are not included in this analysis. Thus in-river and ocean-related impacts on fish stocks, foreign and domestic harvest, sea-lions, and El Niño impacts are not assessed here.

Disputes continue, however, between agricultural water users and various categories of fishermen as to who is most responsible for impacts. Fishermen believe they have taken the brunt of regulatory cutbacks in the form of severely curtailed seasons and harvest limits, while agriculture has not contributed a fair share towards improvement in water quality, quantity, irrigation practices, or grazing impacts. These perceptions of blame vs. self-innocence, supported by inconclusive scientific evidence significantly affect the decisions made by members of the Task Force and TWG when considering what restoration efforts are most appropriate.

Other land use impacts

Several respondents cited the continuing impact of upslope impacts from forestry and other land uses in the basin which cumulatively affect fish habitat. Particularly cited is the extensive network of abandoned or poorly-maintained forest and rural roads, which chronically contribute sediment, affecting spawning gravels and channel morphology. These problems are discussed in the Long Range Plan, but have had little attention by the Task Force. Respondents suggest this is because the scale of the problem is so large that there isn’t enough Task Force money to accomplish much. The few projects that have addressed this issue are viewed favorably, others are still in progress.

Klamath Evaluation Program Fish Population Trends

Here we depart from the evaluation team's review of the TF's meeting products and interview data concerning the community's perceptions of how well the Act and goals have been implemented and provide of roundup of actual data concerning how the basin's fish stocks are actually faring after more than a decade of Restoration Program effort.

Consistent data on Klamath Basin fish population trends for roughly the last 20 years is available only for chinook salmon and summer steelhead. The data on the latter is not particularly precise because of changing methods of counting and varying lengths of stream surveyed, but still allow an assessment of trends. Stream surveys and downstream migrant trapping have helped to determine the range of winter steelhead, coho salmon and cutthroat trout but quantitative data for population assessment is lacking. USFWS recently compiled data from downstream migrant traps that give some indication of the order of magnitude of recruitment in various years (USFWS, 1998). Catch data of green sturgeon caught in the Klamath River has provided some additional information on recruitment of this species but still allows no overall estimate of population size. There is little data on Pacific lamprey and eulachon but the Yurok Tribe has compiled information on these species in a recent report (Larson and Belchik, 1998).

Discussions include possible reasons for the variability of escapement where information is available. A Klamath River Fall Chinook Review Team was convened in 1993 as required by the Pacific Fisheries Management Council because of failure to meet the Klamath River Basin escapement floor of 35,000 fall chinook salmon. Their report (PFMC, 1994) provides some insight into various factors effecting survival of hatchery and wild fish.

<u>Fall-run chinook salmon</u>

There have been some dramatic swings in fall chinook salmon populations since monitoring began in 1978 and since the inception of the Klamath River Basin Fisheries Restoration Program (Figure 2-1). The California Department of Fish and Game (CDFG) data summarized in Figure 1 may under-estimate hatchery fish (Kier Associates, 1991). Fall chinook escapement to the entire Klamath-Trinity Basin for the years 1985-1988 was robust, with an average of 129,700 adults spawning annually. However, upwards of 90% of the fish returned to the Iron Gate Hatchery, Bogus Creek, the Trinity River Hatchery and reaches of the Trinity River below (PFMC, 1994). High survival rates in the ocean for these year classes was partially as result of reduced ocean fisheries (PFMC, 1994).

Escapement of fall chinook from 1990 to 1992 fell below the 35,000 fish floor for natural spawners set by the Klamath Fisheries Management Council and adopted by the PFMC. The low basin-wide escapement was triggered by a combination of poor survival in the marine environment, harvest management errors, poor habitat conditions in freshwater related to drought and hatchery operations (PFMC, 1994).

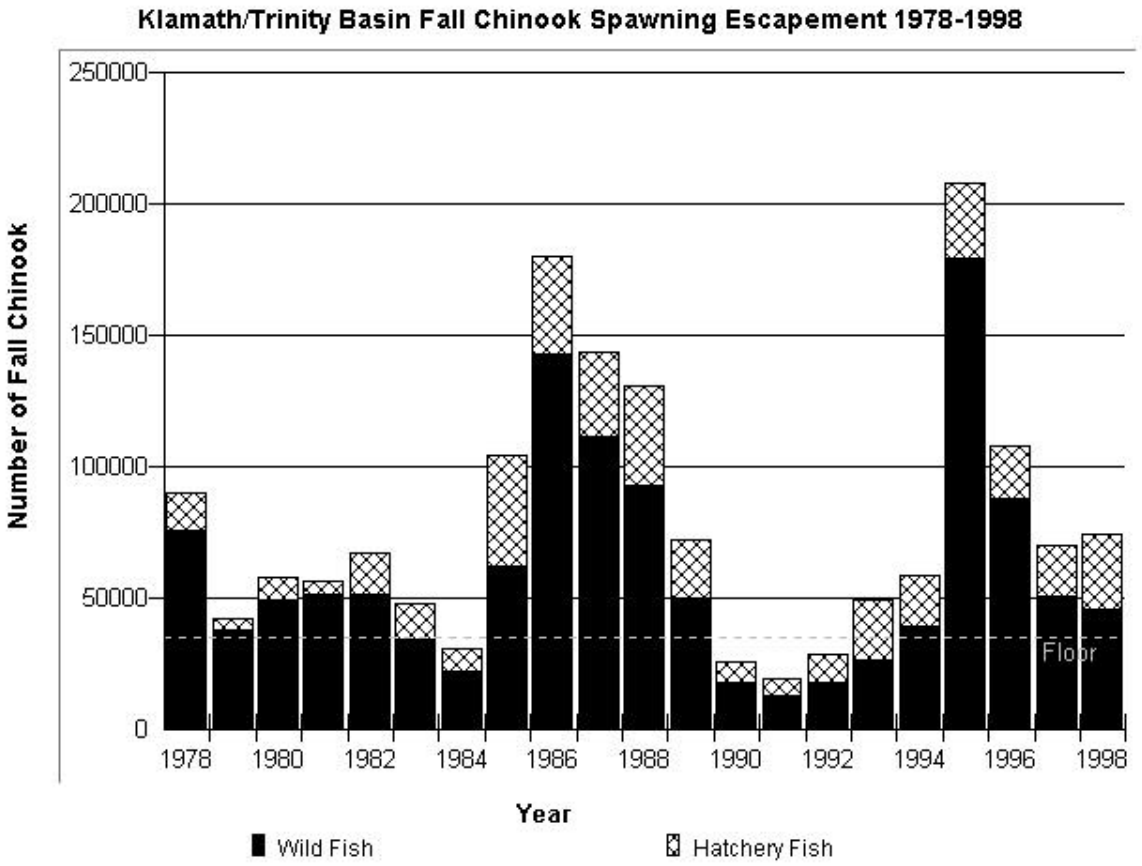


Figure 2-1. Fall chinook salmon escapement trends for the entire Klamath-Trinity Basin are displayed above with a breakdown of hatchery fish and wild fish. Data from CDFG, 1998.

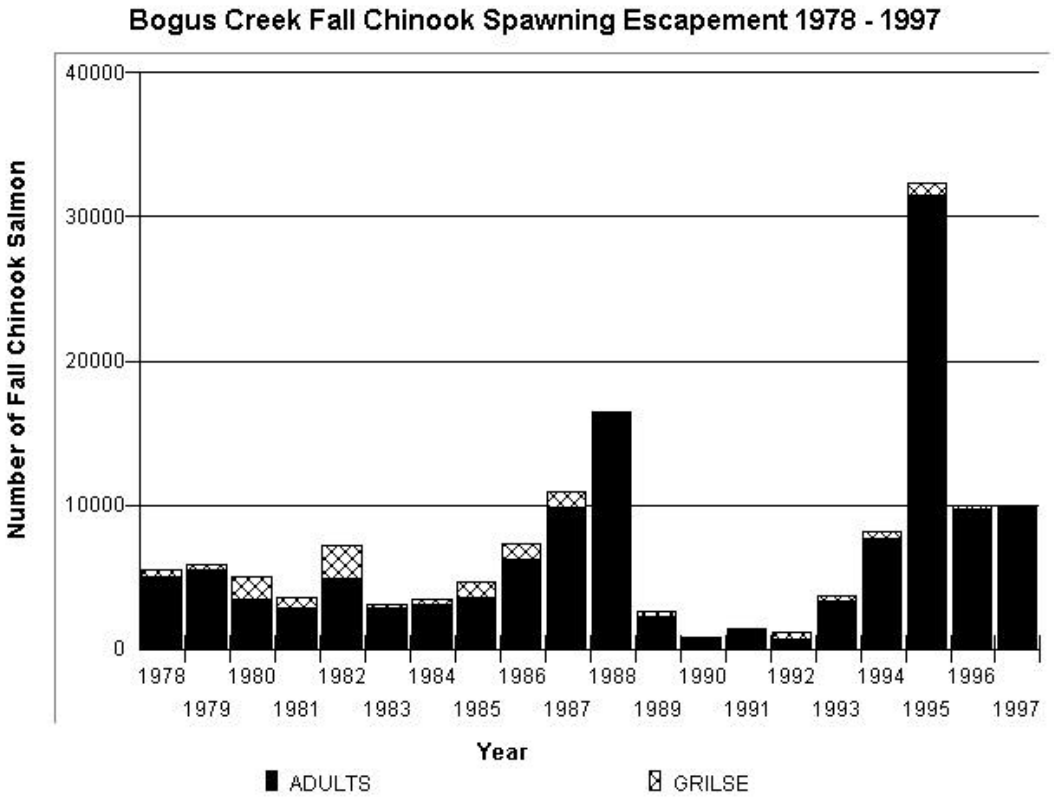


Figure 2-2. Bogus Creek fall chinook escapement from 1978-1997, including a breakdown of adults and grilse. Data from CDFG, 1998.

Bogus Creek: This stream is one of the most productive watersheds for fall chinook salmon in the Klamath Basin, although populations in some years may be inflated by it's proximity to Iron Gate Hatchery. Returns of fall chinook to Bogus Creek from 1978-1997 ranged from 785 to 33,335 adult and grilse (Figure 2-2). Grilse are chinook salmon, usually males that mature after just one year in the ocean and return at a small size. Population levels in 1988 and 1995 were particularly inflated as a result of straying from Iron Gate Hatchery.

Shasta River: Although the Shasta River fall chinook population fell to an all time low in 1990 (533) it rebounded to 13,511 in 1995, the highest return since 1978 (Figure 2-3). Low escapement to the Shasta River may have been keyed by drought conditions which exacerbated water quality problems in the basin and in the mainstem Klamath River (PFMC, 1994). The Shasta River fall chinook must share 175 miles of the mainstem Klamath River with competing Iron Gate Hatchery fish. It is possible that depressed escapement in the Shasta River from 1990 to 1992 was in part owing to the huge releases of fingerlings chinook in the preceding (1986-1988) brood years and problems with competition in the mainstem Klamath (PFMC, 1994). Shasta River fall chinook stocks rebounded sharply in 1995 to 13,511 which may be in part owing to pulse flows which occurred in 1992. Pulse flows help flush young salmon and steelhead out of the Shasta before water quality problems increase during summer.

Scott River: Fall chinook escapement to the Scott River basin has ranged from a low of 1615 fish in 1990 to 14,477 in 1995 (Figure 2-4). Recent fall chinook run trends in the Scott River are encouraging as average returns from 1995-97 have been 11,622. This compares with the 1978-1994 average of 4,865 fall chinook adults and grilse. Decreased 1998 returns may have been as a result of poor ocean survival in 1997 which was an El Niño year in the ocean with associated warm water conditions. The Scott River fall chinook population sometimes is confined to the lowest reaches of the river in drought years, which poses a risk to survival if high flows occur in the subsequent winter. Access to reaches further upstream is partially obstructed by low flows related to fall stock watering (Scott CRMP, 1996).

Salmon River: The lowest fall chinook escapement since 1978 was in 1980 when only 1,000 fish returned but 1995 and 1997 both had approximately 5630 spawners, tying for the largest run size (Figure 2-5). From 1978 to 1997 the average fall chinook escapement was 2670 but runs fell to 1,438 in 1998, probably as a result of poor ocean conditions in 1997. While most other stocks in the Klamath Basin were depressed in 1990, the Salmon River return was relatively robust. This may be owing to high flows in 1986 that improved rearing conditions. Also Salmon River fish may have less competition with Iron Gate Hatchery fish because of the shorter, shared migration distance.

Lower and Middle Klamath Tributaries: Only Blue Creek in the Lower Klamath Basin has been surveyed for adult fall chinook regularly over the last decade with USFWS conducting early surveys (USFWS, 1990) and more recent ones conducted by the Yurok Tribe (1998). Several Middle Klamath Basin tributaries have been surveyed since 1995

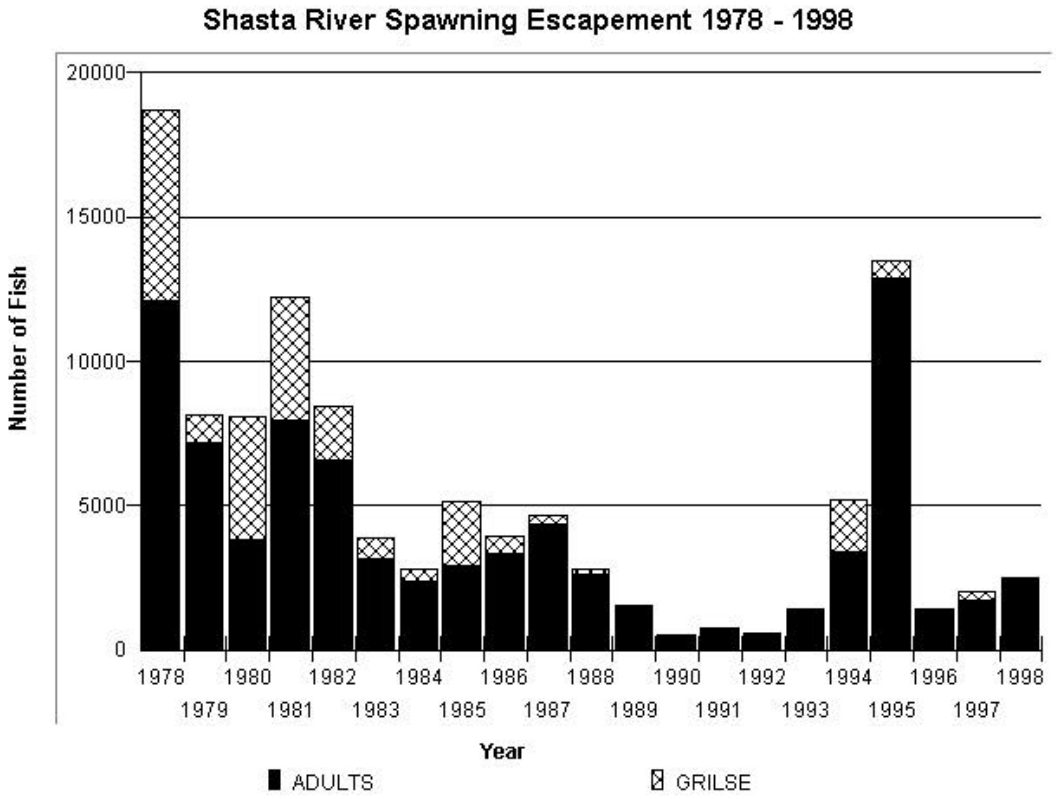


Figure 2-3. Shasta River fall chinook salmon spawning escapement from 1978-1998, including a breakdown of grilse and adults. Data from CDFG, 1998.

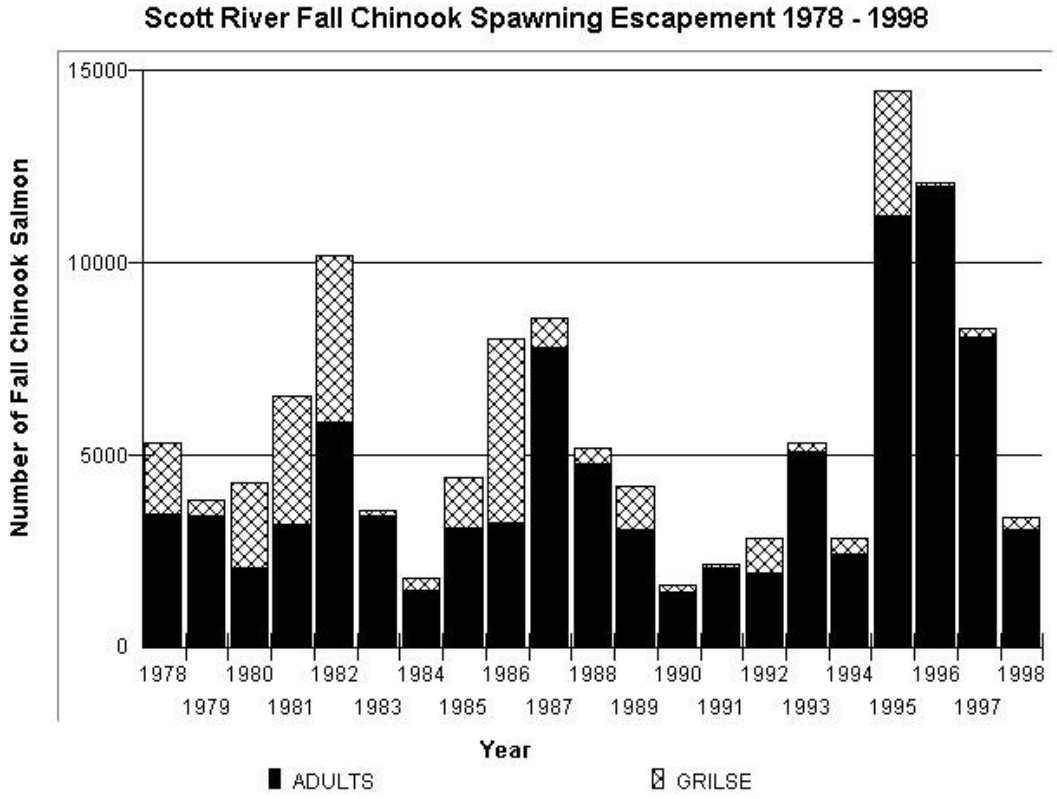


Figure 2-4. Scott River fall chinook salmon escapement estimate from 1978-1998, including a breakdown of adults and grilse. Data from CDFG, 1998.

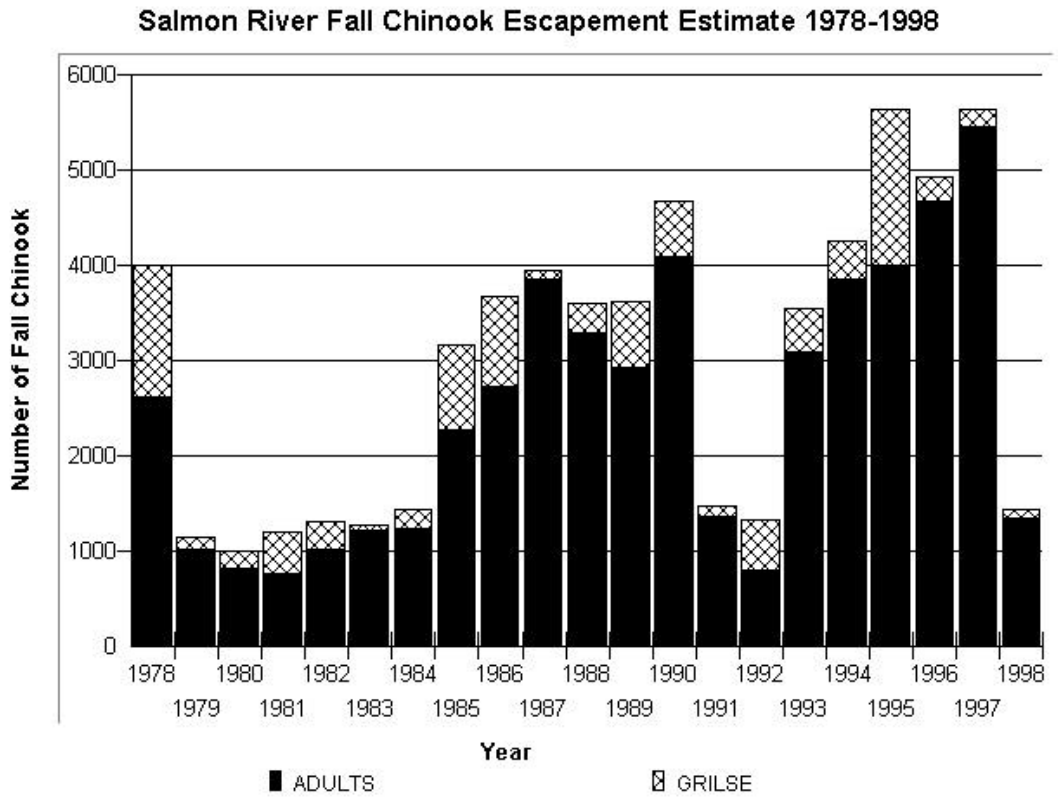


Figure 2-5. Salmon River adult and grilse fall chinook salmon escapement from 1978 to 1998. Data from CDFG (1998).

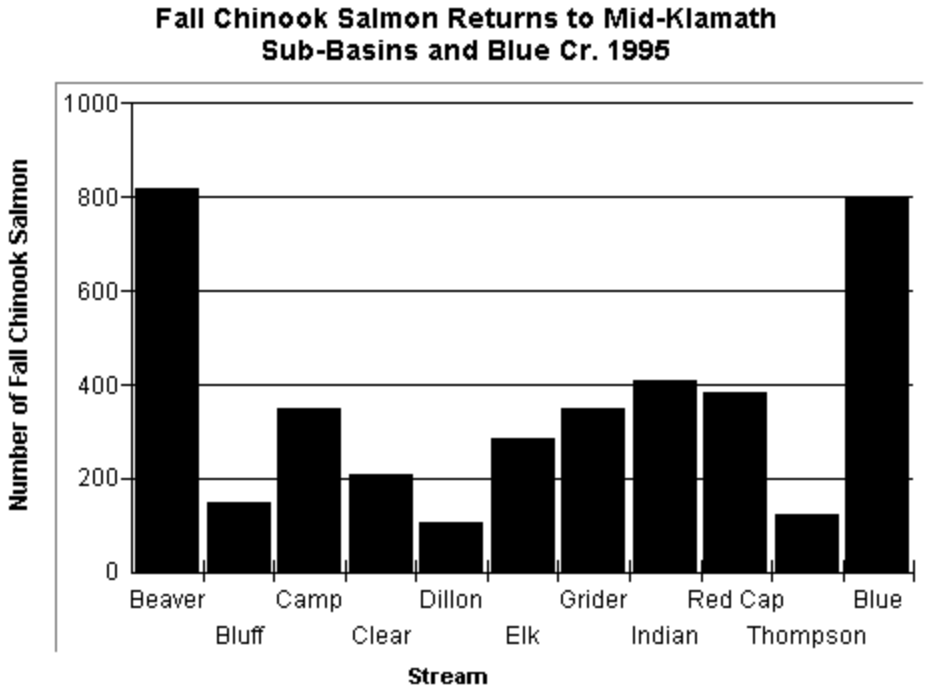


Figure 2-6. Estimated fall chinook salmon escapement to various Middle Klamath tributaries and Blue Creek for 1995. Blue Creek counts were from one week only. Data from CDFG and USFS cooperative effort.

including Bluff, Dillon, Camp, Red Cap, Beaver, Horse, Grider, Indian, Clear, Elk and Thompson Creeks. Not all tributaries are surveyed in all years.

The Yurok Fisheries Department has surveyed Blue Creek since 1994 and over 800 fall chinook were counted in one week in 1995. This weekly count is equivalent to total basin escapement estimates for most of the significant producing Middle Klamath tributaries (Figure 2-6). Production in this basin is assisted by Key Watershed management by Six Rivers National Forest (see Habitat Trends). USFWS (1993) was concerned with spawning success fall chinook salmon using the lower reaches of Blue Creek because of high sediment supply and bedload mobility.

Many Middle Klamath tributary basins may have somewhat inflated fall chinook salmon returns because of pond rearing and small scale hatchery operation (see Large and Small Scale Hatchery Evaluation). Supplementation has occurred in Grider, Indian, Elk, Bluff, Camp, Red Cap and Beaver Creeks. In 1995 Beaver Creek had the largest return of fall chinook of all Middle Klamath Basin tributaries with approximately 800 fish. Camp, Grider, Indian and Red Cap Creek all had returns from 350 to 400 fall chinook.

Fall chinook returns to Middle Klamath Basin tributaries (Figure 2-7) were very robust in 1996, with over 1,500 spawners returning to Red Cap Creek. Camp Creek, which is nearby, had 902 spawning fall chinook and Indian Creek had 756 fish. The highest number of returning adults in 1997 (Figure 2-8) was to Camp Creek with 910 fall chinook, almost identical to the 1996 run. Red Cap and Indian Creek were again top producers with 709 and 688 spawners, respectively. Elk Creek had fall chinook returns of 285, 402 and 480 since 1995 while Clear Creek returns ranged from 207 to 425.

Spring-run chinook salmon

The Salmon River has the only substantial remaining wild spring chinook population in the Klamath Basin above the Trinity River. This run dropped to an all time low of 170 adults in 1990 but rebounded to an average of over 1,200 per year between 1993 and 1997 (Figure 2-9). Increased returns could have been in part owing to improved flows and decreased ocean fishing pressure. Unfortunately, spring chinook runs plummeted in 1998 with Salmon River runs falling below 300 spawners. It is likely that this decrease was in response to poor ocean conditions during the El Niño year of 1997. The other significant wild spring chinook population in the Klamath Basin returns to the South Fork Trinity River. These fish were thought to be near extinction (PWA, 1994), but returns ranged from 232 to 698 between 1992 and 1995 (Dean, 1996). Returns in this basin also dropped in 1998 (Chris James, personal communication).

Coho salmon

There is almost no data available on coho salmon population trends in the Klamath Basin with two exceptions. CDFG estimates abundance of coho salmon for the Trinity River, but returns are dominated by hatchery fish. The Shasta Rack counts give some indication

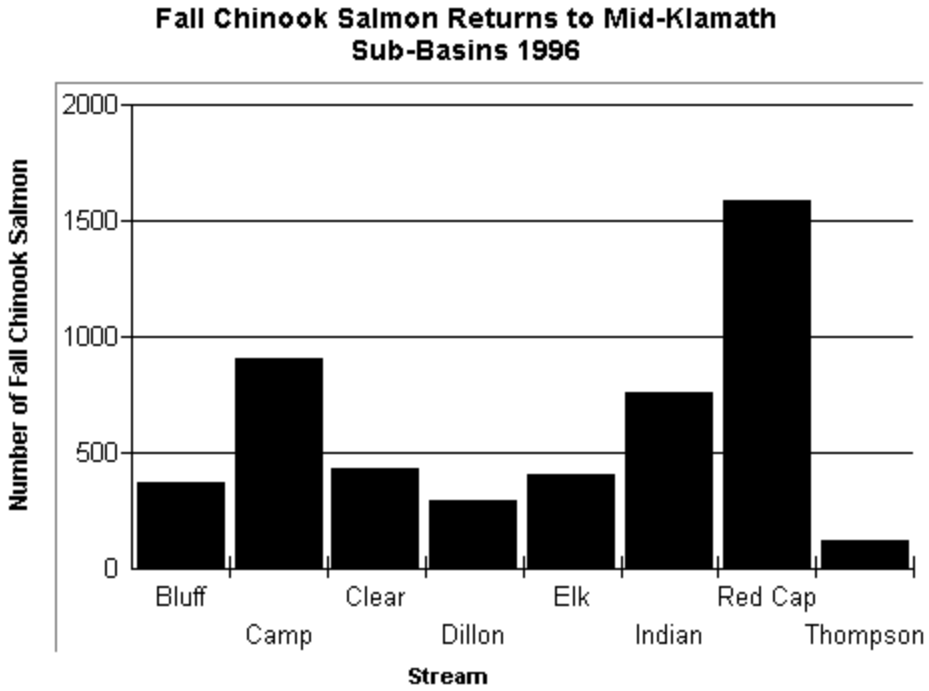


Figure 2-7. Estimated fall chinook salmon escapement to various Middle Klamath tributaries in 1996. Data from CDFG and USFS cooperative effort.

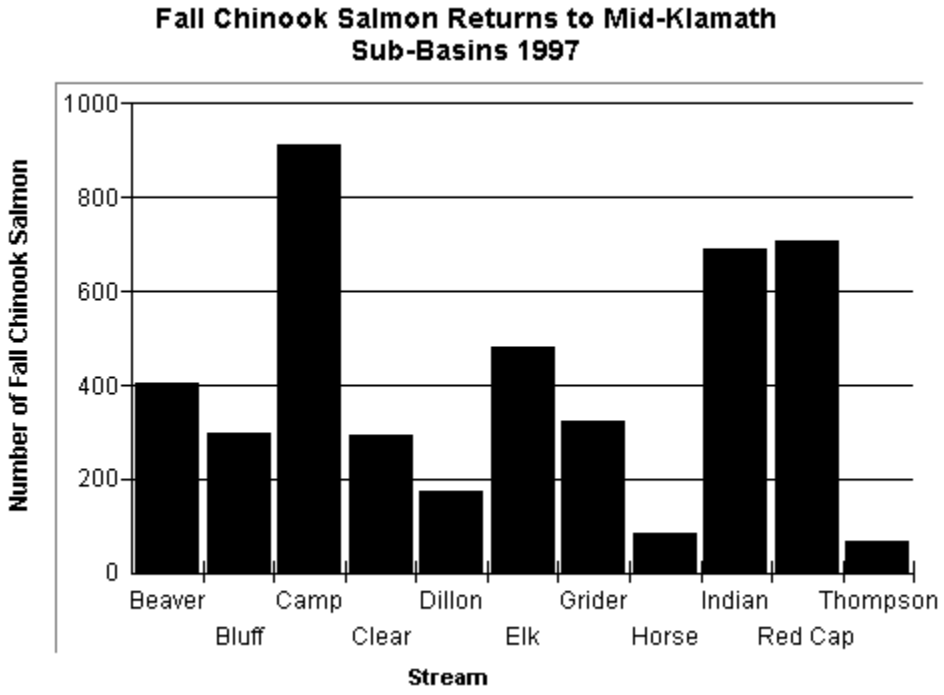


Figure 2-8. Estimated fall chinook salmon escapement to various Middle Klamath tributaries in 1997. Data from CDFG and USFS cooperative effort.

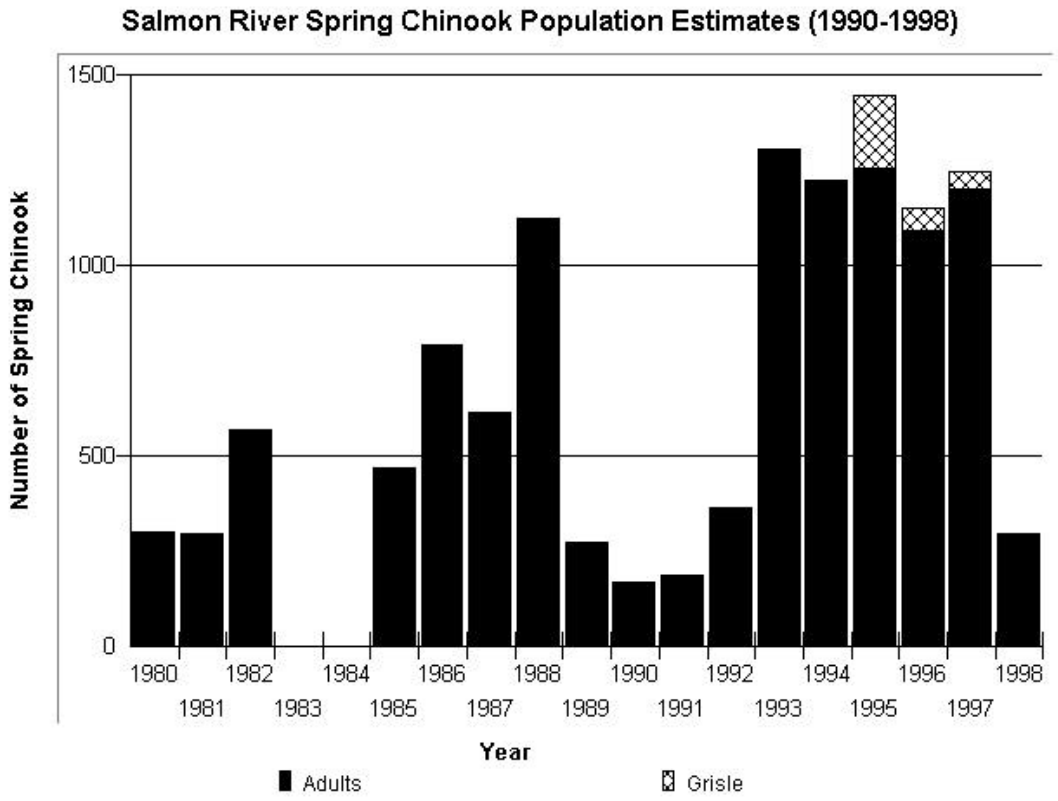


Figure 2-9. Salmon River spring chinook salmon population estimates 1980-1998. There were no counts in 1983 and 1984. Data from Klamath National Forest.

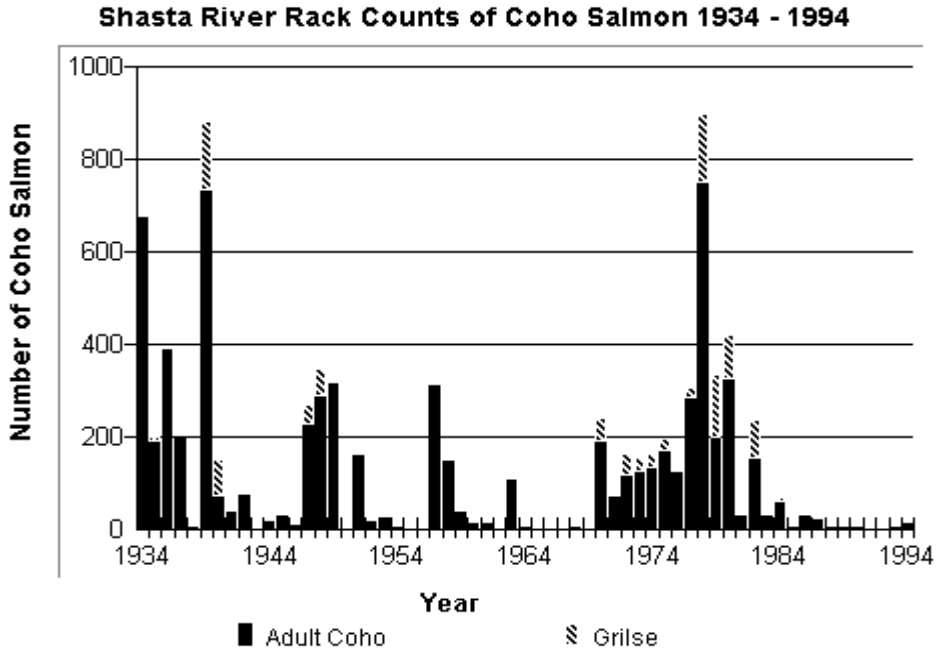


Figure 2-10. Coho salmon counts at the Shasta Racks from 1934 to 1994. Counts reflect different levels of effort and do not represent population estimates. Data from CDFG (1997).

of abundance of wild coho since the 1930's (Figure 2-10). Unfortunately, the racks have been operated for different lengths of time in various years and are often removed before coho salmon return. Therefore, the number of fish shown in the chart is not representative of population levels. The Shasta Racks have not been operated past the end of November since 1986 and native coho often spawn in December or January.

Wild coho salmon returns to Six Rivers National Forest streams seem to show strong and weak year classes (Jerry Boberg, personal communication). Because the age at maturity of coho salmon is almost invariably three years, the species is more subject to year class fluctuations than chinook salmon or steelhead. While coho salmon are widely distributed in the Klamath and Trinity basins, there are no known robust populations (consistently above 500 fish) that could serve as sources for colonization or broodstock for small scale hatcheries to help restore populations. Work by the Yurok Tribe suggests that coho juveniles are abundant in the Crescent City Fork of Blue Creek (Voight and Gale, 1998). Adult population levels in Blue Creek are difficult to ascertain because high flows that often occur during the spawning season (December-January) and the remote location of the this tributary. See discussions of Juvenile Salmonid Trends below for more information on estimates of coho at USFWS downstream migrant traps.

Steelhead

While there is almost no data on wild winter steelhead populations, the California Department of Fish and Game and U.S. Forest Service have teamed up to acquire data on summer steelhead since about 1980. One index of abundance for winter steelhead is fish rescue by personnel from the Yreka Screen Shop, where the number of fish rescued has dropped significantly in recent years (Ron Dotson, personal communication). Based on both summer steelhead data and steelhead population trends at Iron Gate Hatchery, it would appear that steelhead are undergoing a basin-wide down turn in Klamath tributaries above the Trinity River since about 1989. See discussions of Juvenile Salmonid Trends below for more information on estimates of young steelhead at USFWS downstream migrant traps.

Eric Gerstung, the CDFG Endangered Salmonids Coordinator, provided adult summer steelhead data used in this report. Data were collected by both CDFG and the USFS and counting methods may have changed over time. While recent counts often cover the entire holding area of a stream, formerly only index reaches were surveyed. A second variable of the counts is different designation for the length of fish considered half-pounders. The half-pounder is a steelhead that has only visited the ocean for less than a year before returning to fresh water. Despite the variability of counting methods, a clear trend emerges when comparing Klamath and Trinity River summer steelhead returns before and after 1989 (Figure 2-11).

Major drops in adult summer steelhead numbers are evident in every Klamath tributary after 1989. In contrast, the North Fork Trinity and New River summer steelhead runs have increased in abundance in the same time period. Several Klamath River tributaries that have collapsing summer steelhead populations , such as Clear Creek and Wooley

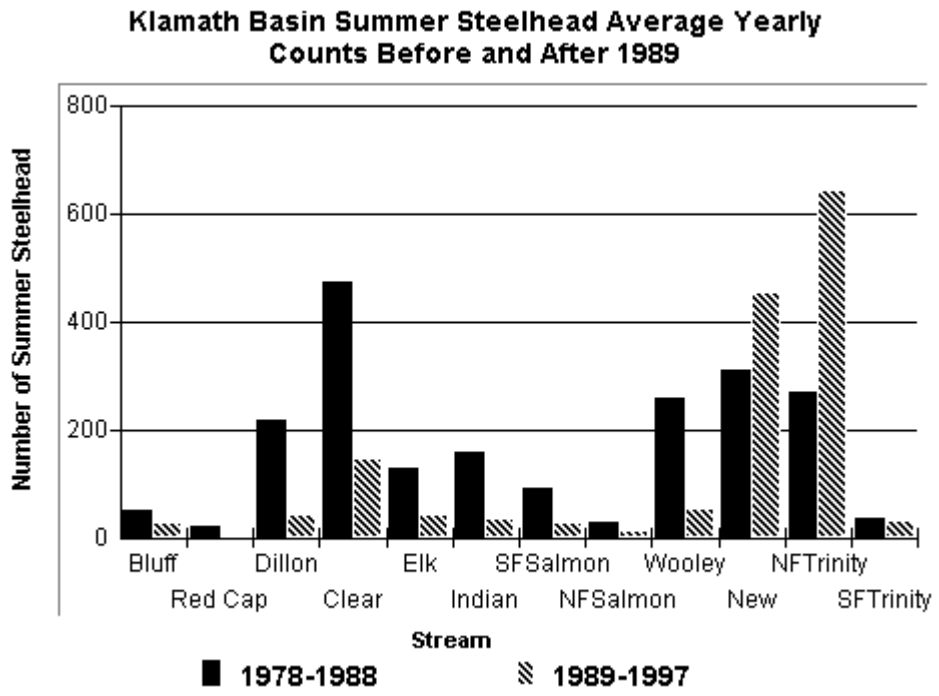


Figure 2-11. Summer steelhead average annual returns to all Klamath and Trinity basins before and after 1989. Data from Eric Gerstung, CDFG Endangered Salmonids Coordinator.

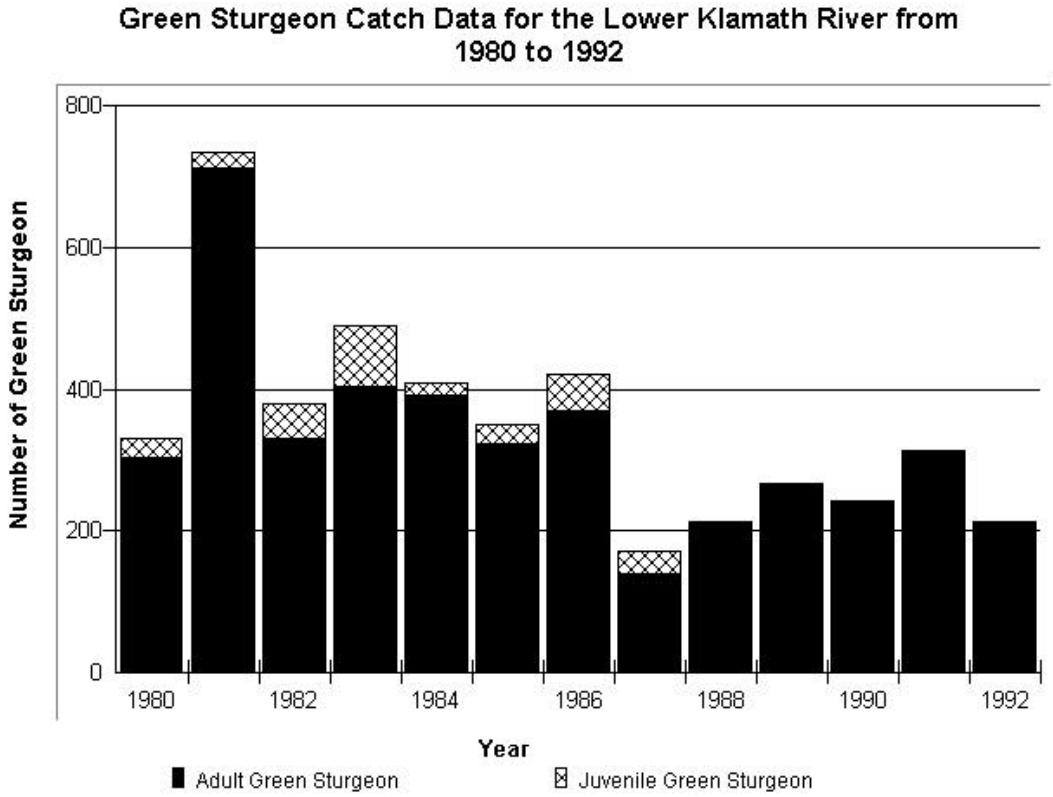


Figure 2-12. Green sturgeon catch trends in Indian net fisheries on the Yurok Reservation from 1980-1992 provided by USFWS, Arcata.

Creek, have not experienced any substantial habitat deterioration. The summer steelhead population in Clear Creek decreased dramatically in the 1990's. Adults numbered fewer than 100 in most recent years whereas surveys prior to 1989 usually found several hundred (average 434) with 1810 counted one year. Summer steelhead returns to the Salmon River basin have declined from an average of 376 annually, before 1989, to an average of 96 adults since 1989 at the same time spring chinook were increasing. It is likely that problems in the mainstem Klamath River are at the root of the decline of summer across the basin.

The half-pounder life history is much more common in Klamath River steelhead than in those that return to the Trinity River (Hopelain, 1998). Half-pounders enter the river in July and August, a time when Klamath temperatures have reached acutely stressful or lethal levels in recent years. Half-pounders are the focus of a catch-and-release fishery that may have some significant un-intended side-effects. The incidental hooking mortality associated with exercising fish in highly stressful water temperatures could be very high. It is also possible that intra-specific competition between summer steelhead juveniles and very large releases of hatchery chinook may also have played a role in the decline of these fish.

Coastal cutthroat trout

Voight and Gale (1998) found that coastal cutthroat trout were widespread in Lower Klamath tributaries but no population estimates were conducted. They advanced the hypothesis that anadromous cutthroat were greatly reduced by habitat loss, citing almost no cutthroat trapped in downstream migrant traps. However, resident cutthroats have increased in relative abundance to other salmonid species in the Lower Klamath because they can express a resident life history. Resident cutthroat typically dominated upper reaches of streams, although densities were sometimes low.

Green sturgeon

Nakamoto and Kisanuki (1995) sectioned pectoral fin rays from green sturgeon caught in Indian net fisheries to determine age and growth of the species in the Klamath River. The samples were collected by USFWS from net harvest specimens and those captured in estuary beach seining. Findings are that Klamath green sturgeon have three life history phases: freshwater juveniles (< 3yrs. old), coastal migrants (3-13 years old for females and 3-9 years for males) and adults.

One interesting and encouraging finding is that there are many different age classes of sturgeon represented in the fishery and some indication that recruitment has continued into recent years. Catches of juvenile sturgeon in downstream migrant traps confirm this assertion. Catch data of green sturgeon from Indian net harvests (Figure 2-12) indicate that at least hundreds of these fish return to the Klamath River annually but no overall population estimate is possible.

Pacific lamprey and eulachon

Larson and Belchik (1998) monitored Indian fisheries and also conducted test fisheries for eulachon. They found that there was no baseline data for either of these species but conducted interviews with Tribal elders regarding past abundance of both species. Eulachon were so abundant that hundreds could be captured in one scoop of the net until the 1960's. Only one specimen has been captured incidentally by a Yurok dip netting for salmon. There is no hypothesis advanced with regard to the near extinction of eulachon, but it is likely that shifting bedload conditions in the lower mainstem Klamath after the 1964 flood caused their demise. Pacific lampreys are still caught by Yurok fishers but catches have declined substantially.

Using downstream migrant trapping data as an index for recruitment

USFWS has operated downstream migrant traps on the mainstem Klamath and Trinity Rivers consistently since 1991. Their most recent report (USFWS, 1998) provides a comparison of juvenile recruitment for chinook salmon, steelhead and coho salmon. Because trap efficiencies have been calibrated, annual estimates of the number of juvenile fish passing the trap can be calculated. Juvenile chinook abundance has varied from 77,230 in 1995 to just under 2,000,000 in 1998 (Figure 2-13), although more than 50% were hatchery fish in the latter year. Juvenile coho salmon estimates are several orders of magnitude lower, ranging from a high of over 6,000 in 1993 to 460 in 1998 (Figure 2-14). Steelhead downstream migrant estimates for the Klamath River range from just a low of 2,188 in 1995 to a high of 64,830 in 1998 (Figure 2-15). While downstream migrant trapping does not allow calculation of a population estimate for any species, it does provide an index for potential recruitment.

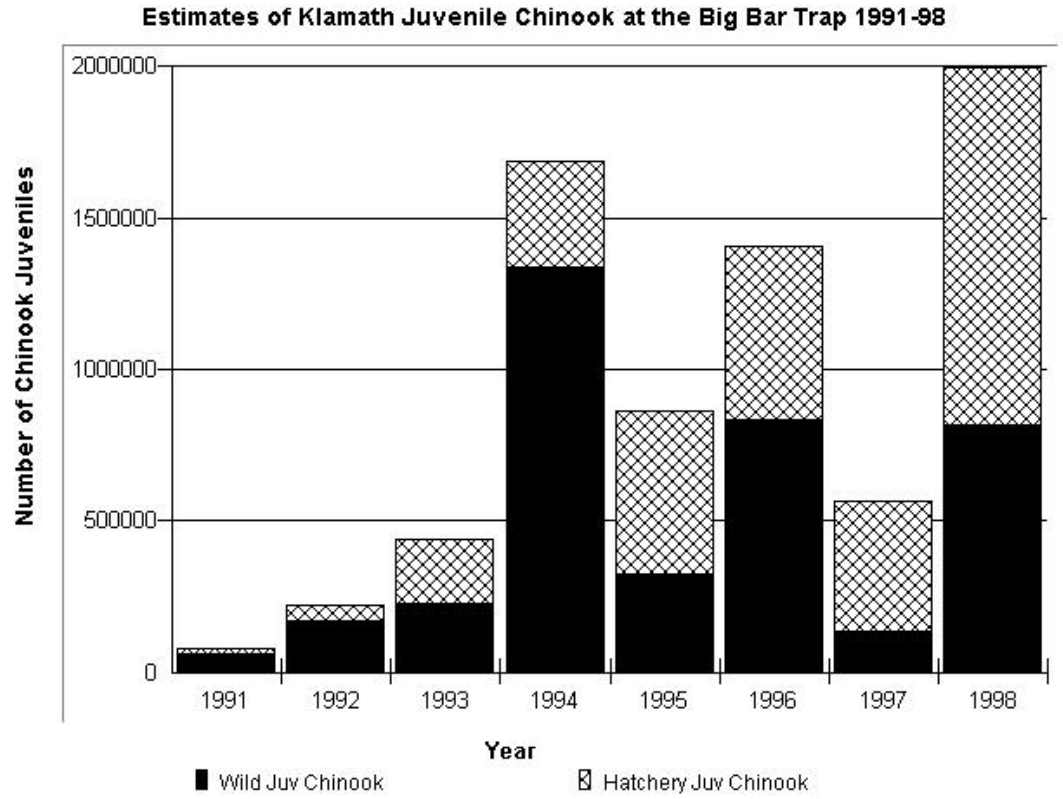


Figure 2-13. Juvenile chinook salmon estimates by USFWS at their Big Bar Downstream Migrant Trap. USFWS 1998.

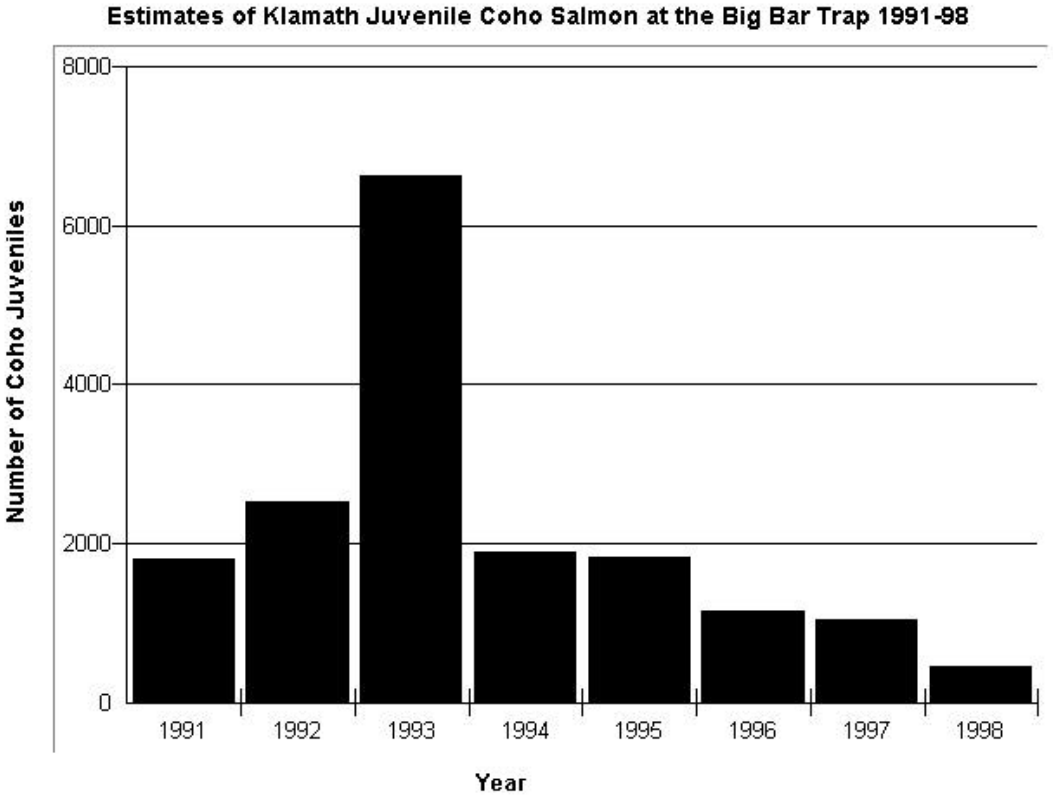


Figure 2-14. Estimate of the juvenile coho salmon passing the Big Bar downstream migrant trap operated by USFWS from 1991 to 1998. Data from USFWS, 1998.

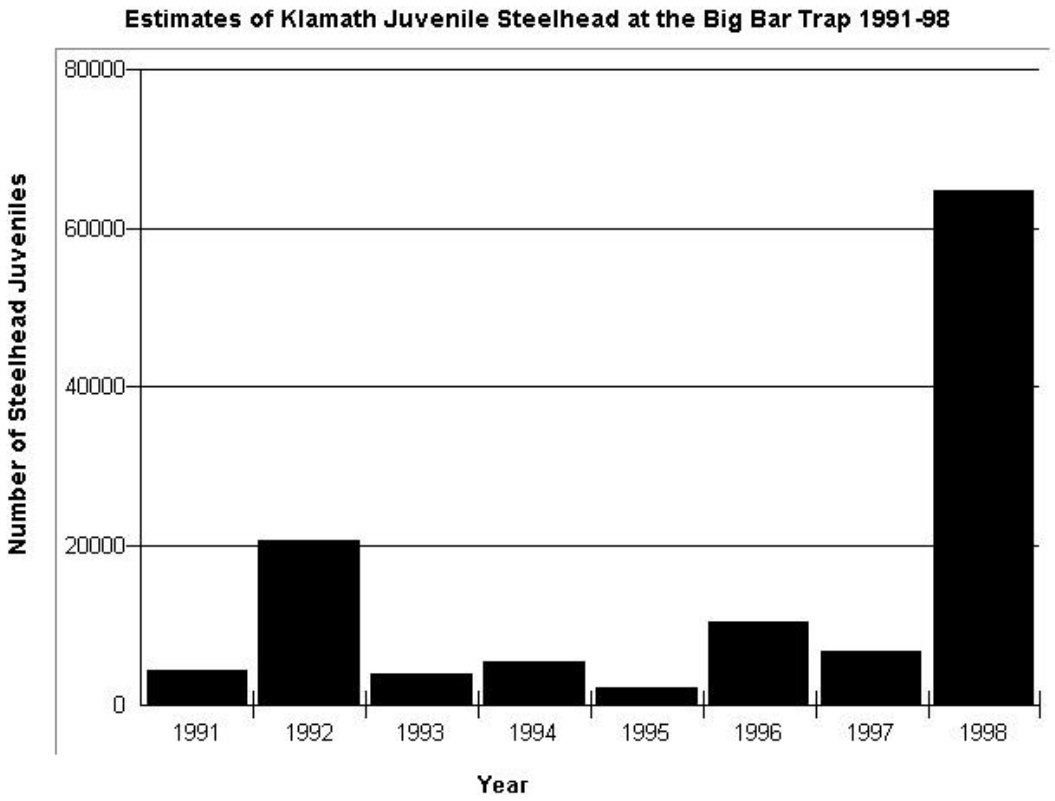


Figure 2-15. Estimate of juvenile steelhead passing the Big Bar trap by year. Data from USFWS, 1998.

Chapter 3

3. Assess the degree to which plan policies and tasks have been implemented from 1992 to the present.

The *Long Range Plan for the Klamath River Basin Conservation Area Fishery Conservation Program* (Kier Associates, 1991) establishes objectives and makes recommendations for achieving those objectives. The recommendations are presented in a step-down structure, which the Task Force has found difficult to use. In order to facilitate analysis for this project and also to improve long-term utility to the Task Force, the original recommendations have been consolidated to eliminate redundancies. For example, policies relating to workshops or community forums now appear in the education section. Virtually every section of the Long Range Plan calls for improved communication between resource users, such as timberland managers and salmon and steelhead users. These were eliminated because they are accomplished more directly through educational objectives and with cooperative processes such as CRMPs. Monitoring needs, which are outlined in most of the sections of the step-down structure, have been combined into one section on monitoring. Outdated recommendations, which could be dropped, are marked with a double asterisk (**).

The discussion below is framed around the newly consolidated recommendations, which can be found in Appendix 3-1. Task 3 also required this contractor to recommend a means of maintaining an on-going assessment of Restoration Program activities in a database. The new consolidated recommendations provide a simple coding system that can be used to help track projects. Discussions on database management can be found at the end of this Chapter. A summary of over-all Program expenditures by categories follows the methods section.

METHODS

The USFWS database of restoration projects was reviewed to determine which objectives of the Long Range Plan were funded, and the level of funding that was provided. Task Force actions and other actions that helped meet recommendations were also considered. The findings of the previous USFWS (1993) evaluation (covering 1989 - 1992) were used as well.

Each section below reports findings on the level of support given to each of the recommendations in the Long Range Plan, and suggests future actions the Task Force should take. In some cases, recommendations were found to be unnecessary or impractical. The Task Force may want to eliminate these recommendations, which have been marked with double asterisks.

SUMMARY

The USFWS administrative database is a useful tool for evaluating how Program funds are allocated. The letter codes used for the various categories tie back to the Long Range Plan.

The categories are:

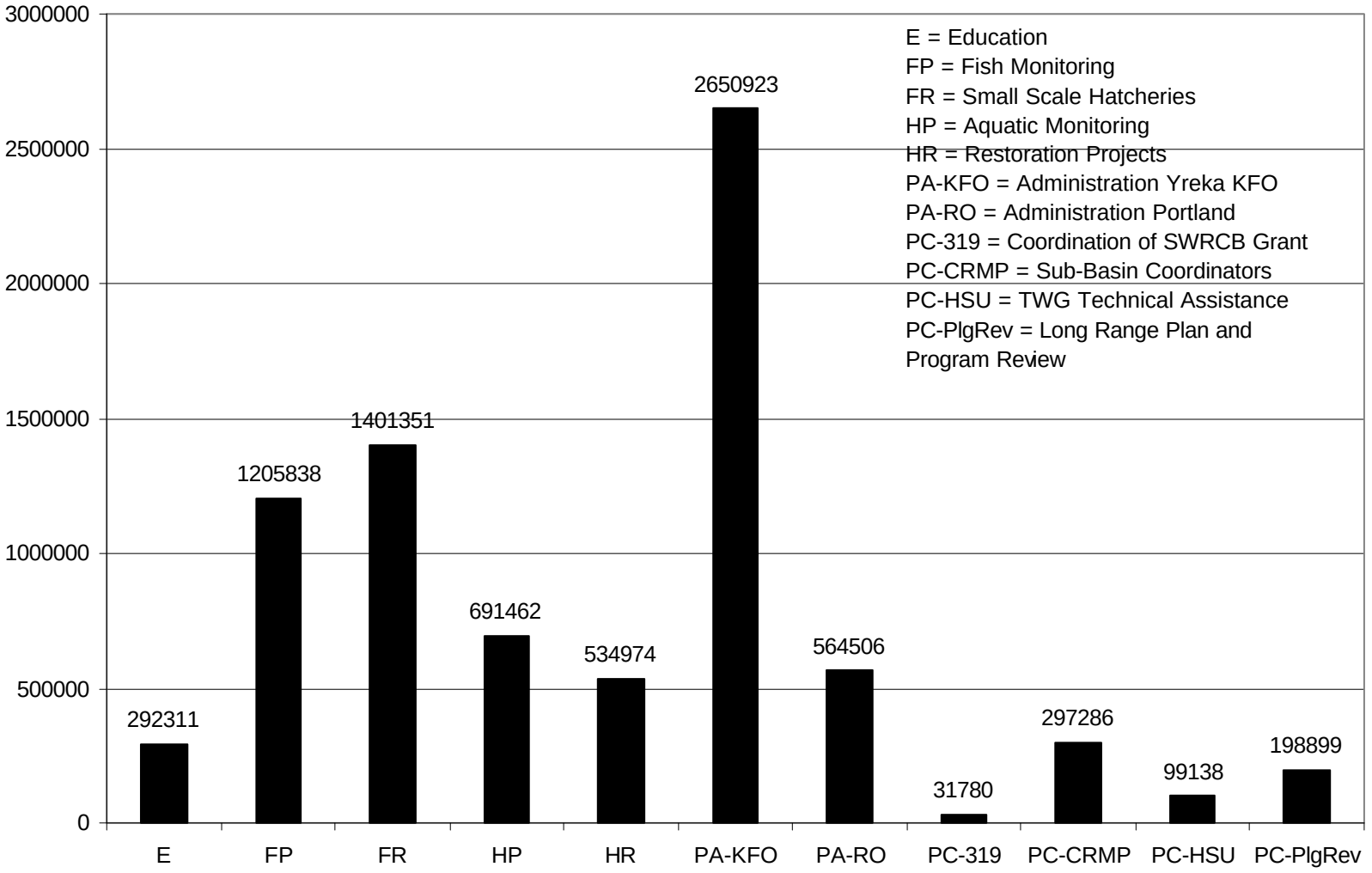
- PA = Program Administration which includes both the Yreka USFWS office (KFO) and the Regional Office (RO) in Portland,
- PC = Project Coordination which includes CRMP funding and planning activities and evaluation,
- E = Education, including both school curriculum and public education projects,
- FP = Fish Protection is mostly monitoring of fish populations and stock structure,
- FR = Fish Population Restoration or hatchery related projects,
- HP = Habitat Protection and represents habitat monitoring projects, including upslope sediment assessments, and
- HR = Habitat Restoration projects.

The largest Program expenditures have been for administration, including overhead for both the Yreka Klamath Field Office and the USFWS Regional Office in Portland. Operating expenses incurred by the Task Force and Klamath Council also fall under this category. Small scale hatchery operation was a significant part of Program expenditures until recently and ranks second in funding levels. The third largest category of funding is Fish Protection (FP), which indicates a strong level of support for fish population monitoring. Fourth is habitat protection which has been mainly stream and watershed monitoring. Program coordination includes funding coordinators for the CRMPs, which facilitate funding from many other sources. Habitat restoration projects received the next highest level of funding. Educational effort ranks last in funding. Figure 3-1 shows totals spent in each category. .Figure 6-1 compares the amount spent on projects and administration. See Appendix 6-2 for a complete list of projects funded each year.

HABITAT PROTECTION

Chapter 2 of the Long Range Plan focuses on habitat protection and is split into several sections: timber harvest, mining, agriculture, water and power projects and stream diversions. Discussions below are framed around these topics. The water and power section is now called "large dams" and stream diversions are called "small scale diversions".

Figure 3-1. Klamath Restoration Program Expenditures by Category 1989-1997



Timber Harvest

HP - Objective 1: Protect stream and riparian habitat from potential damages by timber harvesting and related activities.

Policies and recommendations from the timber harvest section of the Long Range Plan calling for educational forums and materials for foresters (2.A.1a and 2.A.1c) have been merged with those in the community education section. All of section 2.A.2 deals with monitoring and recommendations from that section have been merged with others regarding monitoring.

TH 1: Develop salmonid habitat protection standards for timber harvest (2.A.1b)

Neither the Task Force nor its Technical Work Group (TWG) have formulated habitat protection policies for timber harvest. However, the NWF Plan (FEMAT, 1993) and its Aquatic Conservation Strategy (ACS) provide guidance on needed protection for watersheds and streams as noted in the USFWS (1993) plan implementation review. Fish-bearing streams are to have a riparian buffer which extends two site-potential tree heights or to the top of the inner gorge. Under the ACS the most important fish bearing streams that provide refugia are protected in Key Watersheds. Before any timber harvest can take place in Key Watersheds, a watershed analysis must be conducted which provides further information of the risks of timber harvest and other land management activities.

Habitat protection from timber harvest on private lands remains problematic. Extensive logging in watersheds such as those in the Lower Klamath, including in unstable streamside locations, is confounding restoration in that sub-basin. See recommendation TH 4.

TH 2: Form CRMPs in important watersheds to deal with timber harvest issues. (2.A.1f)

The Task Force has served as a catalyst for the establishment of cooperative resource management planning (CRMP) groups and has funded a coordinator position for the Scott CRMP, which deals with erosion related to timber harvest. The French Creek Watershed Advisory Group was formed to deal with this particularly erodible watershed in the Scott Basin which has mixed ownership (USFWS, 1993). The group has worked together to develop plans for road management, fuels and fire and a habitat and fish monitoring plan. The effort in French Creek has helped win cooperation and erosion control projects have been carried out on both public and private land with a diverse source of funding, including the Klamath Restoration Program.

TH 3: Encourage the USFS to establish cooperative working relationships with private timber companies in watersheds over cumulative effects thresholds. (2.A.1g)

The Klamath National Forest worked actively with Fruit Growers Supply Company to control erosion in the Beaver Creek watershed. The USFS recognized that this watershed

had a high density of roads that caused it to be over cumulative effects thresholds. Klamath NF acquired funding for restoration from the Klamath Basin Ecosystem Restoration Office and the Fruit Growers supplied equipment and man power to decrease erosion risk related to roads. However, in 1999 the USFS is planning additional timber harvests in the Beaver Creek watershed and Fruitgrowers Supply Company has stepped up logging activity.

Recommendation: Continue to foster and encourage locally based efforts which take a watershed approach to erosion problems related to timber harvest and roads. Seek restrictions on private land timber harvest from the Board of Forestry Harvest plans continue to be filed in watersheds that are over cumulative effects thresholds.

TH 4: Seek improvement of stream protection on private lands through revision of the California Forest Practice Rules including: 1) decreased disturbance of erodible soils, 2) improved protection of riparian zones, and 3) allowing watershed rest in basins over CWE thresholds to promote aquatic habitat recovery. (2.A.3a, 2.A.4b)

The California Forest Practice Rules (FPR) have undergone many revisions since the Long Range Plan was finished (USFWS, 1993) but adequate protections for erodible soils, riparian zones and degraded watersheds have not been implemented. USFWS staff responded to a 1992 California Department of Forestry (CDF) survey by describing problems with timber harvest in the Klamath Basin. While timber companies in the eastern portion of the basin have been working cooperatively toward mitigating problems related to timber harvest, serious problems still exist with timber harvest in the Lower Klamath sub-basin. The California Board of Forestry (BOF) may be more open to input from the Restoration Program because of a shift in the make up of the Board.

Recommendation: Work cooperatively with the California Board of Forestry on protecting aquatic health.

TH 5: Work to improve timber harvest practices on USFS lands by 1) protecting to the least damaged salmonid habitats, 2) protecting riparian habitats, 3) decreasing activities on unstable soil types and 4) providing adequate time for recovery before new timber harvest in watersheds over cumulative effects thresholds. (2.A.3b, 2.A.4c)

Timber harvest and land management planning on National Forests has improved dramatically since the Long Range Plan was published (see TH 1). The Northwest Forest Plan (FEMAT, 1993) provides for protection of refugia by recognizing Key Watersheds and prescribing very wide riparian buffers in these watersheds. The Six Rivers and Klamath National Forest (KNF) Land Management Plan recognize "extremely erodible" soil types and call for stringent guidelines for timber harvest in watersheds with these soil

types. The KNF recognizes that some mixed ownership watersheds, such as Beaver and Horse Creeks, are over cumulative effects thresholds and has not allowed more timber harvest on Federal lands in these basins. However, Matrix designated watersheds that are slated for timber harvest, are showing indications of being over cumulative effects thresholds. Since some of these watersheds are important fish producers, the Task Force should continue to work with the USFS to make sure that fish habitat in these drainages is adequately protected.

Recommendation: The Task Force should support implementation of the Northwest Forest Plan and the TWG should continue to work with the USFS fisheries and watershed staff to improve understanding of cumulative watershed effects and prioritization of restoration.

Mining

HP - Objective 2: Ensure that mining activities do not cause damage to fish habitat.

The most widespread mining activity in the Klamath Basin is still suction dredge mining for gold Long Range Plan recommendations regarding mining of this type call for improving regulations, promoting further studies and pursuing educational programs to reduce damage to fish habitat. The latter two categories are now included in the monitoring and community education sections of this report, respectively. Other forms of mining such as pit mining and gravel mining are discussed after suction dredge mining.

Suction Dredge Mining

M 1**: Work with CDFG to maintain mining closures of important summer steelhead streams and to shorten the mining season in streams where late spawning winter steelhead may be effected. (2.B.1d, 2.B.1.e1)

As noted in the USFWS (1993) report, the California Department of Fish and Game altered suction dredge mining regulations in the Klamath Basin in 1994. The USFWS staff provided comments in this process and many of the recommendations from the Long Range Plan were included. Important summer steelhead streams such as Clear, Dillon and Wooley creeks remain closed to mining. A later season for suction dredging was implemented on some streams with late spawning winter steelhead, such as Elk Creek.

M 2**: Request that CDFG have all miners flag dredge holes to reduce problems for fishermen. (2.B.1.e2)

The Task Force has had no activity on this policy.

M 3**: Request that CDFG improve record keeping to keep track of the number, location and dredge size of various mining activities. (2.B.1.e3, 2.B.2c)

The Task Force has not pursued any action on this policy.

Recommendation: Eliminate this policy or define importance and use of this data and work with CDFG.

Other Mining Practices

M 4: Support a bonding requirement for large scale mines and ensure that mining sites have a proper reclamation plan. (2.B.2d, 2.B.2e)

The Task Force has not acted on this policy but few large scale mining operations have been advanced in the Klamath Basin in recent years.

Recommendation: The Task Force should request that the USFS and other permitting agencies notify the USFWS for comments if large scale mining activity is planned.

M 5**: Request lead Surface Mining and Reclamation Act (SMARA) agencies to assess fines for non-compliance with SMARA regulations. (2.B.2g)

The Task Force has taken no action on this policy.

Recommendation: The Task Force should consider taking this action or removing the policy.

M 6: Promote the abatement of any water quality and habitat problems associated with abandoned mining operations. (2.B.2f)

While the Task Force has taken no action on this policy, there are still some potential abandoned mine sites that could be contributing point sources of pollution to Klamath Basin streams. The Grey Eagle Mine is noted as the cause of discoloration of rocks in Indian Creek (see Appendix 5). The Siskon Mine in Dillon Creek also poses a threat to water quality. Monitoring should be carried out to discern whether problems exists with heavy metals or other toxins from old mine sites (see Monitoring section).

Recommendation: If abandoned mines such as Grey Eagle and Siskon are found to be effecting aquatic health, work cooperatively with the USFS, EPA and SWRCB to alleviate problems.

Agricultural Impacts

HP - Objective 3: Protect and improve water quality of stream habitat from adverse agricultural impacts.

As with previous sections, educational policies offered in the Long Range Plan have been moved to Community Education and those dealing with monitoring to the Monitoring section. Many of the policies in this section also cross over with restoration objectives and some have been moved to Habitat Restoration (Objective 3).

AG 1: Encourage "best management practices" to reduce the amounts of animal waste and fertilizers entering watercourses, focusing initially on demonstration projects. (2.C.1b)

No "best management practices" (BMPs) have been developed for agricultural non-point source pollution for the Klamath Basin except that the North Coast Regional Water Quality Control Board *Revised Water Quality Control Plan* (1993) recognizes pesticide applications for agricultural land as meeting "best management practices." The NCRWQCB BMP approach has been superseded by the "Total Maximum Daily Load" (TMDL) which was initiated by the Environmental Protection Agency under a Federal Court consent decree. A TMDL Plan is required for every water body recognized as impaired under Section 303d of the Clean Water Act (EPA, 1997). TMDL implementation is scheduled for the following Klamath Basins: the mainstem Klamath River in California by 2004, the Salmon River by 2004 and the Shasta and Scott Rivers by 2005.

The Task Force and the CRMP's in the Shasta and Scott sub-basins have implemented demonstration projects that will help decrease nutrient inputs into streams. These projects include tailwater recovery and riparian restoration. Tailwater recovery projects on the Shasta River catch accumulated agricultural runoff which may be warm and nutrient rich. Riparian projects minimize cattle waste in streams and the improved riparian buffers filter nutrients from agricultural runoff. While tailwater recovery is only at the pilot phase, hundreds of thousands of dollars have been spent on riparian restoration by the Task Force and other sources.

Recommendation: The Task Force should work with sub-basin planning groups to determine specific desired practices and move toward their widespread implementation.

AG 2: Explore options for restoration easements (2.C.1d)

The Task Force has taken no action on this policy. However, easements are being funded on a large scale in Washington State as part of Federal salmon recovery strategies. Similar funding may become available in California. Easements allow farmers and ranchers to maintain fee title to their land in the riparian zone and to control public access

in return for cash, tax advantages or a combination of both. If cattle exclusion is part of the terms and conditions of the easement, then those conditions must be met.

Recommendation: The Task Force should co-sponsor a forum on riparian easements to present case studies of successful programs from other areas. Technical assistance should be provided at this workshop on howriparian easement agreements are structured.

AG 3: Investigate and pursue other funding sources to abate non-point source pollution and to improve riparian conditions on private farm and ranch lands. (2.C.1e, 2.C.1f)

The SWRCB has funded five cycles of 319H grants through the USFWS Yreka Klamath Field Office which have been dedicated to non-point source pollution abatement projects and the development of the Klamath Resource Information System (KRIS). Projects that have been funded include alternate stock water systems, tailwater recovery projects and riparian planting and fencing. Additional funding should be coming through Federal salmon recovery efforts.

Large Dams

HP Objective 4: Protect salmon and steelhead habitat from harmful effects of water and power projects in the Klamath Basin.

LD 1. Promote adequate fish protection in relicensing of the Iron Gate Hydroelectric Project (2.E.3)

The Task Force has spent considerable amounts money in pursuit of an instream flow study using the Instream Flow Incremental Methodology. The TWG has recently completed a flow study plan (TWG, 1998) and the funding for its implementation may be available from the BOR. Expenditures on flow related studies are detailed in the Monitoring section below.

LD 2. Oppose further large scale water storage projects until habitat problems from existing ones are remedied and there is proof that new projects will not contribute to habitat problems. (2.E.5)

The Task Force has not had to take action on this item because no such projects have been proposed. The Klamath Basin Water Initiative may advance plans for such facilities in the near future, however.

LD 3. Oppose additional out of basin transfers from the Klamath or Trinity Rivers of water required for protection and restoration of anadromous fish. (2.E.6)

The only possibility of increased out-of-basin transfers has been from the Trinity River (see next recommendation).

LD 4. Advocate improved flows on the Trinity River to better mimic the natural pre-dam flow conditions. (2.E.7, 3.4)

The Task Force has sent a letter to the Secretary of Interior requesting increased flows in the Trinity River for improving salmon habitat.

LD 5. Remedy problems related to large dam operation such as 1) access for salmon and steelhead above Iron Gate Dam and 2) poor water quality and insufficient flows below Iron Gate Dam and Lake Shastina. (2E.2, 2.E.1d, 3.5)

The Task Force studied improving access for salmon into the Upper Klamath Basin as part of the Upper Basin Amendment which has never been adopted. The relationship between flows and water quality below Iron Gate Dam has been studied by U.C. Davis with Task Force funds. Further studies are underway or planned as part of flow studies. Shasta River non-point source pollution studies (205J).

Small Scale Diversions

HP Objective 5: Protect the instream flow needs of salmon and steelhead in streams affected by water diversion.

SD 1. Involve landowners in the Shasta and Scott Basins in developing solutions to instream flow problems (2.F.1a, 3.7)

The Task Force has funded the CRMP coordinator positions in the Shasta and Scott River Basins but only pilot projects have been implemented. The wider agricultural community has not been engaged. The Scott CRMP currently has a Fall Flows Action Plan (Scott CRMP, 1996) which is under revision. Alternative stock water systems have been put in place to try to reduce the need for stock water diversions during fall spawning migrations. The Shasta CRMP has coordinated "pulse flows", which flush juvenile salmonids from the system in spring before water quality problems become acute. The Shasta Watershed Restoration Plan (Shasta CRMP, 1998b) calls for an increase in water efficiency over the next decade to insure that the Shasta River does not drop below 20 cfs.

SD 2. Fund water conservation measures which will provide significant benefit to fisheries (2F.C1)

The Task Force has not directly funded water conservation projects but 319 H projects related to water conservation have been carried out.

SD 3. Investigate and pursue other funding sources to help implement water conservation measures. (2.F.1b, 2.F.1g)

Some pilot water conservation projects have been funded through the 319H grants (see SD 1). More money should be available through joint State/Federal efforts on behalf of endangered salmon populations.

SD 4. Support effective screening of all agricultural diversions and help identify a strategy for maintaining screens. (2.F.1d, 3.11)

The Task Force has funded operation of the Yreka Screen Shop and locally based fish screen construction (see Appendix 5. The Pacific States Marine Fisheries Commission has helped facilitate funding in some years, which was redirected to the Yreka Screen Shop. The Task Force has spent a total of $202,232 on fish screens since 1989.

SD 5**. Support needed changes in California water rights so 1) water rights holders are not penalized for conservation, 2) instream uses like fisheries can have water rights and 3) water rights transfers can be made to instream uses. (2.F.1e)

The Task Force has not taken action on this but California water law was amended through SB-301. This statute allows a water right holder to designate part or all of their water right to instream flow , without penalty or risk of losing that right at a future date.

SD 6. If changes are made in the law, support purchase of water rights from willing sellers for the purpose of improved flows for fisheries. (2.F.1f)

No action up to now, but California SB-301 makes this feasible.

Recommendation: Explore the use of federal salmon recovery funds for acquiring water rights or improving delivery efficiency, with the stipulation that instream flow benefits are accrued.

SD 7. Seek enforcement of Scott River Adjudication through the Watermaster, including compliance with October 15 diversion deadline for stream appropriations. (2.F.3a)

The Restoration Program has funded studies of fall flows in the Scott but no action has been taken.

SD 8. Encourage legal action by the USFS to achieve minimum flows for fish under the Scott River Adjudication.

The Task Force has taken no action on this item but such action is still possible by the USFS.

SD 9. Ask the SWRCB to enforce water rights conditions pertaining to "unreasonable use" in the Klamath River Basin.

The Task Force has taken no action on this item.

SD 10.** In the year 2000, if adequate progress towards improving flow conditions for salmonids has not been made as a result of policies 2.F.1 and 2.F.3, then investigate the option of reallocation of water rights under the public trust doctrine for protection of fish habitat. (2.F.4)

SD 11.** If fish population trends in a tributary system are found to be at critically low levels by the Task Force, the following policies will be instituted, along with necessary harvest restrictions:

a. Pursue appropriate agency solutions.
b. Exercise water allotment rights to provide emergency instream flows. (2.F.2)

The Task Force has taken no actions on either SD 10 and SD 11. It is suggested that they be dropped.

HABITAT RESTORATION

Objectives HR: Restoration projects must use appropriate methods to address factors which limit anadromous fish production

HR 1**. Technically sound projects which benefit "stocks of concern" recognized by the Task Force should receive priority for funding. (3.3)

There is such a widespread problem with anadromous salmonid stock groups that using this criteria for project selection is no longer feasible. For example, coho salmon are at high risk of extinction in almost the entire Klamath Basin. Steelhead in Klamath River tributaries also seem to be under-going a basin-wide down turn (see Appendix 5). Therefore, all recommendations that assighned priority have been dropped. These priorities should be established through sub-basin planning.

Riparian Conditions

R 1 Improve riparian conditions in the Shasta and Scott Basins as well as other areas impacted by grazing. (2.C.1c)

The Task Force's efforts to restore riparian areas in the Scott and Shasta River basins is the most successful aspect of the Restoration Program. The Task Force has funded the following projects:

Easton Bank Protection and Riparian Fencing (Shasta)	1992	$7191
Parker Riparian Fencing (Shasta)	1993	$45,356
Shasta Fencing	1994	$59,929
Scott River Woodland	1994	$31,039
" " "	1994	$12,117
Shasta River Riparian Fencing	1995	$60,809
Demo Alternative Bank Stabilization (Scott)	1995	$54,857

Shasta Riparian Restoration	1996	$16,200
Stream Bank Protection Tozier (Scott)	1996	$50,000
Riparian Woodland Rest (Scott)	1996	$30,281
Yreka Creek Greenway Project (Shasta)	1989	$10,000
Horse Creek Cattle Exclusion Fencing	1995	$7961

Most riparian projects have withstood flood damage well, with the exception of the Horse Creek project where extensive flood damage wiped out both the fence and diversion that was installed with Task Force money.

R2. **NEW** Restore riparian areas in forested basins

The Salmon River Restoration Council and the USFS have performed cooperative riparian restoration projects in the Salmon River basin using $19,604 in Task Force money. Two of these projects were destroyed by flood damage in the January 1997 storm. The USFS has used its own funds and CDFG grant money to plant trees in riparian zones of Indian Creek to help improve long term large wood recruitment, to provide shade and to restore the cool microclimate provided by a coniferous tree over-story.

Control Sediment Sources

S 1: Work with CDF, EPA and the SWRCB to monitor progress on abatement of sediment problems and encourage stepped up enforcement of clean water laws if necessary.(2..A.3)

The Task Force funded studies in the Scott River Basin (see Monitoring). The USFS has also helped with fine sediment monitoring in French Creek but the three agencies named in this recommendation have not studied sediment in streams. The EPA TMDL deadlines for various Klamath sub-basins all recognize the need to abate sediment problems.

Recommendation: The Task Force should encourage sub-basin interests to work pro-actively with the EPA and SWRCB to meet TMDL objectives instead of seeking an enforcement solution.

S 2: Use the Scott River sediment study to prioritize actions to decrease erosion in decomposed granite watersheds and fund appropriate actions. (3.7b)

Although the Task Force has not directly funded erosion control activities in French Creek, other interests have used the sediment study to prioritize sediment reduction in the basin.

S 3: Work with the USFS, private timber land owners and others to insure that erosion from existing roads is decreased and that new roads pose a minimal risk of increased erosion. (3.7c, 3.8b)

De La Fuente (1998) offers guidance for minimizing erosion from new and existing roads. His findings are based on extensive examination of the pattern of road failures across Klamath National Forest during the January 1997 storm and resulting sediment production.

Recommendation: Seek funding for the USFS to more widely implement erosion prevention related to roads under the NW Forest Plan.

S 4**: Implement erosion control measures in Pine Creek in the Lower Klamath Basin and work to minimize erosion from future land use to make it a "model" watershed. (3.9d)

Although the Task Force funded sediment surveys and implementation of erosion control measures, Pine Creek has continued to produce large amounts of sediment. No further funds should be expended in this basin because it is over cumulative effects thresholds and investments in sediment reduction are not likely to succeed without watershed rest. The Task Force funded erosion control in this basin for $61,000 which saved on the order of 20,000 cubic yards of sediment (Hoopa Fisheries Dept., 1997a).

Fish Passage

FP 1**: Find a solution to the problem of fish passage over the agricultural diversion on lower Horse Creek. (3.10c)

This fish passage problem was remedied through Task Force action at a cost of $64,000 but the January 1997 flood washed the project away. No further instream or near-stream projects should be carried out in Horse Creek at this time because it is over cumulative effects thresholds and is likely to experience high discharge in the event of another rain-on-snow event.

FP 2: Study the feasibility of removing fish migration barriers in Middle Klamath Basin tributaries such as Humbug Creek and Rock Creek. (3.10b)

The Task Force has not taken any action on this item.

INSTREAM PROJECTS

The Task Force has avoided investments in instream structures which appears wise in hind sight given the widespread damage suffered by these projects during the 1997 storm. Studies in southwest Oregon and Washington (Frissell and Nawa, 1992) showed that failure of structures is highest when discharge in a ten year storm event exceeded 1 cubic meter per second flow per square kilometer of watershed area.

Recommendation: Maintain criteria for instream projects and consider adding requirements to test discharge during 10 year storm events to gauge runoff as it relates to watershed area.

The criteria for approval of instream structures is as follows:

IS 1. Proposed projects to structurally increase fisheries habitat in any Klamath tributary will be evaluated as to whether: (3.12)

- The erosion potential in the watershed and the expected sediment yield would place the project at risk during moderate storm events (10 year interval or less).
- The stream channel remains highly aggraded and, thus, likely to threaten the stability of the proposed structure.
- The project is properly engineered in terms of its setting (gradient and channel type) and expected flows.
- Habitat assessment has been conducted and the suspected limiting factors identified.
- The proposed project has a clear goal of remedying the identified limiting factors.
- The proposal includes methods to evaluate whether the goal of the project has been reached after project implementation (ideally, a demonstration of its positive cost-benefit performance).
- The project budget includes cost estimates for maintenance.

FISH POPULATION PROTECTION

FPP Objective: Strive to protect the genetic diversity of anadromous fishes in the Klamath River Basin

FPP 1: Use self-sustaining, native fish populations as the gauge for Restoration Program success, not hatchery fish or fish that stray from hatcheries. (4.1)

The Task Force has maintained this criteria for measurement of Program success. Changing the designation of stocks within the basin was studied after the Long Range Plan was written but no Task Force action was taken.

FPP 2: Provide support for local involvement by volunteers in salmon counts. (4.2)

The Task Force has funded Yreka High School to assist in fall chinook surveys (see Monitoring). The CRMPs and the Salmon River Restoration Council have both contributed volunteer time to these efforts.

FPP 3:** Seek increased penalties for poaching salmon and steelhead from local and State jurisdictions. (4.6)

Task Force has taken no action on this recommendation.

FPP 5: Support continuation of fish rescue efforts associated with fish screen operations in the Shasta, Scott and Middle Klamath Basins. (3.11)

The Task Force has funded the Yreka Screen Shop (see SD4) which handles fish rescue related to screen operations. The number of steelhead rescued by CDFG Screen Shop employees has decreased substantially over the last decade.

FPP 6:** Determine escapement goals based on carrying capacity. (4.7)

This recommendation is not technically feasible because carrying capacity is too difficult to determine and it is not static.

FPP 7:** Support high seas drift net bans. (4.8)

The United Nations has moved to ban high seas, long-line drift net fisheries and this type of fishing has been reduced to almost an inconsequential level.

FISH POPULATION RESTORATION (HATCHERIES**)**

FPR Objective 1: Iron Gate Hatchery and Trinity Hatchery should be operated to produce salmon and steelhead to mitigate for the losses of habitat above their dams and, at the same time, strive to reduce impacts on native fish.

Large Hatcheries

Extensive discussions on large and small scale hatcheries and their success can be found in Chapter 10.

LH 1: Work in coordination with other basin interest groups (KFMC, Trinity Task Force and Tribes) to insure that large scale hatcheries are operated in such a way as to maximize production for harvest but to minimize impacts on native stocks.

The Task Force Chair met with the KFMC Chair and the Trinity River Task Force Chair in 1992 to discuss hatchery practices, and other topics. CDFG (1992) responded to the Three Chairs request for a review of hatchery practices by reconfirming that mitigation targets for hatchery chinook salmon releases should not be exceeded. The need for hatchery reform was pointed out by a PFMC (1994) report that studied factors affecting low fall chinook escapement levels from 1990-1992. Fishing guides from the basin have been meeting with CDFG to try to re-establish steelhead runs at Iron Gate Hatchery. The

Hoopa Tribe has been working closely with the Trinity River Hatchery to improve performance at that facility.

Recommendation: Re-kindle a cross interest working group to make sure that hatchery practices in the basin are improved and standardized.

LH 2: Conduct studies to determine optimal planting levels at Iron Gate and Trinity River hatcheries and to devise release strategies that minimize impact on native fish. (5.A.1a)

The Task Force and CDFG have taken no action on this recommendation.

Recommendation: Work with CDFG to alter the number of chinook salmon released from Iron Gate Hatchery according to flow levels and thereby arrive at optimal release strategies over time through adaptive management.

LH 3: Press CDFG for universal marking of all hatchery coho salmon and steelhead and at least consistent fractional marking of chinook salmon at both Iron Gate and Trinity River hatcheries. (4.4a, 4.4b)

The KFMC has been studying the need for consistent fractional marking of chinook salmon for harvest management. Klamath River guides working with CDFG on hatchery management issues also support universal marking of steelhead. Because of the listing of coho salmon and the potential listing of steelhead under the ESA, no wild fish of either species may be kept. Consequently, hatchery coho and steelhead that are not marked cannot be harvested. Large scale fish marking has recently undergone substantial technological advances and tests on universal marking are being carried out at Central Valley salmon hatcheries.

Recommendation: Work with CDFG to establish universal marking if technologically feasible, to maximize access for harvest and to aid in studies of hatchery and wild fish interactions.

LH 4: Encourage hatchery practices that maintain fitness of hatchery brood stocks and minimize straying which impacts wild fish. (5.A.1c)

The Task Force's only involvement in this issue is through the Three Chairs process described above. Iron Gate Hatchery experienced extremely high returns in 1995 and 1996 and released fish back into the river. These fish strayed into the Shasta River raising concerns about competition and other undesirable hatchery-wild interactions. CDFG agreed to destroy excess spawners as an alternative.

LH 5:** Use surplus hatchery eggs for "enhancement" and harvest supplementation (5.A.1b)

There is no way that this recommendation can be carried out without substantial detrimental impacts to wild fish.

LH 6** Conduct studies on Iron Gate Hatchery steelhead Ceratomyxa shasta resistance (5.A.1d)

The Iron Gate steelhead run has been lost; therefore, this recommendation no longer applies.

LH 7:** Support acquisition of Iron Gate Hatchery water filter. (5.A.1e)

This water filtering system has already been acquired.

LH 8 New: Encourage re-establishment of a steelhead run at Iron Gate Hatchery to meet mitigation goals and conduct studies on factors limiting survival of smolts to prevent recurring problems.

Iron Gate Hatchery steelhead runs have disappeared, possibly as a result of mainstem Klamath River water quality impairment (see Chapter 10 and Appendix 5). Any action to re-establish runs will necessarily require study of factors outside the hatchery that might hamper the effort.

Small Scale Hatcheries

FPR Objective 2: Small-scale rearing programs should be temporary measures, primarily for the purpose of accelerating the rebuilding of locally-adapted native salmon and steelhead populations, and operated to maintain the genetic integrity of such populations. Ideally, small-scale rearing programs should be operated in conjunction with habitat restoration projects.

SH 1: Formulate guidelines for small scale hatchery operation that will avoid negative impacts on native stock genetic characteristics. (5.B.1)

The USFWS worked with entities operating small scale hatchery facilities to provide guidance from official USFWS policies on brood stock handling and other aspects of small scale rearing. Most small hatchery operations, such as the Karuk Tribe's Camp Creek facility, have been consistent with regard to marking fish and other steps necessary to minimize impacts on wild fish.

SH 2** Provide small scale hatcheries guidelines with regard to 1) trapping protocols, 2) disease control, 3) brood stock management, 4) marking all release groups, 5) release strategies and 6) project evaluation.(5.B.2)

See SH 1.

SH 3:** Conduct studies in tributaries with hatcheries to determine 1) prudent planting levels, 2) release strategies that least impact wild fish and 3) benchmarks for escapement so that projects can be discontinued when "seeding" goals are met. (5.B.3)

No action has been taken by the Task Force on this item.

SH 4:** Consider green sturgeon artificial culture as part of restoration strategy for this species. (5.B.5)

Green sturgeon are a valuable market fish but a hatchery operation for this species would be very costly and no appropriate site may be available. Consider dropping this recommendation unless it enjoys strong support from the Yurok Tribe or other interested parties.

SH 5:** Explore potential for expanding rearing programs to include steelhead and coho salmon. (5.B.4)

Coho salmon stocks are at such a low ebb in the Klamath Basin that trapping adults would not be feasible. The Camp Creek small scale hatchery operated by the Karuk Tribe has trapped adult coho salmon so it might be possible in that stream. Extreme care must be taken, however, when founding a hatchery broodstock with small numbers of fish (PWA, 1994). Steelhead survival in the basin appears to be limited by water quality conditions in the mainstem Klamath River, not by limited hatching success (see Chapters 2 and 10). While adult steelhead populations in one tributary might be increased temporarily by hatchery supploementation, increases in overall steelhead abundance can only be remedied by reversing water quality porblems in the mainstem Klamath.

WIN COOPERATION

WC 1: Hold trainings on restoration techniques and opportunities. Hold trainings on contract and bid processes to increase local involvement. (3.1a, 3.1b)

The Task Force has allocated $7,000 over three years to help fund the Salmonid Restoration Federation Conference which focuses on restoration techniques. This does not meet the criteria for increasing local involvement, however, because the conference has never been held in the Klamath Basin. Local constituencies interested in restoration have learned of the Program and applied for appropriate funding. This report notes the inconsistent quality of project reports submitted to the USFWS which hampers program evaluation and information sharing. Training sessions might be more productive if they focused on project reporting.

Recommendation: The USFWS staff should present a one-day or half-day course for cooperators to show them exemplary final reports and to discuss how reporting should be done on various types of projects.

WC 2: Give preferences to projects with strong local participation. (3.1c)

The Task Force has funded projects advanced predominantly by local interests.

WC 3: Encourage the formation of local sub-basin restoration groups. (3.1d)

The Task Force has allocated over $450,000 to help support sub-basin planning efforts and restoration coordination. Money has been allocated for the Shasta and Scott CRMPs, the Salmon River Restoration Council, Karuk Tribe, Hoopa Tribe and Yurok Tribe.

WC 4: Enter into formal long-term cooperative relationships with the USFS, CRMPs, RCDs, Indian Tribes and others. (3.2a, 3.2b)

It was contemplated that a formal Memorandum of Agreement (MOA) would be advanced between the Task Force and other basin interests. No such MOA has ever been advanced. Given the high level of cooperation with basin cooperators, it may not be necessary.

Recommendation: Direct the TWG to encourage local basin interests to work cooperatively on sub-basin planning with the USFS in areas with a large public land tracts.

WC 5: Seek cooperation in the Lower Klamath Basin with private landowners to identify sediment sources and seek funding to abate erosion problems. (3.9)

The Task Force has taken no direct action on this item other than to fund the Yurok Tribe for sub-basin planning efforts in the Lower Klamath Basin. The Yurok Tribe are establishing a cooperative working relationship with the Simpson Timber Company and are already working on erosion control in McGarvey Creek.

WC 6: Encourage the USFS to expand cooperative efforts in mixed ownership drainages in the Middle Klamath Basin, such as Beaver Creek, to improve watershed conditions and decrease erosion. (3.10a)

The USFS won funding through the USFWS ERO for erosion control in Beaver Creek and Fruitgrowers Supply Company provided equipment and manpower to abate problems related to roads. The USFS has also been actively involved in the French Creek Working Group, helping with monitoring and other activities.

MONITORING

The Restoration Program has allocated substantial amounts of money for monitoring fish population trends, fish habitat quality, water quality and flow. Monitoring efforts have comprised approximately 45% of all funds spent on projects. While monitoring is costly, it provides the information needed to judge program effectiveness. Monitoring recommendations below were extracted from various sections of the Long Range Plan and grouped together so they can be clearly delineated from recommendations related to restoration activities or Task Force policies. Some new recommendations relate to finding new sources of funding for monitoring activities.

Monitoring Timber Harvest

MTH1: Include fish habitat and population data in State Water Resources Control Board and U.S. Environmental Protection Agency processes. (2.A.2b)

The Task Force helped fund habitat inventories on USFS lands and in Lower Klamath tributaries (see Fish Habitat Conditions) and most of the streams on Klamath National Forest and Six Rivers National Forest have now been inventoried. While habitat typing data is useful to fisheries biologists, it still is not used by water quality specialists. Fish population data is now stored in the Klamath Resource Information System (KRIS) where it can be shared with all people studying the basin. Since KRIS contains most of the water quality data collected in the basin, SWRCB and EPA staff should be using it to access to fish data.

Recommendations: The TWG should decide if habitat typing data is a useful tool in watershed analysis, and if it is, work toward capturing that data in KRIS. If not, modify or drop this recommendation.

Work to keep fish population data in KRIS current.

MTH2: Improve monitoring to discern cumulative watershed effects (CWE) and recovery of stream habitat in logged watersheds. (2.A.2a)

The Task Force funded studies in Pine Creek that were directed at understanding stream recovery related to erosion control activities ($67,690). The study actually showed that sediment production remained extremely high in other basin areas where logging and road building was continuing.

The Klamath National Forest January 1997 storm damage study (De La Fuente, 1998) describing landslide rates in areas with different land management history, advances understanding of cumulative watershed effects substantially. The second phase of that study will assess stream damage and track recovery. USFS fine sediment studies in French Creek (Scott Basin) showed a decrease in sediment in pools after erosion control projects were implemented. The new Stream Condition Index being developed by the

USFS may have potential for characterizing the level of impacts to streams from cumulative watershed effects (Jerry Boberg, personal communication).

Recommendation: The TWG should work with the USFS and use GIS to better understand cumulative watershed effects in logged basins.

MTH3: Evaluate watershed conditions and sediment production potential in logged basins. (2.A.2d, 3.9, 3.8a)

The Task Force has funded several watershed studies that focus on potential sediment production and erosion control. The Siskiyou RCD received $80,768 to study decomposed granitic terrain in the Scott River basin (Sommerstrom, 1990) and has used the results to prioritize erosion control activities. USFS watershed inventory (WIN) studies were funded for the South Fork Salmon River and Crapo Creek, also in the Salmon River basin, in the amount of $34,500. The Task Force funded a study of sediment production for the Salmon River Basin which cost $38,190. (De La Fuente and Hassig, 1994). The Hoopa Fisheries Department studies of Pine Creek mentioned above also included erosion assessments (PWA, 1992). The Task Force funded Energy Resource Advocates for a GIS and remote sensing feasibility study for the Lower Klamath Basin in the amount of $36,829.

The Scott River RCD is moving forward on a sediment source study for the Shackleford and Mill Creek drainages in the Scott Basin. The Yurok Tribe also have recently completed erosion assessments in McGarvey Creek in the Lower Klamath Basin and have begun erosion control activities.

Recommendation: Continue to use erosion potential surveys to help prioritize abatement of sediment sources.

MTH4: Evaluate riparian conditions in logged areas, such as use of the RAPID technique (Grant, 1988) to determine riparian recovery of Lower Klamath Basin tributaries. (2.A.2c, 2.A.2d, 3.9b)

The Task Force has not funded any studies of riparian conditions on forested lands. However, the KNF 1997 storm damage assessment (De La Fuente, 1998) includes changes in riparian in streams effected by the flood.

Monitoring Mining

MM1: Study cumulative effects of a large number of suction dredges. (2.B.1b, 2.B.2b)

No Task Force studies have been funded and none have been carried out by other cooperators. This could create a problem if there is a sharp rise in the price of gold and the number of suction dredge operations increases.

MM2: Study the impacts of large (6-10 inch) dredges used in the Klamath. (2.B.1c)

No studies of this nature have been carried out.

Recommendation: The Task Force should seek the guidance of CDFG as to whether this remains a concern or if this recommendation should be dropped.

MM3: Pursue water quality studies to discern lingering effects from abandoned pit mines.

The Task Force has not funded studies regarding these problems. However, the Karuk Tribe has contracted with a consultant to study Indian Creek water quality, which may provide information on lingering effects of the Grey Eagle Mine.

Monitoring Agriculture (Non-point Source Pollution and Riparian)

MAG1: Monitor water quality trends related to non-point source pollution related to agriculture

The Task Force has taken considerable action on this recommendation. The Siskiyou RCD received $23,000 over a period of three years to monitor Scott River water temperature. The Shasta Valley RCD received $24,470 to study water quality. The SWRCB 319H grants have added substantial impetus to this objective with data being contributed by Shasta and Scott Valley CRMPs and by schools.

MAG2: Assess riparian conditions and trends over time

The Task Force funded the Siskiyou RCD in the amount of $7,054 to evaluate the Scott River riparian zone. Humboldt State University used remote sensing imagery to evaluate riparian zones with a NASA Mission to Planet Earth grant (Fox, 1995). The Shasta Valley RCD acquired SWRCB 205J funds for a riparian zone study of the Shasta River (Deas, 1998). The Scott CRMP is monitoring riparian recovery as part of a large project supported by the Cantara Loop fund and the Wildlife Conservation Board.

Recommendation: Continue to use all tools available to monitor riparian recovery.

Monitoring Flows

MF1: Evaluate the instream flow needs of the Shasta and Scott Rivers and their tributaries. (2.F.1j)

The Task Force awarded $15,843 the University of California (UC) to evaluate fish passage related to fall flows in the Scott River. An earlier study was conducted by the Department of Water Resources, at a cost of $35,964, on the potential for augmenting flows in the Scott River. There is currently a UC Davis study underway to study flow and water quality relationships in the Shasta River, which will cost $46,000. Studies of instream flow needs for these sub-basins may now be funded by the Bureau of Reclamation as part of the overall Klamath Basin flow study (Mike Belchik, personal communication). More studies of this nature are contemplated in the Shasta CRMP (1998) sub-basin restoration plan.

The Task Force has been forced to fund operation of flow gauges because funding through the USGS and California Department of Water Resources was discontinued. To date, $55,023 has been spent over several years to collect this data.

The Shasta CRMP operates a real-time monitoring station accessible by phone that includes flow, water and air temperature and conductivity.

Recommendations: The Task Force should continue funding flow gauge operation but seek a long term sponsor for this data collection so that flow monitoring does not continually drain Restoration Program assets.

Pursue funding for these activities as part of the overall Klamath Basin flow study.

Monitoring Fish Habitat Conditions

MFH1: Find funding or partnerships (USFS) to complete habitat typing or other quantitative assessment of all basin streams. (3.1.3a)

The Task Force has contributed to habitat typing and other quantitative fish habitat assessment studies. The USFWS Arcata field office inventoried Lower Klamath tributaries at a cost of $49,363. The Klamath National Forest conducted habitat typing and salmon spawning habitat surveys at a cost of $207,465. The Hoopa Fisheries Department studied Pine Creek using cross sections and fine sediment samples at a cost of $31,188.

Almost all Klamath Basin streams on USFS lands have been habitat typed. Recent studies have shown that while habitat typing is an excellent inventory tool, it is not sufficiently precise for monitoring.

MFH2: Evaluate spawning and rearing habitat above Iron Gate Dam. (2.E.1a)

There have been no studies funded by the Task Force or others on this topic.

Recommendation: Try to acquire funding for projects as part of the Klamath Basin flow study.

MFH3: Evaluate in-stream flow needs for all life stages of anadromous salmonids in the Klamath River below Iron Gate Dam using state of the art methods. (2.E.1c)

The Task Force's TWG has focused on instream flow needs for over three years and has formulated a comprehensive flow study plan (TWG, 1998) The prospect of funding by the Bureau of Reclamation looks promising (Mike Belchik, personal communication).

Studies funded by the Task Force to date have included one by the National Biological Service (now part of USGS) for $45,000, one by Oregon State University for $21,000 and a third by Utah State University for $9,000.

Recommendation: Pursue full funding for TWG plan through the Bureau of Reclamation Klamath Basin flow study.

MFH 4: Examine the effects of Lake Shastina on the Shasta River's flow and water quality problems below Iron Gate Dam using state of the art methods. (2.E.1d)

There has been no Task Force action taken on this recommendation. Some aspects of this problem may be covered under UC Davis water modeling studies that are on-going in the Shasta River Basin.

Recommendation: Seek funding for this activity as part of the larger Klamath Basin flow study.

Monitoring Water Quality

MWQ 1: Work with agencies such as the EPA, SWRCB and USFS which have water quality monitoring responsibilities to study water quality parameters of interest to the Restoration Program.(3.2c. 3.2d, 3.13b)

The Klamath Restoration Program has enjoyed considerable support from the NCRWQCB through 104b studies, which have included extensive sampling in tributaries basins and mainstem Klamath reaches. The data from these studies has been captured in the KRIS system and is therefore available to all those interested in fishery and water quality. The USFS has gathered substantial amounts of temperature data and published two compendiums (USFS, 1992, 1995). They have also shared data with the NCRWQCB

and much of that data is also now available in KRIS. The KRIS project itself was funded with SWRCB money which was provided as block grants from the EPA.

Recommendations: Continue data sharing through KRIS.

MWQ 2: Monitor water quality above, within and below Copco and Iron Gate Reservoirs for five years to determine the effects of storage and power plant operation on downstream fish habitat conditions. (2.E..1b)

The NCRWQCB 104b studies have included stations above and below impoundments on the mainstem Klamath River and they have been supplemented by Pacific Corp (formerly PPL) studies (Pacific Corp, 1996). The larger Klamath Basin flow study currently being pursued by the Bureau of Reclamation should provide information to answer this question.

Recommendation: Pursue funding for this study as part of the larger BOR Klamath Basin flow study.

Monitoring Fish Populations

MFP 1: Monitor fall chinook stock groups annually, including runs in the Scott, Shasta and Salmon River, selected Middle Klamath tributaries and Blue Creek. (4.3a)

The Task Force has sponsored many projects related to fall chinook stock group monitoring. The USFWS Arcata field office has helped to collect data on Blue Creek, Lower Klamath tributaries and mainstem Klamath spawning escapement. All studies combined cost $229,029. The Yurok Tribe has assumed Blue Creek counting responsibilities and received $36,840 to perform this task from the Restoration Program. The CDFG has continued to coordinate fall chinook salmon spawner estimates in Middle Klamath, Salmon, Scott and Shasta River basins. Partial assistance from the Task Force for CDFG efforts in early years of the Program totaled $80,877 including $17,777 that went to improve the Shasta counting weir. The USFS received $13,864 to help with fall chinook salmon counts. The Hoopa Tribe received $14,058 for fall chinook stock assessment in the Pine Creek Basin. The Karuk Tribal fish harvest monitoring project has helped assess catch in traditional fisheries which helps with stock assessment. The latter project has been funded for $34,832. Escapement monitoring has been a subject of discussion between the Task Force and KFMC (see Section 6). Task Force and KFMC members are suggesting that this program cost might be funded through Operation and Maintenance (O&M) of Bureau of Reclamation projects for both the Klamath and Trinity River.

Recommendation: The Task Force and KFMC should insure that monitoring fall chinook stock groups takes place but request that BOR consider escapement estimates annually as O&M costs of the Klamath and Trinity River projects.

MFP 2: Support volunteer monitoring of anadromous salmonid stocks in cooperation with CDFG. (4.3e)

Volunteers from Siskiyou County high schools have helped conduct annual fall chinook spawner counts of the Middle Klamath tributaries, Salmon, Scott and Shasta River basins. The Task Force funded Yreka High School students to help with counts in one year at a cost of $2,018.

MFP 3: Monitor spring chinook both in the Salmon River and in net and in-river sport harvests in the lower river. (4.3.b)

The USFS has monitored Salmon River spring chinook salmon annually with assistance from the Salmon River Restoration Council, although this effort has not been funded directly by the Task Force. Harvest monitoring responsibilities for Indian net harvest of spring chinook in the lower Klamath River have been assumed by the Yurok Tribe.

Recommendations: Encourage the continued monitoring of spring chinook populations, including the lower river sport fishery.

MFP 4: Monitor summer steelhead populations annually. (4.3c)

The Task Force has not funded any monitoring projects for summer steelhead but CDFG and the USFS have cooperated to perform annual counts of holding adults. Given request for listing under the Endangered Species Act for steelhead in the Klamath Province, adult winter steelhead populations may need to be added to monitoring efforts. Klamath National Forest studied winter steelhead abundance using dive surveys with Task Force sponsorship at a cost of $73,368. The latter study encountered too much variability in dive conditions to yield reliable quantitative data (Brenda Olson, personal communication).

Recommendation: Encourage the continued summer steelhead surveys in Klamath Basin tributaries and study the feasibility of adding winter steelhead to this recommendation.

MFP 5: Study fish rescue efforts associated with diversions and determine the survival of fish captured and transferred downstream. (3.11, 5.B.6)

There has been no action taken on this recommendation. The number of juvenile steelhead rescued by CDFG has decreased precipitously in recent years (Ron Dotson, personal communication).

Recommendation: Discern whether fish rescue is significant enough to consider through discussions with CDFG and CRMPs. If not, remove this recommendation.

MF 6: Request that CDFG use data from guides and punch cards to gauge changes in catch success rates and trends over time. (4.3.f)

The Task Force has not acted on this recommendation.

Recommendation: Maintain this recommendation and act on it unless CDFG Task Force representatives present a case for why this monitoring effort would not be effective.

MFP 7: Monitor green sturgeon through analysis of in-river fishing data but also include range, distribution and vulnerability in fisheries outside the Klamath. (4.3g, 4.3j)

The USFWS Arcata field office was funded by the Task Force to monitor green sturgeon harvest for $4,507. The Yurok Tribe in cooperation with Humboldt State University conducted a study with Restoration Program funds regarding the genetics of Klamath River green sturgeon at a cost of $21,102.

MFP 8: Collect additional information on life history patterns and stock structure of the basin's anadromous salmonids. (4.3h)

Restoration Program has devoted very large sums of money to this task.. The USFWS Arcata field office has been funded to operate downstream migrant traps on the mainstem Klamath River and Lower Klamath tributaries and conduct scale analysis. The total amount spent by the Task Force for these projects totaled $324,898 from 1989-1997. The USFS has analyzed the use of Klamath Basin tributaries which helps to understand juvenile life history patterns and habitat use with Task Force funds totaling $14,500. Investigators from Cal Poly at San Luis Obispo studied genetics of spring and fall chinook in the Klamath Basin with $18,434 in Task Force funds. The Hoopa Tribe received $48,458 from the Task Force for downstream migrant trapping on Pine Creek and other Hoopa Reservation tributaries.

MFP 9: Encourage study of cutthroat trout, eulachon and Pacific lamprey. (4.3k)

The USFWS now collects data on Pacific lamprey migrants caught in traps. The Yurok Tribal Fisheries Department has recently completed a study on eulachon and Pacific lamprey as well as another study of salmonid distribution in Lower Klamath tributaries which includes cutthroat trout. On-going studies of the Klamath estuary also yield information on cutthroat trout.

Recommendation: The Task Force should continue to assist in funding fish health studies as needed.

Hatcheries

Fish Health

MH 1: New Recommendation: Monitor fish health to better understand problems for hatchery fish from diseases and the link between environmental stresses and epidemiology.

The Task Force has allocated $50,341 for Klamath River fish health studies carried out by the USFWS California/Nevada Fish Health Center. Such studies are critical for understanding disease outbreaks which could otherwise confound the Restoration Program.

MH 2: **New Recommendation** Conduct studies of hatchery performance and marking strategies as they pertain to harvest and interactions between hatchery fish and wild fish.

The Task Force funded Humboldt State University to study marking of hatchery fish as it relates to harvest monitoring at a cost of $36,165. This type of study allows use of hatchery fish to represent Klamath River contributions to ocean fisheries. CDFG was funded by the Restoration Program to evaluate salmon production at Iron Gate Hatchery in 1989 in the amount of $56,700.

Recommendation: Work together with KFMC, Trinity Task Force and CDFG to achieve uniform hatchery practices between Iron Gate and Trinity River hatcheries, particularly with regard to universal marking or constant fractional marking.

MH 3: **NEW** Evaluate small scale rearing programs to determine their cost-effectiveness and to discern possible interactions with wild fish.

CDFG was funded to determine the effectiveness of small scale rearing and pond rearing projects in the amount of $54,200.

EDUCATION

Public Schools

E 1: Continue developing curriculum (6.1a)

The Task Force funded, over a five year period, the development of a kindergarten through high school Klamath River Educational Program (KREP). The curriculum guides

that were created as part of the KREP are being used in the Klamath River Basin and throughout California and parts of Oregon.

This recommendation has been fulfilled and should be dropped.

E 2: Encourage school districts to integrate Klamath River Education Program (KREP) materials into their regular curriculum. (6.1b)

Some funding for incorporating the KREP into special school programs has been provided to individual schools, including Eureka High School, Salmon River School and the Etna School's Kidder Creek Program. The Task Force should continue to make funds available to schools that want to use the KREP materials.

E 3: Sponsor workshops and conferences to keep teachers updated about the Restoration Program. (6.1c)

The KREP sponsored two week-long summer institutes for teachers in the Klamath River Basin, and two for students. The Task Force also funded field trip to the Upper Klamath Basin for students from Eureka High School whose teacher had participated in a KREP summer institute. Several one-day workshops were also held for teachers over a period of several years.

E 4: Budget for $10,000 annually for school "mini-grants" to keep schools involved in river studies related to restoration. (6.1d)

The Task Force has made a small amount of money available to schools for this purpose, as reported in E-2.

Community Education

E 5: Provide educational forums for foresters. (2.A.1a, 2.a.1c, 2.A.1e)

The Task Force and USFWS staff have taken no action on this recommendation. However, the French Creek Working Group held focused discussions on road and forestry issues in that sub-basin.

E 6: Minimize impacts of suction dredge mining by educating miners as to their potential impacts on fish habitat. (2.B.1a, 2.B.2a)

The Salmon River Restoration Council has actively worked with miners on issues related to habitat impacts and poaching, using Restoration Program grants.

E 7: Sponsor local workshops for farmers and ranchers. (2.C.1a, 2.C.1g, 2.F.1b, 2.F.11)

Many educational forums have been held by locally based groups such as the Scott River CRMP. Annual Klamath Basin Symposia have been held which present opportunities for farm and ranch groups to find out more about fisheries and restoration. However, for the last several years the Klamath Symposium has been held in Klamath Falls, Oregon which discourages farmers and ranchers from the Shasta and Scott Valley's from participating. (See recommendation under AG-2 re: a forum on riparian easements.)

Recommendation: Join with other cooperators in sponsoring a conferences on riparian restoration and increasing efficiency of water use, including field trips to local project sites.

E 8: Support 4H programs related to riparian restoration. (6.2a)

The Task Force has taken no action to involve the 4H program specifically. However, local cooperators such as the Shasta CRMP have found strong support in riparian planting efforts from local schools. The Yreka High School HROP program has set up a native plant tree nursery to supply stock for riparian planting. Weed High school has helped with tree planting and monitoring of riparian recovery in the Shasta Valley and students from Sisson Elementary planted 2,500 trees on the A.C. Marion Ranch as well. Students from Dorris Elementary School have helped the USFS by planting trees in meadows at the headwaters of the Little Shasta River and Montague Elementary School planted trees on the lower reaches on the CDFG Wildlife Refuge.

E 9: Encourage development of interpretive programs at I-5 rest area and at the mouth of the Klamath at Highway 101 on the Yurok Reservation. (6.2b)

No action has been taken.

Recommendation: The Task Force should explore with the Yurok Tribe the creation of a model restoration demonstration project adjacent to the Klamath River Estuary along Salt Creek and lower Hunter Creek adjacent to Highway 101.

E 10**: Assemble a suitable display for county fairs. (6.2c)

Contractors have created two displays that meet this objective: one on the Restoration Program and the other on fisheries management. These have been used at fairs, malls, conferences, county offices and the Humboldt County Airport. This recommendation could be dropped because the objectives have been met.

E-11: The Task Force should maintain public education programs to reduce poaching. (4.5)

The Salmon River Restoration Council helped to substantially reduce poaching in the Salmon River Basin through a locally based education program. Presentations were made at two locations in the basin and at Sommes Bar. The enhanced awareness of residents

increases scrutiny of activities along the river in areas where fish are holding. It is no longer considered politically correct to hold salmon barbecues during summer featuring spring chinook.

E-12: Work with angler groups, resort owners, guides and county fish and game advisory committees to promote angler awareness of the Restoration Program's goals and objectives. (6.2d)

The portable information display has been used extensively for this purpose. Fish and Wildlife Service staff have also made presentations to Siskiyou County angler groups about the Program. The Restoration Program's newsletter also reaches some members of this constituency.

E-13: Conduct workshops for state, county and private road maintenance personnel concerning methods for decreasing sediment contributions from roads. (6.2f)

While the Restoration Program has not funded workshops of this nature, workshops of this type have been sponsored by the Scott Valley CRMP, the Salmon River Restoration Council and the Karuk tribe.

E-14: Join with the Klamath Basin tribes in sponsoring a conference about the Indian fisheries. (6.2h)

The Restoration Program funded the Native American Fish and Wildlife Society meeting in 1992. The program has also funded the Hoopa Tribe to conduct community education workshops.

PROGRAM ADMINISTRATION (PA)

PA Objective: Provide adequate and effective administration to successfully implement the Restoration Plan and Program.

PA 1: Involve interests or agencies not represented on the Task Force through several methods:

PA 1a. Decision-making: Task Force members should each try to reflect public interest and equity values in their decisions and not just the views of their organization. (7.1a)

There have been rare instances of where TF members have demonstrated flexibility concerning constituency's demands, in order to ease conflict among the membership, but such moderation has certainly not been the rule. See related findings in Chapters 2 and 6.

Recommendation: The Task Force has chosen to operate under a consensus rule, and therefore the Task Force should give it a strong chance to succeed. The easy issues have been addressed in the first half of the program, now the Task Force faces the harder issues of water and land use.

The Task Force should clearly put the issues of a well-functioning consensus process on the table and consider the following:

- Dedicating a workshop session in the near future to reviewing what a consensus process is supposed to be, and how it is supposed to function
- Hiring a professional facilitator on an "as needed" basis to work through chronic issues such as the Upper Basin Amendment, issues of tribal vs. agricultural water rights, alternative opportunities for water management
- Making a conscious effort to recognizing when issues need to be brought to a facilitator, and scheduling meetings for those specific purposes.
- Discontinuing use of Robert's Rules of Order and adopting a meeting style more consonant with a consensus process.

PA 1b. Technical Work Group membership: Appointments of technical specialists from other agencies or groups should be made to this Task Force subcommittee, which solicits and evaluate project proposals. (7.1b)

Done. See discussion of TWG's contribution to the Program in Chapter 6.

PA 1c. Public Involvement: Task Force should continue seeking public opinion at its meetings but also develop or support working groups to address different problems or problem areas. Coordinated Resource Management and Planning (CRMP) is another method to involve a wide spectrum of participants. (7.1c)

Done. The TF has tasked sub-committees on some matters, including Upper Basin Amendment and Mid-term Evaluation workplan development. The TF has encouraged and funded CRMP development in Shasta, Scott and Salmon sub-basins. See discussion in Chapter 6.

PA 1d. Cooperative or interagency agreements should be used to carry out restoration activities with non-Task Force agencies, which may be jointly funded. (7.1d)

Done. See discussion Chapter 4.

PA 2. Ensure the decision-making process will work well.

PA 2a. Arrange a training session for the Task Force in the consensus decision-making process. (7.2a)

No action taken. See recommendation at PA 1a, above.

PA 2b. As an option, use the "abstention" position when a member does not feel strongly enough about a proposal to vote "no," yet cannot support the proposal. (7.2b)

Abstentions occasionally voiced, but most commonly on non-substantive issues.

PA 2c. ****** Adoption of rules similar to the "T/F/W Ground Rules," under which each member agrees to work. (7.2c)

No action taken. Not necessary if recommendation at PA 1a is pursued.

PA 2d. Actively seek to negotiate a compromise that considers the needs of all parties. (7.2d)

TF has tried to negotiate compromise on substantive issues, but without success. Again, recommendation at PA 1a should be pursued.

PA 2e. Retain the consensus approach to decision-making. (7.2e)

Done. See discussion in Chapter 6.

PA 3. Assign Committees, made up of Task Force and Technical Work Group members or representatives, to monitor each of the Plan's major components: Habitat Protection and Management, Habitat Restoration, Population Protection (includes liaison with Council), Population Restoration, Education and Communication, and Administration. Committees shall report at each Task Force meeting about progress of policy implementation. (7.3)

The TF has done this a number of times on an as-needed basis, for example, for education and outreach; basin stock-group classification; Upper Basin Amendment issues; and the Mid-term evaluation workplan. The evaluation team does not believe that the TF needs a sub-committee for each and every Program element on an on-going basis.

PA 4. Formally evaluate plan and program progress and provide for amendments to the Plan.

PA 4a. A Program Review shall be done every 5 years during the Program's life span. The first Program Review should begin in 1995, followed by reviews in the years 2000 and 2005. (7.4a)

This Mid-term evaluation – the Program Review proposed above – was begun in 1997. The next review, to be begun in 2004, if the recommended five-year cycle is followed, will hopefully position the Program for a constructive Klamath Act reauthorization discussion.

PA 4b. An Annual Progress Report appropriate for public review shall briefly summarize the results of Task Force actions and projects to date, including an accounting of the costs. Both Federally and non-Federally funded projects should be included. (7.4b)

The KRFWO has done only two of the Annual Progress Reports recommended above, one for the years through FFY 91 and one for FFY 92. The reports, simple annotations of the *Long Range Plan's* step-down structure, were lengthy and repetitive.

PA 4c. Plan Amendments shall be provided for on a regular basis, as new information and conditions arise. Policy changes should be based on new findings in the text. (7.4c)

No Plan amendments were adopted during the evaluation period, although considerable effort was made by the TF to bring the proposed Upper Basin Amendment to an adoptable condition.

Recommendations: The evaluation team recommends that the revised Plan structure presented here be adopted and, further, that TF actions and Program grant agreements be coded using the new structure code and entered into a database for easier and more useful annual Program reports. See database discussion at the end of this chapter.

It is recommended that the sub-basin plans developed by the Shasta, Scott and Salmon River CRMPs be reviewed and adopted as quickly as possible.

It is recommended that the TF explore with the National Marine Fisheries Service at the earliest opportunity the possibility that the updated *Long Range Plan* be recognized officially as the guidance for the recovery of those basin salmon and steelhead species listed under the federal Endangered Species Act.

PA 5. The Program should continued to use a mix of USFWS staff, consultants, and TF committees to meet its administrative needs. Part-term Program evaluations should continue to include analyses of staffing and budget-related issues. (7.5)

The Program has used all its administrative options: USFWS staffing, consultants and TF committees.

PA 6. Ensure adequate funding is available to implement the Plan. (7.6)

The KRFWO and the TF have done a reasonably good job of identifying opportunities to bring new funds to bear on Plan implementation – including $1 million in Clean Water Act funds, Jobs in the Woods funds and others. The Clinton Administration's $100

million FFY 2000 Pacific Coastal Salmon Restoration Initiative represents an extraordinary opportunity for the KRFWO and TF to link up with key federal and State officials to explore how to target the new funds on Klamath *Long Range Plan* implementation.

Recommendation: The TF should approach the National Marine Fisheries Service and the California Resources Agency, at its earliest opportunity, with the proposal the *Long Range Plan* and Restoration Program be at least *tentatively* designated by the Service as the recognized program for the recovery of the basin's Endangered Species Act-listed salmon and steelhead -- in the same manner the Plan and Program were recognized earlier as the basin's water quality restoration platform by the State and federal Clean Water managers.

Whether or not such a proposed designation directs the Klamath River basin's share of the new Initiative's funding to and through the Restoration Program's grant process, entities using the new funds should be guided in their restoration projects y the provisions of the updated Plan.

PA 7. Promote and provide opportunities for information sharing.

PA 7a. Klamath River Fishery Resource Office should develop a catalogued technical library as the repository for completed project reports, historical and recent Klamath Basin references, and other pertinent restoration materials. (7.7a)

The KRFWO has developed a good technical library and it is being used by some Program cooperators and others.

PA 7b. Klamath River Fishery Resource Office should regularly produce a newsletter for continuous communication about ongoing and completed projects and their results, as well as other related topics. (7.7b)

The KRFWO did produce a newsletter during the early years of the Program. Because it was an official USFWS newsletter it required USFWS/Portland review. This agency review process frustrated the release of timely newsletter information. Further, the newsletter mailing list was generally restricted to people already interested in and knowledgeable about the Program. Ultimately the newsletter production gave way to what were perceived as higher priorities, including staffing the KFMC meetings.

The USFWS' Chehalis Fishery Restoration Program in Washington uses a contractor to prepare a Program newsletter which is then included as an insert in that basin's general circulation newspapers.

Recommendation: Explore the possibility of using the Chehalis model, using a consultant and newspaper distribution, for a revived Klamath Restoration Program newsletter.

PA 7c. [**New**] Use the Klamath Resource Information System (KRIS) as the Program's database for monitoring and evaluating fish population, fish habitat and water quality recovery efforts. (2.A.1d) (2.A.2a-d) (2.A.4a) (7.7c,d)

The 1991 *Long Range Plan* recommended that the TWG should evaluate and recommend a restoration data management software option, including the possible use of the U.S. EPA's water-body monitoring system, for the Program's use. In the years since, the TF has recommended and the KRFWO has obtained funding to develop KRIS. KRIS, which is now in place to serve the Program's restoration data management needs, can be used to understand CWE, monitor recovery of logged watersheds and to evaluate riparian conditions.

Recommendation: The TF should encourage, and the KRFWO should enable the dissemination of information concerning KRIS' use and its usefulness in maintaining the Program's restoration data. Program cooperators should be encouraged to contribute data updates, including photos, bibliographic materials, and other information elements to assure KRIS' preparedness to provide essential information concerning the progress and efficacy of the Restoration Program.

PA 7d. Support publication of the results of Task Force funded projects in the scientific literature, periodicals for the general public, and a Klamath River Fishery Resource Office Technical Report Series. (7.7e)

The way in which this (and the 1991 following recommendation concerning the dissemination of Program information through conferences and workshops) recommendation is being implemented on a regular basis is through the annual Klamath Basin Watershed, Restoration and Research symposia organized by the USFWS' Klamath Basin Ecosystem Restoration Office. The symposia produce abstracts of the many papers and posters presented and, thereby, contribute significantly to the accomplished of the 1991 Plan recommendations.

PA 8. Improve the understanding of agency jurisdictions. (7.8)

Parts (a) and (b) of this 1991 recommendation appear to have addressed the jurisdictional issues concerning the basin's Tribes' interest in fish and fish habitat vis-à-vis those of the State and federal agencies and the non-tribal fishermen. Those issues underwent significant judicial review between 1993 and 1995 and are now substantially settled.

PA 9. [**New**] The TF should actively confer with State and federal authorities responsible for stream protection in the basin, including the Department of Fish and Game and the California Department of Forestry and Fire Protection concerning the continuing need for improved stream protection standards under the provisions of the State Forest Practice Act, Fish and Game stream modification regulations (F&G Code Section 1600 et seq.) and other stream protection laws. See Chapter 1 and Appendix 5-1 for findings supporting this recommendation.

PA 10. Provide comments on proposed public and private projects within the Basin that have the potential for affecting the implementation and success of the Restoration Plan and Program. (7.11)

The TF and Project Leader have commented on numerous occasions on public and private actions within the Basin that have the potential for affecting the implementation and success of the Restoration Plan and Program. See Appendix 2-1 for details.

DATABASE MANAGEMENT

The USFWS operates two databases, one is administrative and the other which shows locations of restoration projects in ArcView. The former is the focus of most comments below.

Action minutes should also be done in the form of a database or at least a table with a column for goals and category of action from for the Long Range Plan or the new structure advanced above. A number field for each discreet agenda item and action would allow sorts and counts at a minimum.

With regard to the administrative database, the USFWS should continue to use a standard spreadsheet program such as Quattro Pro or Excel or upgrade to a more robust database such as Paradox or Access. Database programs are less subject to incorrect entries as they will not integrate changes that violate field definitions. Such databases are much more powerful in terms with regard to building queries and providing different types of reports. However, databases can present problems for non-specialists, so full instructions for maintenance and reporting would have to be codified in an instruction manual or an on-line help system.

The USFWS should maintain broad program categories in their administrative database (i.e. HP) but add a category to match each new consolidated recommendation category (i.e. M-1). The USFWS, Task Force and TWG need to ask which parameters are most important for program tracking and include fields in the database that allow the most powerful summaries, then include a column for each. For example, the sub-basin field should be maintained so that totals by geographic area can be summed. Other fields should include member and non-member status and matching funds (both direct and in-kind). Multiple fields make unique identifiers for each project, which help eliminate redundant entries.

To make data entry easier and decrease chances for errors some fields should be switched to a relational database. For example, instead of typing sub-basin names abbreviations can be used. A second database with a key is kept separately and can be used in tables when the full sub-basin name should be used for clarity. This type of system can be used for text fields that can cause clutter in the main database which will now be used primarily for program tracking.

The ArcView database created by Humboldt State University with direction from the USFWS and TWG needs to have a property owner data field. A similar request should be made of CDFG that also maintains a GIS for restoration projects. This field could be used to join both set. At present it is impossible to figure out where USFWS and CDFG projects have occurred on the same ownership and geographic positioning (GPS) is not sufficiently precise to answer this question. Fields should be added for riparian restoration projects which total lineal feet of banks planted and a summary value for planting success which can be updated over time.

Chapter 4

4. Determine the dollar value of non-federally-funded Restoration Program effort. Determine, to the extent possible, the amount of restoration funding leveraged by Task Force expenditures.

The task directs the evaluation team to survey the Klamath basin restoration community and collect information concerning the projects that each community entity has carried out, and the nature and amount of the funding that has become available to each such project. From the information assembled, the team was to determine the "total value of non-federal effort" made on behalf of the Program's objectives as a result of Program expenditures.

The team updated the list of 78 contact persons representing 50 Program cooperators by phoning each agency or individual for a correct contact name, address and phone number. Using that updated list we mailed out survey packets to each contact person in late 1997.. The packets contained individualized requests for information on any matching funds, in-kind contributions and leveraged funds, relating to each of the 217 Task Force-funded projects from 1989 - 1997.

Responses trickled in. Phone call follow-ups were made through the remainder of 1997. In the end, the team obtained reports from 15 cooperators representing 27% of all cooperators. They reported a total of $2,786,285 in in-kind, matching and leveraged contributions.

The reports received represent 59 of the 211 total Task Force funded projects for 1989-1997, or 28% of projects. Included also were reports on projects not funded by the Task Force, making a grand total of 68 projects.

The reports represent $1,546,334 in Task Force funding, or 17% of total.

The Data

	Fed Contributions	Non-Federal Contribs	Totals
Task Force-funded projects	788,026	1,241,843	2,029,869
Projects funded by other sources	318,400	438,016	756,416
Totals	1,106,426	1,679,859	2,786,285

Of the total $2,786,285 in outside contributions (which includes cash and in-kind), $1,106,426 came from federal sources, and $1,679,859 came from non-federal sources.

Of that same total, $2,029,869 was received for projects funded by the Task Force and $756,416 was received for restoration projects funded by other sources.

Non-federal contributions to Task Force-funded projects totaled $1,241,843. With Task Force funding on those projects totaling $1,546,334, the reports show an 80.3% non-federal "match."

Interpretations

Because we received responses from a fairly representative variety of cooperators – non-profits, contractors, agencies and individuals – it seems quite likely that this 80% match can be extrapolated to most, if not all, of the cooperators who did not report.

The percentage is probably actually substantially higher because:

a) Most cooperators who did report stated that they were unable, due to lack of time and record-keeping, to supply information on many of the sources and amounts of outside contributions they had received, especially in unofficial ways.

b) Other entities such as private, for-profit firms which are contributing in various ways, were reluctant to report, probably out of a fear of being held to the "rough estimates" at some future time.

c) There appears to be a large base of local support for restoration projects, which is almost impossible to track and quantify. For example, the help rendered by participating landowners is only barely touched on in these reports, likewise that from school children and staff.

Recommendations

These "match" reports were not easy nor quick for most of the reporting cooperators to generate. All of the cooperators who have received multiple grants from the Task Force and who are non-governmental made the statement that this constituted a substantial unexpected increase in their administrative costs, for which there was no funding and no time.

1- The grant agreements should *require* the grantees to include in their project completion reports any cash contributions to the project-in-question the grantees were successful in securing and should *encourage*, as well, the grantees to report any "soft" match - volunteer labor, supplies, etc. they were successful in securing for the project-in-question - or for their any of their Klamath Basin restoration efforts.

2- The KRFWO should give some serious thought to how they would like grantees to report their cash and non-cash project contributions, based on the use to which such information will be put and how, therefore, it should be formatted for maintenance in a database. [We recommend elsewhere the KRFWO retain a data manager.]

Figure 4-1. Resources Leveraged by Direct Task Force Investment, by Type of Contribution

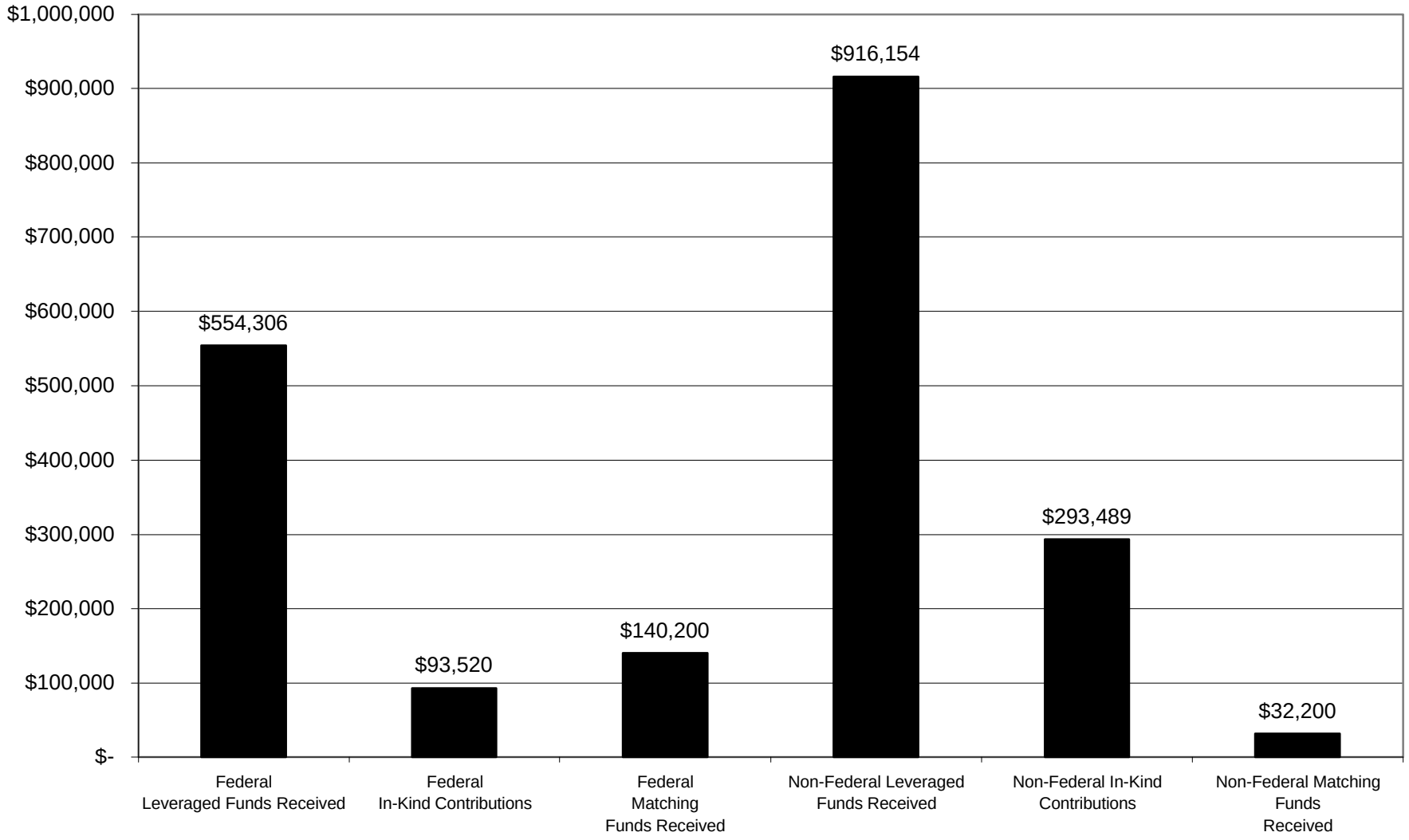
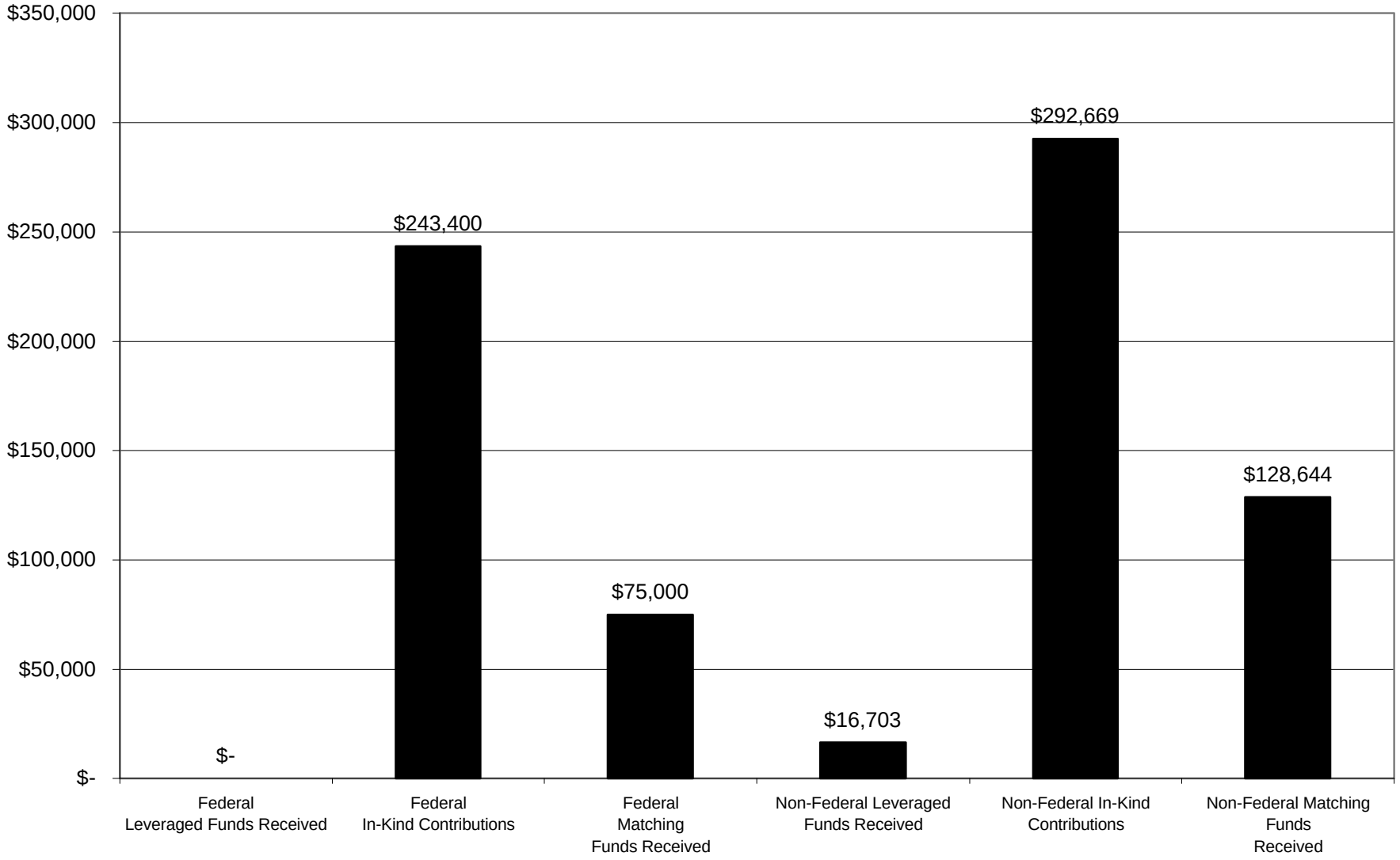


Figure 4-2. Resources Leveraged Indirectly by Task Force Investment, by Type of Contribution



Chapter 5

5. Assess anadromous fish habitat changes that have occurred since the Restoration Program was implemented. Qualitatively and (where possible) quantitatively assess anadromous fish habitat changes through Task Force and other agency on-the-ground projects. Qualitatively and (where possible) quantitatively assess anadromous fish habitat changes due to natural processes and land use. Evaluate the success of the Program's habitat restoration projects.

Substantial habitat change in various Klamath River sub-basins has occurred since the beginning of the Restoration Program in 1987. The discussion that follows will focus on the factors that limit fish production in the basin and the degree to which they have improved or worsened since 1987, particularly changes in stream channels and water quality. Improvements are attributed, in part, to in-stream habitat structures, bank stabilization and riparian habitat restoration. Elsewhere, serious degradation of aquatic habitat has occurred, some of it man-caused and some of it due to natural forces. Major fires, a prolonged drought, and damaging storm events have all occurred since the inception of the Restoration Program. These natural events often make it difficult to determine which negative impacts on fish habitat are natural and which are human-caused. The full benefit of restoration projects already implemented may take some time to be realized. In some sub-basins, restoration is hampered by poor watershed health. The findings are summarized below by basin region. Full documentation of the team's findings, including references and illustrations, are found at Appendix 5.

Lower Klamath Region

Channels of most Lower Klamath tributaries have continued to fill in as sediment yield in the watersheds remains high. Timber harvest in all Lower Klamath watersheds exceeds cumulative effect thresholds and all streams (except upper Blue Creek) have been severely damaged during the evaluation period. Clear-cut timber harvest in riparian zones on the mainstem of lower Blue Creek and the mainstem Klamath River occurred in 1998 in inner gorge locations. Aggradation in salmon spawning reaches can be expected to persist for decades. Fourteen of the seventeen major tributaries in this region go underground in late summer (Voight and Gale, 1998). An exception is upper Blue Creek, which is a U.S. Forest Service Northwest Forest Plan Key Watershed. Blue Creek has maintained its habitat quality and should provide gene resources for Salmonid recovery over the long term in the Lower Klamath Basin so long as this watershed remains protected.

The Yurok Tribe is working cooperatively with the Simpson Timber Company on the abatement of problems related to roads in McGarvey Creek. Similar Task Force-funded effort on Pine Creek in the Lower Klamath region did not succeed because sediment contributions from other areas within the watershed remained high (Hoopa Fisheries

Department, 1997). Timber harvest and road building continued on both Tribal and private lands in the Pine Creek watershed.

The Klamath River Estuary remains in good health (Wallace, 1998). Substantial benefits could be realized if the wetland areas adjacent to the estuary and along Hunter Creek could be restored. Agricultural impacts on lower Hunter Creek and Salt Creek have severely degraded wetlands and stream conditions. The stream channel of Salt Creek is so altered by eutrophication in reaches used for pasture that the channel fills in and blocks fish access to High Prairie Creek, where salmon spawning habitat is recovering.

Hopelain (in press) found that Hunter Creek has one of the lowest scores for habitat restoration success in northern California. High watershed disturbance is confounding habitat restoration efforts in the entire Lower Klamath Basin. The Yurok small-scale fish rearing program did not succeed in rebuilding salmon numbers because the stream habitat was too poor to support natural spawning.

Middle Klamath Region

While Key Watersheds on Six Rivers National Forest have shown improvement since 1987 many streams on the Klamath National Forest (KNF) deteriorated as a result of damage from the January 1997 storm. The storm caused $27 million in damage to roads on the Forest (De La Fuente, 1998). Roads, recent clear-cuts and areas burned in the 1987 fires had the greatest number of landslides. De La Fuente found that a rain-on-snow event triggered many natural landslides but that road failures and landslides in clear-cut areas added to sediment yield substantially in some watersheds. Not all watersheds that experienced wildfires had high storm-related stream damage. While Clear Creek and Dillon Creek were both partially burned, they have maintained high fish habitat and water quality values.

Many watersheds in the Middle Klamath region are over their cumulative effects thresholds because of extensive timber harvest and high road densities. This combination of factors appears to have led to increased peak flows and sediment transport in some watersheds, which caused a substantial setback for instream restoration projects. The structures in Elk Creek had extremely high failure rates. Other sub-basins such as Indian Creek and Beaver Creek showed a high degree of variability with regard to instream structure damage with some reaches seriously impacted and others surviving well. The TF-funded fish screen and fish passage project on lower Horse Creek was completed just before the January 1997 storm and was almost completely destroyed by high flows following the storm. The storm, which had a recurrence interval of less than 10 to 35 years, caused a high degree of damage to Middle Klamath region streams generally. Some of the damaged streams had been providing critically-important cold water refugia at their mouths and in lower reaches (Belchik, 1997). De La Fuente noted that water temperatures in Elk Creek, a Key Watershed, had risen substantially as a result of the flood impacts.

Olson (1997) demonstrated that instream structures in Indian Creek and Elk Creek were having the desired effect of diversifying habitat. The structures in these streams were attracting several age classes of steelhead, coho juveniles and chinook, whereas the unaltered reaches had primarily steelhead young of the year. The January 1997 storm caused the scouring of 446 miles of stream channels on the Klamath National Forest, much of it in the Middle Klamath region. The benefit of instream investments since 1987 in Middle Klamath Basin tributaries was substantially lost to the storm because of poor watershed health. Camp, Bluff and Red Cap Creeks largely avoided flood damage because of improving watershed conditions.

Salmon River

Although the Salmon River was extensively burned in 1987, it has maintained its high habitat quality. Some increase in fine sedimentation resulted from the fire disturbance but several years of drought (1987-1992) allowed the watershed to stabilize. The 1997 storm caused some damage in the upper South Fork, but overall damage was light. Some riparian projects and slide stabilization efforts in the South Fork Salmon River were lost to flood damage. Cooperative efforts by local residents, organized by the Salmon River Restoration Council, likely limited flood damage to roads (Peter Brucker, personal communication). Watershed residents patrol the sub-basin's road system during major storms to clear culverts of debris, to prevent stream damage.

De La Fuente and Haessig (1994) found that the amount of roads in the Salmon River watershed as of 1989 could be expected to trigger twice the amount of sediment than would be expected under pre-disturbance conditions in the event of a 100-year interval storm. Major investments in road-related erosion control are urgently needed in the Salmon River Basin.

Scott **River**

Riparian conditions on private lands in the lower Scott Valley have improved as a result of restoration efforts. Cattle are excluded from over 13 miles of private-land streams in one contiguous reach of the valley. Unfortunately, the 1997 storm and the following use of heavy equipment in stream channels caused widespread damage to riparian areas and the channel morphology in the East Fork Scott, Shackleford Creek, and Mill Creek. It is not possible to characterize the net change in riparian habitat from restoration versus these damaging factors at this time. One reason for that is that riparian planting projects have yet to mature. Bank stabilization projects using a combination of rip-rap and living materials withstood flood damage well and show promise for stabilizing banks and improving fish habitat.

The prolonged drought in the late 1980s and early 1990s decreased the available fish habitat in this sub-basin. Stock-water systems, alternatives to allowing livestock to enter the stream, have been installed on a number of ranches. These systems show potential for water conservation, but only fall flow issues for adult chinook salmon passage have been addressed by the Scott CRMP so far. Summer low flow conditions, caused in part by

agricultural diversions, continue to be severely limiting for juvenile salmonids in the sub-basin.

The French Creek watershed has been the focus of cooperative efforts by the local CRMP, private landowners and the County of Siskiyou. A decreasing trend in fine sediment in French Creek shows encouraging signs that erosion problems there are being abated. The January 1997 storm, however, caused major damage to lower Scott River tributaries on Klamath National Forest - Kelsey Creek, Middle Creek and Thomkins Gulch. The loss of cold water from these tributaries may impact Scott River salmon and steelhead populations since refugia at the mouths of these streams may be critical during summer low flow periods.

Shasta River

Riparian restoration on the Shasta River is more challenging than some of the other sub-basins because of poorly drained and/or alkaline soils in some reaches. Over a dozen landowners have participated in voluntary riparian restoration projects, and some, such as the Freeman Ranch project, have provided substantial benefits to fish habitat. Actions by two landowners, however, point up weaknesses in riparian zone protection under existing laws. The Shasta River at Highway 263 was channelized and rip-rapped with asphalt after the January 1997 storm. The riparian zone of the Shasta at its convergence with Big Springs Creek was bulldozed during the evaluation period.

The drought compounded water quality problems in this sub-basin. Tailwater recovery projects are showing significant promise for improving water quality, but wider issues of improving the efficiency of water use have yet to be addressed. Pulse flows have been used in recent years to decrease the impacts of summer water quality problems on salmon and steelhead. One diversion dam has been replaced by a pump on the Shasta River thereby facilitating fish passage and decreasing biological oxygen demand.

Restored riparian areas, cattle exclusion fencing, stock water access gates, and bank stabilization projects in the Shasta River Basin all survived the 1997 storm mostly intact.

Mainstem Klamath and its Estuary

The mainstem Klamath has shown a *substantial* decline in habitat quality since the inception of the Restoration Program. Problems related to temperature had been recognized previously, but critically low dissolved oxygen levels were discovered in the summer of 1997. The USFWS measured dissolved oxygen at 3.1 ppm at the Big Bar trap below Orleans. Such oxygen levels are lethal for salmonids. Belchik (1997) found that there were few viable cold water refugia for juvenile salmonids between Iron Gate Dam and Seiad Valley. Some of the streams that earlier provided critical refugia suffered substantial degradation from the January 1997 storm. The loss of cold water from these National Forest tributaries further exacerbates the high water temperature problems in the mainstem. Major influxes of sediment continue to pulse through the mainstem, restricting pool depths and temperature stratification. Precipitously declining adult summer

steelhead populations in all Klamath tributaries, and the loss of steelhead runs at Iron Gate Hatchery, indicate severe problems with ecosystem function on the mainstem Klamath River.

The Klamath estuary seems to have maintained its habitat quality and is not showing indications of poor water quality or substantial aggradation (Wallace, 1998).

Upper Klamath Region

While recent efforts have begun to restore wetlands, marshes and riparian areas in the Upper Klamath Basin, it is too soon to discern overall habitat trends in this sub-basin.

Chapter 6

6. Examine organizational structure and behavior of the federal advisory committees, subcommittees and the Klamath River Fish and Wildlife Office

The evaluation team undertook Task 6 primarily through the use of the interview process described in Chapter 2. Claims and counter-claims about the strengths and weakness of the Program – about the unreasonable cost of Program administration, say, or a perceived bias in the award of restoration grants - were then checked against the available data concerning the actual administration costs or the actual grant project selection process.

Organizational and Political Aspects of the Klamath Fisheries Restoration Program

Finding: After nearly twelve years of work, the Task Force and the Restoration Program are mature enough to be evaluated in terms of their procedures, administrative structure, decision-making, and public reputation. While the program has many strengths, some fundamental weaknesses are evident.

Task Force structure

The Task Force has had more than a decade of experience helping to develop the Restoration Program. A variety of procedures have been put in place to:

- Appoint multi-interest, multi-agency Task Force members
- Adopt an annual budget providing for restoration projects and administrative costs
- Select, administer and permit restoration projects
- Appoint and interact with a Technical Working Group to provide technical analyses and recommendations
- Administer an office and staff
- Arrange logistics for meetings, prepare agendas and minutes
- Prepare Annual Reports and audits as required
- Outreach and interact with other interests in the Klamath Basin

Beyond administrative tasks, the Task Force has also had twelve years to form its own working style, to express fundamental positions on issues, and to develop a reputation with respect to residents, local governments and interest groups.

Respondents generally agree that the start-up problems of program administration have been worked out, and that the Task Force procedures are institutionally mature. More than ten years into the program a series of central issues have now become evident which affect the Task Force and its ability to fulfill its mission.

Consensus as a decision-making process

Finding: There is no consensus on the success of consensus as a decision-making procedure. Opinions are strongly divided as to whether it is a roadblock to meaningful restoration efforts, or the only way to make progress with a divided membership.

The Klamath Act of 1986 was unique among fisheries restoration programs in mandating, in the language of the statute, a consensus process for decision making.[1] Indeed, the requirement was rare for any federal program. Amendments to the Act in 1988 subsequently deleted the explicit language mandating consensus for the Task Force (but not for the KFMC), and left it to the Task Force to establish its own procedures.

Respondents do not recall the Task Force publicly discussing whether or not to continue under rules of consensus following the 1988 amendments; they simply carried on as though the mandate were still in place. Task Force operating procedures were not amended to reflect the 1988 Amendments and they still state: "Should any member object to a motion, that motion will have failed, in accordance with U.S.C. 460ss-4(f)(1)". Several Task Force members continue to contend that consensus is required, and the TF has continued to act under a consensus system.

How consensus is supposed to work

In contrast to a majority vote system, decisions under a consensus process are intended to be made through an iterative process that builds on points of agreement between parties that disagree. Decisions do not always meet with complete unanimity, but acceptable decisions are found so that everyone is at least willing to go along (Gellerman, 1981). Under consensus there are no “no” votes. Indeed, a single “no” vote is considered a veto.

The expectation under consensus is that sufficient time will be spent working through divisive issues so that agreements are found that would not otherwise emerge from a majority vote system. Decisions reached under consensus are expected to have a broader base of support and stronger commitment for implementation, since there is buy-in from all parties.

The Task Force’s experience with consensus

Those who were involved in the development of the Klamath Act indicate that the reason for mandating consensus was to protect minority interests. The intent was to bring all stakeholders to the table, but since many of these interests were directly competing with one another for fish and/or water they feared they would be consistently overruled in a majority vote system.

[1] “Sec.4 (f) Transaction of Business.-(1) Decisions of the Task Force - All decisions of the Task Force must be by unanimous vote of all the members.”

Task Force members and others are strongly divided as to the success of consensus as it is currently implemented by the Task Force. Some respondents are staunch defenders while others believe the process is entirely dysfunctional.

Successes: Proponents believe that consensus works about 95% of the time and offer the following in support of the process:

- Protects minority interests: Consensus provides an important equalizing tool that protects minority interests which would otherwise be overpowered if they did not wield the threat of the veto. The threat of veto forces consideration of all viewpoints.

- Improves communication: Consensus enhances communication between stakeholders by requiring the group to work through issues. Groups learn to better understand opposing positions and find ways to meet each others needs.

- Keeps issues on table: Consensus guides the subjects brought to the table. If issues are at the table long enough, eventually progress is made.

- Budget indicates success: The proof that consensus works is that an annual budget has always been passed approving a mix of restoration projects.

Credit for the success of the consensus approach is especially due to the late Nat Bingham, who through the quiet strength of his personality, dedication, and experience with people from all viewpoints was able to coax consensus from fearful and resistant interests. Through his force and skill the process worked as well as it has.

Failures: Critics of the process find the following:

- The process blocks significant decisions: As applied by the Task Force, the process is dysfunctional and has stymied any significant progress toward meeting the needs of the restoration program.

- The consensus process is applied incorrectly: The Task Force does not know how to use consensus properly. Specifically:

  - No facilitator: Consensus relies on the availability of a neutral facilitator to help the group work through issues. The Task Force has never utilized a facilitator and the Task Force Chairperson (traditionally a voting member from the USFWS representing the Secretary of the Interior) is inappropriate to fulfill the facilitation role. Although individual personalities have been instrumental in bringing the TF as far as they have, it cannot be expected that TF membership will always contain this special kind of individual.

- Robert's Rules of Order are inappropriate: Using Robert's Rules of Order as a parliamentary operating system is inappropriate for consensus because it based on a majority vote system of motions, seconds, amended motions, etc. This is the wrong parliamentary structure for working through issues in search of common ground.

-Parties don't play fair: Parties do not participate fairly for consensus to work. Issues need to be put on the table early enough so the group can work through them, rather than holding one's cards close to the chest, and using the power of the veto to blow up an agreement at the end.

- Abuse of veto power: Divisive issues are no longer brought to the table since it is assumed there will be no progress. Because parties wield the veto power to protect their own political self-interests, no substantive decisions can be made.

- Weak decisions: Decisions reached by the Task Force represent the "lowest common denominator" because the group gets exhausted trying to do any better. The Task Force lacks the skills and leadership necessary to seriously work through issues in search of common ground. Motions are attempted, fail and the issue is either dropped, or the motion is reworded to a bland, non-action forcing version.

RECOMMENDATION: The Task Force has chosen to operate under a consensus rule, and therefore the Task Force should give it a strong chance to succeed. The easy issues have been addressed in the first half of the program, now the Task Force faces the harder issues of water and land use.

The Task Force should clearly put the issues of a well-functioning consensus process on the table and consider the following

- Dedicating a workshop session in the near future to reviewing what a consensus process is supposed to be, and how it is supposed to function

- Hiring a professional facilitator on an "as needed" basis to work through chronic issues such as the Upper Basin Amendment, issues of tribal vs. agricultural water rights, alternative opportunities for water management

- Making a conscious effort to recognizing when issues need to be brought to a facilitator, and scheduling meetings for those specific purposes.

- Discontinuing use of Robert's Rules of Order and adopting a meeting style more consonant with a consensus process.

Funding restoration projects

One of the primary responsibilities of the Task Force is to advise on the distribution of a $1 million annual federal appropriation for purposes that further the goals of the Act. Toward this end the Task Force has developed a project cycle that solicits, evaluates and awards funds to restoration projects. In addition, all administrative costs for the program for both the KRFWO and the Regional Office in Portland, Oregon are supported by the Program appropriation.

a. The project cycle

Finding: The project funding cycle consumes at least a quarter of the Task Force and TWG's time for project selection, and at least 80% of KRFWO restoration staff time for permitting and administration. Requirements for contract writing, environmental permitting and monitoring of funded projects are significant. Focused effort should be put into working with the Corps of Engineers and other permitting agencies to obtain a *general* permit for restoration activities in the basin to streamline the permitting process.

As currently designed, the project funding cycle includes the following steps:

1) Adopt project criteria: Categories for desired projects are proposed by the Technical Working Group and adopted by the Task Force prior to the call for projects. Based on funds available, the Budget Committee of the Task Force sets a funding cap for each category.

2) Public call for projects: A public invitation to submit proposals is sent to a broad-based mailing list and advertised in various newspapers.

3) Staff review: Task Force staff collate submitted proposals and conduct a preliminary screening. Materials are organized and distributed to TWG members.

4) TWG evaluation and ranking: TWG members evaluate the technical merit of the proposals and rank the projects according to a pre-established point system.

5) Adoption by the Task Force: The Task Force reviews the TWG recommendations and approves projects in rank order until the funding cap for that category of project is reached. Rules govern the distribution of leftover funds within categories.

6) Grant agreement administration and permitting: Funded projects must meet federal procurement regulations and obtain environmental permits. Following selection by the Task Force, KRFWO staff works with project cooperators to develop grant agreements and obtain permits. Because projects often involve work in and around stream channels the permitting process can become very extensive and require

review by the Army Corps of Engineers, the Department of Fish and Game, compliance with archaeology regulations, state and federal Endangered Species Acts, as well as other federal procurement requirements.

Any process that offers public funds will be subject to pressures that can distort fair distribution. During the first half of the program the Task Force faced a variety of such pressures including:

- A voting system that allowed members of the TWG to support their own projects rather than objectively ranking the technical merits of all applications. Project applicants could rank their own projects high and competitors low, regardless of technical merit.

- Lack of clear categories, criteria and point system for ranking projects.

- Decision-making by the TWG on a political rather than technical basis, even though the TWG is supposed to leave politics to the Task Force.

- Disagreements and jockeying at the Task Force regarding the use of "remainder" funds within categories.

Changes in voting rules have largely resolved these problems, and the current approach for evaluating projects is now perceived as reasonably fair and sensible. Current rules prevent project applicants from voting on their own proposals. TWG members can still distort the system by ranking competitors proposals low, but group pressure is discouraging the practice and emphasizing objective professionalism.

By 1997 the process had evolved to where the participants regarded it as fair.

b. The source and quality of restoration projects

Finding: Restoration projects are solicited through an annual public call for proposals but projects submitted do not always target Task Force priorities.

More outreach and coordination with potential cooperators is needed before project submittal. A conversion to a Request for Proposal (RFP) process for high priority projects should be considered .

Although project selection is now considered to be functioning fairly, some problems have been noted regarding the type and quality of projects submitted to the Task Force. Concerns include:

- Shot-gun rather than targeted RFPs: To date the TF has solicited proposals from the interested public giving only general guidance as to types of projects the Task Force

would prefer. While this encourages innovation by applicants, it does not necessarily result in proposals that address the highest priorities of the Task Force. Proposals are submitted based on the priorities of the applicant – that is, projects they may already be working on, projects that benefit their own geographical area or fit a political need. These may not match the priorities of the Task Force either geographically or in subject matter.

Several respondents have suggested substituting a targeted Request for Proposal (RFP) process to solicit proposals for specific tasks. This would require establishing a process for 1) identifying the high-priority needs of the Task Force (discussed in a later section) and 2) designing and writing the terms of RFPs.

c. Task Force capture of restoration funds

Finding: Eighty-five percent of the Program's restoration funds have been awarded to entities associated with Task Force member agencies, including the CRMPs and RCDs. In part this reflects a trend for "self-dealing" the money, but it also reflects the broad-based membership of the Task Force.

In order to create a broader public constituency for the Task Force, more effort should be put into developing targeted projects within the broader basin community.

Close review of the KRFWO restoration project administrative database suggests that the Program's awarding of funds has progressed roughly as follows:

- The first stage of the Program involved several non-recurring, "front-end" investments like development of the *Long Range Plan*, the salmon-watershed classroom curricula - even the traveling Program information kiosk - carried out by non-Task Force cooperators.

- While the *Long Range Plan* makes clear that the Shasta and Scott rivers have the highest restoration potential in the basin, these are private-land agricultural areas and the landowners were neither inclined to, nor organized for early Program participation.

- As the Shasta and Scott valley communities deliberated their interest in the Restoration Program, public Task Force entities like the Klamath National Forest, California Department of Fish and Game and the Tribes had the opportunity to accelerate "off-the-shelf" restoration efforts, including habitat assessments, fish screen maintenance and small-scale fish rearing projects.

- When the Shasta and Scott river valley communities finally did organize for restoration action (1993-1994 period) they found a Task Force eager to fund their private-lands projects, precisely as contemplated in the *Long Range Plan*.

- Exclusion of non-members: Several respondents noted the "group capture" of grant funds by TF, TWG and CRMP members to the exclusion of outside individuals or groups. Evidence includes 1) the drop-off in number of grant proposals submitted by outside parties as compared to Task Force members - after one or two rejections, individuals and outside groups become discouraged by the process; and 2) that the funding pattern indicates 85% of Task Force funding has gone to member agencies and groups - if the CRMPs are considered as being members of the Program's "family".

  A counter-argument has been offered that all the major stakeholders in the Klamath Basin are already represented on the TF and TWG membership, and that a large "excluded" public community does not, in fact exist - especially now that the CRMPs and Tribes are charged with organizing community-level. While it is difficult to document whether exclusion is real or not, it should be a subject for Task Force discussion in terms of whether the Task Force is adequately building a broad, supportive public constituency.

  - Active public outreach to generate better proposals: Respondents suggested that staff of the Task Force and CRMP coordinators should conduct more community outreach to potential applicants during the year to help them develop more focused projects. This would help the Task Force in targeting needed priorities and build a larger public base for the program. Workshops were also suggested to help applicants write better proposals.

d. Accountability: completing the loop

Finding: Although the Task Force and TWG put high priority on evaluating and awarding projects, they pay little attention to project findings and results.

There is a notable lack of feed-back in the project cycle after projects are selected. Significant time and energy is expended in the front-end process of soliciting, ranking, selecting and administering project contracts. But feedback regarding the findings and results of completed projects is almost entirely absent.

Failures occur in the following areas:

1) Poorly implemented formal process for Task Force and TWG to review final reports: Final reports submitted by project cooperators are collated annually by the KRFWO and distributed to various libraries and reference services. Memos are sent to members of the TF, Klamath Council and technical support groups providing abstracts of the final reports and inviting members to request full copies. Typically, very few such requests are made.

Several respondents noted that the reason for this failure is that the Task Force is not interested in technical information, and doesn't want to spend time during meetings discussing project results. A summary from staff or TWG provided by request to

individual interested TF members might be sufficient. Some TWG members suggested that the TWG annually dedicate a meeting day to hearing presentations from cooperators, but others felt that the TWG was already overburdened with existing tasks.

2) Lack of standards for final reports: Although progress reports and final reports are required of project cooperators, and reporting requirements are contained within each signed agreement, there are no explicit standards regarding the rigor of analysis and style for the reports. The quality of final reports varies from cursory summaries to formal scientific journal caliber.

It would also be useful to examine the standards required of cooperators for complying with the terms of their agreements. Current standards only require a showing of "reasonable effort" in producing the work, which leads to wide variation in interpretation and makes it difficult to enforce against poor performance.

3) Too much time allowed for report completion: KRFWO staff is responsible for administering funded projects and obtaining final reports before the five-year grant agreement period expires. Grant agreements provide for a 10% hold-out of final payment until a final report is submitted.

The five-year period may be too long for projects that can be completed in less time, and the 10% holdout may be too small an incentive. Delayed reporting requirements allow cooperators to procrastinate, thereby forgetting results and losing motivation to write about an old project when they now are involved in new ones.

4) Comments from Program cooperators: Although not a focus of this evaluation, anecdotal reports from project cooperators indicated some frustration with the project administration from their side. Complaints included excessive permitting requirements, and excessive bookkeeping and reporting requirements.

Interactions between the Task Force and the Technical Working Group

Finding: The TWG has been assigned increasing workloads by the TF but has denied concurrent logistical support. An exhausting meeting schedule has led to drop-off TWG participation.

Each Task Force member appoints a counterpart to the Technical Working Group. TWG members contribute their time and expertise; slightly more than half of the current TWG members have salaried employment that supports their attendance. Other members must forfeit work days to attend.

The responsibility of the Technical Working Group is to assess issues assigned by the TF from a technical perspective. The workload of the TWG has increased continuously. The Task Force continues to add controversial issues to the TWG's agenda, in some cases as a method for deferring contentious discussion at a TF meeting. These new issues add to the

existing list of TWG priorities and push some items to lower priority. In addition, the scoping study for the IFIM flow needs study called for in the *Long Range Plan* has required numerous extra meeting sessions during the past year. This has exhausted the ability of several members to attend and participation has decreased. With completion of the scoping study the TWG intends to drop back to quarterly meetings in an attempt to restore attendance, and it plans to make greater use of sub-committees.

Lack of clerical support: Particularly vexing to many TWG members is the lack of clerical support provided for their work. Extensive notes and working papers are generated during TWG meetings. A recent request by the TWG for clerical support was rejected by the KRFWO following a discussion concerning the qualifications of staff needed for the task. The KRFWO contends they do not have room in the administrative budget to add clerical support to the TWG. In response, TWG members have questioned the need for four KRFWO staff members to attend each Task Force meeting, and have suggested diverting one of the support staff for use by the TWG.

Interactions between the TF and KFMC

The Klamath Fishery Management Council (KFMC) was established concurrently in the Klamath Act with the Klamath Task Force. In contrast to the Task Force's mandate for restoration, the KFMC was charged with making recommendations regarding river and ocean harvests. Recommendations from the KFMC are to be forwarded to the fish and game agencies of California and Oregon, the tribes, and the Pacific Fishery Management Council for use in harvest management decisions. The Act expressly provided for overlapping membership between the KFTF and KFMC with the expectation that the two groups would cooperate in exchanging information and arriving at coordinated policy decisions.

The issues and decisions of the KFMC are outside the scope of this evaluation. However interviews were conducted with ten KFMC members regarding the organizational behavior and coordination between the KFMC and the Task Force. Appendix 2-2 summarizes the responses of KFMC members. The perceptions of KFMC members regarding inter-group coordination include:

- *Communication should be improved*: There is a general sense that inter-group communication is not as close as it should be. In spite of overlapping memberships, periodic joint meetings and the Three- and Five Chairs agency coordination, the transfer of information between the two groups is felt to be weak.

Some KFMC members feel that poor communication has resulted in misdirected decisions by the Task Force. Some respondents felt that the non-KFMC Task Force members do not fully appreciate the role the KFMC must play and the hard decisions it must make, especially when new TF members come on board. The upstream-downstream tensions of the Task Force are a frustration to KFMC members, who perceive that upstream interests do not understand the severe economic impacts on the sport and commercial fishing

industry. If upstream interests better appreciated downstream hardships, they might modify their rigid positions regarding land and water use.

It was noted that KFMC staff gave substantial attention to TF and CRMP constituents regarding harvest and recruitment issues on the Shasta River. This raised the issue whether CRMP funds should be directed to harvest issues at all when they are outside the TF's work agreement funding the CRMPs.

- *Concern re: role of TWG and KFMC*: The dominant role of the TWG in TF decision-making was cited as affecting inter-group coordination. The strong role of the TWG, particularly in budget recommendations, is seen as pre-empting authority and judgment that should rest with the TF and KFMC. Suggestions were made that the technical teams of each body should meet jointly to provide more KFMC input into budget prioritizing.

- *The KFMC has good internal working dynamics*: The judicial resolution of tribal fishing rights relieved the KFMC of an internally divisive issue, and since then the KFMC is felt to have evolved into a well-functioning group. Some suggested that the dynamics, civility, and spirit of give-and-take practiced in the consensus process of KFMC might serve as a constructive example to the Task Force. KFMC members particularly appreciate the facilitation skills of the current chairman.

<u>Specific issues</u>

- *Funding routine monitoring*: Strong sentiment is found among KFMC members regarding the poor funding of the fish monitoring needed for basic management recommendations. The Klamath Act calls for the Secretary of the Interior and the California Department of Fish and Game to "furnish the Council with relevant information concerning the Area", but KFMC members are increasingly impatient with Fish and Game, the US Fish and Wildlife Service and the Bureau of Reclamation for not providing sufficient funds to meet this information requirement.

The lack of funding for basic escapement and recruitment data drove the KFMC to request money from the Task Force. Their request was denied. This was disappointing to some who felt it was one of the few requests KFMC had ever made to the TF and that it should have been granted. Others oppose the principle of committing Task Force money for routine monitoring since that draws away from the restoration program.

It was noted that data collected for the IFIM study does little good for the KFMC since it is not species-specific.

- *Hatchery policy*: Improvement in hatchery operations was noted as an example of successful interagency coordination brought about by the KFMC, TF and the Three Chairs. KFMC members feel hatchery issues should be addressed jointly since hatcheries affect both management and restoration.

• *Other issues*: Additional comments were made by KFMC members regarding water issues, restoration policies and high administrative overhead costs, but these were directed more generally at the Restoration Program as a whole rather than specific KFMC-TF coordination.

Conclusions and recommendations regarding TF/KFMC relations

The interrelated responsibilities of the KFMC and Task Force call for a high level of coordination to meet the goals of the Klamath Act. In practice, however, the natural tendency is for each group to go its own way, one focused on harvest and the other on disbursing funds for restoration projects. Each group develops its own working style, jargon and intra-group dynamics, even with the overlapping memberships.

The test of whether coordination between the two groups is "working" or not is ultimately whether decisions are made by either group that flagrantly frustrate the goals or programs of the other. This was not a complaint of either TF or KFMC members. Frustrations were expressed by both groups with the general constraints of the Program *as a whole*, both financial and political, but more in the vein that "things could be better", and not that "we're working at cross-purposes".

Existing mechanisms for fostering interchange already take advantage of the obvious methods: joint meetings, high level staff communication, overlapping memberships and status reports at each other's meetings. The opportunity is clearly there for interested members of either group to find out what is happening in the other. The key, of course, rests in the interest level of the individual members to understand and take into account the issues of the other during decision-making. This is a function of the commitment of individual appointees rather than something that can be solved by institutional re-arrangements.

With respect to joint meetings between the KFTF and KFMC, a review of the minutes of joint meetings indicates that in general the joint meetings are not "action" meetings for either group. Rather, the joint meetings are largely informational, listening to summary reports from various third parties. Adding more directed agenda items, aimed at stimulating debate between the two groups and perhaps resulting in joint statements -- rather than passive listening to third-party presenters -- may promote better interchange.

Specific recommendations for further improving communication include:
1) Joint meetings between the technical groups of KFMC and KFTF to improve understanding of mutual issues and funding

2) Identification of a class of issues that should be mutually considered by both groups before actions are taken, such as hatchery issues.

3) Joint discussions regarding funding of ongoing monitoring needs, with the goal of developing a joint position statement to involved agencies.

Administering the Task Force: The KRFWO and RO

Supporting the costs of program administration is never as popular as promoting program achievements. A series of factors however appear to be causing a higher- than-expected negative perception of Klamath program administration.

Finding: Program administration is perceived as weak and overstaffed, but in fact staff workload is high for the volume and dollar value of projects administered. Differences in expectations and lack of communication between KRFWO staff and Task Force members exacerbate negative perceptions.

Where the administrative money went: 1989 - 1997

Of the $1 million made available to the Restoration Program each year over the period of this evaluation (Figure 6-1):

- 40% went to program administration (KRFWO and RO)
- 8% to program planning and coordination, and
- 52% to restoration projects

Portland Regional Office: The RO has deducted approximately $80,000 annually for overhead costs for the Task Force program. Both the amount and the bookkeeping system have varied over the evaluation period[2], but the average is around $80,000. Members of the TF and TWG indicate they do not receive any accounting of how this money is spent and do not perceive any "service" derived from the funding, other than attendance at TF meetings by the USFWS Chairman. The amount is perceived to be excessive given the lack of accounting or justification.

Klamath River Fish and Wildlife Office, Yreka: Office costs attributed to support of the Task Force at the KRFWO have varied from approximately $178,000 to $344,000 annually, with a current level around $320,000. Salary and benefits for KRFWO staff account for about 60 - 70% of this amount. Travel is the second largest category (about 15%), with vehicle leasing, space leasing, utilities, computers, supplies and other miscellaneous accounting for the rest. (Table 6-1).

[2] Prior to 1997 the KFO received $1M and paid RO overhead out of that amount. Since 1997 the RO has deducted overhead costs before transferring funds to the KFO account. See Figure 6-2.

Figure 6-1. Summary of Restoration Program Expenditures 1989-1997

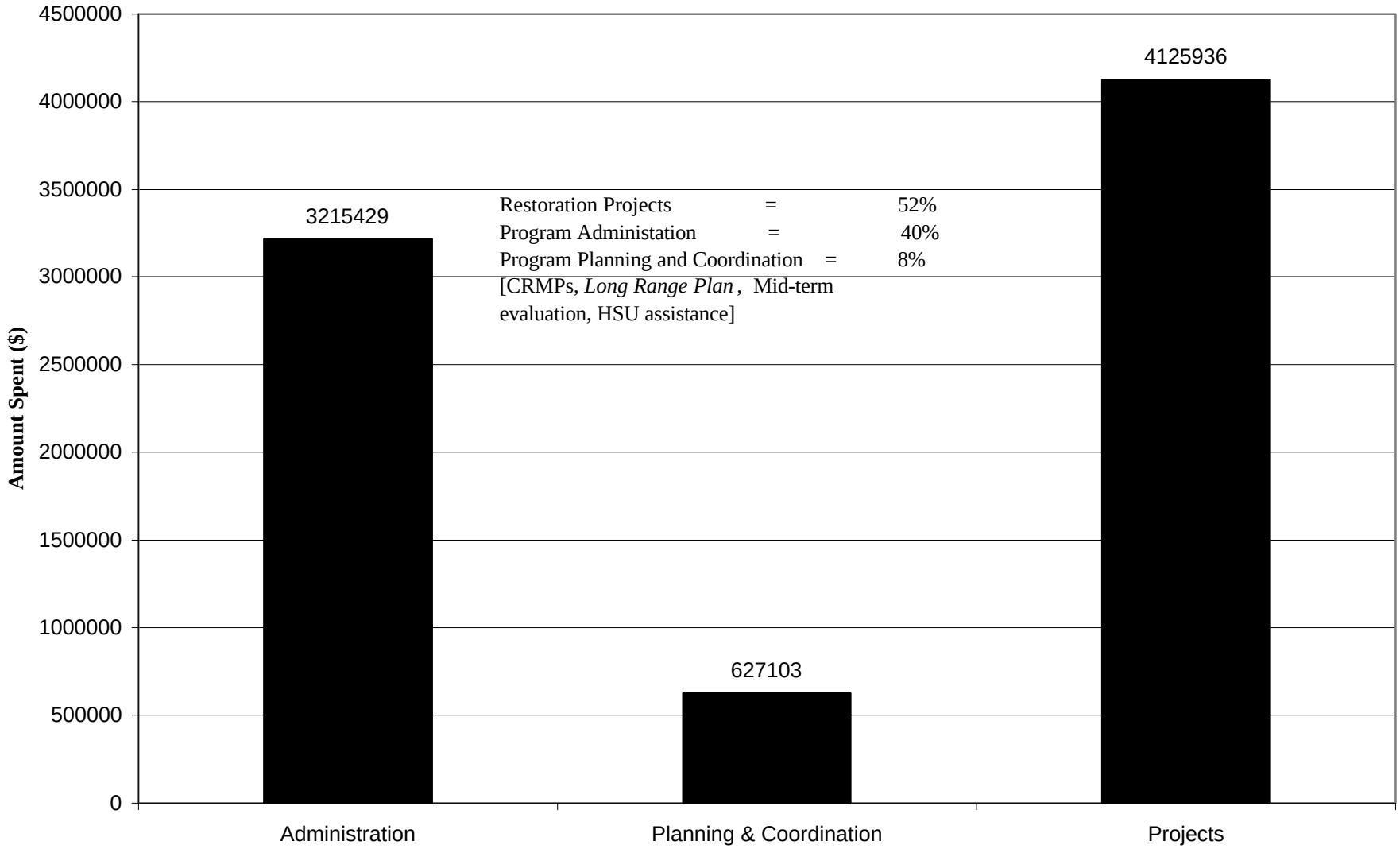
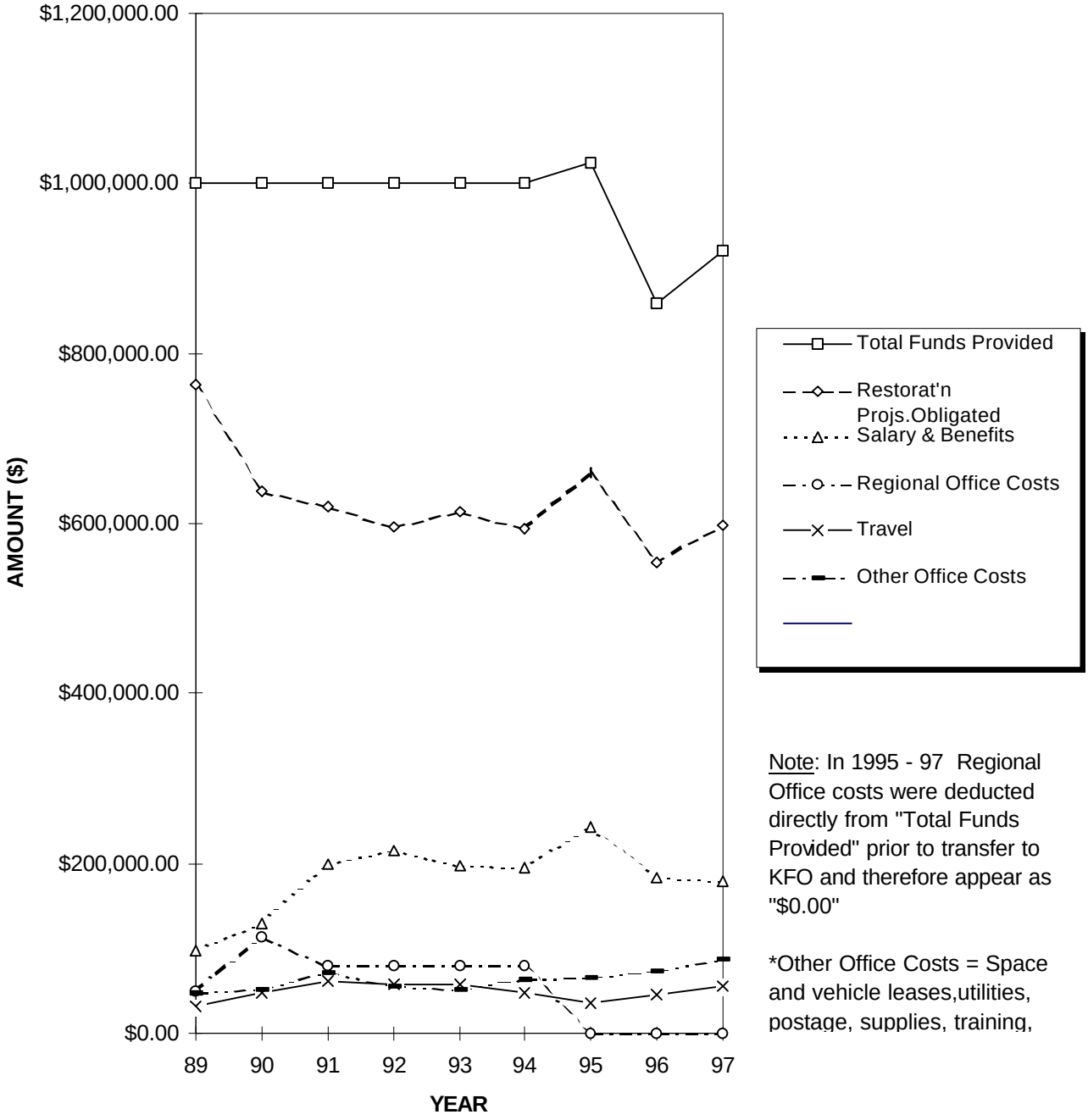


Table 6-1. KRFWO Administrative Costs

Administrative Costs	89	90	91	92	93	94	95	96	97	Total
Salary & Benefits	97,978.08	129,884.00	198,782.24	215,728.37	196,746.43	194,884.67	242,198.80	183,045.00	178,487.00	1,637,734.59
Travel	31,916.92	47,204.68	62,280.74	57,486.11	57,384.00	48,523.01	35,732.80	46,211.00	55,358.00	442,097.26
PCS relocation	0.00	7,262.00	0.00	105.00	10,984.00	0.00	4,697.00	0.00	7,995.00	31,043.00
Vehicle Lease	4,027.00	4,965.00	1,893.43	2,622.62	998.00	3,170.00	2,977.00	6,120.00	9,403.00	36,176.05
Space Lease	0.00	2,653.00	13,955.00	9,473.00	11,478.00	7,388.00	0.00	2,080.00	5,950.00	52,977.00
Utilities	4,017.75	3,090.00	4,718.14	1,505.42	473.01	1,937.00	14,163.35	4,192.00	3,683.00	37,779.67
Postage	0.00	0.00	71.00	284.25	6,280.00	707.00	946.00	589.00	1,017.00	9,894.25
Printing/copying	708.00	0.00	11,327.00	2,131.00	215.00	2,169.00	1,581.00	1,799.00	1,318.00	21,248.00
Computer Maint.	0.00	0.00	0.00	200.00	0.00	1,125.00	81.00	6,233.00	10,482.00	18,121.00
Lease/rental copier,fax	0.00	0.00	2,914.00	9,383.00	1,466.00	139.00	2,725.00	693.00	3,096.00	20,416.00
Contract Admin. Services	0.00	0.00	3,039.00	2,725.00	2,867.00	12,881.00	13,928.43	19,895.00	17,214.00	72,549.43
Training	0.00	0.00	1,475.00	970.00	8,762.05	1,624.00	1,135.00	1,315.00	2,886.00	18,167.05
Supplies	18,103.02	7,283.97	23,222.39	13,255.75	8,098.00	13,935.65	16,026.72	17,079.00	11,228.00	128,232.50
Non-cap property	0.00	0.00	1,293.00	704.55	331.99	18,129.00	7,824.00	6,697.00	13,029.00	48,008.54
Capitalized Propery	21,354.73	25,808.41	8,722.67	13,241.00	0.00	377.30	366.40	6,610.00	0.00	76,480.51
Total Office Costs	**178,105.50**	**228,151.06**	**333,693.61**	**329,815.07**	**306,083.48**	**306,989.63**	**344,382.50**	**302,558.00**	**321,146.00**	**2,650,924.85**
Restorat'n Proj.Obligated	**763,070.00**	**638,724.00**	**619,095.00**	**595,364.00**	**613,992.00**	**593,048.00**	**659,904.00**	**553,405.00**	**598,791.00**	**5,635,393.00**
Regional Office Costs	**50,000.00**	**114,061.00**	**80,000.00**	**80,000.00**	**80,445.00**	**80,000.00**	**0.00**	**0.00**	**0.00**	**484,506.00**
Total Funds Provided	1,000,000.00	1,000,000.00	1,000,000.00	1,000,000.00	1,000,000.00	1,000,000.00	1,025,000.00	860,000.00	920,000.00	8,805,000.00
Unobligated Balance	8,824.50	19,063.94	-32,788.61	-5,179.07	-450.48	19,962.37	20,713.50	4,037.00	63.00	34,246.15

Figure 6-2. Klamath Restoration Program 1989 - 1997- Total Program, Restoration Projects, KFO and Portland Regional Office Costs



Note: In 1995 - 97 Regional Office costs were deducted directly from "Total Funds Provided" prior to transfer to KFO and therefore appear as "$0.00"

*Other Office Costs = Space and vehicle leases,utilities, postage, supplies, training,

Staff Organization: Three professional positions currently serve the Restoration Program full time, plus a shared Project Leader and a shared support staff person. Five positions are authorized for the Program, but one is currently vacant and one is devoted to administering projects not funded with Task Force funds, e.g. Jobs in the Woods and Clean Water Act grants. (See KRFWO organization chart, Figure 8-1)

The Project Leader splits time between administering the Restoration Branch consisting of the Task Force and KFMC programs, and administering the Forest Resources Branch which is a separate USFWS consultation program for the US Forest Service. Administrative and clerical support for the two branches is provided by a shared pool.

KRFWO Tasks: The primary tasks conducted by the Ecosystem Restoration Branch on behalf of the Task Force include:

1. Project Management: Responsible to the USFWS for
    - Managing the budget, staffing and office
    - Organizing logistics, agendas and attending TF meetings
    - Organizing logistics, agendas and attending KFMC meetings
    - Preparing Annual Reports, audits and other coordination with USFWS
    - Providing general project leadership

2. Managing Restoration Projects
    - Preparation and distribution of the public call for projects
    - Review, organizing and distribution of submitted proposals to TF and TWG
    - Project Administration including contract preparation, environmental permitting, project oversight, invoicing, payments and closeout.

3. Administration and interagency coordination for the IFIM flow study
4. Transcribing, editing and organizing of TF minutes
5. Attendance at TWG meetings
6. Coordination and supervision of support staff

Workload: Three aspects of the KRFWO responsibilities consume the majority of staff time:

a) Managing Restoration Grant Agreements. This task has grown over 300 % in terms of numbers of projects and dollar value administered over the course of the evaluation period. The biggest period of expansion occurred between 1989 and 1992. At present three persons (two biologists and an administrative assistant) administer over 90 projects.

An average of 29 projects are approved annually and an average of 17 are completed, thus there is continual upward creep in the total number of projects administered.

Project management for federally-funded projects is substantially more complex than for private non-profit organizations owing to strict federal provisions. Because many projects

involve work in or near a watercourse, environmental permit requirements must be met. These including compliance with CEQA and NEPA, Department of Fish and Game streambed alteration agreements, state and federal Endangered Species Act compliance, state and federal historical preservation requirements including archaeological surveys, Regional Water Quality Control Board review and other agency requirements. Making sure these permissions are obtained is the responsibility of the KRFWO staff.

b) IFIM study coordination

A substantial portion of KRFWO staff time is currently required to coordinate the IFIM flow study. Negotiation and administration of interagency contracts between the USFWS and the California Department of Fish and Game, the USGS and private contractors has consumed more effort than originally expected. With completion of project scoping, this coordination task will become more complex and is estimated to require at least a half-time position.

c) Minutes of Task Force meetings:

Extensive minutes are taken of Task Force meetings. At least ten person-days are required to transcribe the tapes of each meeting and organize a coherent record. Minutes can extend up to 50 pages. More condensed action minutes are also prepared.

The preparation of such extensive minutes provides a very complete record of discussion and actions taken by the Task Force. However this is also very consumptive of staff time to transcribe the tapes verbatim and perform follow-up organization and editing.

d) Administering non-Task Force funds

In addition to administering the $1 million in Task Force funds annually, the KRFWO also administers non-Task Force funds for projects in the Klamath basin, the majority of which are federal Jobs in the Woods projects and Clean Water Act Section 319(h) grants.

The workload for administering non-Task Force funds now consists of three dozen projects with a dollar value approaching $1.5 million. A separate staff position has been dedicated to administering these projects. Further analysis is needed to determine if the overhead provided for these projects is sufficient to cover the cost of their administration.

<u>Perceptions about KRFWO administration</u>

A strong negative perception exists on the part of numerous Task Force and TWG members regarding the duties and performance of KRFWO and Portland RO staff. Concern stems from the high administrative costs for the program and the lack of understanding as to how administration money is spent. The issues include:

- A relatively high cost of program administration (40%) compared to the funds available for restoration projects

- A perception that the administrative tasks of the KRFWO are primarily secretarial

- A perception that staff is primarily working on non-Task Force items

- The passive leadership style of Project Leader

- A lack of accountability from the Portland Regional Office on how their share of program dollars are used.

Response from KRFWO staff provide a counterpoint to these perceptions and indicate strong differences in expectations between TF members and KRFWO staff and a clear lack of understanding by TF members concerning what the office actually does.

Perceived staff duties: Staff functions are perceived as consisting primarily of secretarial duties in arranging the logistics for Task Force meetings and taking minutes. For the most part, these functions are the only ones that most Task Force members see.

Management of project agreements are perceived as trivial, or not done efficiently. There seems to be little staff interaction with Task Force members between or during meetings, and a feeling of distrust that Task Force monies are being spent on non-Task Force duties.

Some members believe program administration funds are insufficient, that current staff are overworked and that the Task Force gives too many conflicting directions to staff as to what priorities come first, leading to a perception of lack of direction.

<u>Project Leadership</u>

Several respondents take issue with the leadership style of the Project Leader and staff, citing the following as weaknesses:

- Not proactive: Project leader does not promote the Task Force mission, interact with other basin interests, or generate additional funding sources

- Project leader is almost an invisible presence during Task Force meetings

- Project leader does not use initiative to bring items to the agenda or help the TF to work together better

These are countered by the following:

- The Project leader's primary responsibility is to the Fish and Wildlife Service, and the administration appears highly satisfied with the Program. Awards were recently given to the Project Leader commending his performance with the Task Force and KFMC.

- The Task Force does not request stronger staff participation in meetings

- The Task Force is advisory to the Program and the KRFWO staff take direction from the Project Leader, not the Task Force.

Issues of leadership style and the relationship between the Task Force and USFWS staff are a matter of judgment. Ultimately the Project Leader answers to superiors within the USFWS, not to the Task Force. However, the critical comments of Task Force respondents should be carefully considered by all.

It is recommended that a formal, closed session be held between Task Force and staff to discuss how communications can be improved. Consideration should be given to:

1) Regular, agendized staff reports (either written or oral) at Task Force meetings to discuss work loads, project status, current issues.

2) Discussion regarding the desirability of a more pro-active leadership style to promote the Task Force presence and reputation in the Basin

4) Distribution of USFWS Annual Report: An annual report is submitted from the KRFWO in Yreka to the USFWS as required under USFWS procedures. In recent years the report has also been submitted to the congressional delegation within the Klamath Basin. However this report is not routinely made available to Task Force or TWG members.

The Annual Report contains a summary of actions taken by the Task Force and the Klamath Fisheries Management Council during the year. Final reports of project cooperators are summarized as well as administrative costs. Reports are distributed to the US Fish and Wildlife Service and congressional delegation, but not to the Task Force.

Some comments have been made, however, that TF members are not interested in reading substantive materials sent to them, such as project completion reports, staff reports or annual USFWS reports.

<u>Planning and Priority Setting</u>

Finding: Lack of clear priorities in the *Long Range Plan* leaves the Task Force without a adequate sense of direction.

Strong emphasis should be placed on implementing the sub-basin planning process to identify high priority restoration needs on a basin-by-basin basis. A clearer plan of action will likely be necessary to justify any future re-authorization and funding of the Act.

The Klamath River occupies an enormous drainage basin and encompasses a diverse geography, vegetation, river ecology, economic base, social and political culture. Since the 1970s two major planning efforts have been made addressing the resource and fishery needs of the basin.

A Klamath River fisheries resources plan (CH2M Hill, 1985), developed for the basin prior to the Klamath Act ,[3] introduced the concept of sub-basin planning. For various reasons the plan was not implemented, but the concept of tailoring plans to geographic sub-basins remains valid.

Following passage of the Klamath Act, the *Long Range Plan* for the Klamath Basin was commissioned and adopted by the Task Force[4]. This plan was organized on a policy and land-use basis (e.g. timber, mining, agriculture, fish habitat) rather than by geographic sub-basins. Specific problems were identified by topic area, and lists of needed actions were compiled in a "step-down" series of goals and objectives.

Setting priorities: The task of setting priorities within the *Long Range Plan* was stymied, however, by the divided composition of the Task Force. At the time of plan adoption the group could not come to agreement on what the priorities for action should be. In order to get a plan adopted at all, prioritization was left to "later".

Since then, an ad hoc prioritization has occurred through the project funding process. Decisions on what projects to fund have been made through political struggles at the TF and TWG. Only recently have the rules for a more technical evaluation stabilized the selection process. In part, the override decision by the USFWS to initiate the IFIM flow study is a result of the lack of explicit Task Force priorities. The use of the federal override was a shock to Task Force members as it made clear their advisory, rather than decision-making authority.

Adopt the new streamlined Plan objectives offered in this Program Evaluation in order to make Program prioritization and project tracking easier.

[3] CH2M Hill, Klamath River Basin Fisheries Resource Plan, USDOI, BIA, Portland, 1985

[4] USFWS, Long Range Plan For The Klamath River Basin Conservation Area Fishery Restoration Program, Prepared for the KRBFTF by Kier Associates, 1991

Next Steps: Sub-Basin Planning

The job of prioritizing Task Force objectives still has not been completed and has contributed to a lack of direction in Task Force decisions. Some members have felt very strongly about this problem and the issue has been turned over to the TWG where a subcommittee developed a strategy for sub-basin planning. Now that the majority of IFIM scoping has been completed, the TWG should return some attention to completing its sub-basin planning protocol. Sub-basin planning has been on-going at the local level and plans are at different stages of development:

- The Shasta CRMP has a completed sub-basin planning document that has findings and recommendations that are focused and frank. The mid-term project goals are to construct at least 3 miles of riparian fencing annually, replant at least 1.5 miles of river bank per year, reduce the mainstem Shasta temperature at Montague-Grenada Road by 5^0 F (from a baseline of 80.60 F in 1996) and to implement water conservation so that flows are never less than 20 cfs within 10 years. Two other notable goals are to develop a downstream salmon migrant index within three years and to raise the dissolved oxygen to above 6 ppm along the entire river. There is no time frame given for achievement of this last goal.

- The Scott CRMP has split sub-basin planning efforts into elements such as fish, flows, monitoring and agriculture. The fish element (Scott CRMP, 1998) and fall flow elements (Scott CRMP, 1997) are complete but presently under revision. The fish plan offers specific prioritization and actions regarding fish screening, riparian restoration and monitoring.

- A Draft Mid-Klamath Fisheries Restoration Sub-Basin Action Plan was recently completed under the direction of the Karuk Natural Resource Department staff (Polmateer, 1999). It represents a compilation of existing planning documents relating to this area, which extends from Iron Gate Dam to Weitchpec. Although action categories are given some prioritization, recommendations are not specific.

- The Salmon River Restoration Council (SRRC) and the Klamath National Forest are working collaboratively on the Salmon River sub-basin restoration plan. The USFS has advanced technology for determining cumulative effects and has also completed some elements of its transportation plan for some areas within the Salmon River Basin. The SRRC has also developed technical expertise and has the capability to help improve the accuracy of data used for planning. For example, the SRRC and its members intend to help the USFS establish more accurately the current and historic range of the various species of anadromous fish in the basin.

- The California Coastal Conservancy recently funded a Lower Klamath Basin watershed restoration plan..

The TWG should review these sub-basin plans and advance them to the Task Force for approval.

Sub-basin planning groups that have large tracts of USFS land within their watershed area should work collaboratively with the USFS on planning to take advantage of their technical expertise.

Keeping it Current

One intent of the *Long Range Plan* was that it be maintained as a living document which would be updated and improved as the Task Force continued its work.. It was three-hole punched so that pages could be rewritten and updated as new information was obtained.

Unfortunately this goal has not been met for several reasons:

1. The natural tendency for committee members to put plans on their bookshelves and not feel bound by their recommendations. Adoption of a plan is perceived as an completed accomplishment rather than "just the start". Attention gets moved to other issues. Rather than maintaining and updating the document to keep it current, the document is forgotten over time and is not used as an active reference tool for decision making.

2. New members often do not read the plan in detail when they come aboard, and most importantly, do not have a sense of "buy-in" to the plan since they were not part of the dynamics of plan preparation and adoption.

Original recommendations in the original *Long Range Plan* were redundant and varied in scale. This caused problems for the Task Force in prioritization and in developing a database for the USFWS' use in tracking Program activities. With regard to the latter, similar projects have been recorded as responding to different objectives. This report has attempted to consolidate and simplify the recommendations while maintaining their integrity. The sub-basin planning process should rejuvenate interest in setting the direction for the Task Force's next years.

Adopt the recommendations advanced in this Evaluation in lieu of the original recommendation structure of the *Long Range Plan*.

Adopt sub-basin action plans approved by the TWG and use them to prioritize funding at the sub-basin level.

The current federal budget request will bring an additional $25 million to California for salmon restoration if the State provides matching funds. Large scale funding for stream easements and restoration projects in basins impacted by agricultural activities should provide money for coordination as well. The fact that sub-basins within the Klamath Basin

are relatively advanced in planning efforts should give them an advantage in competing for these funds.

The Task Force and cooperators should begin to contact both State and federal officials to make sure that they are aware of the advanced stage of restoration planning and implementation in the Klamath Basin and of the need for additional funds.

IFIM

Commitments have been made to conduct the IFIM study but argument remains as to how much should be funded from Task Force funds. Several respondents called for more of the burden being placed on agencies and utilities who need the information for regulatory decisions, such as the Bureau of Reclamation, the USFWS, and PacifiCorp which faces a FERC relicensing procedure.

The Future: Meeting the Goals of 2006

The Restoration Program's *Long Range Plan* states the following goals the Program intends to achieve by the end of its statutory life:

1. Restore, by the year 2006, the biological productivity of the Klamath River basin in order to provide for viable commercial and recreational ocean fisheries and in-river tribal (subsistence, ceremonial and commercial) and recreational fisheries.

2. Support the Klamath Fishery Management Council in the development of harvest regulation recommendations that will provide for viable fisheries and escapements.

3. Recommend to the Congress, state legislatures, and local governments the actions each must take to protect the fish and fish habitats of the Klamath River basin.

4. Inform the public about the value of anadromous fish to the Klamath River region and gain their support for the Restoration Program.

5. Promote cooperative relationships between the lawful users of the basin's land and water resources and those who are primarily concerned with the implementation of the Restoration Plan and Program.

Specific Issues

1. Funding

- The Program can handle more money, the institutions and mechanisms are in place. With completion of sub-basin plans, the priorities for action will be clear. The Program can show specifically where money is needed.

- USFWS should contribute a larger share of administrative costs to the program, similar to all the other member agencies (e.g., DFG, USFS, Counties, Tribes)

2. Public Support

- Major public outreach and mobilizing the TF's own constituencies will be needed for any attempts at reauthorization or increasing funding

3. Responsibilities of Task Force Members

Comments were often made that TF members come to the meetings only to ensure their self interest is protected and not to act constructively in furthering the mission of the Act.

The Task Force is only as strong as the commitment of its members. Fingers can be pointed at the lack of funding, administrative costs, complaints regarding the consensus process, and a host of imperfections that are endemic in any effort to handle large problems. But ultimately the responsibility comes back to the members and their sense of duty to the task.

The Task Force is at a crossroads. It is at a point where the easy decisions have already been made. The major issues left on the table are the tough ones: water management, water rights, water quality and water quantity. Many respondents suggested that win-win arrangements are possible between agricultural and fishery interests, but no one is taking them on. There is a stalemate because there appears to be no process or political will to get the discussion started.

The Task Force offers an institutional framework for bringing these problems to the table, but currently seems to lack the leadership, political will and willingness to accept the risk of trying to do it. It can continue to sweep discontent under the rug, nibble at the margins of problems without confronting the true ecological issues of the basin, and avoid facing the political divisions. The program will run its course, showing a modicum of small scale successes in fencing, screening, hatchery, and data gathering efforts. But in the end it will not have grappled with the fundamental issues of what is necessary to restore sustainable fish populations in the Klamath Basin.

The requirement for consensus will continue to be a problem, but this does not mean the task should be dodged. The alternative is to take this Evaluation as a wake-up call and confront the issues that now stymie the group.

Recommendation: The Task Force should work with the services of a skilled facilitator in a closed retreat session, to set issues clearly on the table and set out a plan of action. The Task Force needs to go through the process of identifying its high priority needs to serve as guidance for future decisions. Issues that "get stuck" because of lack of agreement should be compiled in a list, and reasons for the lack of agreement made explicit. These should then become the subject of concentrated facilitated discussions.

Chapter 7

7. Determine what percentage of Task Force funds have been allocated to entities represented on the Task Force

This task required the evaluation team to acquire the KRFWO's project administration database and identify, on a project-by-project basis, which projects on the list were awarded to agencies and entities directly represented on the Task Force and which were awarded to non-Task Force-connected agencies and individuals. The results of the team's analysis are summarized in Figure 7-1. The amounts shown in the graph reflect funding allocated which may differ slightly from the amount actually spent. Administrative costs which were not allocated at the Task Force's discretion are not included in calculations.

The evaluation team's findings are as follows:

1- a majority – 62 percent – of the Task Force-granted funds has been used by Task Force-connected entities (agencies and Tribes) throughout the life of the Program.

2- early in the Program – in the 1989-1990 period – a fair variety of grants was made to non-Task Force-connected entities, followed by a period – 1991-1992 – of shrinking grant participation by non-Task Force-connected entities, which was followed, in turn, by the current period – 1993 on – of steadily-increasing non-Task Force participation – i.e., in terms of dollars allocated.

3- the current rise in non-TF-connected funding reflects the increasing interest in Restoration Program participation on the part of the landowner-based CRMPs.

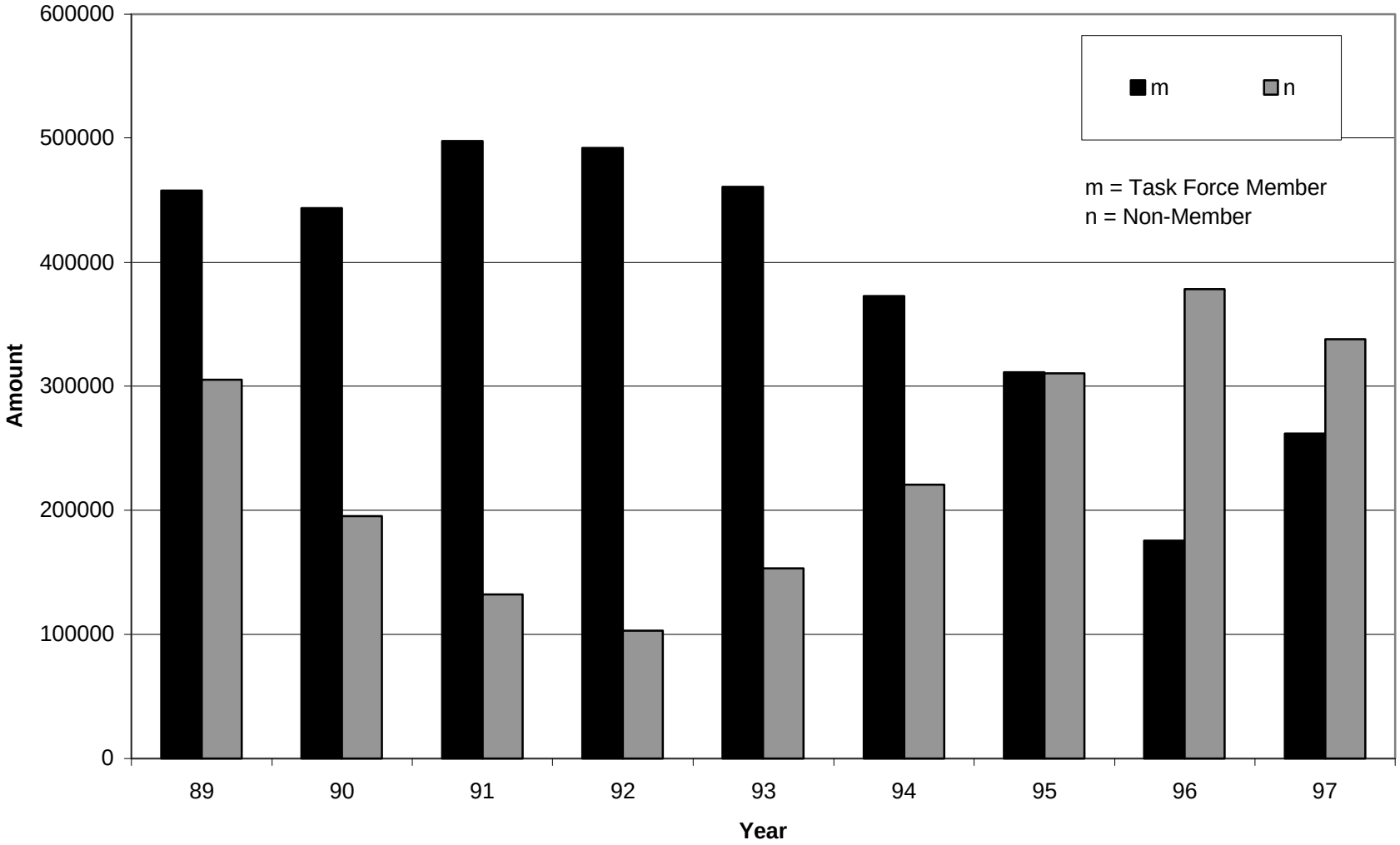
4- there are fewer proposals being made each year.

The evaluation team's recommendations are:

1- the Task Force and TWG should consider the use of "targeted" RFPs for modest-sized projects for things like innovative education or outreach initiatives, for the specific purpose of reinvigorating broad community interest in the Program.

2- the evaluation team and the KRFWO experienced significant difficulty in moving the project administrative database to a modern spreadsheet program that would enable sorting and analysis of the grant agreement data. The KRFWO would do well to fill the Office's vacant database manager position at the earliest opportunity (see Chapter 3 for more complete discussion of data management).

Figure 7-1. Klamath Restoration Program Expenditures 1989-1997, Allocations to TF-Connected and Non-Connected Entities



Chapter 8

8. Assess the effectiveness and workload of the Klamath River Fish and Wildlife Office.

Task 8 requires the contractor to compare the volume and dollar value of restoration project effort administered by the Service's Klamath River Fish and Wildlife Office to "similar government agency and private organization offices". To perform this task the Kier Associates team first familiarized itself with the overall organization of the KRFWO and determined that the activities of the Office's Forest Resources Branch, which deals with the implementation of the Northwest Forest Plan, were not directly concerned with the progress of the Restoration Program. The analysis focuses, then on the activities of the Office's Ecosystem Restoration Branch and the project administration support staff (see Figure 8-1), which fluctuated in total from five to 3.5 full-time equivalent positions (FTEs) during the evaluation period.

The evaluation findings follow:

- The volume and dollar value of projects handled by KRFWO staff has been roughly twice that of the Restoration Program since it includes administration of Jobs in the Woods and Clean Water Act restoration grant projects as well.

- Because of the multi-year nature of many of the restoration projects administered by the KRFWO, the number and dollar volume of "open" projects has accumulated over time.

- As the number and dollar value of open projects has accumulated during the evaluation period, the number of FTEs available to administer them has waxed and, most recently, waned – from a high of five FTEs to the present level of 3.5 (Figure 8-2).

- The average number and dollar volume of open projects administered by the KRFWO compares favorably to agencies engaged in similar activity (Table 8-1). The apparent differences in the productivity between, say, the KRFWO and the National Fish and Wildlife Foundation reflect, in the evaluation team's opinion, the more "hands on" nature of the KRFWO, involving, as it does, project-by-project compliance with the National Environmental Policy Act, the Department of the Interior's requirement that each on-the-ground project provide a survey of its possible impact on archeological resources, and compliance with federal procurement standards.

Figure 8.1. Organizational Chart of the Klamath River Fish and Wildlife Office

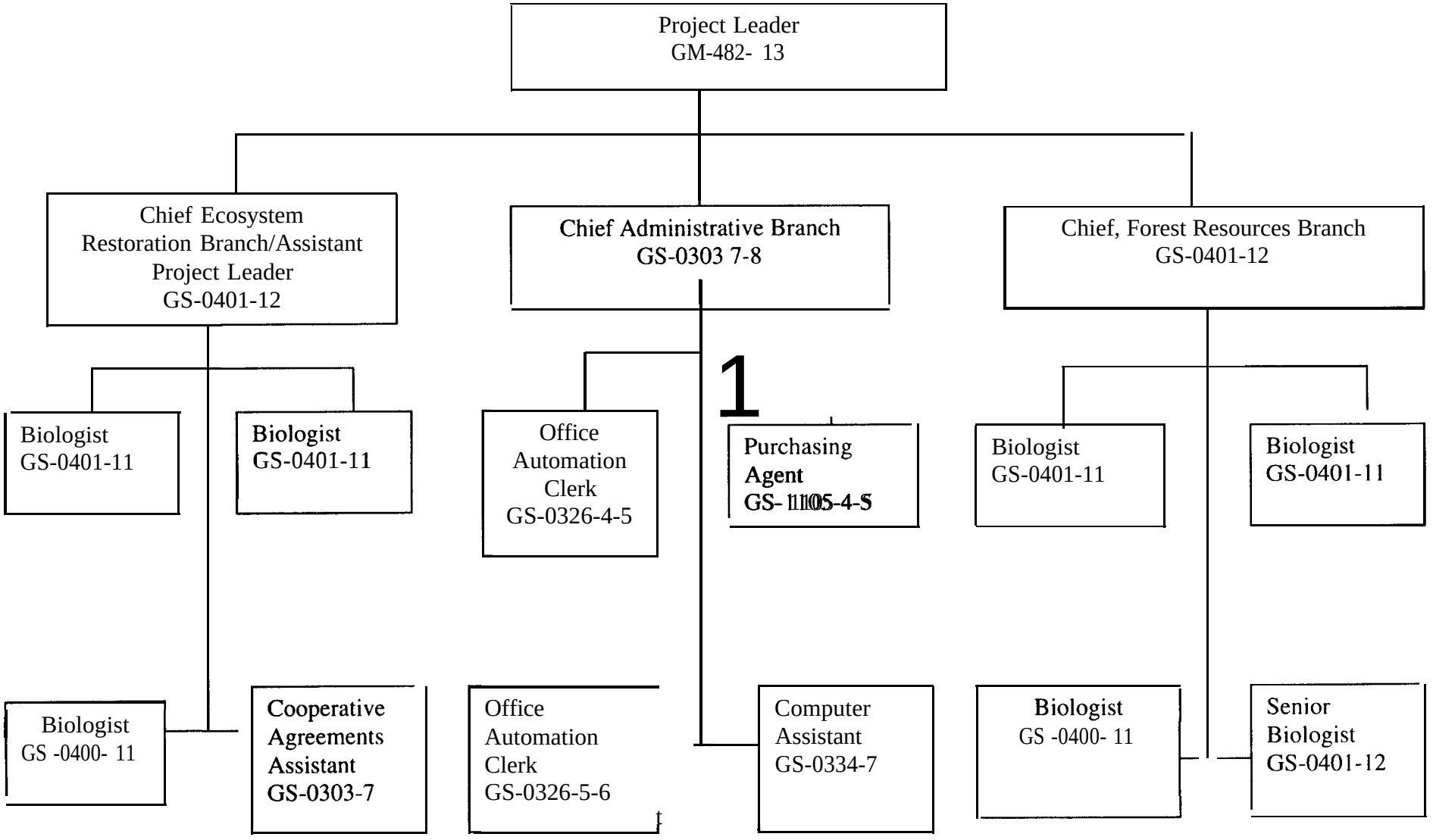


Figure 8-2. Task Force Dollars Plus All Other Restoration Project Dollars Administered By The KRFWO vs. KRFWO Restoration Project Administration FTEs

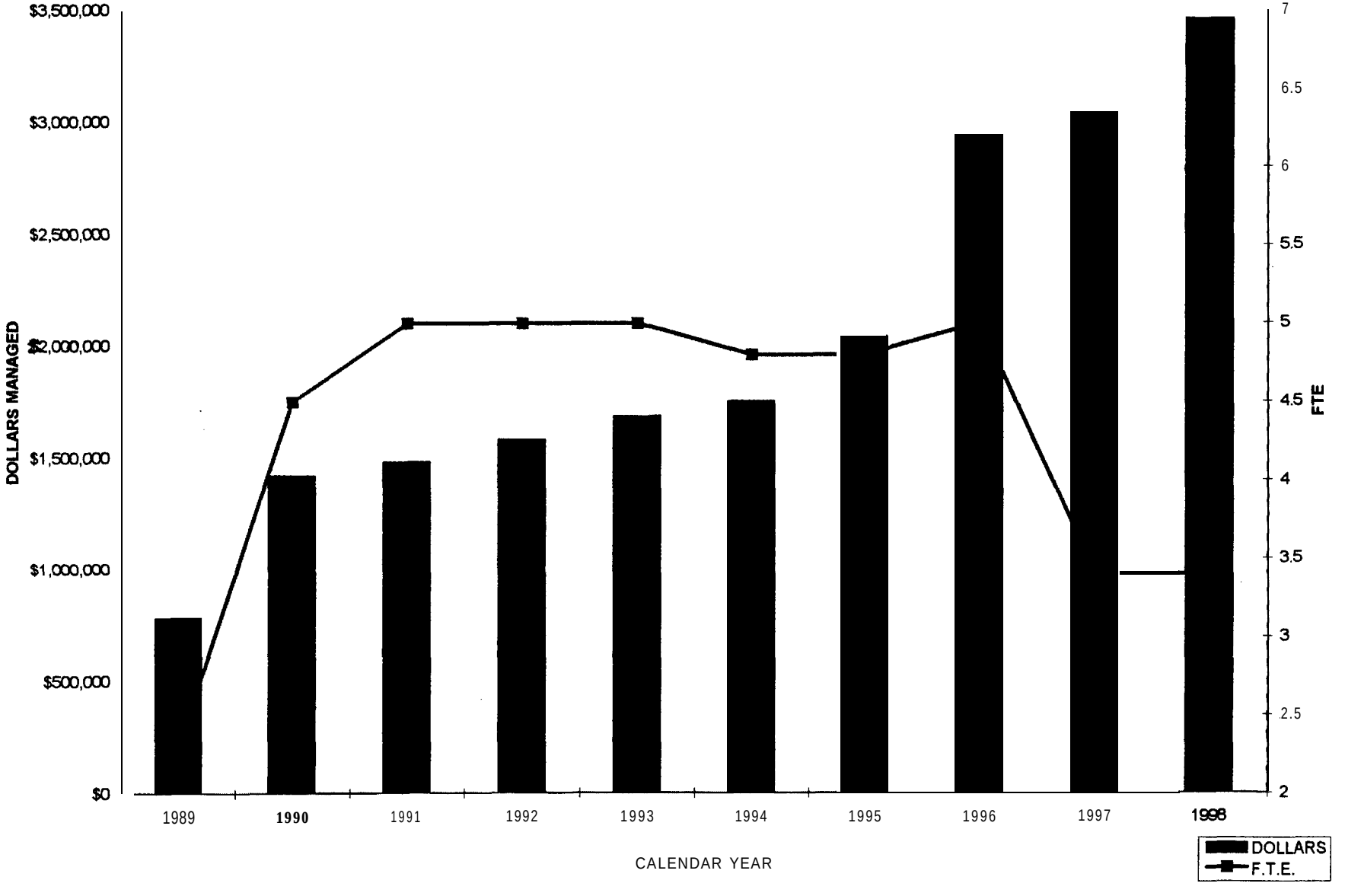


Table 8-1. Comparison Of The Number and Dollar Volume of Restoration Projects Administered By The KRFWO To That Administered By Similar Agencies

Agency Program	Number of FTEs Managing Proposals/ Projects	New Projects Approved Per Year	Value of New Projects Approved Per Year	Average Project Value	Average Number of Projects in Portfolio	Average Value of Projects in Portfolio	Number of Portfolio Projects Per FTE
Klamath R. Fish & Wildlife Offke	3.5	29	$1,072,500	$36,983	98	$3,150,000	28
California Dept. of Fish & Game	8.0	120	5,000,000	41,666	150	7,000,000	19
Chehalis Fisheries Restoration Program	1.25	20	217,000	10,850	40	400,0000	32
Oregon Governor's Watershed Enhancement Program	7.0	250	11,000,000	44,000	450	20,000,000	64
Klamath Basin Ecosystem Restoration Offke	6.25	33	1,305,925	39,573	78	3,300,000	12
National Fish & Wildlife Foundation	4.5	100	18,000,000	180,000	250	30,000,000	55

Kier Associates
February, 1999

Chapter 9

9. The contractor shall review baseline information and surveys regarding the level of knowledge local residents had regarding fish and habitat issues at the beginning of the Restoration Program, shall determine appropriate means for comparing that level to that which exists at present, and shall complete such comparison.

The team did three things in order to gather information for this task:

- consulted with the Survey Research Center at California State University, Chico, to see how far they had proceeded, if at all, on their 1989 TF-funded "Benchmark Study of the Public Knowledge of the Restoration Program",

- acquired microfilm copies of the basin's four principal newspapers for the benchmark year 1989, and the more recent years 1995 or 1996 (Appendix 9-1); reviewed all issues for those years; identified and evaluated all anadromous fish and fish habitat-related articles; and entered data concerning all such articles into an Excel spreadsheet, and

- evaluated public school salmon- and salmon-watershed related education programs, from the standpoint of growth-in-programs and growth-in-pupil-participation, for the term of the Restoration Program.

Findings:

The Chico State survey had to be canceled

The CSU/Chico survey never really got off the ground. After the $18,265 TF-funded contract was entered into, the KRFWO discovered that the special U.S. Office of Management and Budget review requirements for any project involving household surveys were simply too onerous to satisfy within the time-frame of the proposed project. Consequently the University and the KRFWO agreed to drop the project, at a mobilization cost to the Restoration Program of $5,859. Only the survey questionnaire was salvaged from the project No data was acquired.

Newspaper coverage of Klamath River basin fish and habitat issues has increased

Newspaper coverage of fish and habitat issues has definitely increased since the Restoration Program's infancy. Of the four daily newspapers serving the Klamath watershed, three show a significant increase in coverage of these issues. Space devoted to these issues increased between 1987 and 1996 in the three basin newspapers by:

- 243% in the Klamath Falls *Herald & News*
- 100% in Yreka's *Siskiyou Daily News*
- 33% in the Eureka *Times Standard*

The difference in these numbers appears to be explained by the geographic location and economic situation of the three towns.

1- Klamath Falls, having no anadromous fishery, had very little coverage in 1987 (Figure 9-1). By 1995, however, the most recent year for which the newspaper is available on microfilm, various segments of the community had become keenly aware of the potential limiting effect that the basin's aquatic species-at-risk could have on the region's ability to draw water from the Klamath River. Coverage increased dramatically between those years, from 966 lines of straight news pieces with only three photos, to 3,311 lines, including many feature stories with photos and maps, guest editorials, opinion columns, and several fish-related full-page ads by an industrial timber landowner.

2- Yreka (Figure 9- 2) started at a higher level of coverage than Klamath Falls, consistent with the fact that Siskiyou County has traditionally enjoyed substantial business from anglers who come for the anadromous fishery. Coverage here increased steadily.

3- Eureka showed a very high level of coverage already in 1987, clearly due to the importance of salmon fishing to the area (Figure 9-3). Curiously, salmon coverage in Eureka was substantially higher in 1995 than in 1996. This anomaly appears to be attributable to the high profile that newly-(re)elected congressional Representative Frank Riggs took that year on federal river and salmon management issues.

4- Crescent City salmon coverage dropped when Pelican Bay prison came to town (Figure 9-4). This fourth Klamath basin newspaper, the *Del Norte Triplicate*, shows a drop of salmon issue coverage of 38 percent between 1987 and 1996. The drop is due to two overwhelming changes in local conditions. First, the paper went from being a small three-times-weekly in 1987, with no wire service and nothing but local news - of which fishing news was by far the largest component - to a daily full of wire news by 1995-96. Probably more importantly, however, the town changed from a fishing village to a prison town. Fishing issues then appeared to be a distant second to prison system issues.

When the coverage each year for all papers is averaged, we find that salmon and habitat issues increased by 60 percent between 1987 and 1995. Averaging the three newspapers available on microfilm for 1996 (the Klamath Falls ***Herald and*** *News* is not yet available on microfilm) you get a more modest increase, 41 percent, between 1987 to 1996. This 1987-1996 growth should be significantly higher than 41 percent when the Klamath Falls numbers can be included.

<u>Awareness has been significantly increased in the basin's schools</u>

Using Humboldt and Siskiyou schools as examples, we find that prior to 1987 there was little or no curriculum aimed specifically at fish and watershed issues in the Klamath

system. Since that time, however, seven major programs have brought these issues directly to tens of thousands of students and their families.

Aquarium incubator

The aquarium salmon and steelhead incubators have become a significant annual study project in 80 classrooms and have reached about 17,000 students in the two counties.

Klamath River Educational Program

The in-depth summer-institute portion of this project has trained 38 Klamath River basin teachers and about 50 selected high school students.

The grade K-12 KREP curriculum materials have been used with at least 6,000 students.

AmeriCorps Watershed Stewards Program

AmeriCorps volunteers are presenting specialized lessons and assisting in the other watershed projects.

Siskiyou Eisenhower Applied Math and Science Project (SEAMS)

Twenty schools in Siskiyou County participated during this three-year project, involving 5,344 students in a wide variety of studies on fish and water resources. The main curriculum materials used were from the Klamath River Educational Program.

Student-built fish screens, salmon plays, and the Klamath Resources Information System (KRIS) Project

These programs have reached an estimated 2,455 students.
Additional information developed by the Kier Associates team about the public schools watershed and fish restoration programs in Siskiyou and Humboldt counties is found in appendixes 2 and 3 of this report.

Conclusions

The public has become substantially more aware of fish and watershed issues in the Klamath area since 1987, thanks in large part to political interest spurred by Task Force activities, the Endangered Species Act, and the changing economics of the salmon fisheries. Educational efforts created and promoted by the Task Force have touched many lives. The diligence of participants in these projects has also enticed other community members to create and support collateral means of educating the citizenry.

Figure 9-1. Klamath Falls *Herald & News*

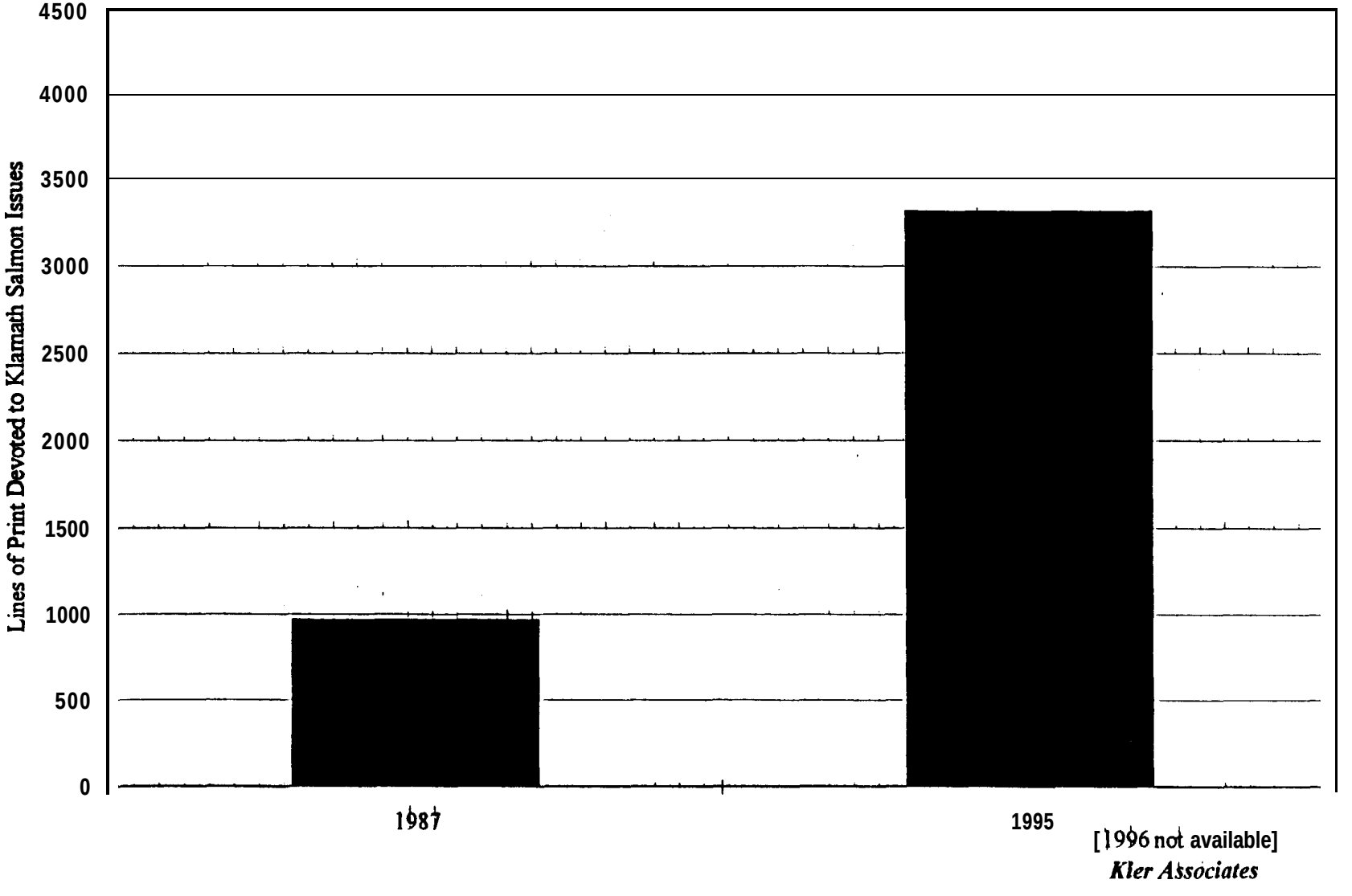


Figure 9-2 Yreka ***Siskiyou Daily News***

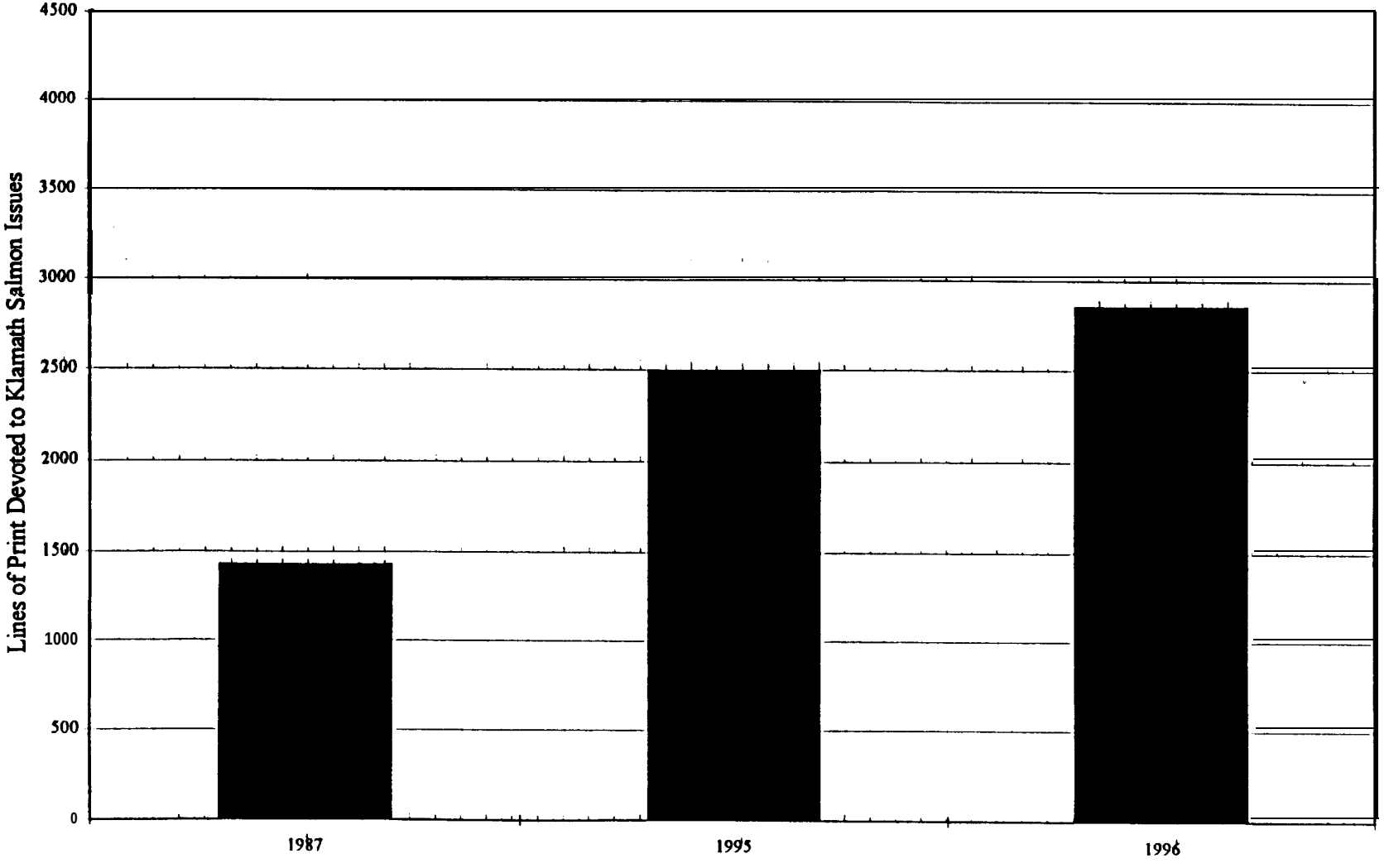
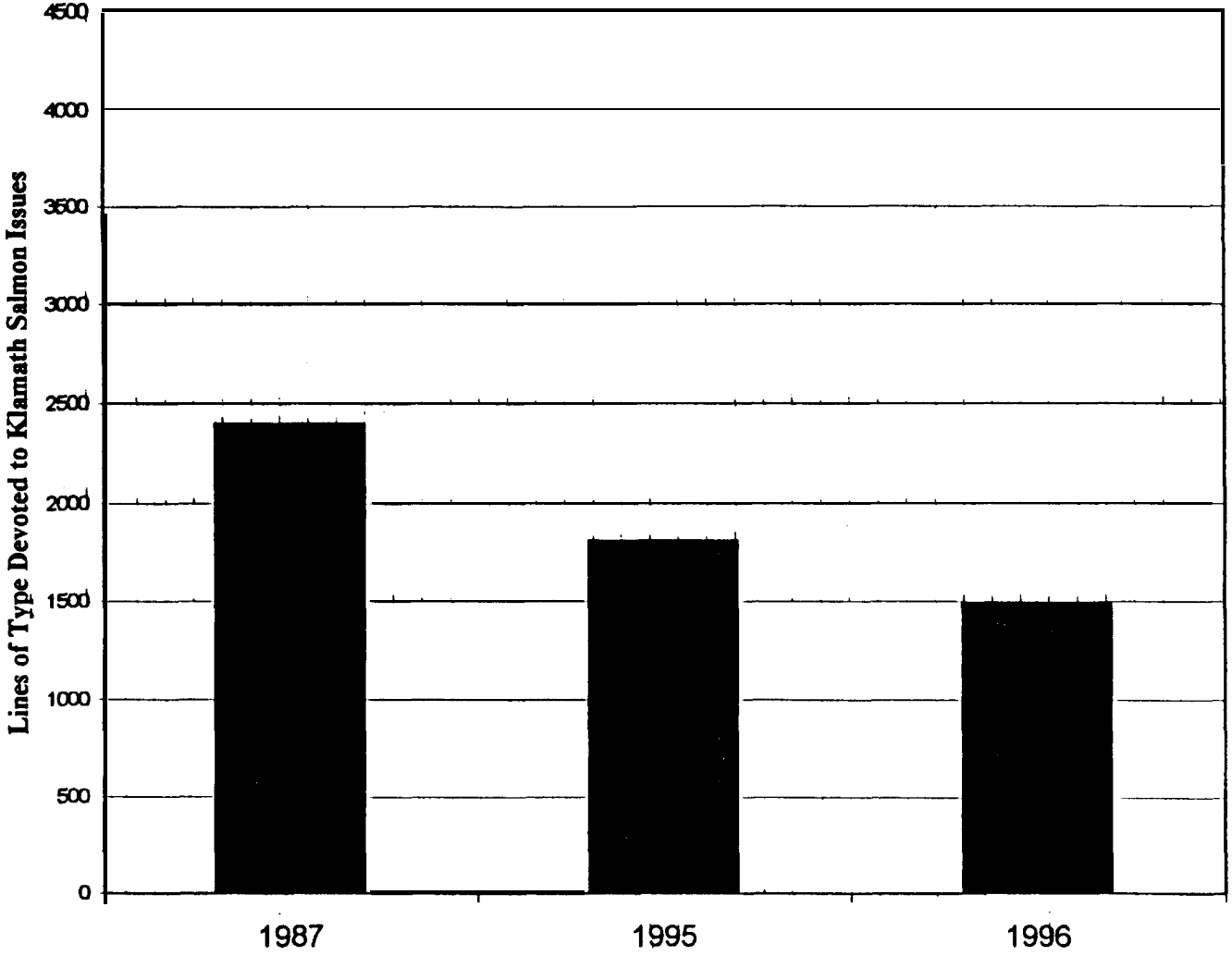


Figure 9-3 Eureka *Times Standard*

Figure 9-4 ***Del Norte Triplicate***



Chapter 10

Large and Small Scale Hatchery Evaluation

This evaluation of Klamath River basin large and small hatcheries was not required in the Restoration Program evaluation contract, but it was specifically requested of the evaluation team by the KRFWO staff.

Iron Gate Salmon and Steelhead Hatchery and the Trinity River Hatchery are the two large-scale fish culture operations in the Klamath Basin but only Iron Gate Hatchery is reviewed here. Small-scale rearing operations of two types have been operated in the basin: pond rearing programs, using Iron Gate Hatchery chinook juveniles, and hatcheries using native broodstock. The operation of both large and small facilities is evaluated as to whether they met their stated goals in the short and long term and whether the operation is likely to have had adverse impacts on wild fish.

Iron Gate Hatchery

Iron Gate Hatchery was constructed at the time of completion of Iron Gate Dam to mitigate for the loss of habitat blocked by the dam. The hatchery raises fall chinook salmon, coho salmon and steelhead trout. While returns of fall chinook salmon have been robust, coho salmon returns are more erratic and steelhead returns have almost completely disappeared (Rushton, 1997). There is some evidence that operation of Iron Gate Hatchery may have contributed to low escapement in the entire Klamath Basin from 1990 to 1992 (PFMC, 1994) and that is discussed below. Possible relationships between problems with mainstem Klamath River water quality and declines of Iron Gate hatchery steelhead are also explored.

Fall-Run Chinook Salmon

Iron Gate Hatchery returns of fall chinook have ranged from a low of 2,558 in 1981 to 21,711 in 1993 (Figure 10-1). Returns were robust in the late 1980's, very low in 1990-1992 and have since rebounded to near record levels. Returns have always been large enough to prevent problems with loss of gene resources even in very low return years (Waples and Teel, 1990).

Very low returns in the late 1970's, early 1980's and 1991-92 were partially as a result of low escapement rates for Iron Gate Hatchery stocks (PFMC, 1994). For example, the brood years 1979-1987 had an average escapement rate of 24% at Iron Gate Hatchery (12-46%) while at Trinity River Hatchery, escapements averaged 46% (31-69%). For wild fish an escapement rate of 33% is required for population replacement. Iron Gate Hatchery stocks were experiencing higher ocean harvest rates because they matured at four years of age versus age the three maturity characteristic of Trinity River Hatchery stocks (PFMC, 1994). Also in-river Indian fisheries were impacting Klamath River stocks more than Trinity River stocks because of the timing of fishing effort (USFWS, 1992). Other causes for stock declines from 1990-1992 were ocean conditions, drought and increased production of chinook salmon juveniles

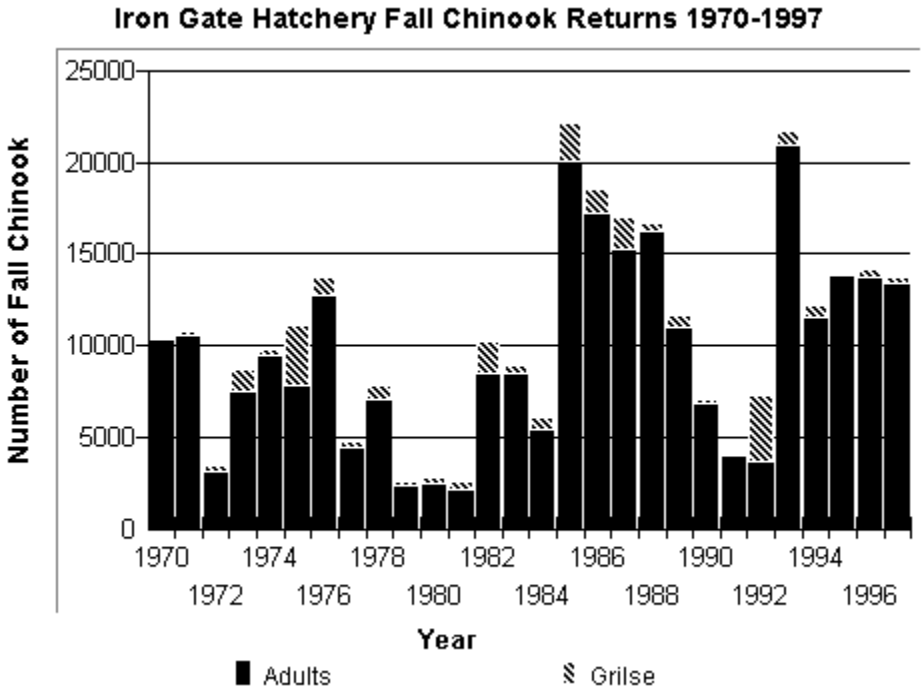


Figure 10-1. Iron Gate Hatchery fall chinook returns from 1970 to 1997.

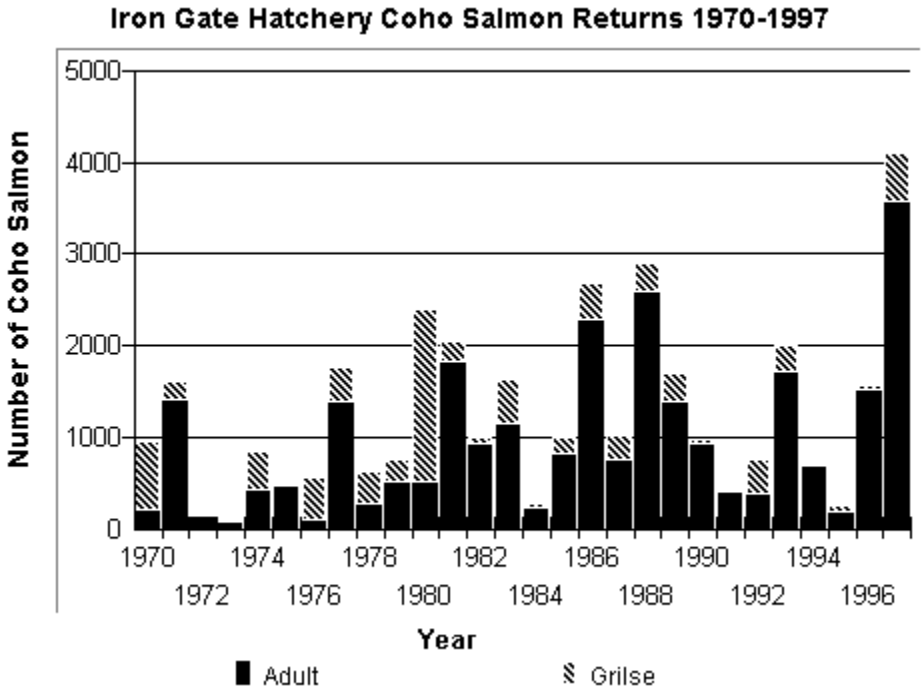


Figure 10-2. Iron Gate Hatchery coho salmon returns from 1970 to 1997. Consistent low returns after establishment of the population may have lead to inbreeding problems.

at the hatchery itself (PFMC, 1994).

Very large returns of fall chinook salmon caused major logistical problems at Iron Gate Hatchery in 1995 and a major problem with over-escapement into Bogus Creek. Large numbers of chinook salmon were released back into the Klamath River and moved back downstream into the Shasta River. Arrangements were made in subsequent years through cooperation with the Humboldt Chapter of the American Fisheries Society (1996) to process surplus Iron Gate Hatchery fall chinook salmon for charitable donations instead of releasing them back into the river. The over-escapement of Iron Gate Hatchery fall chinook in recent years points out the pressing need for universal marking and selective harvest of hatchery fish in all fisheries where feasible.

Coho Salmon

Coho salmon at Iron Gate Hatchery have had variable rates of return since 1970 (Figure 10-2). Low returns in early years and a very high component of grilse were during a period of acclimation of the non-native broodstock (Kier Associates, 1991). Low returns in 1983 could be attributed to El Niño conditions that are particularly hard on coho salmon. The return of only 269 coho in 1995, however, can not be explained by extremely poor ocean conditions. Also fishing pressure was not limiting since no commercial or ocean sport take was allowed in that year. Very low escapement levels could compound problems with loss of genetic diversity of this stock and potential in-breeding depression (Kier Associates, 1991). It is likely that this broodstock will need replacement in the future (within the next 50 years).

Steelhead

Iron Gate Hatchery steelhead have declined to the point where the hatchery run is no longer viable (Figure 10-3). Returns since 1991 have averaged 163 fish with only 12 steelhead returning in 1996 (Rushton, 1997). Scale studies showed that a substantial number of returning fish had not been to the ocean (Jong, 1993; 1994). The increase in resident life history of rainbow trout as opposed to anadromy may be in part owing to water quality problems in the mainstem Klamath River (see Water Quality Problems Impact Hatchery Fish). A new broodstock needs to be acquired for Iron Gate Hatchery, however, without improvements in water quality further downstream in the Klamath River success of re-establishing hatchery steelhead runs may be limited.

Problems Related to Operation

There is some evidence that low returns of hatchery and wild chinook salmon to the Klamath Basin from 1990 to 1992 is partially as a result of increased stocking levels at Iron Gate Hatchery in the preceding brood years (1986-1988) (PFMC, 1994). Record number of chinook fry were reared in those years which resulted in restricted growth in crowded hatchery raceways (PFMC, 1994). Smaller fry migrate more slowly (USFWS, 1994) and survival rates for these brood years were extremely low (PFMC, 1994). The

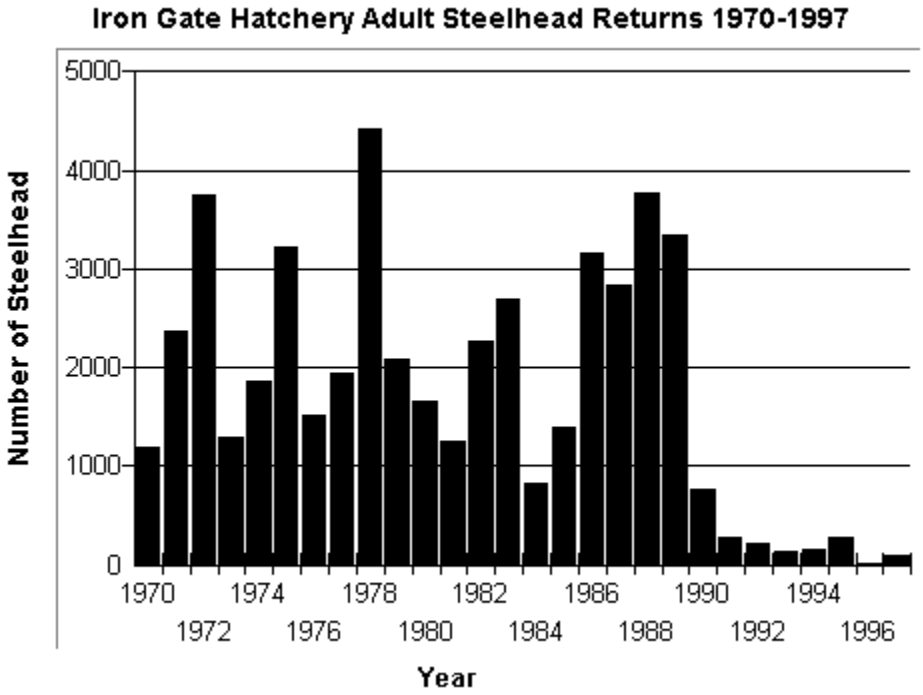


Figure 3. Iron Gate Hatchery steelhead returns from 1970 to 1997.

release of record number of fry also happened to coincide with a sequence of drought years that probably resulted in density dependent mortality of both hatchery and wild chinook salmon fry (PFMC, 1994). The precipitous decline in steelhead returns at Iron Gate Hatchery began in 1990 and continued in successive years. It is possible that density related factors because of chinook over-planting may have had ripple impacts on the success of Iron Gate Hatchery steelhead.

The three chair persons of the Klamath Task Force, Klamath Fisheries Management Council and Trinity Task Force met in the summer of 1992 to review hatchery operations in the basin (CDFG, 1992). They expressed concern with regard to the level of hatchery production and potential impact on wild fish. As a result, egg take at Iron Gate Hatchery was to be decreased from 18,000,000 chinook salmon eggs to 12,000,000. All fry in excess of the 6,000,000 required for mitigation and the 1,000,000 to be held as yearlings were to be exported for use in lake stocking programs or were to be destroyed (CDFG, 1992). The stocking size for chinook salmon fry was also to be a minimum of 90 to the pound at a minimum.

Foote (1995) found dissolved oxygen in Iron Gate Hatchery raceways of 3.9 mg/l, which is in the extreme stress for salmonids. He surmised that "This low value indicates insufficient flow for the biomass within the rearing units." Foote (1995) also found very low fitness values for the released fry with liver glycogen levels of 2.68 mg/100 mg as compared to 8.95 mg/100 mg for Coleman Hatchery fry. While chinook fry in the release group ranged in size from 41-85 mm, no fish smaller than 85 mm was captured at traps downstream. This suggests that survival of fry that are small at release may be quite low. The low fitness of hatchery chinook and poor water quality in the mainstem Klamath River lead to major losses to disease in 1995 (see Water Quality Problems Impact Hatchery Fish).

Although the Three Chairs specified that only 6,000,000 chinook fry be released annually at Iron Gate Hatchery ((CDFG, 1992), the annual report for the 1994-95 (Hiser, 1995) did not mention any transfer of juvenile chinook to other inland programs or of excess fry being destroyed. The low dissolved oxygen found by Foote (1995) does not seem consistent with the release of fewer than 5,000,000 fish and an egg take of approximately11,000,000 described in the hatchery report. The KFMC has also recently discovered that unmarked releases of hatchery fish may not have been reported (Troy Fletcher, personal communication). This may have caused problems with coded-wire tag expansions and lead to problems with harvest management modeling.

Water Quality Problems Impact Hatchery Fish

There is a growing recognition in the fisheries science community that fish disease organisms are omnipresent and that environmental stressors can trigger disease outbreaks (AFS, 1997). Water quality in the mainstem Klamath River falls into acutely stressful ranges for salmonids with regard to temperature and dissolved oxygen (see Mainstem Klamath in Habitat Trends). Foote (1995) found that fish captured at the Big Bar trap on the Klamath River showed a high

incidence of Ceratomyxa shasta, a protozoan fish disease. He noted that water temperatures at the trap were in stressful ranges for salmonids. There had been no level of infection of chinook juveniles from C. shasta in raceways at Iron Gate Hatchery from 1992 to 1995 (Foote, 1995) although the disease organism is certainly present since water used by the hatchery comes from Klamath River water. No incidence of disease was found in juvenile chinook captured in a cold water refuge area at the mouth of Red Cap Creek (Foote, 1995). This suggests a linkage between the environmental stress of high temperature and chinook juveniles succumbing to this disease. Poor condition factors of chinook fry from Iron Gate Hatchery may have also decreased immunity. Foote (1995) concluded that a significant portion of the chinook salmon fry release group for 1995 did not survive out-migration because of C. shasta.

The declining success of the Iron Gate Hatchery steelhead program also supports the hypothesis that problems exist with ecosystem function of the mainstem Klamath River. Iron Gate Hatchery has had a precipitous downturn in returning steelhead and a significant percentage of fish returning in some recent years have been residuals or resident rainbow trout that failed to migrate to the ocean and remained in the Klamath River (Jong, 1994). Klamath River releases from Iron Gate Reservoir are moderate in temperature relative to those migrating steelhead might experience further downstream. It is likely that poor mainstem Klamath River water quality could be selecting for the resident as opposed to the anadromous life history of Iron Gate Hatchery steelhead.

Small Scale Hatcheries and Rearing Ponds

Small scale hatchery programs in the Klamath Basin were founded to help reverse the decline of locally adapted endemic populations of salmon in selected Klamath sub-basins. Pond rearing programs had a dual objective supplementing fish for harvest and augmenting spawning returns.

Pond Rearing

Pond rearing programs were founded to supplement the number of chinook salmon available for harvest and to restore chinook runs to selected Klamath sub-basins (Pisano, 1995). The different run timing of Iron Gate Hatchery stock and other differences with locally adapted native populations could confound the latter objective (Kier Associates, 1991). Ponds were stocked with fingerling chinook hatched and reared at Iron Gate Hatchery, which were fed during summer and released in fall to the stream where the pond was located. Funding for pond rearing was provided by grants and contracts acquired by the Northern California Indian Development Council (NCIDC). The Klamath Task Force provided funding for pond rearing in some years. During different periods ponds have been operated on Grider, Beaver, Thompson, Elk, Indian, Bluff and Red Cap Creeks. The ponds began operation in the mid-1980's and were discontinued after 1991. In the most recent years of operation, ponds were operated on Indian, Elk and Bluff Creeks (Pisano, 1995) and funded through NCIDC.

By 1988, a substantial portion of pond reared chinook salmon were being coded wire tagged in order to understand their contribution to fisheries and the success of the pond rearing program. From 1988-1991 over 526,000 pond reared chinook salmon were released, with 379,250 coded wire tagged. Pisano (1995) found that contribution rates to fisheries were 0.26% as compared to a ten-year average of Iron Gate Hatchery yearlings of 2.72%. Downstream migrant trapping showed that in some years, pond reared fish did not move downstream at the rapid rate normally associated with Iron Gate Hatchery yearling releases (PFMC, 1994).

Pisano (1995) indicated that pond program release groups up to 1991 could contribute to returns through 1996 while his report only covered through 1994. Therefore, fall chinook trends in Middle Klamath tributaries such as Bluff, Indian and Elk Creek could have been inflated by pond reared fish through 1996 (see Population Trends). The homing ability of pond reared fish could also be somewhat altered since they were moved during times when they could have been imprinting. Consequently, some of these fish may have strayed to other Middle Klamath tributaries and inflated returns in those sub-basins as well.

Run timing of the vast majority of fall chinook salmon spawning in Red Cap and Bluff Creek is in early to mid-October (Jerry Boberg, personal communication). This contrast with the historic run timing in these basins of November through January (Snyder, 1931 as cited in Kier Associates, 1991). Similar run timing is exhibited by fall chinook returning to Elk Creek and Indian Creek (Bill Beamis, personal communication). High flows during November and December often confound spawning surveys (Jerry Boberg, personal communication) so it is possible that late returning fall chinook are not being counted. The Karuk Camp Creek trapping operation has not noted a major influx of early run fall chinook but that may reflect the smaller basin size and related lower flows in the early season.

Pisano (1995) concluded that:

> "Given the relatively low number of coded wire tags recovered thus far from pond-reared fish, predation problems at the ponds, relatively high maintenance costs, and genetic concerns arising from use of Iron Gate Hatchery fish as broodstock, consideration should be given to permanently discontinuing this program."

Surveys should continue in Middle Klamath tributaries to see if long term benefits are accrued with regard to rebuilding local populations or whether high returns only occurred when pond rearing programs were operated. In drier years when late season spawning surveys are feasible, late run fall chinook salmon returns in Middle Klamath tributaries should be gauged.

Small Scale Hatcheries Using Native Broodstock

Small scale fall chinook salmon hatcheries have been operated in the Lower Klamath and at Camp Creek near Orleans. The Horse Linto rearing project on the lower Trinity River is also discussed because it provides a model both in operation of the facility and its evaluation (Hillemeier and Farro, 1995)

Lower Klamath/Hunter Creek: Between 6,350 and 30,082 juvenile chinook salmon were released by the small scale hatchery operated by Yurok Tribal members on the Lower Klamath from 1986 through 1994 (Lara, 1996). Average output of the hatchery was 14,850 chinook salmon juveniles reared to yearling size. Brood fish were captured with a trigger gill net for several years near the mouth of Blue Creek. Eggs were reared at satellite facilities in early years of operation, such as at Pecwan, but all incubation and rearing in later years was at Spruce Creek. Planting of juveniles was concentrated in Hunter Creek in the latter years of the program.

USFWS (1995) expressed concern over whether broodstock capture by this rearing project might be depleting fall chinook escapement into Blue Creek, which was at a critically low ebb. Gillnet capture in the mainstem Klamath River off the mouth of Blue Creek also posed the potential problem that fish intercepted might be destined for some other location. This is in potential conflict with the objective of the project that was to restore locally adapted Lower Klamath Basin stocks. The rearing project collected brood stock from Hunter Creek using a weir in the latter years of operation. The problem with this method of brood collection was that it risked restricting the gene pool to predominantly fish from the artificial culture operation. This is due to the paucity of natural spawners in Hunter Creek. Interbreeding fish from a restricted family size can lead to problems with fitness and can ultimately harm remnant endemic chinook salmon populations (PWA, 1991). A survey by the Yurok Fisheries Department of Hunter Creek in 1997 found approximately 50 adult chinook salmon of which about half were adipose fin clipped. It is likely that habitat conditions confounded the success of this project (see Habitat Trends).

Camp Creek/Red Cap Creek: The Karuk Tribe and the Northern California Indian Development Council (NCIDC) have operated a small scale hatchery on Camp Creek near Orleans (Jones, 1998). The facility Six Rivers National Forest and the California Department of Fish and Game have been cooperators in the project since its inception. The hatchery has operated since 1986 and uses only native fall chinook salmon broodstock. All juvenile chinook reared by the project are released as yearlings in October, that is after being fed in ponds through summer. Release groups have all been marked, with maxillary clips in early years and with coded wire tags since 1992. The number of fish released has ranged from 4,637 in 1990 to 34,976 in 1995. The total number of juvenile yearling chinook released by the program from 1986 to 1996 was 173,323 or an average of 17,332 per year. The January 1997 floods caused many problems at the facility but eggs and fry were rescued and successfully reared.

Horse Linto Creek: The Horse Linto Creek rearing facility is a cooperative effort of CDFG, USFS and the Pacific Coast Federation of Fishermen's Association (PCFFA). The report produced by Hillemeier and Farro (1995) documented all aspects of operation including brood handling, fish health problems, code-wire tagging and success of varying release strategies. Contributions to fisheries were calculated with assistance from CWT data provided by CDFG. The USFS conducted extensive annual spawning surveys and operated a downstream migrant trap to track juvenile abundance. This allowed evaluation of the success of the operation. The stated objective of the rearing program was to restore natural spawning to Horse Linto Creek. Natural spawning levels in recent years are fully seeding all spawning and rearing areas accessible to chinook salmon. Consequently, the Horse Linto rearing facility has discontinued operation. Six Rivers National Forest is committed to continued surveys to judge the longer term success of these efforts. The reason this project was able to succeed is that Six Rivers National Forest management within the Horse Linto Creek watershed has allowed recovery of ecosystem function. Headwall areas of Horse Linto Creek are undisturbed and logging in steep, unstable inner gorge areas was discontinued after the 1964 flood. The USFS has also stabilized slides to reduce sediment inputs and improved the complexity of rearing habitat through use of in-stream structures.

Straying of Small Scale Hatchery and Pond Reared Fish

Weir operations in the South Fork Trinity River from 1985 to 1995 showed that straying from small scale rearing facilities was significant (PWA, 1994). Coded wire tag returns in the South Fork Trinity included fish from Horse Linto Creek, Hoopa Lower Trinity rearing operations and the Lower Klamath rearing project. Pond reared fish also commonly returned to Iron Gate Hatchery. The wide spread straying of small scale hatchery reared fish could cause problems with genetics and spread of disease (PWA, 1994). No fish from the Camp Creek rearing facility were counted at the South Fork Trinity weir or in Middle Klamath spawner surveys. The use of native stock and the fact that all hatchery juveniles are raised and released in Camp Creek has probably helped this facility avoid straying problems.

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Appendix 2-1

ACTIONS TAKEN BY THE KLAMATH RIVER BASIN FISHERIES TASK FORCE
1991 - 1997

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
February 5-6, 1991 Yreka	Presentation Final draft Long Range Plan, discussion of rewrites and changes	Long Range Plan	I		Discussion re: production and distribution
	Presentation of plan amendment for Upper Basin	UBA	I,V		
	Clean Water Act proposal for non-point source pollution control: KRIS development **Motion**: TWG to examine the feasibility of the proposal	GIS, Monitoring	I		
	TF policy on commenting on EIS;s and THPs **Motion:** replace plan language with more specific from Odemar memo	Interagency coordination	I, III	P	
	Procedure for further review of Long Range Plan	Long Range Plan	I		Action: TF to review plan, forward comments and discuss at PFMC
	Public information: final reports, newsletter, report repositories	Public Education	IV		Actions: pursue information from great Northern on info dissemination proposal Tribes to elect an education subcommittee member TF to review content of newsletters before distribution
	USFS project, spawner use study	Monitoring	I		
	Sensitive species designation for spring chinook	ESA	I		Information provided on T&E species listings, benefits and problems
	Treatment of Long Range Plan amendments, UBA	Long Range Plan	I		TF group to discuss including new information in plan
	Action Planning, sample operational plan for projected work	TF business and procedures	I		Add time line, costs for next agenda
	Request for support of Trinity River flows	Trinity Restoration program	III		Letter to be redrafted and sent to BOR
	Update: CDFG funded programs that qualify as non-federal match **Motion:** Review CDFG projects for consistency with TF goals and objectives Discussion re: cost of CEQA compliance for restoration projects	TF business and procedures	I	P	Action: Information transfer system with CDFG to be set up
	BOR report: Klamath and Trinity flows Motion: Send letter to BOR regarding flow policy	Flow	I		**Letter** to be sent from TF Chair to BOR
	Diversion screen maintenance project; lack of funding	Habitat protection	I		Investigate funding sources
	Karuk tribal harvest monitoring report	Fish management	I		**Letter** from TF to BIA in support of monitoring effort
	Lower Klamath late fall chinook rearing	Small-scale Fish Rearing	I		

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	FY92 annual workplan. Discussion ranking, budget	TF business and procedures	I		Budget subcommittee to look at guidance on proposal ranking
June 17-19, 1991	Report: Status of work plans for FY89-91	TF business and procedures: Status	I		Reports accepted
Eureka	**Motion**: TWG to develop criteria to guide use of carry-over funds			P	TWG to provide flexibility to carry over funds
	Update: BOR Klamath Trinity Flows	Flow	I		Drought conditions
	Upper Basin Plan Amendment	UBA	I		Date extended to April '91 to consider Kier version of UBA. Procedure will be similar to that for long-range plan.
	KFMC long-range plan update	KFMC coordination	II		Discussion
	Report: Benefits and detriments of Threatened or Endangered listing of Klamath River stocks	ESA	I		No action
	Klamath River Subbasin Stock ID	Stock Identification	I		**Letter** to be written to create temporary panel
	Report: Education Subcommittee	Public Education	IV		Curriculum development for grades 4-5 reviewed
	Motion: Refer video discussion to education subcommittee including work proposed by NCIDC			P	
	Three year action plan proposal	TF business and procedures: Prioritization	I		Discussion on directions for task force
	Motion: Use proposal and set meeting to look for short and long term policy breakdown				
	TWG report re: ranking	TF business and procedures: Prioritization	I		Discussion: ranking criteria
	Budget Committee report State and federal Funds available	TF business and procedures: Budget	I		Discussion on funding levels between categories: Education, Fish Protection, Fish Restoration, Habitat protection, Habitat resstoration, DRMP, Overhead,, funding procedures,
	Adoption of FY92 workplan	**FY92 Workplan Adoption**	I	P	FY92 Workplan adopted
	Reports on FY90 Projects	TF business and procedures: Report	I		Presentation and discussion of projects and results
	Need to develop processes to: provide accountability of proposers, quantifying volunteer effort, identifying the non-federal match	TF business and procedures: Non-federal match	I		

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
Nov. 6-7, 1991 Yreka	Report: Columbia River Basin Fish and Wildlife Program	Interagency Coordination	I		Discussion
	Status of 1992 Work Plan	TF business and procedures: Status	III		Discussion re CDFG projects and funding requirements
	Evaluation Report of Restoration Progress	TF business and procedures: Report	I		KRFRO to present additional funding info at next meeting; KRFRO to summarize findings for Newsletter
	UBA status	UBA	I,V		Still in comment period through Dec. 91
	Action Plan: Action Plan needed as result of evaluation report: need to understand current baseline, data gaps, research needs, policy implementation	Long Range Plan	I		Discussion re priority setting; time and ability of non-agency members to take on additional work beyond project ranking Action: Agendize discussion of FY93 RFP and project selection process for Jan meeting
	Develop FY 1993 Annual Work Plan; drafting the RFP	TF business and procedures: RFP	I		Discussion contract regulation; role of federal panel vs. TWG
	Report: Water Management issues	Flow	III		Hoopa tribe report on action to develop criteria for flow releases from Trinity Reservoir
	Forest Management Issues	Timber Harvest	V		Status Klamath N.F. Land Mgmt Plan. Timber harvest plans under interdisciplinary, landscape approach
	KRIS status	GIS, Monitoring	I,IV		Discussion SWRCB funding; housing of data base
	Process for tracking volunteer contributions	TF business and procedures: Non-federal match	I		Need acknowledged
	Timber issues: private land. Update on Sierra accord process, Emergency rules	Timber Harvest	I,V		Send **Letter** to Governor expressing willingness of TF to get involved in timber issues
	Monitoring of water quality impacts of harvest French Ck. chosen as BOF case study of mixed ownerships.				Information to be included in TF newsletter
	Report: Fish disease survey	Fish Monitoring	I,III		Odemar to meet with Iron Gate and Trinity R. hatchery staff re: hatchery operations and KMZ coalition proposal
	Report: Coordination of restoration programs with Trinity River Task Force, KFMC, CDFG, and TF	Interagency Coordination	II, III		**Letter** to Trinity TF and KFMC requesting meeting of three Chairs, and identify specific management issues needing coordination.
	Klamath Stock Identification **Motion**: Leave committee membership flexible	Stock Identification	I	P	Report on committee status; proposed definition of stock

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Spring Chinook recovery plan: Habitat restoration esp. roads, erosion sources, riparian reforestation	Habitat Restoration	III		**Letter** to Regional Forester supporting recovery plan Report in future newsletter on projects funded in Salmon Basin USFS to keep T"F informed
	Decomposed Granite sediment conference proposal	Habitat Protection	IV		Discussion: requests outside accepted grant procedure
	Motion: Provide share of funds	Public Education		P	FY 1992 funds to be appropriated for DG Soil Symposium
	Report: Trinity River Restoration Program library	Trinity Restoration Program	IV		Report received, no action
	Report: GIS technology for assessing large-scale land management e.g. timber harvests, landscape level analysis	GIS, Monitoring	I		Discussion on potential of landscape GIS approaches
	Request to CDFG for specific chinook fishing closures	Fish Management	III		**Letter** to CDFG requesting closure
Jan 28-30, 1992 LaJolla	Facilitated Meeting: Implementing the Long Range Plan: 1) Design a Management System for the Restoration Program Issues: Centralized, decentralized; subbasins, prioritization, stakeholders, process management etc. 2) Find support Relationships between Policy Items in long range plan and how they support each other ID 30 high-priority policies and next steps	TF business and procedures: Prioritization	I		Discussion: Facilitated process difficult but worthwhile
Jan. 29, '92 La Jolla	Regular meeting: FY93 RFP and Selection Process Options for funding: All policies equal priority; use action plan under preparation; use prioritized policies as developed by KRFO	TF business and procedures: Prioritization	I		Discussion: project selection process, federal review process, setting levels of funding, role of budget committee
	Motion: ID high priority action items and use for next budget cycle			P	
	Motion: Adopt selection process as modified			P	Recommendation to USFWS on selection process
	KMZ proposal for Hatchery Operation and trucking	Hatchery Operations	III		Discussion: Technical review, CDFG comments re: hatchery practices, mix of age classes, straying, need for basinwide review of practices Action: Prepare response to KMZ coalition from TF
	CDFG guidelines for funding small-scale fish rearing projects	Small-scale Fish Rearing	I		Review of guidelines linking rearing projects to instream habitat restoration No action
	UBA: Review of public and agency comments	UBA	I,V		Action: Committee formed to review comments and meeting set

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Status reports: Calif. forest practice regulations; status of Grand Accord	Timber Harvest	I		Receive and discuss
	Spring Chinook recovery proposal	Habitat Restoration			
	Motion: draft **Letter** to Regional Forester complimenting KNF on fisheries work		III	P	**Letter** to be sent
	Close river mouths to salmon angling	Fish Management	III		Action: KRFRO to prepare **Letter** of support of closure from tF to F&G Commission
	Three chairs coordination	Interagency Coordination	I,V		Meeting set
	1991 Fall chinook run	Fish Management	I,II		Discussion
	Upper Klamath River water situation: request larger USFWS role in BOR decisions	Flow	I		KRFRO staff to stay involved in flow release decisions
	Discontinuation of CDFG operation of Salmon and Scott weirs	Fish Monitoring	I		Discussion: budget reductions of CDFG anadromous fish budget
	Shasta River CRMP: Draft MOU establishing CRMP	CRMP	V		TF to review the draft
June 15,'92 Arcata, CA	Report on prioritization scheme for project selection by TWG	TF business and procedures: Prioritization	I		Discussion
	Report on Budget Committee FY 1993 workplan budgeting process	TF business and procedures	I		Set agenda item for next meeting re: adding preference points for employing target groups
	Discussion of TWG compensation or alternate funding for technical services	TF business and procedures	I		KRFRO to research compensation of TWG members
	TWG clarification on carrying capacity and participation in THP process	Timber Harvest	I		Motion to request TWG to formulate guidelines and techniques for timber harvest activities. Two will develop functional timber harvest guidelines to provide adequate protection for streams. Place on next agenda. KRFRO to research carrying capacity of the Klamath River system and relation to spawning escapement floor.
	Motion to put USFWS requested public workshops out to bid	Public Education	IV	F	No action
	Various Motions re: adopting FY 1993 workplan	TF business and procedures	I	F	Discussion re: various underlying policy questions
	Motion: to approve projects as ranked with exception of public education items to be considered by Budget committee	**FY93 Workplan Adoption**	I	P	FY93 Workplan adopted

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Various Motions on specific budget proposals, re: carryover money and multiyear projects	FY93 Workplan amendments	I	P	
	Motion: for TF to sign MOA committing UFDWS and TF to communicate and coordinate some efforts on fish restoration activities	Fish Restoration	IV	P	Information sharing
	Letter to Dept. of Interior (Lujan) requesting specific deliveries at Iron Gate to support smolt survival.	Fish Restoration	III	P	**Letter** to be sent
	Long-Range Plan amendment process: leave period open or stagger over 5 yr. period	Long Range Plan	I		Moved to next meeting agenda
	Update on Iron Gate and Trinity R. spring hatchery releases and operation changes	Hatchery Operations	I		CDFG to send updated report to TF
	Motion to form a committee re: issue of artificial propagation and wild stock interaction	Hatchery - Wild Stock	I	P	Views to be taken to ODFW for discussion
	Motion to request RWQCB to amend basin plan to include temperature objectives	Water Quality	III	P	Staff to write **Letter**. CDFG, NMFS and USFWS will compile WQ data and develop fish protection standards for mainstem, Shasta, Scott. Report to be reviewed by TF with request to amend Basin Plan.
	Report on suction dredge mining regulations in KB. **Motion** to support changes proposed by CDFG	Mining	I	F	KRFRO will compile comments of individual TF members and draft **Letter** for TF consideration
	Request for additional funds for ongoing sturgeon project due to tagging problems	Fish Management	I	P	Placed as 3rd priority for use of unexpended 1992 funds
Nov. 4-5'92 Yreka, CA	**Motion:** Bonus points for employing target groups	TF business and procedures: Ranking	I	F	
	Establish committee to address issue	TF business and procedures: Ranking	I	P	Chair to appoint committee to develop recommendations how to make target groups integral to the ranking process
	Report on 3 advisory committee chairs	Interagency Coordination	V		KRFRO to distribute copies of report. Members can comment.
	Report of hatchery review committee	Hatchery Operations	I		KFRFO to distribute copies of reports on bioenhancement/supplementation. Hatchery/wild stock committee asked to look at basin wide enhancement

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Annual (1992) fishery restoration program review report	TF business and procedures: Report	I		
	Motion: Adopt draft report with 30 days for members to respond			P	Staff to incorporate discussion of ocean harvest management and population protection into 1992 annual report
	Report on THP regulations	Timber Harvest	I,V		**Letter** of thanks to Fruitgrowers
	Recommendations of budget committee with deletion of $10000 for public workshops requested by USFWS	Public Education	IV	P	KRFRO to develop information on public workshops for next meeting
	Discussion of 1992 flows in Klamath	Flow	I		Discussion, no action.
	Motion to delay adoption of Upper Basin Amendment	UBA	I,V	P	No action on Upper Basin Amendment
	Send **Letter** to NCRWQCB requesting due process for establishing and enforcing temperature objectives	Water Quality	III	P	**Letter** to be sent
	Report on CDFG proposed changes to 1993 Suction Dredge mining regulations	Mining	I		Received report; discussion; No action
	Report on Public Education Program	Public Education	IV		No action
FEB. 3-4, 1993 Brookings	Reports on Administration chances, CVP Reform Act, High Seas driftnets	Interagency Coordination	I		No action
	Report from Stock Identification Committee (Barnhart)	Stock Identification	I	P	Discussion re: Unique stocks of concern as identified in LRP vs. metapopulation concept.
	Motion to thank committee and keep in mind that purpose is to validate or amend list of stocks contained in Long range plan				**Letter** of thanks drafted TF did not accept, reject or necessarily endorsing report findings
	Report and **Motion** to adopt RFP process for 1994 proposals with a strawman example provided	TF business and procedures: RFP	I	P	RFP format approved with strawman example included
	Motion on policy for KRFRO to develop proposals for work by others	TF business and procedures	I	P	KRFRO can develop proposals for needed work
	Report on compensation for TWG members. Request for staff to explore contracting services	TF business and procedures	I		Compensation is legally possible but is not the policy of Dept of Interior. Serving on an advisory committee is considered an honor. KRFRO to investigate financial compensation.

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Motion to change cyclical RFP system	TF business and procedures: RFP	I	P	Place on March agenda
	Discussion on role of local Fish and Game Commissions in fish restoration. **Motion** to send ranked lists of proposals to Commissions for funding consideration	Interagency Coordination	III	P	KRFRO to provide info to County F&G Commissions on established subbasin planning groups and funding consideration.
	Discussion on content of quarterly newsletter. **Motion** for editorial guest column with opposing viewpoints	Public Education	IV	P	Newsletter will contain guest editorial column with opposing viewpoints
	Incentive Points for target employment groups	TF business and procedures: Ranking	I		
	Motion: Up to 10 point may be awarded			F	
	Motion: Adopt RFP with modifications on point criteria (see minutes for details)			P	RFP adopted as modified
	Report on new Calif. Board of Forestry forest practice rules	Timber Harvest	I		Discussion.
	Report on recommended streamside protection measures, crossings, refugia,	Habitat Protection	I		
	Motion to assign TWG to ID high quality watershed which provide critical habitat for native anadromous fish stocks . KRFRO staff will prepare correspondence to major landowners and land management agencies for cooperation			P	TWG to ID high quality watersheds
	UBA sent out for public review	UBA	I,V		Public comment period
	Public meeting Klamath Falls re Restoration program and UBA	Public Education	IV,V		
	Report on Salmon River spring chinook project and Hammel creek rearing	Stock Identification	I	P	
	Motion to withdraw Hammel Creek project funding from 1993 list	Small-scale rearing project			
	Report 1992 Fall chinook escapement	Fish Management	II		Report accepted; No action
	Proposed KlamathRiver Instream Flow Study	IFIM	I		Discussion re: scoping, parties to be involved

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
MARCH 30-31, 1993 Klamath Falls	Reports on Jobs bill, status of Upper Basin amendment, BOR operating plan	Interagency Coordination	I,V		No action
	PFMC salmon season escapement	KFMC coordination			
	Motion to support escapement of 55,000 natural spawnerrs			F	
	Motion to support escapement of 35,000		II	P	**Letter** sent to KFMC
	Evening Discussion session on Upper Basin Amendment	UBA	I,V		Discussion
					Place P. Higgins Congressional testimony on future TF agenda
	Update on Instream Flow study; discussion re: parties, methodology	IFIM	I		
	Motion to have additional scoping session to wider audience			P	
	Target group proposal ranking process	TF business and procedures: Ranking	I	P	TWG to assign up to 10 points based on documentation provided by a proposal on compliance with federal job preference guidelines
	Cyclical RPF system: **Motion** to have TWG develop prototype RFP identifying specific and high priority work needed by each subbasin with attention to involving CRMPs	TF business and procedures: RFP	I	P	
	Motion re: how to process comments received on UBA	UBA	I,V		Form a committee of upper basin interests to work on re-drafting UBA
	Status report on KRIS	GIS, Monitoring	I,IV		Report received; no action
	Green sturgeon update, hatchery/ wildstock update	Fish Management	I		Reports received; no action
	Reports from TF participants on proposed 1994 activities	Interagency Coordination	I		
JUNE 15-16, 1993 Yreka	**Motion** to adopt the FY 1994 Work Plan as recommended by TWG and amended by Budget Committee	**FY94 Workplan Adoption**	I	P	Opposition based on ranking process, issue of UBA. Passed as amended.
	TWG ID of Critical Fish Refugia and **Letter** to landowners	Stock Protection	V		Redraft **Letter** identifying watersheds and requesting cooperation from land owners in protecting those watersheds
	Instream Flow study scoping	IFIM	I,V		KRFRO to set up meeting of agencies and organization to participate in scoping of Flow study
	Status report Klamath and Six Rivers Nat'l Forests Land Mgmt. Plans	Timber Harvest	I,V		Report; discuss; no action
	PacFish update	Habitat Restoration	I,V		Report; discuss; no action

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Klamath Basin Hatchery Report **Motion**: Direct TWG to investigate impacts on natural fish populations of shifting hatchery releases from fingerling to yearling sized fish	Hatchery - Wild Stock	II	P	Coordinate TWG and KFMC TAC review
	CDFG policy on small scale rearing projects. Discussion of TF policy on funding new hatchery proposals	Hatchery - Wild Stock	I		Invite participation in a wild-hatchery fish review team
	Report: Shasta R. 1993 unimpaired flow	Flow	V		No action
	Report: Shasta fall chinook status will not be listed by CDFG	ESA	I		Set future discussion in context of Barnhart report and Stock identification committee
	UBA ad hoc committee report	UBA	I,V		Committee directed to provide list to TF on specific changes needed
	Long term "needs list" for fish restoration	Long Range Plan	I		KRFRO staff to compile list of recommended projects and forward to tWG
	Contribution of $500 to high school Klamath field trip	Public Education	IV	P	Request for $500 approved
Oct. 5-6, 1993 Yreka	Reports: Calif. work plan for FY94	Interagency Coordination	I		
	Federal work plan FY94	Interagency Coordination	I		
	Upper Basin report on ERO	Interagency Coordination	I,V		New USFWS office in Klamath Falls
	Effect of UBA on FERC relicensing	FERC	I		Recommendations how TF can be involved
	Discussion of UBA procedure	UBA	I,V		Continued discussion
	Report on ID of critical fish refugia	Stock Protection	I		TWG to develop recommendation for prioritizing "key watersheds" in basin
	Report: Trinity River Act amendment	Trinity Restoration Program	V		TF to place update on feathering C&D on next agenda
	Report: Coho listing petition by PRC	ESA	I		No action
	ERO report on new office and ecosystem approach to biodiversity in KB	Interagency Coordination	I		TF Budget committee to look at FY94 work plan to ID priority projects for possible ERO funding
	Report: Pine creek restoration Report: BLM Fisheries Program	Habitat Restoration	I		No action
	Report: Annual program accomplishment	Long Range Plan	I		Assign subcommittee to evaluate accomplishments and identify objectives that have not been addressed using Long-Range Plan as measuring stick
	Long term needs list status; non-federal funds match determination for CDFG funding	Interagency Coordination	I		CDFG Proposals accepted as federal match
	Report: TWG activities: Hatchery impacts on wild fish	Hatchery - Wild Stock	I,V		Discussion; TWG to continue work
	GIS development; development of hydrologic layer, key watersheds	GIS, Monitoring			

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Motion: Invite PPE to provide information on hatchery/wild interaction on operation options of Iron Gate Hatchery as part of FERC obligations	Hatchery - Wild Stock	I,V	P	Pacific Power and Electric invited to participate
Oct. 6,'93 Joint KFMC-KTF mtg. Hoopa	Report: Dept. Interior on status of salmon; staffing, setting of priorities	Interagency Coordination	I		Report; discuss; no action
	KFMC update: PFMC review group in process KTF update: 3 issues: Subbasin implementation of restoration via CRMPs; UBA process; ERO ecosystem opportunity	Interagency Coordination	II		Report; discuss; no action
	Report: 4 Chairs meeting **Motion**: To develop communication methods between chairs of TWG and TAT. Joint technical meetings could occur.	Interagency Coordination	V	P	Proposal to improve information sharing between groups by fostering communication, meeting together, hearing technical information together.
Feb. 1-2, 1994 Arcata, CA	Report from UBA ad hoc committee Motions proposed to expand ad hoc process, add members to TF,	UBA	I,V	F	Various Motions fail. Ad hoc committee to report in future meetings.
	TWG reports: NBS projects FY1995 RFPs: minor change to RFP language to stress sub-basin objectives	Interagency Coordination TF business and procedures: RFP	I I	 P	No funds available for Klamath Basin Adopted
	TF request for budget item of $16,000 for support of TWG members	TF business and procedures	I	P	Adopted
	Request for support of Trinity Restoration Program reauthorization	Trinity Restoration Program	III		**Letter** to be drafted with suggestions for improvements. Sub committee formed
	Instream Flow Needs assessment	IFIM	I		Issue turned back to work group
	Report on status of coho listing petition	ESA	I		No action
	Report on USFS forest plan process	Interagency Coordination	I,V		Receive report; recommendation to continue coordination
	Report on Jobs in the Woods program	Interagency Coordination	I		Receive report; no action

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
April 19-20, 1994 Brookings	BOR Report on 1994 water outlook and operational plans	Flow	I,V		Receive report; discuss
	USFWS report on effects of 1994 water operations on endangered species	Flow	I		Receive report; discuss
	CDFG report on planned releases from Iron Gate Hatchery	Hatchery Operations	I		Receive report; discuss
	Report of fishery agencies on planned 1994 actions	Flow	V		Receive report; discuss
	Motion to alter long-term instream flow management below Iron Gate •in accordance with Federal Trust Responsibilities to all basin tribes •Fishery assets to be protected in times of shortage •USBOR to use best available scientific information in developing operations criteria and procedures	Flow	III	Tbl	
	KFMC report on 1994 salmon harvest management	KFMC coordination	II		Receive report; discuss
	Report on Klamath Symposium re: biological constraints	Interagency Coordination	IV		Receive report; discuss
	Report on NEPA coordination between Trinity River restoration efforts and CVPIA	Trinity Restoration Program	III		Receive report; discuss
	Report on Four Chairs and Trinity Restoration extension	Interagency Coordination	V		Receive report; discuss
	Federal Work Plans in response to President's plan: KRFRO, ERO, Dept. Ag; Hoopa tribe	Interagency Coordination	I		Receive report; discuss
	Motion: UBA ad hoc committee to expand membership to Klamath Tribe and Klamath County; not expand original LRP into Upper Klamath Basin; expansion of Klamath Restoration Program to occur upon adoption of UBA in June or no later than October	UBA	I,V	P	Expand TF membership to include Upper basin representatives when UBA adopted
	Status report on FY 94 restoration projects	TF business and procedures: Status	I		Continue discussion of NCIDC project via conference call
	Make $2500 available for Upper Basin field trip	Public Education	IV,V	P	
	Motion: Approve **Letter** of support for Trinity program extension as amended	Trinity Restoration Program	III	P	**Letter** to be prepared and sent to Congressional and other representatives

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
May 4, 1994 TF Conference Call	**Motion:** to reject proposed changes in scope of work of Salmon Rearing proposal submitted by NCIDC and refer to TWG for review	Small-scale Fish Rearing	I	P	Adjust funding; direct TWG to review project
June 22-23,1994 Yreka	Report on FY 1995 Work Plan from TWG and Budget Committee: Point ranking, priorities, objectives Various Motions re: NCIDC reallocation; use of surplus funds from 94.	TF business and procedures: Budget	I		Motions discussed
	Action adopting final FY1995 Work Plan as amended	**FY95 Workplan Adoption**	I	P	FY95 Workplan adopted as amended
	Motion: re use of surplus 1994 funds: for instream flow study including Shasta and Scott rivers.	IFIM	I	F	
	Restated **Motion:** deleting specific reference to Shasta and Scott			P	Funds directed to IFIM
	Motion: on **Letter** supporting reauthorization to Trinity Restoration Program as amended	Trinity Restoration Program	III	P	**Letter** to be sent
	Motion: Adopt a timetable for adoption of the upper basin amendment as proposed by the upper basin committee	UBA	I,V	P	
	Motion: to alter long-term instream flow management below Iron Gate •in accordance with Federal Trust Responsibilities to all basin tribes •Fishery assets to be protected in times of shortage •USBOR to use best available scientific information in developing operations criteria and procedures	Flow	III	F	No recommendation for change in water management
	Motion: to send **Letter** from TWG to FERC and BOR re: implementation of Instream Flow needs assessment	IFIM	III	P	**Letter** sent
Joint KFMC and KFTF	Report: Harvest monitoring methodology for spring and fall Klamath fisheries	Fish Management	II		Reports received, discussed, no action

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Harvest reports: CDFG Ocean Sport and Commercial, Karuk, Hoopa, Yurok, ODFW	Fish Management	II		Reports received, discussed, no action
	1994 water management in upper basin; escapement goals.	Flow	I		Reports received, discussed, no action
Nov. 29-30, 1994 Klamath Falls	Upper Basin Amendment	UBA	I,V	P	Discussion
	Motion: TF to review draft of UBA submitted by ad-hoc committee by Feb. and proceed with final action at June meeting				
	Request for TF endorsement for Trinity Co. request for 50,000 AF under Trinity Act	Trinity Restoration Program			
	Motion: TF recommend evaluation of 50,000 AF in EIS/EIR and make available if consistent with fishery needs of Klamath, Trinity and Sacramento basins		III	P	**Letter** to be sent
	BOR report on 1995 Klamath River water outlook and operational plans	Flow	V		Discussion re BOR considering minimum flows as defined in FERC licence
	TWG update on IFIM, esp. role of NBS and scoping	IFIM			
	Motion: **Letter** to Secty. Interior in support of NBS role in Phase I scoping		III	P	
	Assign TWG to form recommendation re: use of carry over funds for river flow studies				
	Maintenance of USGS Stream Gauge stations	Monitoring	I		KRFRO to fund gages in Klamath, Shasta and Scott for FY95
	USFWS results of Fall Outmigrant Trapping and Spawning Survey	Fish Monitoring	II		Report received; discussion
	Report: KWUA request : survey of potential benefits of increased releases below Iron Gate	Flow	I,V		Report received; discussion re: water temperatures (e.g.)
	Proactive measures on Listing of Klamath Spring Chinook	ESA	I		Discussion; Request to include proposals to benefit spring chinook in the RFP process
	CDFG report: funding, regulations, returns, hatchery practices	Interagency Coordination	I		Discussion: Upper vs. lower basin concerns; wild-hatchery issues, Shasta, Scott stocks
	NRCS Salmon Initiative: Assistance to Tribes and private landowners	Interagency Coordination	I,II		Opportunities for funding announced
	USDA Forest Plan Update	Interagency Coordination	I		Report: President's Forest Plan, Northern Spotted Owl, Watershed Analyses (WAs), GIS

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Update: Subbasin planning	Sub-basin planning	V		Discussion: Role of CRMPs, technical capacity of CRMPs, prioritization of problems in Shasta
	Motion: Provide an award for landowners contributing to fisheries resources			Tbl	Staff to provide ideas
	Motion: **Letter** of support to Coastal Conservancy for Lower Klamath restoration plan	Interagency Coordination	III	P	**Letter** to be sent
	Discussion: Bring parties together to use Iron Gate and Copco storage to alleviate water quality and timing problems	Flow	V		Interested TF members to meet and discuss
	Update: Reauthorization of Trinity Program; status of 95 Restoration projects	Trinity Restoration Program	II,V		Recommendation to discuss at Three Chairs meeting
	Status 95 Restoration Projects	Trinity Restoration Program	I		Report received; no discussion; no action
Feb. 16-17, 1995 Eureka	Dale Hall introduced as new Chairman, seated new members, comment period for state angling regulations announced	TF business and procedures	I		
	Report: USBOR 1995 Klamath River water outlook and operational plans.	Flow	III		**Letter** supporting 50,000 AF release from Trinity Reservoir for Humboldt and downstream water users per Trinity River Act and review of management options in the EIS/EIR Motion failed on issues of state and tribal rights on adjudication.
	Motion: to write **Letter** to DOI and Dept. Justice encouraging federal help in completing adjudication of the Klamath Basin	Adjudication		F	
	Motion: TF to write **Letter** to BOR concerning rationale behind 1995 water management: process, standards, selection of exceedance values	Flow	III	P	Discussion of technical vs. policy issues in water mgmt. **Letter** to be sent to BOR
	Report: IFIM Scoping, Funding **Motion:** to spend surplus funds and matching funds on mainstem this year	IFIM	III	F	**Letter** to Secty. Interior supporting '95 funding request for funds to complete stream flow evaluation of Klamath River (check: **Letter** of March 29, 1995 not sent?)

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	'95 RFPs Discussion re: adding restoration of spring Chinook, geomorphology to RFP	TF business and procedures: RFP	I		
	Concern from Hall re: TWG timing and IFIM funding				
	Upper Basin Amendment**:** Discussion of draft	UBA	I,V		Draft to be circulated within ad hoc committee and TF for action before public review
	FiveYear Program Review:	Long Range Plan	I		Discussion how to proceed
	Report: French Creek monitoring results	Habitat Restoration	I		Report received
	Report: USGS Klamath Initiative funding Coordinate USGS, NBS and TWG on geomorphology aspects	IFIM	I, III		Report received. **Letter** to DOI thanking for funds and cooperation between NBS and USGS
	FWS reorganization on Ecosystem basis	Interagency Coordination	I		
	Agriculture/private lands cooperation in Klamath restoration **Motion**: Staff to develop non-monetary awards options proposals for TF consideration	Agriculture-private cooperation	V	P	Staff to provide options at next meeting
	Report: Tech Team concerns and actions to prevent ESA listing of spring Chinook	Fish Management	I		Discussion re: Barnhart report, invormation on Shasta and Salmon stocks
June 20-21, 1995 Klamath Falls CA	Disagreement with CDFG **Letter** re: request for increased flows	Interagency Coordination	I		Discussion; no action
	USBOR report Status; operating plan, FERC aspects	Flow	I		Discussion: no action
	KPOP: Operations plan for Klamath project	KPOP	I		Discussion: no action
	Report: Coho/ Steelhead listing	ESA	I		Discussion: no action
	Report: IFIM: NBS and TWG scoping	IFIM	I		No **Motion** or explicit decision on proceeding with IFIM regarding TWG recommendations was made by TF. TF Chair made decision to move forward with IFIM study based on TWG recommendations.
	Status Report: UBA	UBA	I,V		Recommendation by Ad Hoc committee for Do-Pass Agendized for next meeting

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Award Option and Nomination **Motion**: Appoint awards chairman	Agriculture-private cooperation	V	P	Committee chair appointed to move forward with nominations
	Report: FY 96 Work Plan: Budget Cmte. and TWG Various Motions, amendments, failed Motions, and withdrawals	TF business and procedures: Budget	I		Discussion re: IFIM funding, CRMPS, native stock enhancement, screen maintenance, GIS, TF overriding TWG recommendations, etc.
	Motion to adopt Work Plan as amended	**FY96 Workplan Adoption**	I	P	FY96 Work Plan adopted as amended
	Request for additional funds for IFIM	IFIM	III		**Letter** to Sctry. Babbitt requesting additional funding for elements of IFIM study
	Report: Trinity Restoration Program	Trinity Restoration Program	I		No action
	Proposed Trinity River amendments to CVPIA **Motion**: **Letter** to Secty. opposing amendments and referring to NEPA process	Trinity Restoration Program	III	P	 **Letter** sent opposing further water diversion from Trinity
Oct. 26-27,1995 Brookings	BOR status of lake levels	Flow	I		Discussion; no action
	Status of Klamath Project Operation Plan	KPOP	I		Discussion
	NBS Jurisdictional Analysis as part of IFIM	IFIM	III		Discussion
	Motion: **Letter** from TF to Solicitor requesting fast-tracking the review of NBS jurisdictional analysis			P	**Letter** to be sent
	Report: Flow study direction and TWG recommendations	IFIM	I		Discussion Request for comments on MOU
	Report: TWG role in KPOP	KPOP	I		TWG members to review technical memoranda and provide recommendations to TF
	Motion (as amended): to consider items singularly: 1)Water quantity model Keno to Seiad 2) Pilot study cold water refugia 3) Defer Increase Water quality contract bet IGD and Keno until next meetg 4) Refer Water Quality Model and increase in scope of work back to TWG with response in 30 days	IFIM	I	 F P F F	 Approve and include funds to add videography component Discussion on Upper Basin concerns on scope of work and source of funding No action

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Rept: Reintroduction of anad. fish into Upper Basin	Fish Management	I		Discussion re: historical presence
	UBA final recommendation	UBA	I,V		Deferred to next meeting
	Mid Program Review	Mid Program Review	I	P	Scoping committee formed
	Motion: Develop RFP to seek evaluation from an independent entity				
	Restoration Award to private landowners **Motion**: Approve press release	Agriculture-private cooperation	V	P	Press release to be issued
	Report: adverse effects of pesticides on Coho Salmon	Water Quality	I		Discussion; No action
	Report: CDFG on 1995 In-river fishery	Fish Management	II		Discussion
	Revision on RFP and Proposal ranking process of TWG andTF	TF business and procedures: Ranking	I		Discussion; Comments to be returned by Dec. 1 for consideration at next meeting
	USFWS Klamath Ecoregion reorganization	Interagency Coordination	I		Discussion; no action
	Update: Trinity River Reauthorization	Trinity Restoration Program	I		Discussion
April 23-24, 1996 Klamath Falls	Report: Sen. Hatfield representative on Ecosystem Restoration issues before Congress	Interagency Coordination	V		No action
	Report: BOR status of lake levels	Flow	I		No action
	Report: CDFG on 1995 escapement and 1996 abundance forecast	Fish Management	II		Discussion re: sport fishery issues re: counting techniques; spring chonook tagging; hatchery vs. natural issue etc. No action
	Report: NBS Jurisdictional analysis	IFIM	I		Receive report, discuss, no action
	Report: Klamath Compact	Klam. Compact, Upper Basin	V		Discussion re: coordination with UBA; No action.
	Budget realities of TF and effects on 1)Reductions 2)Meeting frequency 3)Reauthorization of Trinity Program 4)Appoint chair for MidProgram evaluation 5)New TF priorities given limitations	TF business and procedures: Budget	I		Discussion on funding constraints; no action
	Private Landowner Award	Agriculture-private cooperation	V		Winners announced; Plaques to be prepared and awarded at a TF meeting

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Revised TF priorities and revision of RFP ranking for restoration proposals	TF business and procedures: RFP	I		Discussion
	Motion: To adopt new procedures and not permit TWG members sitting as TF alternates to vote at TF level			P	**Motion** carries
	Motion: To adopt list down to available funds and fund others in rank order if funds become available	**FY96 Workplan Revision**	I	P	Amended Motion adopts revised funding priorities
	Budget shortfalls for FY96 proposals: Procedures to fund remaining projects on ranked list as new money becomes available	TF business and procedures: Ranking	I		Discussion re: negotiating with contractors to revise amounts and timing; revision upward of funds available if certain projects delayed
	UBA final recommendation	UBA	I,V		Discussion: Defer decision to next meeting
	IFIM correspondence and Chair's position: **Letter** from Hall to PacifiCorp requesting financial contributions for water quantity model development	IFIM	I,V		Discussion re: Chair's position moving study forward
	Update on IFIM contract agreements, MOU, Hatfield Committee support	IFIM	I		Discussion on study elements, timing, microhabitat quick response study, action by Chair to sign MOU without TF concensus, Hatfield funding
	Report: Oregon AG's opinion on Klamath Project water allocation	Flow	I		Discussion on process, UFSF claim
	Additional Handout materials: **Letter** TF to BOR supporting KRIS coverage to mainstem Trinity	GIS, Monitoring	III		**Letter** of support
	Letter Hall to TF appointing 5-yr program review RFP committee	Mid Program Review	I		Committee appointed
June 4-5, 1996 Arcata	BOR water supply conditions	Flow	I		Report received; no discussion
	Cong. Riggs Leg. Update 1) Trinity Reauthorization: 2 yr. extnsn. 2) CVP Reform Act 3) Hatfield bill re: Upper Klam Wkg. Grp	Legislative coordination	III		Discussion; thanks
	Mid program review update on developing RFP and requests for participation	Mid Program Review	I		Discussion

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Report: Results of Budget Committee meeting and recommended categories for ranking FY97 projects	TF business and procedures: Budget	I		
	Motion: Adopt categories recommended by the Budget Committee at the levels indicated			P	Reopen issue re: Sub-basin planning coordinator
	Motion: Approve categories with exception of Subbasin planning coordinator			P	
	FY97 RFP Format	TF business and procedures: RFP	I		Discussion pre- and post- photographs; monitoring, flexibility, user friendliness. Format adopted.
	UBA Final Recommendation	UBA	I,V		
	Motion: Delay action until passage of Hatfield amendment			F	
	Motion: Pass UBA with understanding that Hatfield working group be autonomous, with representation o the working group from the ocean fishery and lower river tribal interests			Amendment rejected	
	Motion: Pass UBA with understanding that Hatfield working group be autonomous,			F	Move item to next agenda
	Hatchery management issues: how to handle escapement fish and especially dispose of fall chinook	Hatchery Operations	I		Food giveaway programs proposed Discussion on who sets hatchery policy (F&G Commission, Region?);; attention to Steelhead. No action
	Update Phase II, IFIM, agreements with NBS	IFIM	I		Discussion; coordination with TWG on use of available funds
	Update: GIS activities at HSU	GIS, Monitoring	I		No action
Oct. 10-11, 1996 Brookings	CDFG request for approval of nonfederal match	TF business and procedures: Non-federal match	I		Discussion re: agencies other than CDFG providing match; Defer action to confirm qualifying activities
	Motion: Approve items presented by CDFG for non-fed match			P	
	BOR Update on lake levels, flows and forecast	Flow	I		Discussion; no action
	Report: Klamath Basin ecosystem restoration issues before Congress (DeFazio rep)	Legislative coordination	III		

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Report: Klamath Compact Commission and Hatfield Working Group	Interagency Coordination	V		Discussion on how coordination and information flow is occurring
	Report: Status on Steelhead and Coho listings	ESA	I		Discussion of listing process, area, influences of flow releases, cumulative impacts, watershed appr9oach, NMFS as lead agencies;
	Update on IFIM studies	IFIM	I		Discussion
	Report: 5 Chairs meeting	Interagency Coordination	II,V		ID's need for more coordination especially at technical level Action: Develop working paper outline on what coordination should be
	Review of Long Range Plan; Mid-program review contract	Long Range Plan Mid Program Review	I		Discussion of other state/basinwide models; cost of audit; remove Harvest Management component; include KFMC, not done in house; look at money spend administration vs. projects on ground RFP is already distributed
	Motion: Issue RFP for independent auditor to audit program finances; Amendment: Dollar amounts spent to be developed internally then evaluated by cooperator			P	**Motion** passes
	TWG report on FY97 projects	**FY97 Work Plan Adoption**	I		Discussion re: funding available, categories of projects; need for additional funding for program; specific project proposals; CRMP planning process
	Motion: Adopt FY97 work plan as amended				
	Report: TWG recommendation on sub-basin planning and spending priorities	Sub-basin planning	V		Discussion of CRMPs vs. TF setting sub-basin priorities
	Programmatic priorities for FY 98 process	TF business and procedures: Prioritization	I		
	Motion: Priorities for FY funding be 1) 5-yr program evaluation and 2) Instream flow study			F	
	Motion: Priority for FY 98 funding will include Instream flow study			P	
	UBA **Motion**: Adopt the UBA	UBA	I,V		**Motion** withdrawn
	Motion: Defer adoption to Feb. mtg.			P	UBA deferred
February 20-21, 1997 Yreka	CDFG: Review non-federal matches. So far these have consisted entirely of CDFG habitat restoration projects funded by sources now drying up. Suggestions to look for other matches that would qualify.	TF business and procedures: Non-federal match	I		Report to be brought back

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	BOR to pick up funding for Juvenile Emigration Monitoring. Need overall study plan how traps operate together.	Fish Monitoring	I		Trinity Monitoring subcommittee to meet with USFWS Arcata office and TWG to coordinate trap program
	Parliamentary chair appointed to make recommendations on issues of order	TF business and procedures	I		Parliamentarian appointed
	Appointment of representatives to Upper Klamatth Working Group	Interagency Coordination	I,V		Agreement on representatives
	Report: BOR on lake levels, flows and forecast	Flow	I		
	Report: CDFG 1996 Fall chinook run, harvest	Fish Management	I, II		
	Report: Cong. Herger re flood damage	Legislative coordination	III		
	Interior appropriateions	Interagency Coordination	I,III		
	Award to private landowners	Agriculture, private cooperation	V		
	Status: IFIM studies	IFIM	I		
	Motion: TWG shall have full authority to guide IFIM			Withdrn	
	Motion: TWG directed to provide oversight on IFIM with ultimate authority remaining with TF thru updates			P	Motion to provide TWG oversight with ultimate TF authority
	Motion: TF to commit to spend 1-2 days addressing IFIM and solicit proposals thru annual RFP process			P	Motion for TF to meet with a facilitator
	Trinity River Flow Evaluation Report	Interagency Coordination	I		
	Report: TWG letter on scoping	IFIM	I		Discussion re: components of study, TWG role
	TF Decision on LIAM	IFIM	I		TWG to prepare questions from policy side
	Status: Trinity Mainstem Fishery Restoration	Trinity Restoration Program	I		Discussion on EIS/EIR
	KRIS demonstration	GIS, Monitoring	I,IV		Demonstration
	Upper Basin Amendment assignments: state of Oregon commitments. Klamath Co. mandated rep. not to accept any decision on UBA	UBA	I,V		Refer UBA back to Committee
	Development of FY98 RFP and sub basin planning	TF business and procedures: RFP	I		
	Motion: Accept recommendation of TWG for revised RFP and encourage matching funds and in kind.			P	FY98 RFP adopted
	Motion: TF to recommend to CDFG to Coded Wire Tag the appropriate number of coho and chinook in Klam. Basin and appropriate marks be applied to steelhead.	Fish Management	III	P	Motion passed
	Budget Committee recommendations for FY98	ESA	I,V	F	Motion fails
	Motion: In HCP process that Secty. Interior encourage involved landowners to participate in sub-basin planning				
	Motion: Accept Bud. Cmte. recommendations	TF business and procedures: Budget	I	P	Budget committee recommendation pass

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Mid Year Program Review recommendations to contractor Motion: Accept Kier and Associates as cooperator, amend contents of proposal to delete harvest management, establish oversight committee	Mid Program Review	I	P	Contractor selected and proposal amended
April 23-24, 1997 Eureka	Facilitated meeting to discuss IFIM study Discussion of IFIM process, review of TWG questions, scoping/problem ID	IFIM	I		
	Motion: TWG to provide TF with flow study plan from Iron Gate to mouth of Klamath. Results of study to be integrated with other needs and considerations			P	TWG to prepare flow study plan
June 26-27, 1997 Klamath Falls, OR	Review data for IFIM study. **Motion:** approve letter from TWG to BOR	IFIM	I	P	Letter to be sent.
	Update: Fish Harvest	Fish Management	I		Discussion, no action
	Update: Restoration Issues in Congress(Wyden,Smith) Reauthorization of Hatfield Working Group	Legislative coordination	III		Discussion, no action
	NMFS listing and restoration project implementation	ESA	I		Discussion, no action
	BOR status report, Klam. Basin water acquisition	Flow	I,V		Discussion, no action
	TWG report on IFIM scoping	IFIM	I		Discussion, no action
	Update Trinity EIS	Trinity Restoration Program	I		Discussion, no action
	Klamath Compact update on water supply initiative	Klamath Compact	V		Discussion, no action
	Other funding sources for TF	TF business and procedures	I		Refer to Five Chairs meeting
	Motion: Adopt FY98 Workplan as amended	**FY98 Workplan Adoption**	I		Workplan adopted.
	Motion: Fund Videography for water quantity model	IFIM	I		Funds authorized
	Response to TF letter on LIAM (Legal and Institutional Analysis Model)	IFIM	I		Decision deferred to Octover
	Upper Basin Amendment, former concensus lost, **Motion:** Table UBA in present form as amended until October **Amended Motion**: UBA subcommittee to convene to address unresolved issues	UBA	I,V	Not voted P	UBA not tabled
October 15-16, 1997 Ashland	CDFG Report: Non-Federal funding sources	TF business and procedures	I		Discussion how to better capture data on non-federal match

MEETING DATE	MOTION OR AGENDA ITEM	CATEGORY	GOAL	PASS FAIL	ACTION
	Update basin ecosystem restoration issues before Congress (several senators and representatives). Request for $1 million additional for projects, state bond, CDFG watershed funding proposals	Legislative coordination	I, III		
	Report: 5 Counties Coho Initiative	Legislative coordination	I,III		
	Report: CDFG Watershed Initiative	Legislative coordination	I,III		
	Report: BOR 1997 operations plan and EIS on Klamath Project; updates to planning model	Flow	I		Discussion re: model, tribal trust and endangered species needs, agricultural needs, and political compromises
	Coordination of Dept. Interior programs in K.Basin (2 TFs and Klamath Council)	Interagency Coordination	I,V		
	Mid Program Review update	Mid Program Review	I		
	TWG Sub-basin planning, relation to budget process **Motion:** Offer sub-basin action plan to CRMPs, watershed planning groups, Klamath PAC as TF approved outline for sub-basin planning	Sub-basin planning	I	P	Coordination with CRMPs and watershed groups to proceed with sub-basin recommended outline
	Status of restoration in lower basin	Habitat Restoration	I		
	American Heritage River Program **Motion:** KRTF support nomination of Klamath River under the Am Heritage River Program	Interagency coordination	I, III	With-drawn	
	Summary 5 Chairs meeting	Interagency coordination	I, III		
	TWG report on IFIM scoping	IFIM	I		
	USFS stream gage funding crisis Various motions to fund, withdrawn	Monitoring	I	With-drawn	
	Private landowner award	Agriculture-private cooperation	V		Call for nominations to proceed; funds provided
	LIAM (Legal Institutional Analysis Methodology)	IFIM	I		No quorum, no action
	Upper Basin Amendment; work still in progress	UBA	I,V		

KLAMATH RIVER BASIN FISHERIES TASK FORCE MIDTERM EVALUATION
INTERVIEW RESPONSES[1]

ISSUE	ID NO.	COMMENT
I. WOULD THE SITUATION BE WORSE WITHOUT THE ACT AND TASK FORCE?	3	Yes, would be worse without the Act and TF Only have $1 million per year to address a huge basin with all kinds of problems The fact that came up with a plan at all, generated with citizen input, with the TF guiding the pen of the author, is a huge success But a plan is only as good as it its implementation
	7	Probably would be worse without the Act and TF. At least TF does get interests to the table. If not talking would be suing. Does serve as a forum, attaches faces to names, become better educated on opposing issues. Members don't agree on a range of issues, but the forum has merit.
	13	Act has helped some; would be worse off without it. Provides a starting point, brings information to the table. Failure is weak stock management under current system. Listing was the only alternative.
	14	No, the situation would not be worse without the TF. If TF weren't there we wouldn't miss it. There is a better way to address fisheries problems than putting the money into the political arena. Should spend the money on the fish. Is not proud of the way the TF is operating. Are not addressing the real problems from Iron Gate to the Pacific. Fish problems are also affected by the "black box" of processes in the Pacific, harvests in the ocean, Native American harvest and Trinity diversion, which the TF cannot or will not address.
	34	Stocks are not continually declining, rather are yo-yo. Are only seeing natural fluctuations due to drought, natural ups and downs. Chinook and steelhead coming back after the drought. Coho are pathetically low in last 10 years, but aren't "declining". Fluctuations are influenced little by restoration efforts. Restoration hasn't made much difference. Any gains from restoration are negated by drop in water quality from Klamath Lake due to ag use and algae.

[1] Interview responses include 13 Task Force members, 9 TWG members, 2 KTF staff; and 2 former consultants.

ISSUE	ID NO.	COMMENT
	23	Failure will be most likely outcome of Klamath program. Will read in newspaper in 10 years "$20 million spent and didn't solve anything" - like the $3 billion on the Columbia. This shows how *not* to set up another TF with consensus rule. Act and TF does increase public awareness of the fisheries problems. Are spending money on bandaids (e.g. fish screens), but would be worse without them. At least are discussing the problems, have started a dialogue. The flow study will bring information to change the way water is allocated. Information will be used during the FERC relicensing.
	6	Not many successes to show. Had hoped for more examples of on-the ground successes to generate more money and support. Only good is that BuRec can't sweep the fish problems under the rug, but that's due more to ESA listing than the TF. Would probably be CRMPs anyway. Water rights issues will go to court anyway.
	18	Situation is only slightly better than it would be without the Act and Task Force. <u>But</u> it never had the tools to succeed so don't judge the TF unfairly. Can't take a 12,000 sq. mile watershed and expect to fix it with $1 million a year. The alternative is that the agencies would be free to do what they want, with no input from stakeholders. A TF with a broad-based membership and a strong technical TWG can be a powerful mechanism if it has the tools to work with. Temptation is to judge the TF and ask why hasn't it done more in 10 years, but judging on a starvation diet is unfair. Need to compare this program with others that have received many times more money.
	26	Situation is better with the Act. Question is whether any restoration program has done any good. This program will be a failure too if the big issues are not fixed, but it still does good to pick around the small issues. Are stymied with TF because the big issues aren't touched, i.e. water allocation, irrigated agriculture, fish passage.
	11	TF is a big plus for the fisheries, habitat and the constituencies that depend on the resource. If there were no TF, we'd be stuck with individual, uncoordinated agency processes, and minimal steps being taken for fisheries. The benefits of the TF outweigh the problems.

ISSUE	ID NO.	COMMENT
	4	Yes, situation would be worse absent the TF and Act. TF and Program have focused concern in the region on the plight of the fish. The CRMPs will do so in time. The anadromous fish stocks in the basin are "drifing toward extinction" overall, but their are "pockets of success" like the Shasta River fall-run chinook salmon.
	5	The TF and Act have been successful in consciousness-raising about the need to conserve the Klamath's salmon resources
	15	Yes, things are better with the Act and Task Force. But agriculture and timber are missing and should be at the table. Does provide a forum to discuss issues.
	16	No. Does not think the Act and TF have done any good. Can't think of a single notable achievement except for organizing Scott and Shasta landowners, which the Trinity Program never touched.
	17	The Program has made things better by increasing public awareness of, and concern for, salmon conservation in the basin. Plus there are specific accomplishments like the award-winning French Creek (sediment stabilization) project. The Klamath Basin fish stocks are steady "at worst".
	22	Public awareness of fisheries issues has increased, mostly due to the CRMPs. Are far better off in terms of public information and education. Poaching is down due to Sal.River Rest.Council. Shasta farmers are more aware of decreasing fish stocks. Would be worse off without the Act.

NATURAL SYSTEM ISSUES		
II. WATER MANAGEMENT: QUALITY AND QUANTITY		
a. Not enough water for all users	31	This is the fundamental issue and the TF has ducked it. Upper Basin was originally outside the jurisdiction. TF is not authorized to be a water allocation authority, but there is a perception that they are. Therefore the battle is over information on flow; hence divisiveness on instream flow study Above Iron Gate the IFIM is not funded by the TF
	13	Dealing with water rights, allocations, and buying water are not politically doable, therefore it settles to the bottom as a TF issue.
	14	Problem is too many people wanting fish. Increasing population and demand on resources is the real problem.
	6	Not enough water in most years, but water quality is the issue as much as water supply. Increase in water supply would mean a change in channel forming processes; can't store and release without creating additional problems.
	18	Is a Water Quality issue as much as one of water supply. Is not enough just to provide water quantity. Temperature and nutrient loads have to be reduced. Klamath main stem is dying; the fish kill of 1997 will be repeated.
	26	The findings of the Long-range Plan capture the causes of the problems in the Basin, plus the original Upper Basin Amendment. Problems are water supply, hydrodams, timber harvest and road building, degradation of water quality through irrigated agriculture etc. Also need to look at change in stock recruitment curves; shape of curve is set by the environment and the shape has changed.
	33	Diversions of natural drainage patterns and conversion to agriculture in Upper Basin are responsible for degradation of Klamath system. Is a historic problem created by early federal reclamation policies. Now Dept. of Interior has conflict of interest managing conflicting interests of agriculture, fish and native water rights. Lack of political will to restore Upper Basin conditions means that the loss of fisheries is a viable option. Feds will put money and lip service into the problem and say "we tried". Public doesn't understand that the government won't modify policy and make the necessary changes to make restoration possible.

	4	Doubts whether the BuRec controls enough water to 1) protect the federally-listed Klamath Lake sucker; 2) meet down-river (tribal) fish flow demands without 3) destroying irrigated agriculture in the upper basin.
	5	Minimum streamflow reservations may be OK for some of the smaller tributaries, but are simply not sufficient on the key streams. Disagrees with Objective 2.E.8* in the Long Range Plan. Also need to put more effort into developing index of habitat integrity per 2.A.2(a) of LRP.
	16	Water Quality, i.e. from the Upper Basin, is the principal fish-production limiting factor in the Klamath Basin.
	17	Concerned about Jenny Creek which can and should be returned to Klamath River flows. This can and should be done when the present users can obtain alternative supplies from the two new Rogue River reservoirs.
b. Impacts on water quality: temperature, nutrients, pollutants	34	Water quality is almost worse in wet winters than during drought since there is a bigger surface area in Klamath Lake for problems to develop. In wet years, water quality in Trinity goes up, but goes down in Klamath.
	6	Water quality is issue in Upper Basin, Shasta, Seiad. Water is eutrophic naturally, and after it's used to flood cow pastures it is worse and worsening. Are legitimate uses of water: Klamath wildlife refuges are important, but they only receive return water. Should have their own dedicated supply. Oregon as decided that agriculture is the primary use, and as long as they maintain that position nothing can be resolved.
	12	Hot water in main stem more a problem than quantity.
	18	Wetlands in Upper Basin need to be restored as nutrient filters. Need program to purchase ag lands in Upper Basin and above Klamath and Tule lakes in appropriate places. Lakes were always eutrophic, but nothing like now. Species have changed, nutrient loads have changed. Individuals need to take responsibility. There is no regulatory authority on water diversions number or timing, but there is on fish harvesters through KFMC, PFMC, DFG, so they take all the regulatory burden. Is unfair and disproportionate burden.
c. Water withdrawals for agricultural use	32	Need alternative water management. Problem is that it's a legal policy hole. There may be hybrid approaches possible but its hard to embrace change. E.g. Scott CRMP is light on water management. Haven't looked hard enough for alternatives. E.g. a proposition for pumping vs. riparian use, with

		financial assistance on energy costs could be possible solution. But it's a cultural deal and they're not ripe for change; won't let the hard line slip. Won't even talk about the possibility - like NRA on assault weapons.
	23	No creative thinking on water management alternatives. Are flooding fields for alfalfa because that's the way it's been done for generations. Need discussion of alternative uses: higher value crops; buying water. Are exterminating a fish run to grow a low value crop just because land owners are so set in their ways. Need more creative thinking and no one is looking at it. Maybe there is enough water if we use it differently. For example, could purchase flushing flows. Ground water pumping is totally ignored. Seen as disconnected from surface flows. No one is looking at the system.
	6	Ag community is more antiquated than other industries in terms of responding to its public trust responsibilities.
	11	It's a domino effect. Water is consumed by agriculture and what does return is high in nutrients so DO,pH become problems, results in algae blooms.
	14	Agriculture is doing the best they know how and the most they can afford. Have improved and redesigned sprinkler systems; 70% of basin has sprinklers for more accurate water application compared to none in the 1960's. Land owners using their own money for wheel lines, pivots. 85% of water is returned for other uses. Upper Basin is improving: runoff problems are reducing as runoff flows through marshes for nutrient uptake.
d. Water Allocation between Upper Basin vs. Lower Basin	2	TWG is politicized by the Upper:Lower basin issue. Irrigators block progress to goals. Deny access to land. Don't want to find steelhead on land. Shasta Co. is worst
	20	Water allocation between Upper and Lower Basin will not be resolved through the consensus process. Over long term, the IFIM study will be important for flow based issues; and sub-basin plans will be important for non-flow based issues.
	7	This is the #1 issue to increasing fish production, but other TF members won't allow water to be addressed. Flow study is vetoed every time. Is self-serving interest to constituents, not interest of fish. Takes advantage of the consensus process.
	13	Water quality and quantity in the tributaries and main stem is the #1 issue. TF has worked on the fringes and edges of the issue, but has no political will to attack. 10 years ago there was less public scrutiny, no ESA issues.

		Need to resolve the IFIM study issue. Need to do it right and not hassle with Bureau of Reclamation every year.
	27	Don't carry problems of Trinity over to Klamath; situation is different. Is not an export problem, it's timing.
e. Native American Water Rights	3	Not much action on water rights by TF. Only recently doing instream flow study. TF and State Lands Cmsn. should have taken stronger role in acquiring water rights snf/or land of ranch on tributary to Shasta R for the public trust. Other property interests defeated the initiative.
	9	Some tribes are getting out in front of the issue by hiring own water resource consultants to model flows. The TF IFIM and KPOP will take too long. Tribes may be forced to take legal action asserting their own water rights if other users continue to stonewall cooperative reallocation of water.
	34	Issue is Native American water rights vs. 70 yr. old ranchers
	6	Will come down to a legal question. Positions of the upper basin interests are too fixed. Don't know how it will play out. Tribes have the strongest hand, but need to try to work with UB interests. Should not be a "winner takes all" situation.
	33	Yurok and Klamath tribes have identified the minimum flows needed to restore fish habitat and found that even in wet years there is not enough water to support current economic needs of agriculture. There is no way out. To restore fisheries will have to impact agriculture, and the political will is not there.
	2	After IFIM study the Issue will probably go to courts: Tribes vs. irrigation interests; Resource interests vs. agricultural interests
	13	Initiatives on water rights won't come from the agencies. Courts may be the only recourse. Result will be a function of public sentiment. There has been no test of the Public Trust Doctrine yet. Was incomplete adjudication of the Klamath River in the 30's; some users didn't enter; new riparian users are now present.
	12	Tribes argue that they have jurisdiction under the Clean Water Act, Sect. 404. Decision still pending. Tribes don't get state recognition as "co-managers" in California, whereas they do in WA and OR. Have tried MOAs with DFG; are focused on the Trinity now. Need to demonstrate stability.
	11	Has already been established in the Upper Basin that Native Americans do have senior water rights

		for fishing, hunting and gathering. The adjudication process is currently underway to restore beneficial uses to biologically sound levels. 18 month timeline for ADR process with sunset in Yr. 2000 to complete adjudication. Lower Basin has not entered adjudication process yet.
f. IFIM "Flow Study"	18	Success of IFIM will rest on everyone buying into the data, which means the parties need to agree on the tasks; otherwise it will be a waste of the process and money. The TWG responsibility was to go through the scoping process thoroughly so everyone had a chance to contribute. TWG needs to keep stressing it was a technical decision, not a political one. Handling of the Geomorphology study by USFWS bypassed the TWG.
	33	Flow study would be most useful on Shasta and Scott where fish passage is not the issue, but study in tributaries is blocked. IFIM study will try to find a smoking gun, funnel money at it and when over, say they tried. Flow has to actually change before anyone can claim something was done.
	32	IFIM is painfully slow. Keep scrapping on fine points of scoping. Is the 3rd year in a row and know no more now than before. Have to fight the same fights every year.
	12	BuRec says it wants the "best science". But then what? What are they going to do when they have it? Trinity did 12 year study, peer reviewed, flow report, revisions ready, but litigation will drive the decision, then legislation can unravel that. Need a commitment up front to implement the recommendations.
	34	Even after IFIM study is completed, monitoring money will be needed to implement it. Would the money be better spent fixing something? On the Trinity, IFIM allowed tribes to go to court. On Klamath, there is no surplus to put down the river, so result of study won't change anything.
	6	The Task Force is taking responsibility for doing the IFIM, but really should be the Bureau of Reclamation since they are creating the water allocation problem. BuRec is "selectively interpreting" its responsibility. KRTF was intended to be a restoration program, not a flow study program. Dept. of Interior dictated to TF that it do the IFIM study via the override. OK, was a way to get the process started. But now all the money goes to the study, and there's no money for restoration. There has been a public investment in highly subsidized water with no acknowledgment of the public trust and tribal rights to water or fish. If got good base info from IFIM then it would be useful. Water quality and water supply are the biggest limiting factors for salmonids. Concern is with who inputs the information : a diverter or water agency

		consultant gets different answers than pro-fish analyst. Flow studies are limited by perceptions. Need coastal perspective as well as upriver for scoping.
	12	Should be higher priority on IFIM study by Secty of Interior, not the Task Force. Also need commitment that solutions will be implemented
	26	Flow study is addressing a big problem of gathering necessary information. Has been slow process. At first the expense crowded everything else out, then during 92-93 drought almost had agreement from Sacramento USFWS office to do it, but proposal was killed by certain TF parties wanting more control. USFWS found other money, elevated interest at Dept. Interior (with tie-in with KPOP and concern for water needs at Klamath Wildlife Refuge) and got the current process started. The scoping process has been done before for other flow studies, but even if the TWG process is slow you still have to get political buy-in. Consensus in itself is a win.
	35	Would be more efficient if smaller group of technical specialists did the scoping, but TWG needed to go through the process which is important for political buy-in.
	7	Value is questionable since so much variation in data. Hasn't worked elsewhere, so why here. BOR will use it whether it's valid or not. Concerned with potential to misuse the model data.
	34	There is a push to get monitoring programs out of the restoration funds. Monitoring by agencies should not be restoration dollars. e.g. BuRec should fund flow study; USFS should fund own projects.
	2	Irrigators don't want to find steelhead on land, so access is a threat
	23	Lack of Access to private land for the flow study is a huge issue.
	2	Irrigators vote no on everything above IG dam, Chairman has to override irrigators
	17	Not enough attention is being paid to the sidehill and estuary processes in either IFIM, LIAM or the other bells and whistles. The Nat'l Biological Service (USGS) comes at the TF with projects that are too pricey. These projects should be broken down into affordable chunks and doled out to others.
g. FERC Relicensing Iron Gate Dam	3	Know it's coming, but nothing done on it
	7	Will be a test of the TF and TF should make its presence felt.

	14	Will track the process. Especially concerned that power rates not be increased as a result since the electricity is important. Concern re: massive disease from hatchery stocks being passed to native trout if dams were blown out.
	34	Problem is who is going to participate for the Task Force? It takes time and effort to show up at other meetings.
	23	Tribes will have united front to force issues of water rights and fishing rights. Tribes becoming better equipped; have increased staff, expertise, data collection. Tribes have more in common as a group; old disputes between tribes now less important.
	22	Power the dams generate is so small, only about 104 families, so why have hydro on the Klamath? Pac. Corps could do away with the dams and not suffer financial loss.
	18	Need to review both quantity and quality of releases. Dams did more than just block fish passage; also drowned cold water refugia used during warm summer months (creek mouths and springs). PacCorp should be held responsible for the costs of studies they would have had to pay for if IFIM wasn't ongoing. Funds should be used for supplemental studies.
	5	FERC relicensing will be another avenue for more flow study money; applicant can be required to look upstream as well.
	33	If could eliminate the dams then could focus on different problems. Could try to get fish up where agriculture doesn't need the water. If dam passage weren't the issue could work with UB interests to restore spring Chinook
	8	Same kinds of water release requirements could be made at Iron Gate as were made on Trinity. BOR let water out of Trinity to stimulate migration of fall chinook and they had fish 3 days later. Iron Gate is used for peaking; typically power is needed in the fall and winter, but that is when there is the least water available in the dam since it is still stored in the snow pack. There should be some minimum flows in the summer. FERC relicensing will dictate how to operate the hydro. Iron Gate serves 16-20,000 homes; Not a lot but is paid for. Sells some power to Sacto where peak is in the summer, so economically is worth keeping

		Should look for a watershed basis for the studies; doesn't make sense not to look at tributaries. FERC study will have to look up to Klamath or Tule Lake.
	2	Iron Gate blocks the primary run: spring Chinook
	33	Talk about removal of dams is off the table too. Half the original spawning habitat was eliminated by the dams. Spring chinook was the biggest run in the 1850s. That's now wiped out, is lumped with fall.
	23	No discussion so far of mitigation at dams for fish. Traditionally dams were a source of water for fish, and fry could use edge habitat. But if water is warm and DO is low, it's no good.
	11	In comparison with other large anadromous river systems (e.g. Columbia, Rogue) the Klamath has the highest feasibility for reconstructing dams to permit fish passage to the Upper Basin. Looking at half a river (i.e. lower basin only) for restoring fish won't work; need to look at the whole system of water flow, water quality, riparian and wetland habitats. Will be participating in FERC process.
	16	The FERC relicensing procedure should address the need to remove Iron Gate Dam. But the TF is not even beginning to address the need to prepare for relicensing, which is only 8 years away.
	17	The present day FERC flow requirements of the Pacific Power and Light reservoirs are too low. They need to be revisited in time for the relicensing in 2006.
h. BOR KPOP	9	KPOP is not in the business of restoring fish. They want to keep water where it is . May be trying to "guide" or "manage" the use of existing water, but basically is flawed since goal is power production, not fish restoration.
	14	Hates KPOP. Understands why BuRec did it, but water allocation is a State's Rights issue. The US should not be in the business of allocating water. Adjudication will solve the problem.
III. FISH MANAGEMENT ISSUES[2]		
a. Relationship between fish and water management	3	Not on the table of KRTF; is the domain of KFMC. Have talked about allocation, but not the business of the KRTF.

[2] Fish harvest issues were excluded from this mid-term program evaluation, but voluntary comments by respondents are included.

	18	Harvest issues are not a part of this mid-term review. But it is galling to see fish harvesters take all the burden of regulation when agricultural users don't take any. There is disproportionate impact on user groups.
	32	Not the business of the TF, but the painfully slow decision-making process of the TF re: flows stymies rational decisions by agencies for fish management. If agencies don't have the data, will act conservatively and cut harvests until have more.
	23	Problem is that peak demand for irrigation in spring is the same as the time of out migration. Juv. fish are flooded onto pastures but return water is low quality. Then need good water quality for maintaining summer coho habitat, and its a dry channel. Eg. Scott: Channel changed by gold mining, diking, draining, elimination of beaver, network of sloughs, ponds, riparian zone. Screening and fencing treat a symptom, not the problem.
	34	Don't use Restoration money for monitoring fish. Fish monitoring needs a separate source.
	16	Haven't seen much improvement in fish numbers on the Klamath or Trinity. Many K-T fish experts are now suggesting the fall-run chinook spawning escapement floor might even be the average or the ceiling given the degraded nature of the habitat. The work of Orlob and Deas (UCD) on Klamath temperature issues needs to be sustained.
b. Wild vs. Hatchery stock	3	TF has an influence on DFG on the issues
	34	If TF really wants to manage based on natural spawners, then it means there won't be fishing some years. Achieving natural production will take a lot longer than 2006. To meet 2006 Goal means would need supplementation, not just natural production. So what is restoration supposed to do?
	23	Concerns re hatcheries and rearing are just symptoms of the real problems.
	6	No definitive answer. TF did a disservice to the Barnhart report by dismissing the report without adequate consideration.
	22	Is problem with residual hatchery fish that stay in upper river and don't go out to ocean. Get big eating hatchery fish; lots of dark grey steelhead with big bellies (not streamlined) between Iron Gate and I5. The rearing conditions in the Salmon are still OK, so either hatchery management or ocean impacts are the problem. There are no steelhead left in the Shasta, used to be one of the best in Calif.

	5	Strongly believes that hatchery fish compete with natural stock. Need to reform hatchery operations to "place greater emphasis on natural stock replacement". TF needs to place greater effort on stock differentiation. Also need greater emphasis on community-based monitoring of fish habitat and water quality.
c. Native Americans harvest	8	Still is a huge hole in the statistics on fish take. Can't verify assumptions of pre-dam fish and water modeling of historic flows
	14	Don't know Native Am. fish harvest numbers. Everyone else has to be checked and have a tag, but there is no tribal accountability for size of their take; is a black hole.
	16	Doesn't think harvest impacts are significant on a long-term average annual basis.
d. Ocean Impacts	8	Ocean conditions are major limiting factor for Klamath fish, but can't keep track of Klamath fish to get the data. Ocean conditions are cyclical; the food moves. Fish also affected by bears and sea lions. Coho are affected by 8 years of drought, tribs don't have enough water, which hurts juvenile production and spawners. Carrying capacity is too low for coho juveniles. The listings are political; the coho will be back in 7 years. Since we can't control the ocean factors we go to the watershed and harvest to find problems.
	14	Pacific is a big box. Feds don't touch it. Is a big piece of the puzzle and is ignored. Harvest by other countries in the Pacific is unknown factor. Can't blame all fish problems on agriculture. Effect of Trinity diversion is also major, and isn't being touched by the KTF.
e. Success of Instream Structures	2	Overall plan is needed before structures are placed. Not a fan of instream structures. Need spawning assessments before install structures, but no study plan in place. Should do upslope restoration before do instream structures
f. Continued need for KFMC	7	Yes, need KFMC. Created by Act and linked as sister agency.
-	34	Need a basic communication link, but should not be linkage of funding. There is no allocation for KFMC other than meeting expenses.
	26	Success of TAT shows you can get technical products to support management decisions, on time and with a low budget. Difference with TWG may be that it has a mixed membership and TAT is more truly technical. KFMC and TAT may need a mid-term review as well.

IV. IMPACTS OF SPECIFIC USER GROUPS		
a. Agriculture	2	Scott: 160 diversions, only 50 are screened. Not enough funding. Still have dewatering of streams
	7	Agriculture has the biggest impact of all users
	23	Water quality in upper basin is not well documented. No analysis on discharges as a whole: impacts of sewage treatment plant effluent with raw pulp mill effluents combined with ag runoff. Has always been high nutrient system with natural plant growth and waterfowl excrement, but were 5 times more fish then too. Last years fish kill was due to bad water quality management in the middle stem of Klam.
	6	When have good water in the tributaries, fish move to the mainstem. Last year hit Klamath at 80 deg due to upper basin water and loss of refugia resulting in fish kills. Not a bad water year in terms of supply. Have stress before have dead bodies.
	14	Cannot just say that "fixing agriculture" will fix the problems of the basin. Still have the unknown impacts of the ocean component, native fish harvest, diversion of the Trinity, which no one is willing to talk about.
	18	Agriculture has to change to save the fish. Can't dry up the Scott, have 85^{o} water in the Shasta and high nutrients in Main stem from the Upper Basin and expect to maintain fish.
	27	Fish screens provide a big bang for the buck, but DFG keeps a monopoly on screen technology, unlike Oregon which disperses the technology so it gets done. Are over 100 unscreened diversions in the Scott, and only 2 per year are being fixed. In 1974 Legislature set policy that DFG would be responsible for screening flows <250 cfs, but there is no money.
	11	Agriculture affects the fish resources by 1) reducing water flow in streams 2) adding nutrients which turn Klamath Lack into a cesspool. State and tribes on alert with re-appearance of toxic algae blooms. DO, and pH are chronic problems for sucker and bull trout.
	2	Need alternate water sources for stock: wells and tanks; fencing of riparian
	18	Fencing is good; is not just a band-aid. There are still problems with landowners that refuse to

		participate.
b. Mining	2	No attention on issue and no funding by TF, but DFG calls USFWS for info on presence/absence of fish redds in suction dredge sites.
	13	TF not getting into mining activities. No evaluation of impacts. DFG did do EIR on suctioning dredging.
	6	Some problem now, but mostly a problem of the legacy of mining.
	5	Suction dredging is not a major problem.
c. Timber Management	32	What difference does sediment make if there's no water in the channel? Instream structures are buried in 10 feet of stuff from road decomposition.
	34	Why spend TF money on road decommissioning when that should be a cost of maintenance by the land owner.
	6	Logging practices are under-appreciated as a problem, esp. in lower tributaries and mainstem. FEMAT and moratorium on roads is positive. Hillslope processes are a significant source of problems. Have miles of road failures during normal winters; these aren't 100-yr. storms. Some progress by Fruitgrowers in DG soils - hard to ignore. KRTF doesn't have resources to address more of the problems. USFS and private landowners are ahead of TF; TF is just a sideshow; is not creating change, is not a leader.
	26	Aquatic strategy of Forest Plans will lead to less road impacts, but there is a huge backlog of damage. Even if are good stewards now instability in lower basin wants to come down. Timber sales planned today are much more protective,
	8	Is comfortable with current timber practices since are so much better than in the '20s and '30s. If timber management were a factor impacting fish, then things should be looking better by now with the reduction in harvest and better practices.
	35	Yes, TF could have spoken out more on forestry issues
	5	Better private land forest practice rules are needed. TF is limited, but they could do an analysis of the

		problem and submit to the State. Efforts to improve timber guidelines would be shot down by the consensus process.
d. Upslope impacts	20	Funding upslope projects is a waste, since costs are so expensive that funding one wipes out budget for anything else. Putting 5 miles of road to bed or fixing a landslide are huge projects, vs. instream projects at $20-30,000 per shot. With more funding could get to upslope problems, But sub-basin prioritization is needed first.
	7	TF needs to focus on roads and land management. but have funded instream projects as didn't have enough upslope projects submitted.
	35	Need more focus on upslope problems, cumulative impacts, sources of sediments, large woody debris recruitment, riparian issues
	5	Not enough attention is given to upslope problems in grant program
e. Rafters and fishing guides	2	Most fishing guides and rafters are out of business. Happy Camp no longer "Steelhead Capitol .of the World"
	6	With abnormal high flows (in excess of natural through dam controls) on Trinity have more rafters.
f. Urban/Rural users	2	Many hidden diversions along mainstem now ID'd. Issue is lack of screening. Fish congregate in the low velocity edge of the intake inlet
	7	Shasta and Scott need to address water: These basins have the most potential to produce fish.

INSTITUTIONAL, POLITICAL, ADMINISTRATIVE ISSUES		
V. THE CONSENSUS PROCESS		
a. A major barrier to group cohesion or a unique success?	2	Personally feels it is used as leverage to kill progress, but the Chairman overrode when necessary But still can't extend IFIM process above Iron Gate
	3	A very important component of the process and very supportive of it When have a wide range of competing interests a majority rule won't work as will focus on 1 set of issues, will get alliance building, which leads to mutually assured destruction. Is an important equalizing tool: tribes like the process, since won't get gored. This is one of the few federal agencies ever to use it. Majority rule is quicker. With consensus have to give a lot of opportunity to object, stop and caucus, call a lot of breaks. Mtgs. can be slow and irritating. Best test of the process is that the TF has never failed to approve a budget. Always get to yes.
	14	Consensus will never work. Chairman can override it anyway. Aren't getting progress with consensus, but don't know if majority vote would help. Is sick of the political posturing.
	20	Because of consensus, every interest group has to get a share of the money regardless of the merits of their project and the overall need in terms of basin priorities. Have to get away from this "win:lose" mentality. Have to reestablish a commitment to increase the fish resources. Each interest group should not feel they are entitled to some share of money; some will get more than others. Have to accept the verdict and live with it, even if some groups don't get funded
	7	Has provided a structure, a process to look at the needs in basin But does create a barrier. Is a proponent of consensus, but won't ever get a motion through to fix Shasta and Scott.
	9	Consensus is dysfunctional and frustrating, but ultimately it has to work. It guides what is talked about. If issues are at the table long enough eventually you can leverage your position and get what you want. .

	13	TF members need to listen to other positions. Need to give, listen, pick your opportunity. Works about 95% of the time. Don't see holdouts as much now; biggest problem is upper-basin amendment. Consensus means there is no support for fish restoration, only for your constituency. But Long-Range Plan says do a flow study. IFIM scoping calls for an analysis of where to study.
	32	Very cumbersome. At critical moments when must get something done, can't do it due to minority opponent, no quorum etc. – so takes another 3-4 months up to years to get decisions made. For example, have to do an instream flow study based on poor information because of consensus requirement. Would like to see the difference between how Klamath and Trinity task forces work - Trinity does not use consensus.
	34	TF is stymied by the consensus process: slowed down, cumbersome, non-functional, very slow and awkward. Only serves to heighten the politics (e.g. UBA and flow study). Technical group spends huge amount of time analyzing flow study information to make a recommendation, and is ignored due to consensus deadlock. Could have 80% support but blocked by 1 vote veto.
	23	The process is set up to kill anything meaningful from happening. Barely got flow study, can't study tributaries. Many on TF want increase in fish runs and changes in water allocation, but one vote can kill. Many want good science, but are handicapped. If scrap consensus, 2 UB counties would pull out. Would be better to go the Mono Lake model with judge imposing the process of 8 member panel with 6 carrying the motion. This broke the logjam, all of a sudden got range in minimum flows and lake levels rose.
	6	TF is dysfunctional. For consensus to work need either 1) total distrust among all members and so much disagreement that need to work hard to find the only identifiable common ground, or 2) there is basic agreement among all the members and no one with a vested interest, but just want the best solution. Klamath meets neither criteria. Have abuse of the veto power, and is the Achilles heel in project selection
	6	Consensus means that more time is spent on minor issues, but it gives an opportunity for people to grow and know each other. Supports alternative dispute resolution as means to help with communication.
	22	Consensus is the biggest joke ever seen. Is a major barrier. Why should this decisionmaking be any

		different from an elected board of supervisors. Members are only there to protect self interest, and are not deciding on behalf of fish.
	27	The TF has never learned how to operate under a consensus form of decision making. They haven't tried it fairly and don't know how to do it. Consensus needs a facilitator to work the group through difficult issues. Consensus is not quick. The tyranny of consensus is that the group gets worn out and settles on the lowest common denominator, mundane, status quo decision just to get on. A true consensus process chooses its own chairman, doesn't have a pre-selected chair. The government model is top down; this doesn't mesh with consensus. The parties at the table aren't participating fairly for a consensus process. They need to put their concerns on the table early in the process so the group can work through them. It's unfair to hold issues to the end and then use the power of the veto to blow up an agreement. Consensus is a give and take process, with agreement to stand aside.
	18	Would hope the consensus process would work; but the blocking vote is not being used responsibly, especially by Upper Basin interests. UB has blocked things that would be good for fish, but they are not able to justify their votes in terms of the mission of the TF. In a true consensus process you would keep working on it until a solution is found that is amenable. All "no" votes should be explained in terms of the goals set by Congress to protect fish. If a party is not committed to fish restoration, then should not participate on the TF. The TF needs to hold itself accountable to its own goals.
	26	Should look at other ways to operate a consensus process other than using Robert's Rules of Order. Using parliamentary motions and substitute motions is not appropriate for a consensus process. Robert's calls for hearing all views before the majority determines the outcome. Consensus requires a facilitator to work through the issue; find the points of agreement
	33	Only got Congressional attention on the Klamath basin when problems got too big for politicians to ignore. Everyone finally came to the table when they realized the cumulative problems were bigger than their individual power. At first accused each other for being the reason for fish decline. Now realize the issues are bigger than individual members. Everyone had a stake and motives to join the process, but also realized that restoration was desirable.

		Although consensus is laborious and frustrating it provided opportunity for education in all directions. The problem now is the high burnout rate of TF and TWG members. Changes in county representatives with elections, PacifiCorp transfers, different agency reps. Membership Is a moving target and have to keep re-educating. Most members don't read materials, lots happens between meetings, can't remember what happened at last meeting so each meeting is wide open when you get there.
		No process will overcome a lack of political will to change.
	8	Everyone has to have ownership and participation in the process for it to work.
	11	Should stay with the consensus process. If had majority rule, people would step away from the table from fear that their interest would be overwhelmed by the others. Consensus helps the process to work.
	5	Consensus is a nuisance and it causes unnecessary delay. But it does add balance to the top-down approach. Gives it a "C". Consensus is a moderate to major barrier.
	16	The consensus rule is a "poison pill". Was proscribed by the salmon trollers, and killed the program's prospects from Day 1.
b. The TF avoids politically divisive topics	7	Can no longer avoid politically divisive topics, that's all that left.
	9	Consensus forces motions to be vague, thereby delaying the tough decisions.
	13	Yes, the TF avoids politically divisive topics. Won't (can't) take a position on anything.
	2	True. KRTF doesn't deal with timber issues (private or public lands), decommissioning roads, Feeling that other agencies are dealing with ESA, Forest Plans, CDF Forest Practice Rule issues. Advocates who speak on timber issues are "shined off"
	3	Federal mandate doesn't include telling other agencies what to do. Have stayed out of water allocation issue, since what purpose to raise it if have no authority to do anything about it. Klamath Compact is trying to integrate the interests in spirit of cooperation. TF can help out without direct involvement.
	6	Yes, avoids divisive topics since know they won't agree.
	22	Haven't dealt with big conflict between the tribes and the Shasta CRMP re: cause of fish decline. Are

		at war, especially in TWG meetings. Shasta contends Yurok fill their quota of fall run chinook with Shasta stock which enter middle stem Klamath earlier. Yurok claim Shasta is doing nothing to deal with habitat degradation, water quantity and quality. Data are needed to make an objective evaluation, but data collection and dissemination is stonewalled on both sides. Is easy to blame others to avoid doing your share.
	11	Issues are raised anyway and talked about. Doesn't see shying away from controversy just because there is no resolution.
	5	TF does not duck thorny issues. The consensus rule takes care of that.
	17	TF does tackle tough issues.
c. Use of federal override	3	Almost destroyed the TF when it was used. Broke an unbroken record. Showed the TF really didn't have power; are just now healing. Goes to heart of what TF is. If don't adhere to tenets of citizen participation, why have a TF? Override could have been attained through consensus process, but feds were in a hurry by pressure from above.
	7	Question the ability of FWS in Yreka to be impartial on IFIM. Need more deliberate study plan before jump in. Need to be conscious of feds taking over, not using best scientific information and responding on a political basis
	13	Task Force forgot it was advisory to the Secty. of Interior and was surprised when TF decision was overridden and directed the flow study.
	12	TF is not up to the task to deal with Upper Basin issues; may need federal override. Both Trinity and Klamath TFs are advisory; need DOI to come in and get off the dime.
	11	Was a necessity to get the flow study started. Don't like the idea of the federal override, but can live with it as a last resort.
	5	Retain the use of the federal override, especially for keeping the money flowing smoothly. "Use it or lose it"
VI. RESTORATION PROJECTS		
a. Fairness of Selection Process	2	Members no longer permitted to vote on projects they are affiliated with Evaluation criteria for projects are more defined and seem to work Politics can override TWG decisions, but is accepted as a reality

	9	Not bothered by the idea of “Self dealing” the money since all the power brokers in the Klamath Basin are included at the table. The people there represent the interests in the basin, so its not a problem that the money is consumed by TF members. Doesn’t understand who the “disenfranchised” people are. The real problem is that the agencies (e.g. DFG, USFWS) get such a big share of TF money for duties that should be part of their own budgets, as part of their own statutory responsibilities. The agencies shouldn’t be subsidized on the Klamath or Trinity side.
	13	Less of a problem than it used to be. Used to be a significant part of budget of some parties. In the last few years the allocation of money has gone pretty well. Is a scatter-gun approach to RFPs, but by and large the projects are OK. IFIM is a big item but TF has made the commitment.
	32	The hard categories are more a problem than the ranking.
	34	Early on there were many more proposals submitted, maybe 100; now around 30-50. The Process has discouraged local community groups who don’t know the system, and is dominated by agency proposals.
	6	Is unfair to public and non-profits to put out bid package since outside projects are mostly blocked by vested interests Should not have a 10-pt. group criteria.
	12	Need to keep science separate from TF policy process. TWG decisions are massaged at the TF but the TWG work is beneficial. Ranking criteria are better now; procedures are good.
	22	Obviously there is conflict.
	18	The system is only as objective as the people who do the ranking. The process is set up with reasonable ranking criteria, and parties cannot vote on their own project
	35	Selection process Is cleaner than it used to be. Applicants can no longer vote on their own projects. Problem with long-term studies vs. short term: Long term studies need multi-year funding which locks a set of projects into place, and reduces amount available for new projects But long-term projects are too valuable to give up: e.g.: USFWS trapping outmigration; spawning surveys.
	7	Is better now than it was, but TWG members still find ways to play the system rather than wear the “technical” label. Political decisions should be at the TF level.

		TWG needs a “Code of Ethics” prescribing protocol and behavior.
	6	Project selection process has gotten better, but is not fixed yet. Can still give low rank to others to boost your ratings. Tribes and FWS service have too much at stake in getting their projects funded. The conflict of interest isn’t as obvious but is still a problem.
	22	Project evaluation is clouded with conflict between Tribes and Shasta CRMP.
	26	Could do project ranking with fewer people and be more efficient, but is more democratic to have full process
	2	TWG needs a facilitator for trust problem
	11	TWG ranking process works until the list gets to the TF, when advocates for low-ranking projects start to dicker, which dilutes the TWG rationale. Sometimes adjustments by TF are legitimate to take needs of the whole basin into account. TWG has become politicized. TWG needs to have truly technical members, scientists or persons trained in fisheries and habitat management. When non-technical people are appointed it allows politics to intervene at the TWG level. Would rather see technical, scientific input at TWG level, and let the TF make the policy decisions.
	5	The TF sometimes turns the TWG recommendations upside down. The program should go to a foundation-type arrangement (where screening/selection process is done by others).
	16	It’s not so much self-dealing as a needs-based selection process easily over-ridden by Indian greed and demands under the consensus rule. No Indian vote, no budget for others.
b. Accountability for Project Results	9	TF does not have good accountability or feedback regarding projects that are funded. This should be a regular function of USFWS administrators.
	6	Can’t get basic reports from some cooperators: e.g. How many adults, egg take, releases? Need standardized data collection. Getting more professional now.
	32	TF sees no progress reports or final reports. There is little or no accountability for projects. Data goes into a black hole (e.g. Tribes temperature data). Data is collected but not analyzed. The type of project determines the type of deliverable, but it should be something. ESA requires good information. These are public funds, therefore is public information. Info should

		put on the Web.
	34	Completion reports for projects are a condition of the contract, but there is no quality control on projects. Are CRMPs doing reports on what they did during the year?
	27	Contracts go on and on; by third year still no completion
		Final reports are poor quality; have no standards, expectations aren't laid out, lack clarity. Should have a mandated workshop for cooperators on how to write final reports, invoices. Project budget must include preparation of final report. 10% hold-out for final payment is too small.
		TF funded projects should have mandatory 5 year review; take photos before and after. Should have staff check out proposed projects. TWG often can't tell about a project if no field knowledge.
	18	Need to close the loop on projects. The responsibility to provide final reports is not stressed and its easy to let it slip. Would increase the quality of work if cooperators had to present their findings. Ought to require cooperators to give presentation to TWG on yearly basis.
		Final reports should be distributed at least to TWG, and to interested TF members. Also FWS annual reports.
	385	Most of the focus is on the front end, cutting up the pie, but don't see much interest on part of TF regarding the follow up, i.e. what was learned from the funded projects.
		Cooperators are slow to turn in final reports. Agree that more information should get back to the TF.
		TF probably doesn't realize the administrative load for administering the large number of small projects
	14	No one comes back with results. Should have before and after pictures, numbers. Recipients owe the TF members their results.
		Process needs more accountability before the TF should ask for more money.
	8	Need an annual report to the Task Force on projects and administration. Need report on project completion, and books of cooperators should be open at any time. Don't fund cooperators again if the can't tell you what you did.
		Won't get immediate data on success of mitigation projects till 3-4 years after. If nature is good then

		fish will be back by Yr. 2006 and TF can take credit.
c. Project-development	27	Making projects work needs more help in project development. Need technical advice, workshop to assist project applicants. Need to put together groups of agencies at the local level that are capable and compatible to work with landowners. Should take more advantage of NRCS, UC Coop Extension which are more landowner-friendly. Have gotten good value for the money in many CRMP projects. Locals can often do more for less money working together with agencies.
d. Public Outreach	33	Need more systematic approach to restoration projects. Why leave them up to chance? TF should have dialogue with CRMP coordinators in advance of proposal cycle so have a logical sense of what is needed. Locals should prioritize with TF /TWG interface to provide scientific review; work with public to identify the true limiting factors. TF/TWG would do strategic planning for basin as a whole. Now need CRMP leaders to be at the table to establish what a sub-basin plans would look like. All but Shasta agreed to format and assemble plans. TWG is ready to review the plans they prepare. If lucky, by Yr. 2000 CRMP's will have priorities and will be reflected in project proposals. If knew exactly what to do could go to a RFP/RFQ process to bid on specific tasks. But realistically there are only 6 more years of the program left.
	11	Had higher public participation In the earlier days of the TF. Public input has deteriorated since iw was perceived as falling on deaf ears. TF should be more pro-active in listening and responding to public, and in articulating how the TF is meeting the public needs. Should have an open mike portion on the agenda at the beginning of each meeting, offering a public forum. This would set the tone for the rest of the meeting of a TF responding to public concerns.
VII. THE CRMPS: Scott, Shasta, Salmon River Restoration Council	9	The TF has lacked direction from the start, and the CRMPs offered a mechanism to bring the mix of jurisdictions and power brokers together within their sub-basins. Before the CRMPs, the basins were paralyzed in the status quo: no one interest had sufficient power to dominate, but each could take others to court. The CRMPs provided a forum for each interest group to see how far it could go without being sued.

		The TF recognized the stalemate and began funding the CRMPs to facilitate their startup. Coordinators were hired and parties brought together. CRMPs offered a structure, eliminated some of the squabbling and concentrated it. CRMPs have been successful in bringing about small cooperative projects (e.g. fencing, occasional flushing flows). But CRMPs have gone almost as far as they can. The fundamental issues of water allocation are still unresolved, and won't be addressed through the CRMP mechanism. The test will be their success in sub-basin planning. The tribes may step in to deal with water issues when the CRMPs peter out. If they don't see progress in water allocation they will be able to use the veto power of consensus to stop further CRMP funding. There are no CRMPs in the mid- or lower Klamath because the land ownership / management is less complex (tribes, USFS, timber companies). Tribes can and will perform the same planning functions as CRMPs.
	3	There is tension with TWG which wants sub-basin planning, like the Trinity R. technical committee.
	32	Is ambivalent about continuing support for CRMPs. Frustration in getting deliverables from CRMPs. It's nice to meet and chat, but they aren't accountable for deliverables. Question is whether to continue their funding or do on-ground projects. Hopefully CRMPs can apply for Thompson bill money, but they need more than that.
	23	Mixed feelings. Shasta CRMP gets ± $40,000 per yr., but owners refuse access to property to study and suggest improvements. Information is not science-based; are treating symptoms, not problems. Fencing, riparian planting, screens are just treating symptoms, not the real problem of water use. Water diverters should pay for their own screens since are taking a public trust resource.
	22	Scott CRMP: Has better land owner cooperation. Membership is based on categories rather than limited to land ownership. Has good chairman and staff, develop good agendas, talks about projects. Gets outside funding. Shasta CRMP: Membership is dominated by landowners but has poor landowner cooperation. Major owners deny access to evaluate habitat or stocks and refuse to participate in restoration programs.

		Owners are steeped in property rights rhetoric. No objectivity on the CRMP. Those dedicated to fish restoration are hamstrung and getting burned out. Meetings are contentious and hostile. Don't know who will show up at a meeting, and don't know what constitutes a quorum. Great Northern Corp. administers the CRMP, takes 10% for admin costs. Gt.Northern was set up to run community development programs (housing, infrastructure, weatherization etc.) and is not set up to run a fish restoration program, but was the only non-profit around. Accountability: CRMPs get a lot of money but there are no performance standards; can't objectively evaluate their performance. Need to account for the money they receive. CRMPs would probably go away if there were no TF money. Scott did get outside grants incldg. Salmon Stamp. Shasta was denied Salmon Stamp money since had no diversity of membership. TF should get tough. Require diversity of membership by category, not domination by majority of landowners. Won't happen voluntarily.
	27	Original idea was that CRMPs would be a short term structure for addressing specific resource issues. CRMPs should not exist just to exist; should respond only to specific issues. CRMPs should not become a quasi-government with authority for final decisions, and Coordinators should not become political advocates.
	14	See efforts to eliminate the CRMPs, but they are needed. Everyone is jockeying for their own share of limited money. Tribes don't see the CRMPs as important, but this respondent does.
	18	Supports local participation, but CRMPs need standards of accountability. Need to state their goals up front and justify why they should be getting fish restoration money. Funding of CRMPs will be a issue this funding cycle . Not all CRMPs are created equal. CRMPs should do better at addressing real issues. Demand for money by CRMPs will outstrip the amount available. TF and TWG will need to set criteria on how they are going to allocate money to CRMPs. Will be difficult when performance of CRMPs varies and when don't address the real problems. Parties are unwilling to look at themselves as part of the problem. Is easier to point blame at others.
	26	TF funding for CRMP coordinator is still a good investment. Are a lot of help in developing project proposals and keeping projects together. But the easy stuff with willing landowners has mostly been done. Even if more money is made available there the question of what to do next.

	33	Need to clarity what the role of the CRMPs is supposed to be. Is the purpose to develop a sub basin plan, or just to keep coordinating forever? When is enough enough? Didn't define their purpose at the beginning; should be revisited in context. CRMPs were thrown out on their own, with no standardized procedures or technical assistance to move forward. Are caught in their own consensus process and can't get to the taboos, so now have CRMPs enforcing their own hen house.
	11	Impression is that CRMPs are trying to get at the issues, but should be more aggressive in tackling the important problems.
	5	Disagrees with some members that it is time to wean the CRMPs.
VIII. PLANNING AND PRIORITIES		
a. No Prioritization of Goals and Objectives in Long Range Plan	20	No attempt in LRP to prioritize spending of a small amount of money over 9 pages and 200 things to accomplish. Measure of success has become how many items are being addressed, rather than a concern for which are done, and how well each is done. Biggest criticism is that KRTF has no recognition of a strategy on how to restore a large, culturally and geographically diverse basin. Long Range Plan was a success at the time, but now knowledge has grown, structure is outdated. Could go to Congress for explicit money for strategic planning purposes, since would be directly towards problem solving.
	7	Need update of LRP e.g.. Clean-up language dealing with tribes
	3	After the Plan was adopted the TF said they couldn't do it all. Instead, decided to focus on a few watersheds, and were criticized for it. Early on, TF approved projects everywhere, then saw would have little discernible effect, and would need to focus. So focused on Salmon, Scott, Shasta and a tribal share, and stayed away from Main Stem.
	34	LRP can't be achieved by 2006; so what happens then? Need a reality check now. Need to prioritize, ID the few places where can do some things
	6	LRP is not pragmatic enough. Policy good but how to do it incrementally. Is no prioritization even at a subbasin level, and no motive to do prioritizing since ESA only punishes the users of fish, not those who impact the fish.

	26	Turnover in TF and TWG membership means that LRP is forgotten or not read by some members. Is not having an impact on how projects are selected. LRP does not prioritize projects so TF/TWG are moving towards sub-regional plans.
b. Sub-Basin Planning	20	KRTF should adopt a strategic plan for the basin based on sub-basin plans which are action plans: 1) Define problems in each basin 2) Assign priorities in some standardized way 3) Prioritize across sub-basins. This will require workshops, consciousness raising. Need short term shift in funding from projects to planning. Once have structure and priorities set, then project funding becomes more rational. This needs to be in place before go to Congress for re-authorization and new money.
	33	The CH2MHill plan created subbasins, relied on an "instream fix approach". At the time thought that instream was enough. Then was realized a watershed aproach was needed. Long Range plan takes a policy approach, but the policies are too broad, needs more focus. Tells what to do but not how to do it. Gave no direction how to implement, so lost correlation between the Plan and decisions at TF meetings. Have had a series of boring years trying to get back at priorities through sub basin planning. If KFO was more of a mover and shaker office then would have the personnel and resources to move the process forward. Have left the issue to TWG – who have other jobs.
	13	Given the political factors hampering the TF, this is the #1 priority where something can be accomplished. The limiting factors are politics, not information Sub-basin plans should have been done 10 years ago.
	32	Need to get talking and pull them together. A lot of information is available already. Shouldn't re-invent the wheel. Sub-basin plans address sub-populations of fish, so is the most appropriate scale. A local scale is the only scale that locals will buy into, is a more defensible and personal approach. Cookie-cutter doesn't work; need to address problems at the site-specific scale and avoid broad-brush policies. Challenge is to avoid finger-pointing at other causes and accept your share of the responsibility.

		Need: 1) ID of activities in the basin and how they affect the habitat, with a sense of history; 2) ID where the fish are: spawning and rearing habitats; 3) What are the implications of current management on fish and how to improve management; 4) Rough analysis of limiting factors (DG, DO);
	23	Sub basin planning is necessary to deal with such a huge watershed. Tasks are daunting with so many owners, geology, weather, hydrology. So should pick a sub-basin and try to make something happen so can point to a success story. Shasta is a good place to start. Implementing USGS findings would make a big difference to the fish – but landowners are the most resistant to change.
	27	CH2MHill report was project-specific, but was unrealistic and un-doable. Long-range plan was meant to be a macro- level; to set the big picture; was 3-hole punched so could be updated. Some TF members haven't read the findings that lead up to the objectives in the plan. TF never took the next step to make the plans site-specific. Job was turned over to CRMPs, but TF didn't want to fund "studies" so the planning work never got done; just jumped into specific projects. Sub-regional plans need to set clear criteria for setting priorities. CRMPs have developed criteria for ranking projects, but then have ignored them.
	18	Sub-basin planning process is going slowly in the sub-committee. Need to decide when the process is ready to implement.
	11	Prioritization of projects does occur through the TWG ranking process, but it should be formalized. Supports sub-basin planning to ID specific needs within each basin.
c. Upper Basin Amendment: Why not adopted?	2	"No" votes come from Upper Basin interests. Klamath Tribes not showing up, are fed up. Questions legitimacy of UB membership on Task Force if only role is to block actions
	3	Biggest unsolved problem. The Upper basin representatives need to get over the idea that blocking is empowerment. The Amendment is an innocuous document that has become a symbol
	13	Upper Basin went ballistic when UB Amendment was considered. UB decided it needed a seat on TF, and got it. Now Hatfield has started and UB will get better deal with Hatfield legislation. If UBA were adopted it would be a signal that Hatfield wasn't needed. So UBA was disavowed; alternates were sent that couldn't act. Now Amendment is watered down and is benign.

	14	The UBA will never be passed as long as the water adjudication process is ongoing in the upper basin. UB interests would be a fool to give away a card during the legal process; it would just muddy the waters. The TF should stop politicking. The TF should realize nothing is going to happen with the UBA and take it off the table as an issue. Is just a distraction away from the real work of the TF and wastes time. TF should focus on their primary responsibility of problems between Iron Gate and the Pacific: i.e. Shasta, Scott, Trinity, Main Stem. Many provisions of the UBA are already being done in the basin. Ag interests are not just sitting on their hands. With their own funds are installing more efficient and targeted irrigation systems. The Restoration office is growing, focusing on water quality and efficient use.
	32.	TF takes incredible time to do a no brainer (i.e. adopt the UBA). Why does the issue keep coming up. Don't mind a hard discussion, but don't drag it on forever. Technical analysis will lead to a logical conclusion, but consensus forces illogical path, so will then have to write a technical explanation for a political decision.
	7	Why do Upper Basin members sit on the TF when only purpose is to block action, hold rest of group hostage? UB group have not offered solutions to address their concerns.
	33	The goal of UB members is to block action, so why be on the TF? "Win or Lose" mentality of farmer constituency means county reps can't change. Allowing the UB membership to change before Congress authorized it has changed the composition of the consensus process.
	11	The ag community and county are balking, don't want changes in Upper Basin. If the current version of UBA were adopted then all parties could work together on the basin as a whole. The objective is to protect water quality from the mountains to the ocean. Need to find a balance between the needs of society and the natural system. UBA is eing held up by 1 group, and the ag interests aren't being resolved.
	17	The UBA would have been adopted if former USFWS Dept. Reg. Director hadn't bungled it from the chair. The linkage with the upper baisn interests will occur in time, through means other than the UBA, and the UBA as a "whipping boy of preference for upper basin interests" will simply fade away.

d. Goals for the Year 2006	34	Long-range plan was unrealistic from the start. Lots of good ideas, but tasks are not prioritized because TF couldn't. Caught in consensus bind - only 1 vote could veto it. TF is kidding itself. Don't have money, staff or political will to meet the Goal of 2006 - which is unrealistic unless management changes radically.
	23	Goal is unrealistic. At least should be producing studies showing what the current condition is and why. Not even doing that well.
	33	Goal is a farce. Can't even talk about the changes needed for agriculture, tributaries are off the table, can't do flow study above Iron Gate.
e. Program Evaluation of Task Force and TWG	20	Should be done more frequently. This exercise is long overdue. Need benchmarks so can measure success more frequently and cheaper. Don't use goals in LRP as a measure of success (per past Hamilton approach) Only 10% of goals are really important. Question should be: are fish returning to the river? Is riparian area restored" are slopes stabilized? Etc. To have adaptive management strategy need: 1) strategy 2) establish benchmarks 3) revisit the benchmarks every year to reflect new knowledge. TF needs a Strategic plan and Annual Work Plans. When one strategy is implemented and accomplished, then second in line moves up. This is absolutely lacking in TF: can't set objectives, can't adapt; can't evaluate where to go.
	6	If reform doesn't come after the mid-term review, will leave the process out of frustration. Currently is an ineffective, inconsequential program.
IX. THE TASK FORCE AND TECHNICAL WORKING GROUP		
a. Group Cohesiveness	7	TF needs less formal workshops, planning sessions, retreats. Needs better social structure e.g. drinks, dinners. Meetings now in a rut, boring. TF needs to be willing to argue: put issues on table and talk about them

	26	Group says it wants social events, but parties didn't show up when it was tried.
	33	The TF and TWG need some closed sessions. Never get an opportunity to let their hair down with one another. Can't get into frank discussions.
	14	Would approve of a closed / executive session for TF to talk candidly. Sick of the posturing and politicking. Time to stop wasting time.
		TF is responsible to the US government. Are half-way along, and what have we done?
	5	TWG deserves a medal. Whatever has been accomplished the TWG has accomplished it.
	17	Doesn't think TWG is expensive.
b. Turnover in Membership	13	Turnover high for agency reps; leads to poor continuity Only a few "long-termers" on the TF with institutional memory
	35	Frustrated with too much turnover in TF and TWG membership. Representation has been delegated down to lower levels, so departments and agencies are less engaged at the decision-making levels, and are less likely to integrate TF actions and directions into their own programs.
c. Chairman of TF	13	Chairman of TF is always USFWS, and has to be even though is a conflict of interest. The chairman is supposed to be elected, but with USFWS as chair can elevate TF needs and get to a higher level quickly.
d. TWG Workload	18	Need all the members participating to make fair decisions. 3 days/month is too much. Have decided to move to quarterly meetings plus a proposal-ranking session.
		TF keeps heaping work on the TWG but gives no support. TWG tries to keep costs down. TWG was dumbfounded when were rejected for secretarial help by TF staff. Need some continuity in note-taking, but don't need a full professional staff member. The Yuroks offered to provide note-taking assistance, but the TWG chair (Yurok representative) can't lead a meeting, do flip charts, participate in the discussion and take notes too.
		Why do so many KFO staff attend the TF meetings? Don't need 4 people there. Should re-deploy one to be a notetaker for TWG.
	14	TWG has grown too large; don't want it to wag the dog.
		TWG workload is too big. TF should just go ahead and vote, don't keep referring matters to the

		TWG. TF should just learn to say "no", don't put off decisions.
	26	TWG has too much work on its plate now, and every meeting has 3 more tasks thrown at them. Nothing has traction to get anywhere.
	23	Shocked at poor respect and treatment of TWG recommendations by TF. TWG members put in long hours, without pay or clerical support. Weakness in ranking system: Need better coordination between various agencies and programs that fund projects in the basin. Agencies and restoration groups submit projects to more than one funding agency. TF/TWG gives most technical evaluation, and even if ranked low by TF (as not science-based), project may still show up again funded by JITW or other agency.
	22	Impressed with quality of people on TWG. Have done a lot, approach their jobs with sincerity for the fish, not politics. TF would be in a sorrier state without them. TWG members don't get the respect from TF that they deserve. TF runs risk of burning out TWG members. Many dropped out because of intensity of IFIM study. See a breach developing. Is an insult not to give them clerical staff.
e. Low Attendance at TWG meetings	22	Personality problems; Lack of trust between groups; TWG dominated by Tribes; Hum. Co. doesn't come, are blocked by Klam and Sisk Cos. Del Norte doesn't come, trollers, Oregon sport fishing don't come.
	2	Currently are scoping the IFIM (Instream Flow Incremental Methodology) and need the user groups to attend, but aren't coming.
	20	TWG needs to be paid. TF needs good scientific information, but TWG volunteers are overwhelmed, and non-paid members can't afford to attend meetings.
	23	Disparity in representation due to ability to pay for representatives to come to meetings; e.g. counties, commercial fishermen reps. can't afford to come. No Klamath Co. representation on TWG for over a year.. Especially important in terms of discouraging expertise on TWG. Sisk. Co. rep comes sometimes, but is not a technical person . Continual turnover in membership means phase-lag as new members get up to speed on issues and procedures. One reason why the flow scoping took so long. Adopted a working rule that missing a meeting can't stall the process next time ("you snooze, you lose"). Group operates on majority rule.
	32	Attendance at TWG meetings was good, even had upper-basin ag people. Can't speak to the

		problems of citizens and volunteers.
	6	Too demoralizing to TWG members to attend. No incentive. TF decisions not based on policy, just on slicing the melon. Workload is unfair. Non-agencies don't have money to participate
	18	Is difficult for unpaid TWG members to come to meetings, especially when means they are losing earnings. Reduction in number of meetings per year should help; 3 days/month too much.
f. Agenda and Meeting Locations	20	Meetings in Ashland and Klamath eliminate ½ the people. Makes it a 2-3 day meeting due to drive. Redding is more equidistant. For this reason TWG is dominated by tribes and agencies who can afford to come. County representatives (esp. Hum, Del Norte, Trinity) can't afford to come to Klamath-end meetings, and vice-versa.
	13	Not a major issue, TF and TWG try to move around. There are inequities but it washes out.
	34	Meetings are too inefficient. Too much time spent talking about nothing. If the issue wasn't resolved last time, why talk about it again this time.
	18	TWG makes an effort to move around so everyone shares the burden.
X. KRTF ADMINISTRATION		
a. KFO Workload and Budget	2	Restoration Office is overworked; have already cut the administration budget to $350,000 and can't afford another staff member
	13	Not much left for habitat and restoration when 40% is taken for administration. Program is underfunded.
	14	Respects Program Leader. Is incredibly responsible and doing yeoman's job. Has kept a low profile, doing his job with what he was given. Doing a good job, but tasks are not well defined. Is responsible for the operations of the office as chief office manager and secretary, and won't go beyond that. Doing more public outreach would only cost more time and paperwork. Job is overwhelmed with problems. Paperwork is huge. Problem is that money has to go through so many layers (scientists, lawyers, aides) that only 23% of money gets to the ground.

	20	Ambivalent on issue. Administration is underfunded too. Field office needs a work plan: Workload is too high, more than they can do; each TF meeting gives a different emphasis on what to do first. Nothing gets done well, no clear direction. Constantly shifting priorities, no discipline within TF to stick with a priority, so staff is caught.
	9	Half of budget now goes for administrative costs. But it is extremely difficult to get information on how administrative money is spent out of the Yreka office. Need disclosure on what the various employees do. Private contractors may be able to do it cheaper
	32	Yreka office is mainly secretarial. Can't tell if share of overhead is reasonable or not. Is not a proactive office; are not drumming up interest outside the 4 meetings. Need a more meaningful agenda. Need an advocate for the task force. Staff needs to have answers "need to check" means it takes another 3 months for an answer.
	34	Administration is perceived as a problem and KFO needs to deal with it. TF needs a clear list of staff functions and cost breakdown: 1) contracts 2) meetings 3) administration
	23	Hamilton is helpful at TWG meetings, usually comes for 1 day per meeting; gives guidance. Quick turnover on paperwork.
	6	Budget Committee is not strong enough. Should be asking the real questions: What are the job descriptions of TF staff? What do they do? What other, non-TF projects do they work on? Portland should not heap other projects on them. Staff is amorphous; mostly a vacuum. Not pro-active; uses no initiative to bring items up on agenda or get Board to work together. Mostly a secretarial function Why is a Yreka office needed? Could the office be combined with other FWS offices (e.g. Klam. Falls, Arcata) to save administrative costs?
	22	Yreka office is a joke, esp. when TWG has no clerical staff. Are to the point where Yuroks are doing the minutes - is ridiculous. TWG members are not getting paid, is grossly unfair to have to do staff work. The success of an advisory group like the KRTF is a function of staff support. TF wanders around without direction. Staff are so afraid of being assertive and paying the consequences that they remain mute. Have abdicated any responsibility.

		Especially should have staff for Flow study, with staff reports and data backup. TWG could have been done by now. TF keeps piling on the work as TWG membership declines
	6	Doesn't buy the "fixed costs" argument. Has seen bigger programs operate with less administrative money. Does not support top-down federal programs. Only about 20% avail for on-the-ground restoration, CRMPs about 36%, with a chunk of administrative; flow study should be DOI money.
		Program is almost inconsequential, is not addressing the causative problems in any significant way. If the program went away tomorrow, would the fish notice?
	18	Staff could do more, find ways to lighten their load. Need to get projects off the books; put more responsibility on the cooperators.
	26	Portland USFWS executives don't seem to want a pro-active staff
	35	The permit process to implement TF projects is very cumbersome and time consuming, esp. for habitat restoration projects (i.e. EA review, possible ESA consultation, Archaeology review, Toxics compliance). KFO has been trying to get a programmatic consultation / approval process approved through USFWS and NMFS to simplify the permit process but still has received not concurrence
	8	No accountability on expenditures for KFO or Portland.
	33	USFWS should not be the lead agency for Klamath Act. Needs to be an agency with less vested interest in the outcome, budgetary or otherwise. USFWS just follows BuRec lead.
		There are no checks on how the administrative money is spent. Trinity TF has a much lower percentage. Tried to set an internal cap on funding, but were told it takes money to administer". There's no other money so administration money has to come out of restoration funds.
	35	Process for transcribing and organizing TF meeting minutes is very time consuming. TF should revisit issue as to whether they wish to continue extensive minutes.
	11	Program administration costs are out of line. Have asked for more information about how money is spent and never got the full picture of where the money is going.
	16	The program has an "obscene" overhead cost which is the result of the consensus rule. What should take one meeting takes 10-20, and still no product.
b. Leadership Style and Program Building		

	27	Staff has extremely passive style. Waits to be spoken to. Has survived 10 years. Needs to be in the field interacting more with cooperators, generating useful projects, helping projects along, fostering state: federal cooperation and learning . Opportunity to blend projects is missing Portland derived paperwork is horrendous - is USFWS-imposed. Leads to horrible problem administering projects. (e.g. archaeology review takes forever) Project leader does not does not demonstrate enthusiasm for the program, does not bring new resources to the table, does not generate new funding for the TF. This may be politically purposeful, i.e. protecting USFWS by keeping a lid on the real issues of water allocation. .
	13	Program leader is not pro-active; has almost a secretarial role. Is not autonomous, is USFWS employee and does not comment on TF actions. USFWS is rolling-over nationwide.
	34	Communication skills are lacking in the Yreka office.
	22	See mismanagement in Yreka office. Staff are fish biologists, not project managers; don't have training to manage. Need clear organization plan, lines of authority, staffing chart, report on job descriptions, policies and procedures, performance evaluations,-- all regularly updated. Need to evaluate the duties of each staff person. Is there enough for each staff to do for 8 hrs/day? What is the staff doing? Must be working on something else other than TF. No accountability on funded projects. Can't get copies of completion reports. There is no review on the substance of the reports. Projects need tighter monitoring. Evaluation should be on results, not process. What is TF getting out of staff for 40% of total budget? Are there more fish in the system?
	33	Need a mover and shaker, more heart and creativity.
	6	Why is a biologist doing clerical work? If it is just a clerical job, then why is a biologist doing it? Could do better. Project leader is weak as an administrator. Should do more promotion of program.
	11	No problems with staff, but they haven't done much. Should be more proactive.
XI. PUBLIC PARTICIPATION AND EDUCATION		

a. Public is excluded from the process	20	No ongoing effort to encourage public involvement in the process. There is institutional insensitivity to the public: landowners, ranchers, miners, farmers, environmentalists. Disenfranchising local communities means no local support when need to go to Congress for reauthorization. RFP process for projects is so unfriendly to the public that they dropped out. Lack of prioritization of projects by sub-basins means public has no idea of the relative importance of their restoration project. Individuals want to be active, but don't know what is important, perhaps can't write a grant well, so fail and are discouraged. Will find that number of projects has dropped, and a smaller proportion are from non-profits. Individuals not associated with CRMPs lose out. Recommend "Contact meetings"
	34	It would be helpful to project applicants if they received written feedback on why they did not get funded as a broad way of helping them next time. Staff is concerned about time required to write the letters and possibility of litigation.
	6	Public is excluded from the process. Has figured this out, aren't excited about the program; has worn out its interest. Program is not showing success; public outreach in terms of press releases is ineffective.
	33	Used to have around 130 project proposals, now down to around 40. Public was enthusiastic in the beginning, were asked to submit proposals. But over the years they haven't gotten funded so there is attrition. Only those in the loop are funded.
b. Public perceptions of TF	34	Perception from the outside is bad feelings and distrust of the process. Fish are not being restored, status quo still in place. Spent $35 million and took 10 years to find out there's not enough water in the Trinity. Public is not aware of accomplishments that have been made. Perception is that money is spent to create kingdoms and jobs; don't see money in projects on the ground. In part a fault of the Yreka office for not communicating. Sporadic newsletters are not enough. TF needs to blow its horn. Klamath basin users are basically unaware of each other. Del Norte has no clue about and progress in the Upper Basin and vice versa. 10 years has not breached the fables. Del Norte interested only in estuary and chinook, could are less about water diversion issues up river. Communicating with public has deteriorated; need to do a better job of telling what is good.
c. Education projects of TF	9	In spite of big effort to develop K-12 curricula we don't see it being implemented, at least not in mid- or lower-basin. Have never seen the product in action. There is more to the Klamath Basin than just

		the Shasta and Scott.
	26	Observers do see changes in attitudes and level of knowledge in the Scott over the period of the CRMP program. People are more accepting, understand the rationale for riparian buffers, even if action is limited to little stuff. See reorientation of attitude towards the river and fish habitat, at least among some landowners
XII. PROGRAM FUNDING		
a. Insufficient Funding	2	Biggest problem is insufficient funding to implement the plan. Goal of restoring fishery by 2006 is impossible. No economic analysis of plan- would cost more than $100 million to fully implement the LRP.
	20	Program is so vastly underfunded that failure is built in -funding limits number of meetings, so can't be held when needed -funding limits participation by non -agency, non-paid volunteers who must give up work, pay own nickel to participate. -would easily be a ½ time job to do it right
	7	$1 million is not enough. Should be at least the size of the Trinity budget.
	3	Too much money early on destroys a program; was good at first to learn how to squeeze every nickel. Now have learned and are now able to step up to $2 to 5 million per year; that's the magnitude of the task. Need to have a retreat planning session to get back into consensus.
	13	Biggest problem is program is underfunded. 40% administrative costs doesn't leave much for habitat and restoration.
	14	More public outreach would mean more money,time and paperwork.
	32	Would favor more money as long as all kinds of projects are brought to the table, not if only restricted to non-controversial projects. TF is ready to talk about water, but is expensive.
	34	TF could handle more money for projects since it now has the structure to administer it.

		Major new funding should be spent on buying out water rights. Would be more valuable than restoration by instream projects. Question is how to administer a water buyback: TF too politicized.
	23	TF and TWG are ready to handle more money. Esp. need more for flow model development. Ranking process for projects could handle more.
	6	No the TF should not get more money. This is the wrong model; is not a good example of how to run a program. Top-down federal programs are not the answer TF needs to realize they don't need to exist. Yes, the funding for the basin is insufficient, but not to this group.
	26	Yes the program is ready for more money, but only if it is earmarked to meet specified needs of basin and concerns by TF members that their interests get a share.
	8	There's no way you can restore fish with only $500,000 per year. In Oregon timber industry alone put in $1 million for 1 river . $10 million here may not do it; too many factors.
	35	As money for projects increases would need some new staff to administer projects, but not at a 1:1 ratio. Total number of projects that are still open is a current administrative problem.
	16	The Trinity program by comparison has the Central Valley Project "cash cow" to milk, but the Klamath program has nothing similar.
	11	Yes, the TF is ready for more money. Hatfield program is getting $1million for projects, TF should get at least that much. But don't put the money into administration; put into projects and rehab.
XIII LINKAGES WITH OTHER FEDERAL AND LARGE-SCALE PROGRAMS		
a. Lack of Linkages	7	TF does not interact with USFS as much as it could. TF doesn't make the linkage between Clean Water Act, EPA, TMDLs, ESA. TF should be better informed on how to incorporate existing environmental laws into the restoration program.
	3	Would be great to link into FEMAT. TF has good filtration process for projects.
	32	TF needs to recognize plans of other agencies. E.g. Klamath NF did a habitat analysis for the basin including the Trinity. Used a priority scheme for restoration opportunities. Was a good draft. TF is not

		even aware of it and isn't using it. Sustained Yield Plans (SYPs) don't have to include other ownerships so are not very useful.
	34	Financially may make sense to link projects together, but gets into turf battles.
	23	RWQCB and DRG are failing to enforce their mandates. ESA under NMFS so far has failed to cause changes for Coho. Landowners are inflexible; just don't want government in their face even though the commercial fishermen, sport fishermen, and tribes are losing.
	5	Have been some linkages between FWS, NMFS and CDFG, but linkages with Cal. Dept. Forestry "just lurk".
	16	As indicated by the Forest Plan and the three National Forests in the basin, the Klamath Act and TF have not been taken into consideration at all.
b. Member Agencies are funding not supplementing their own statutory responsibilities with TF funds	7	DFG, USFWS, BOR, DWR etc. have statutory responsibilities to protect resources of the Klamath, therefore should cover administration costs within their own budgets. Restoration dollars are being used for administration and backfilling. Protection of public trust resources is their job, part of their business, and the agencies shouldn't be using restoration dollars for regular business.
	11	Agencies on TF should fund their own projects out of their own budgets. Since TF can't see the budgets of member agencies, can't tell where the TF money is going. Is beneficial to link and coordinate the activities of the various agencies in the basin.
	6	Bureau of Reclamation wants the TF to be inconsequential; don't even provide money for investigating their own impacts.

KLAMATH FISHERIES MANAGEMENT COUNCIL (KFMC)
Interview Responses

ISSUE	ID NO.	COMMENT
1. Coordination between Task Force and KFMC	12	· There have been efforts to coordinate such as 1992 joint meeting in Hoopa · Three Chairs then Five Chairs meetings also helped on coordination (Three Chairs issued policy guidance for hatchery planting levels) · Hatfield Working Group in the Upper Basin has mandate to coordinate with Trinity Task Force, the Klamath Compact and the Klamath Task Force but not the KFMC.
	17	· The KFMC has improved its own internal dynamic as allocation patterns have stabilized. Improved cooperation is also the result of chair with good facilitation skills. · KFMC fulfilling its function as a sounding board for the PFMC and meetings in conjunction with PFMC regional meeting help sustain influence. · An exception is in-river sport fish allocation remains the one thorny issue for the KFMC with CDFG Commission intruding on KFMC and PFMC processes in recent years. · KFMC is an integral part of the Klamath Restoration Program and the communication with Task Force needs to be improved. · Improved dynamic of KFMC may provide lessons in process that the Task Force might learn from (i.e. Less struggle for share and more give and take is very positive).
	36	· In spite of membership overlap, communication between the KFMC and Task Force is not very good. · Some Task Force members are not aware of the severe restrictions on fisheries that are causing great hardship on the coast. (Commercial salmon fisheries are currently restricted to 9% of four year old chinook but would get 20% if full fishing were allowed. Haven't had full fishing for a decade.)

ISSUE	ID NO.	COMMENT
		· The Task Force has turned over since joint meetings (1993-94) and some new members are not fully aware of KFMC functions and duties. · Even more of a disconnect between the constituencies of both groups with fishing interests and farm interests not communicating well. · KFMC sometimes begins to over-step its role and issue policy statements on habitat issues. This is because fishing constituents do not feel the Task Force is effective in dealing with habitat issues. For example, flow issues in Klamath sub-basins have not been dealt with. · KFMC has carried out its functions in providing guidance to the PFMC. Harvest ranges are fairly narrow with exact quotas in some years. KFMC has done better than Task Force in discharging its responsabilities under the Klamath Act. · KFMC has improved in its chemistry because of changes in representatives and good facilitation from the chair. KFMC members can disagree formally but maintain civility. · KFMC members are frustrated by allocations of at about half of intended because habitat problems have not been remedied.
	37	· Need closer working relationship with the Task Force on monitoring fish populations
	40	· Cross-membership on the KFMC and Task Force helps convey information to KFMC on Task Force business
	7	· Task Force is obligated under the Act to coordinate with the KFMC and to meets its requests.
2. Funding Basic Monitoring	12	· California Department of Fish and Game (CDFG) failure to fund basic monitoring creates problems for the KFMC because they lack basic data for management. KFMC is then in awkward position of asking Klamath and Trinity Restoration Programs for money. · The U.S. Bureau of Reclamation (BOR) has often helped with funding but only at the eleventh hour. Need a stable funding mechanism for basic data. Should not be the burden of restoration programs. · The KFMC has much different priorities than the Task Force related to monitoring.

ISSUE	ID NO.	COMMENT
		· The U.S. Fish and Wildlife Service (USFWS) or BOR should have dedicated funds for downstream migrant trapping because the U.S. Solicitor General has ruled that the Department of Interior has full responsibility to manage Indian fisheries. (Solution to problem of KFMC tin-cupping for monitoring dollars). · Committing Task Force money for routine monitoring reduces the effectiveness of the Restoration Program and should not be allowed.
	38	· CDFG is constantly berated on the KFMC and Task Force for not picking up monitoring costs. Department simply does not have the money. · Inland Fisheries Division has consistently requested funds but they have never been favorably considered. · Federal dollars to support activities in the Klamath are drying up; therefore, it is difficult for CDFG to get money from other sources to continue monitoring activities.
	17	· The Technical Work Group (TWG) for the Task Force and the KFMC Technical Team have diverged with regard to data needs. The TWG has been feeding large amounts of money into the Flow Study while KFMC data needs are ignored. · Problem exists when KFMC can't get basic data on escapement and recruitment (downstream migrant traps) to manage fisheries. KFMC asked Task Force when no other source was available to fund these activities and was turned down. · KFMC requests for funding in RFP process are also turned down. · Data gaps may eventually lead to shut down of fisheries if basic management data needs are not met. · Klamath Restoration Program should fund basic fish monitoring data needs or BOR should make it an O&M line item ($100,000/year). · IFIM data does KFMC no good because it is not species specific.
	17	· Need strategic placement of downstream migrant traps in tributary basins like Shasta to better understand production and recruitment.
	7	· Very disappointed that KFMC request for monitoring budget was turned down by the Task Force as it is one of the few requests made over the life of the Program.

ISSUE	ID NO.	COMMENT
	36	· Tired of agencies such as CDFG using budget problems as an excuse for not live up to public trust responsibilities and doing monitoring that is needed. · KFMC and Task Force must reach a consensus on what monitoring budgets are needed annually for these tasks and move to get what is needed through political channels. · Multi-Chair groups (Three Chairs/Five Chairs) are not very productive except with regard to hatcheries · Focused action by Task Force and KFMC can lead to change in resistant bureaucracies such as the CDFG hatcheries. Must continue efforts of this type. Although progress is slow, there has been progress.
	40	· Problems getting budget for needed monitoring activities necessary for harvest management
	37	· Core funding for routine monitoring of critical population data for fisheries management should be shifted to O&M budget of the Bureau of Reclamation
	39	· Concern with regard to funding of critical data needed for fisheries management
3. KFMC - TWG Issues	17	· The KFMC and Task Force are Federally chartered Advisory Committees (FACAs) but their authority and judgment are being usurped by the TWG.
	39	· Budget process on the Task Force is driven too much by the Technical Work Group · Possible that KFMC and Task Force technical teams might meet jointly sometimes
4. Administrative Overhead for KFMC and TF	38	· Administrative overhead for the KFMC and Task Force is inordinately high, with $400,000 of the annual budget going toward these costs. CDFG tries to make overhead a maximum of 20%. · Staffing for KFMC and Task Force is too high. Four people are generally at meetings when two should suffice. · Now USFWS Portland wants administrative overhead out of Klamath Program which is unacceptable.
	17	· Staff turnover at USFWS Yreka Office has sometimes slowed output of KFMC minutes.

ISSUE	ID NO.	COMMENT
	40	· Administrative overhead is too high for the Restoration Program
5. Specific Issues		
a) CRMPs	7	· The KFMC gave quality attention (staff time) to Task Force constituents from the Shasta Valley with regard to potential harvest problems and issue of recruitment on Shasta River. · CRMP groups funded by Task Force may use budget to track harvest issues which is not in the work agreement. Sub-basin planning dollars need to go for tasks funded in agreements.
b) Hatcheries	7	· KFMC and Three Chairs lead to improved hatchery operations but problems still exist. Variation in fractional marking has confounded KFMC model outputs. Task Force and KFMC must work together to standardize hatchery practices on both the Klamath and Trinity Rivers.
	37	· Managing fisheries, particularly with regard to hatcheries, should be approached jointly by the KFMC and Task Force because it effects both harvest and the prospect for restoration
c) Water	36	· Task Force may never be effective on water issues; therefore, those fishing interests who are not satisfied with the process may need to take other courses of action. Some Task Force members are too conflicted in dealing with these issues and will never allow progress.
d) Restoration Priorities	37	· Has some concern about the effectiveness of the way current resources are allocated regarding restoration · Task Force should agree in principal on the strategy for restoration and prioritization then partner with other agencies for expanded implementation (i.e. NRCS/USFS) as additional dollars for salmon restoration become available

Appendix 3.1
Consolidated Long Range Plan Recommendations

Recommendations with a double asterisk (**) are those that could be eliminated.

HABITAT PROTECTION (HP)

Timber Harvest (TH)

HP Objective 1: Protect stream and riparian habitat from potential damages by timber harvesting and related activities.

TH 1: Develop salmonid habitat protection standards for timber harvest

TH 2: Form CRMPs in important watersheds to deal with timber issues

TH 3: Improve monitoring of impacts from timber harvest, including cumulative watershed effects (CWE)

TH 4: Seek improvement of stream protection on private lands through revision of the California Forest Practice Rules including: 1) decreased disturbance of erodible soils, 2) improved protection of riparian zones, and 3) allowing watershed rest in basins over CWE thresholds to promote aquatic habitat recovery.

TH 5: Work to improve timber harvest practices on USFS lands by 1) protecting to the least damaged salmonid habitats, 2) protecting riparian habitats, 3) decreasing activities on unstable soil types and 4) providing adequate time for recovery before new timber harvest in watersheds over cumulative effects thresholds.

Mining (M)

HP Objective 2: Ensure that mining activities do not cause damage to fish habitat.

Suction Dredge Mining

M 1**: Work with CDFG to maintain mining closures of important summer steelhead streams and to shorten the mining season in streams where late spawning winter steelhead may be effected.

M 2**: Request that CDFG have all miners flag dredge holes to reduce problems for fishermen.

M 3** Request CDFG to improve record keeping to keep track of the number, location and dredge size of various mining activities.

Other Mining Practices

M 4: Support a bonding requirement for large scale mines and ensure that mining sites have a proper reclamation plan.

M 5:** Request lead Surface Mining and Reclamation Act (SMARA) agencies to assess fines for non-compliance with SMARA regulations.

M 6: Promote the abatement of any water quality and habitat problems associated with abandoned mining operations.

Agricultural Impacts (AG)

HP Objective 3: Protect and improve water quality of stream habitat from adverse agricultural impacts.

As with previous sections, educational policies offered in the Long Range Plan have been moved to Community Education under Objective 6B and those dealing with monitoring to the Monitoring section. Many of the policies in this section also cross over with restoration objectives and some have been moved to Habitat Restoration (Objective 3).

AG 1: Encourage "best management practices" to reduce the amounts of animal waste and fertilizers entering watercourses, focusing initially on demonstration projects.

AG 2: Explore options for restoration easements.

AG 3: Investigate and pursue other funding sources to abate non-point source pollution and to improve riparian conditions on private farm and ranch lands

Large Dams (LD)

HP Objective 4: Protect salmon and steelhead habitat from harmful effects of water and power projects in the Klamath Basin.

LD 1. Promote adequate fish protection in relicensing of the Iron Gate Hydroelectric Project

LD 2. Oppose further large scale water storage projects until habitat problems from existing ones are remedied and there is proof that new projects will not contribute to habitat problems

LD 3. Oppose additional out of basin transfers from the Klamath or Trinity Rivers of water required for protection and restoration of anadromous fish

LD 4. Advocate improved flows on the Trinity River to better mimic the natural pre-dam flow conditions

LD 5. Remedy problems related to large dam operation such as 1) access for salmon and steelhead above Iron Gate Dam and 2) poor water quality and insufficient flows below Iron Gate Dam and Lake Shastina

Small Scale Diversions (SD)

HP Objective 5: Protect the instream flow needs of salmon and steelhead in streams affected by water diversion.

SD 1. Involve landowners in the Shasta and Scott Basins in developing solutions to instream flow problems

SD 2. Fund water conservation measures which will provide significant benefit to fisheries

SD 3. Investigate and pursue other funding sources to help implement water conservation measures

SD 4. Support effective screening of all agricultural diversions

SD 5.** Support needed changes in California water rights so 1) water rights holders are not penalized for conservation, 2) instream uses like fisheries can have water rights and 3) water rights transfers can be made to instream uses

SD 6. If changes are made in the law, support purchase of water rights from willing sellers for the purpose of improved flows for fisheries

SD 7. Seek enforcement of Scott River Adjudication through the Watermaster, including compliance with October 15 diversion deadline for stream appropriations

SD 8. Encourage legal action by the USFS to achieve minimum flows for fish under the Scott River Adjudication

SD 9. Ask the SWRCB to enforce water rights conditions pertaining to "unreasonable use" in the Klamath River Basin

HABITAT RESTORATION (HR)

HR Objective - Restore the habitat of anadromous fish of the Klamath River by using appropriate methods that address the factors that limit the production of these species

HR 1.** Technically sound projects which benefit "stocks of concern" recognized by the Task Force should receive priority for funding

Riparian Conditions (R)

R 1 Improve riparian conditions in the Shasta and Scott Basins

R 2: (NEW) Restore riparian areas in forested basins.

Control Sediment Sources (S)

S 1: Work with CDF, EPA and the SWRCB to monitor progress on abatement of sediment problems and encourage stepped up enforcement of clean water laws if necessary

S 2: Use the Scott River sediment study to prioritize actions to decrease erosion in decomposed granite watersheds and fund appropriate actions

S 3: Work with the USFS, private timber land owners and others to insure that erosion from existing roads is decreased and that new roads pose a minimal risk of increased erosion

S 4: Implement erosion control measures in Pine Creek in the Lower Klamath Basin and work to minimize erosion from future land use to make it a "model" watershed

Fish Passage (FP)

FP 1: ** Find a solution to fish passage problems over the agricultural diversion on lower Horse Creek

FP 2: ** Study the feasibility of removing fish migration barriers in Middle Klamath Basin tributaries such as Humbug Creek and Rock Creek

Instream Structure Criteria (IS)

IS 1. Proposed projects to structurally increase fisheries habitat in any Klamath tributary will be evaluated as to whether:

- The erosion potential in the watershed and the expected sediment yield would place the project at risk during moderate storm events (10 year interval or less).

- The stream channel remains highly aggraded and, thus, likely to threaten the stability of the proposed structure.

- The project is properly engineered in terms of its setting (gradient and channel type) and expected flows.

- Habitat assessment has been conducted and the suspected limiting factors identified.

- The proposed project has a clear goal of remedying the identified limiting factors.

- The proposal includes methods to evaluate whether the goal of the project has been reached after project implementation (ideally, a demonstration of its positive cost-benefit performance).

- The project budget includes cost estimates for maintenance.

FISH POPULATION PROTECTION (FPP)

FPP Objective: Strive to protect the genetic diversity of anadromous fishes in the Klamath River Basin

FPP 1: Use self-sustaining, native fish populations as the gauge for Restoration Program success, not hatchery fish or fish that stray from hatcheries

FPP 2: Provide support for local involvement by volunteers in salmon counts

FPP 3: Seek increased penalties for poaching salmon and steelhead from local and State jurisdictions

FPP 4: Support continuation of fish rescue efforts associated with fish screen operations in the Shasta, Scott and Middle Klamath Basins

FPP 5: ** Determine escapement goals based on carrying capacity

FPP 6: ** Support high seas driftnet bans

FISH POPULATION RESTORATION (HATCHERIES)

FPR Objective 1: Iron Gate Hatchery and Trinity Hatchery should be operated to produce salmon and steelhead to mitigate for the losses of habitat above their dams and, at the same time, strive to reduce impacts on native fish.

Large Hatcheries (LH)

FPR Objective 1: Iron Gate Hatchery and Trinity Hatchery should be operated to produce salmon and steelhead to mitigate for the losses of habitat above their dams and, at the same time, strive to reduce impacts on native fish.

LH 1: Work in coordination with other basin interest groups (KFMC, Trinity Task Force and Tribes) to insure that large scale hatcheries are operated in such a way as to maximize production for harvest but to minimize impacts on native stocks

LH 2: Conduct studies to determine optimal planting levels at Iron Gate and Trinity River hatcheries relative to carrying capacity as well as release strategies that minimize impact on native fish

LH 3: Press CDFG for universal marking of all hatchery coho salmon and steelhead and at least consistent fractional marking of chinook salmon at both Iron Gate and Trinity River hatcheries

LH 4: Encourage hatchery practices that maintain fitness of hatchery broodstocks and minimize straying which impacts wild fish

LH 5: ** Use surplus hatchery eggs for "enhancement" and harvest supplementation

LH 6 ** Conduct studies on Iron Gate Hatchery steelhead C. shasta resitance

LH 7: ** Support acquisition of Iron Gate Hathcery water filter (DROP)

Small Scale Hatcheries (SH)

FPR Objective 2: Small-scale rearing programs should be temporary measures, primarily for the purpose of accelerating the rebuilding of locally-adapted native salmon and steelhead populations, and operated to maintain the genetic integrity of such populations. Ideally, small-scale rearing programs should be operated in conjunction with habitat restoration projects.

SH 1: Formulate guidelines for small scale hatchery operation that will avoid negative impacts on native stock genetic characteristics

SH 2 Provide guidelines for small scale hatcheries with regard to 1) trapping protocols, 2) disease control, 3) broodstock management, 4) marking all release groups, 5) release strategies and 6) project evaluation.

SH 3: Conduct studies in tributaries with hatcheries to determine 1) prudent planting levels, 2) release strategies that least impact wild fish and 3) bench marks for escapement so that projects can be discontinued when "seeding" goals are met

SH 4: Consider green sturgeon artificial culture as part of restoration strategy for this species

SH 5: Explore potential for expanding rearing programs to include steelhead and coho salmon

Win Cooperation (WC)

WC 1 Hold trainings on restoration techniques and opportunities and bid and contracts work to increase local involvement

WC 2: Give preferences to projects with strong local participation

WC 3: Encourage the formation of local sub-basin restoration groups

WC 4: Enter into formal long-term cooperative relationships with the USFS, CRMPs, RCDs, Indian Tribes and others

MONITORING(M -)

Monitoring Timber Harvest (MTH)

MTH1: Include fish habitat and population data in State Water Resources Control Board and U.S. Environmental Protection Agency processes

MTH2: Improve monitoring to discern cumulative watershed effects (CWE) and recovery of stream habitat in logged watersheds

MTH3: Evaluate watershed conditions and sediment production potential in logged basins

MTH4: Evaluate riparian conditions in logged areas, such as use of the RAPID technique (Grant, 1988) to determine riparian recovery of Lower Klamath Basin tributaries

Monitoring Mining (MM)

MM1: Study cumulative effects of a large number of suction dredges

MM2: Study the impacts of large (6-10 inch) dredges used in the Klamath

MM3: Pursue water quality studies to discern lingering effects from abandoned pit mines

Monitoring Agriculture (MAG) ((Non-point Source Pollution and Riparian)

MAG1: Monitor water quality trends related to non-point source pollution related to agriculture

MAG2: Assess riparian conditions and trends over time

Monitoring Flows (MF)

MF1: Evaluate the instream flow needs of the Shasta and Scott Rivers and their tributaries

Monitoring Fish Habitat Conditions (MFH)

MFH1: Find funding or partnerships (USFS) to complete habitat typing or other quantitative assessment of all basin streams.

MFH2: Evaluate spawning and rearing habitat above Iron Gate Dam

MFH3: Evaluate in-stream flow needs for all life stages of anadromous salmonids in the Klamath River below Iron Gate Dam using state of the art methods.

MFH 4: Examine the effects of Lake Shastina on the Shasta River's flow and water quality problems below Iron Gate Dam using state of the art methods

Monitoring Water Quality (MWQ)

MWQ 1: Work with agencies such as the EPA, SWRCB and USFS which have water quality monitoring responsibilities to study water quality parameters of interest to the Restoration Program.

MWQ 2: Monitor water quality above, within and below Copco and Iron Gate Reservoirs for five years to determine the effects of storage and power plant operation on downstream fish habitat conditions

Monitoring Fish Population (MFP)

MFP 1: Monitor fall chinook stock groups annually, including runs in the Scott, Shasta and Salmon River, selected Middle Klamath tributaries and Blue Creek

MFP 2: Support volunteer monitoring of anadromous salmonid stocks in cooperation with CDFG

MFP 3: Monitor spring chinook both in the Salmon River and in net harvests in the lower river

MFP 4: Monitor summer steelhead populations annually

MFP 5: Study fish rescue efforts associated with diversions and determine the survival of fish captured and transferred downstream

MF 6: Request that CDFG use data from guides and punch cards to gauge changes in catch success rates and trends over time

MFP 7: Monitor green sturgeon through analysis of in-river fishing data but also include range, distribution and vulnerability in fisheries outside the Klamath

MFP 8: Collect additional information on life history patterns and stock structure of the basin's anadromous salmonids

MFP 9: Encourage study of cutthroat trout, eulachon and Pacific lamprey

Monitoring Hatcheries (MH)

Fish Health

MH 1: New Recommendation: Monitor fish health to better understand problems for hatchery fish from diseases and the link between environmental stresses and epidemeology.

MH 2: **New Recommendation** Conduct studies of hatchery performance and marking strategies as they pertain to harvest and interactions between hatchery fish and wild fish.

MH 3: **New Recommendation** Evaluate small scale rearing programs to determine their cost-effectiveness and to discern possible interactions with wild fish.

EDUCATION (E)

Education Objective- Promote public interest in the Klamath River Basin's anadromous fish, their beneficial use and habitat requirements and gain support for the Restoration Program's plans and efforts to restore fish habitat and populations.

Public Schools

E 1: Continue developing curriculum

E 2 Encourage school districts integrate Klamath River Education Program (KREP) materials into their regular curriculum

E 3 Sponsor workshops and conferences to keep teachers updated about the Restoration Program

E 4 Budget for $10,000 annually for school "mini-grants" to keep schools involved in river studies related to restoration

Community Education

E 5 Provide educational forums for foresters

E 6: Minimize impacts of suction dredge mining by educating miners as to their potential impacts on fish habitat

E 7: Sponsor local workshops for farmers and ranchers

E 8: Support 4H programs related to riparian restoration

E 9: Encourage development of interpretive programs at I-5 rest area and at the mouth of the Klamath at Highway 101 on the Yurok Reservation

E 10: Assemble a suitable display for county fairs

E 11: The Task Force should maintain public education programs to reduce poaching

E12: Work with angler groups, resort owners, guides and county fish and game advisory committees to promote angler awareness of the Restoration Program's goals and objectives.

E13: Conduct workshops for state, county and private road maintenance personnel concerning methods for decreasing sediment contributions from roads.

E14: Join with the Klamath Basin tribes in sponsoring a conference about the Indian fisheries.

PROGRAM ADMINISTRATION

PA Objective: Provide adequate and effective administration to successfully implement the Restoration Plan and Program.

PA 1: Involve interests or agencies not represented on the Task Force through several methods:

PA 1a. Decision-making: Task Force members should each try to reflect public interest and equity values in their decisions and not just the views of their organization.

PA 1b. Technical Work Group membership: Appointments of technical specialists from other agencies or groups should be made to this Task Force subcommittee, which solicits and evaluate project proposals.

PA 1c. Public Involvement: Task Force should continue seeking public opinion at its meetings but also develop or support working groups to address different problems or

problem areas. Coordinated Resource Management and Planning (CRMP) is another method to involve a wide spectrum of participants.
Done. The TF has tasked sub-committees on some matters, including Upper Basin Amendment and Mid-term Evaluation workplan development. The TF has encouraged and funded CRMP development in Shasta, Scott and Salmon sub-basins. See discussion in Chapter 6.

PA 1d. Cooperative or interagency agreements should be used to carry out restoration activities with non-Task Force agencies, which may be jointly funded.

PA 2. Ensure the decision-making process will work well.

PA 2a. Arrange a training session for the Task Force in the consensus decision-making process.

PA 2b. As an option, use the "abstention" position when a member does not feel strongly enough about a proposal to vote "no," yet cannot support the proposal.

PA 2c. ****** Adoption of rules similar to the "T/F/W Ground Rules," under which each member agrees to work.

PA 2d. Actively seek to negotiate a compromise that considers the needs of all parties.

PA 2e. Retain the consensus approach to decision-making.

PA 3. Assign Committees, made up of Task Force and Technical Work Group members or representatives, to monitor each of the Plan's major components: Habitat Protection and Management, Habitat Restoration, Population Protection (includes liaison with Council), Population Restoration, Education and Communication, and Administration. Committees shall report at each Task Force meeting about progress of policy implementation.

PA 4. Formally evaluate plan and program progress and provide for amendments to the Plan.

PA 4a. A Program Review shall be done every 5 years during the Program's lifespan. The first Program Review should begin in 1995, followed by reviews in the years 2000 and 2005.

PA 4b. An Annual Progress Report appropriate for public review shall briefly summarize the results of Task Force actions and projects to date, including an accounting of the costs. Both Federally and non-Federally funded projects should be included.

PA 4c. Plan Amendments shall be provided for on a regular basis, as new information and conditions arise. Policy changes should be based on new findings in the text.

PA 5. The Program should continued to use a mix of USFWS staff, consultants, and TF committees to meet its administrative needs. Part-term Program evaluations should continue to include analyses of staffing and budget-related issues.

PA 6. Ensure adequate funding is available to implement the Plan.

PA 7. Promote and provide opportunities for information sharing.

PA 7a. Klamath River Fishery Resource Office should develop a catalogued technical library as the repository for completed project reports, historical and recent Klamath Basin references, and other pertinent restoration materials.

PA 7b. Klamath River Fishery Resource Office should regularly produce a newsletter for continuous communication about ongoing and completed projects and their results, as well as other related topics.

PA 7c. [**New**] Use the Klamath Resource Information System (KRIS) as the Program's database for monitoring and evaluating fish population, fish habitat and water quality recovery efforts.

PA 7d. Support publication of the results of Task Force funded projects in the scientific literature, periodicals for the general public, and a Klamath River Fishery Resource Office Technical Report Series.

PA 8. Improve the understanding of agency jurisdictions.

PA 9. [**New**] The TF should actively confer with State and federal authorities responsible for stream protection in the basin, including the Department of Fish and Game and the California Department of Forestry and Fire Protection concerning the continuing need for improved stream protection standards under the provisions of the State Forest Practice Act, Fish and Game stream modification regulations (F&G Code Section 1600 et seq.) and other stream protection laws.

PA 10. Provide comments on proposed public and private projects within the Basin that have the potential for affecting the implementation and success of the Restoration Plan and Program.

Appendix 3-2. Summary of Annual Project Expenditures

FYP-Abbrv		PRJ_ID	COOPERATOR	PROJ_TITLE	FUNDED	SPENT
89	E	E-3.1	Diane Higgins	4-6 grade: Develop classroom curriculum, teacl	67,000	67,000
90	E	E	CA Salmon and Steelhead Rest. Fe	Conference	1,500	1,500
90	E	E-3.21	Chico State University	A Benchmark Study of Public Knowledge of the	18,265	5,859
90	E	E-3.1	Diane Higgins	7-8 grade: Develop classroom curriculum, teacl	68,040	68,040
91	E	E-6	Diane Higgins	9-12 grade: aquatic education program	67,335	67,335
91	E	E-1	Etna Elementary School District	Kidder Creek Enviro. School - fish field study	2,685	2,681
91	E	E-4	Paula Yoon	Portable information display for Klamath Fisher	7,777	7,750
92	E	E-14	CA Salmon and Steelhead Rest. Fe	10th Annual Conf	2,500	2,500
92	E	E-13	Klamath Forest Alliance	Salmon ED Workshops	1,600	1,600
92	E	E-0	Native American Fish & Wldlf Soc	Annual conference to discuss fish and wildlife is	1,000	1,000
92	E	E-11	UC Extension Davis	Conference on decomposed granitic soil: Proble	4,000	4,000
93	E	E-03	Hoopa Valley Tribe	11th Annual Conference	3,000	3,000
93	E	E-13	Hoopa Valley Tribe	Salmon Education Community Workshop	2,500	2,500
93	E	E-06	Paula Yoon	Portable information display for upper Klamath	8,350	8,350
93	E	E-09	Paula Yoon	Klamath River Field Trip	500	500
93	E	E-02	USFS Six Rivers NF, Orleans	Public fisheries education through nonconsump	2,750	2,750
93	E	E-15	USFWS Klamath River FWO	Klamath Symposium	1,000	1,000
94	E	E-06	Diane Higgins	Klamath River Education Program K-3	36,059	36,059
94	E	E-04	Klamath Forest Alliance/SRRC	Salmon River Stewardship and Education Proje	3,500	3,500
94	E	E-02	Paula Yoon	Eureka High School Klamath River Project	1,265	1,265
94	E	E-07	Siskiyou RCD	1994 California Salmonid Restoration Conferen	3,000	3,002
94	E	E-04a	USFS Klamath National Forest	Salmon River Stewardship and Education Proje	1,120	1,120
95	E	E-07	Forks of Salmon School	Watershed Education and Stewardship Proj	7,513	----------
96	E	E-03	Klamath Trinity Unified School Distr	Camp Creek caring kids protection projec	4,500	----------
				E TOTAL	**316,759**	**292,311**

Appendix 3-2. Summary of Annual Project Expenditures

FYP	Abbrv	PRJ_ID	COOPERATOR	PROJ_TITLE	FUNDED	SPENT
89	FP	FP-2.21	Calif. Dept. of Fish and Game	Estimate fall chinook escapement operating adı	41,700	41,700
89	FP	FP-2.25	Calif. Dept. of Fish and Game	Hydroacoustic weir, Salmon River	21,400	21,400
89	FP	FP-2.12	Humboldt State University	Study to determine tagging needs for time/area	36,383	36,165
89	FP	FP-2.31	USFS Klamath National Forest	Steelhead escapement, selected tributaries	73,368	73,368
89	FP	FP-2.22	USFWS Coastal Calif. FWO	Fall Chinook escapement, Lower Klamath subb	24,000	18,630
89	FP	FP-2.23	USFWS Coastal Calif. FWO	Fall Chinook escapement, Blue Creek	43,800	43,052
89	FP	FP-2.51	USFWS Coastal Calif. FWO	Trap outmigrants on the lower Klamath River m	27,200	23,102
90	FP	FP-01	Karuk Tribe of California	Karuk Tribal Harvest Monitoring Program	15,295	15,295
90	FP	FP-4.3	Pacific States Marine Fisheries Con	Temporary help for Yreka Screen Shop	23,911	23,911
90	FP	FP-2.21	USFS Klamath National Forest	Spawning ground utilization surveys	81,568	81,568
90	FP	FP	USFS Klamath National Forest	Unknown	15,000	13,864
90	FP	FP-2.52	USFS Six Rivers NF	Camp Creek Downstream Migrant study	14,993	12,445
90	FP	FP-2.22	USFWS Coastal Calif. FWO	Habitat/fish inventory of the lower tribs to	24,000	21,688
90	FP	FP-2.23	USFWS Coastal Calif. FWO	Blue Creek studies	53,400	52,359
90	FP	FP-2.51	USFWS Coastal Calif. FWO	Trap outmigrants on the Klamath River mainste	27,200	27,839
91	FP	FP-193	Calif. Dept. of Fish and Game	Modify and repair Shasta River fish counting fa	17,777	17,777
91	FP	FP-01	Karuk Tribe of California	Karuk Tribal Harvest Monitoring Program	19,537	19,537
91	FP	HR-15	Pacific States Marine Fisheries Con	Yreka Screen Shop	27,589	27,589
91	FP	FP	USFS Klamath National Forest	Unknown	10,500	9,183
91	FP	FP-03	USFWS Coastal Calif. FWO	Investigations on lower tributaries to the Klamat	40,500	49,363
91	FP	FP-04	USFWS Coastal Calif. FWO	Evaluation of chinook stocks of Blue Creek, sta	57,400	59,473
91	FP	FP-05	USFWS Coastal Calif. FWO	Monitoring Klamath River Yearling Salmonid Er	2,750	3,003
91	FP	FP-06	USFWS Coastal Calif. FWO	Monitoring of juvenile chinook salmon	27,750	27,649
92	FP	FP-8	California Polytechnic State U	population differentiation of spring and fall chin	18,434	18,434
92	FP	FP-11	Hoopa Valley Tribe	Estimate population size and range	14,058	14,058
92	FP	FP-12	Hoopa Valley Tribe	Monitor outmigrants	49,128	48,548
92	FP	FP-16	Pacific States Marine Fisheries Con	Temporary help for Yreka Screen Shop	29,118	29,118
92	FP	FP-7	USFWS CA/NV Fish Health Center	Health and physiology monitoring of hatchery a	10,105	10,567
92	FP	FP-2	USFWS Coastal Calif. FWO	Status of salmon and steelhead stocks of Blue (	58,729	58,010
92	FP	FP-5	USFWS Coastal Calif. FWO	Age composition /scale analysis of Klamath Fal	5,450	3,166
92	FP	FP-04	USFWS Coastal Calif. FWO	Monitoring of Klamath River Yearling Salmonid	3,000	4,334
93	FP	FP-03	Pacific States Marine Fisheries Con	Temporary help for Yreka Fisheries Habitat Imp	31,118	15,216
93	FP	FP-13	USDA Forest Service Research	Age and growth of Klamath River green sturgec	3,823	4,507
93	FP	FP	USFS Klamath National Forest	Tech support	4,000	1,905
93	FP	FP-04	USFWS CA/NV Fish Health Center	Health and physiology monitoring of hatchery a	14,000	11,882
93	FP	FP-05	USFWS Coastal Calif. FWO	Monitoring of Klamath River Yearling juv salmo	9,000	8,791
93	FP	FP-06	USFWS Coastal Calif. FWO	Age composition /scale analysis of Klamath Fal	7,350	7,408

Appendix 3-2. Summary of Annual Project Expenditures

FYP	Abbrv	PRJ_ID	COOPERATOR	PROJ_TITLE	FUNDED	SPENT
93	FP	FP-07	USFWS Coastal Calif. FWO	Fall Chinook spawning escapement survey	15,228	15,533
94	FP	FP-10	USFWS CA/NV Fish Health Center	Health/physiology evaluation of hatchery yearlir	10,000	9,475
94	FP	FP-19	USFWS Coastal Calif. FWO	Age Composition of the 1993 Klamath River Fa	7,850	8,583
95	FP	FP	USFS Klamath National Forest	Tech support	1,000	1,000
95	FP	FP-01	USFWS CA/NV Fish Health Center	Health physiology and migration characteristics	21,455	18,417
95	FP	FP-03	USFWS Coastal Calif. FWO	Age composition of the 1994 Klamath River	10,582	10,648
95	FP	FP-08	USFWS Coastal Calif. FWO	Mainstem Klamath River Fall Chinook spawner	26,900	25,349
95	FP	FP-11	USFWS Coastal Calif. FWO	Spring emigration assessment of Klamath	28,105	26,635
95	FP	FP-12	Yurok Tribe	Assess chinook/coho salmon Blue Creek	43,307	34,331
95	FP	FP-07	Yurok Tribe and Humboldt State U.	Genetic analysis of Klamath Green Sturgeon	21,102	21,102
96	FP	FP-27	Hoopa Valley Tribe	Pine Creek Stocks	20,155	----------
96	FP	FP-23	Siskiyou RCD/CRMP	Locally built fish screens for Scott River	14,787	2,410
96	FP	FP-13	USFWS Coastal Calif. FWO	Age Composition fall chinook	11,146	---------
96	FP	FP-18	USFWS Coastal Calif. FWO	Klamath Spawning Escapement	32,771	32,771
96	FP	FP-20	USFWS Coastal Calif. FWO	Spring emigration assessment	52,260	---------
96	FP	FP-11	Yurok Tribe	Blue Creek Population Assessment	39,835	36,840
96	FP	FP-12	Yurok Tribe	Eulachon / Lamprey Assessment	6,076	4,822
97	FP	FP-08	USFWS Coastal Calif. FWO	Monitoring Klam Riv Juv Salmo springtime emi	39,052	---------
97	FP	FP-11	USFWS Coastal Calif. FWO	Mainstem Klamath River Fall Chinook spawner	29,656	---------
97	FP	FP-09	Yreka Union High School	Salmon spawning ground survey and river studi	3,410	2,018
FP TOTAL					**1,419,011**	**1,205,838**

Appendix 3-2. Summary of Annual Project Expenditures

FYP	Abbrv	PRJ_ID	COOPERATOR	PROJ_TITLE	FUNDED	SPENT
89	FR	FR-5.11	Calif. Dept. of Fish and Game	Evaluation of salmon production at Iron Gate H	56,700	56,700
89	FR	FR-5.12	Calif. Dept. of Fish and Game	Evaluation of pond rearing of chinook salmon	26,600	26,600
90	FR	FR-117	Northern Calif. Indian Dev Council	Middle Klamath chinook rearing pond operation	135,653	135,140
91	FR	FR-03	Calif. Dept. of Fish and Game	Evaluation of Mid-Klamath River Pond Rearing	27,600	27,600
91	FR	FR-01	Northern Calif. Indian Dev Council	Yurok Reservation late run fall chinook returnin	99,818	99,818
91	FR	FR-02	Northern Calif. Indian Dev Council	Late run fall chinook gill net capture project	33,950	33,950
92	FR	FR-04	Karuk Tribe of California	Orleans community rescued steelhead rearing p	1,412	1,412
92	FR	FR-02	Northern Calif. Indian Dev Council	Late run fall chinook gill net capture project	13,184	13,184
92	FR	FR-003	Northern Calif. Indian Dev Council	Yurok reservation fish rescue and rearing projec	400	400
92	FR	FR-06	Northern Calif. Indian Dev Council	Klamath river yearling chinook salmon rearing p	101,712	101,711
92	FR	FR-09	Northern Calif. Indian Dev Council	Yurok reservation late run fall chinook rearing p	133,058	133,058
92	FR	FR-01	Orleans Rod and Gun Club	Klamath River Steelhead Enhancement Project	9,550	8,263
93	FR	FR-06	Northern Calif. Indian Dev Council	Yurok Reservation Late Fall Chinook Accelerate	156,873	156,873
93	FR	FR-09	Northern Calif. Indian Dev Council	Mid-Klamath Chiook Restoration/Acceleration	160,333	160,333
93	FR	FR-03	Orleans Rod and Gun Club	Orleans community anadromous fish rearing	12,476	7,670
93	FR	FR-13a	USFWS Coastal Calif. FWO	Age and growth of green sturgeon	4,507	4,507
94	FR	FR-04	Northern Calif. Indian Dev Council	Mid KlamathChinook Accelerated Restoration F	151,787	151,787
94	FR	FR-02	Northern Calif. Indian Dev Council	Yurok Reservation Late Run Fall Chinook Stock	143,915	84,366
94	FR	FP	USFS Klamath National Forest	Technical Support	1,000	1,000
95	FR	FR-01	Lara, Walter Jr.	Lower Yurok Res. Late Run Chinook Stocking F	55,574	55,574
96	FR	FR-04	Karuk Tribe of California	Native stock enhancement: Camp Creek	13,000	13,000
97	FR	FR-04	Karuk Tribe of California	Camp Creek Native Stock Enhancement Progra	142,816	128,405
FR Total					**1,481,918**	**1,401,351**

Appendix 3-2. Summary of Annual Project Expenditures

FYP	Abbrv	PRJ_ID	COOPERATOR	PROJ_TITLE	FUNDED	SPENT
89	HP	HP-2.61	Calif. Dept. of Water Resources	Potential for augmenting flow in the Scott River	36,000	35,964
89	HP	HP-2.42	Hoopa Valley Tribe	Erosion site inventory and restoration plan deve	31,905	31,905
89	HP	HP-4.14	Siskiyou RCD	Develop a sediment budget for Scott sub basin,	50,000	50,000
89	HP	HP-2.41	USFS Klamath National Forest	Habitat type and standing crop estimate on 125	74,956	74,956
90	HP	HP-2.42	Hoopa Valley Tribe	Pine Creek habitat evaluation/improvement	31,188	31,188
90	HP	HP-2.71	Shasta Valley RCD	Shasta River fisheries water quality project	24,470	24,470
90	HP	HP-4.2	Siskiyou RCD	Scott River subbasin sediment study, Phase II	30,768	30,768
90	HP	HP-2.41	USFS Klamath National Forest	Habitat productivity survey	45,247	38,853
91	HP	HP-01	Energy and Resource Advocate	A remote sensing and GIS feasilbility analysis	36,830	36,829
91	HP	HP-10	Siskiyou RCD	Inventory riparian zone of valley reach of Scott	7,054	7,054
91	HP	HP-07	USFS Klamath National Forest	South Fork of the Salmon River Watershed inv	18,500	18,500
91	HP	HP-09	USFS Klamath National Forest	Salmon sub-basin sediment analysis	38,190	38,190
92	HP	HP-01	Hoopa Valley Tribe	Monitoring of sedimentology in anadromous sal	38,662	35,785
92	HP	HP-15	Karuk Tribe of California	Water temperature monitoring of the Klam Rive	24,000	24,000
93	HP	HP-15	Karuk Tribe of California	Water temp monitoring of the Klamath Mainste	12,740	8,905
93	HP	HP-02	USFS Klamath National Forest	Coarse woody material condition surveys	4,800	---------
93	HP	HP-13	USFS Klamath National Forest	Crapo Creek WIN inventory	16,000	16,000
94	HP	HP-08	Great Northern Corp.	Grenada Irrigation District monitoring project	7,275	6,959
94	HP	HP02	Siskiyou RCD	Temperature monitoring on the Scott River	9,418	9,405
95	HP	HP	Calif. Dept. of Water Resources	Gauging stations	16,350	16,350
95	HP	HP-06	Karuk Tribe of California	Water temperature monitoring of the Klam Rive	24,864	--------
95	HP	HP-03	University of California	Assess fall agriculture irrigation on Scott River	10,463	10,463
95	HP	HP-01	USFS Klamath National Forest	Horse Creek cattle exclusion fencing	7,961	7,376
96	HP	HP-04	Great Northern Corp.	USGS guaging station: Shasta River	6,600	6,600
96	HP	HP-07a	National Biological Survey	Water quantity and routing model	45,000	45,000
96	HP	HP-07b	Oregon State University	Cold water refugial study and videography	21,000	21,000
96	HP	HP-05	Siskiyou RCD	Temperature monitoring	8,650	4,321
96	HP	HP-06	Siskiyou RCD	USGS guaging station: Scott River	5,500	5,500
96	HP	HP-01	UC Davis	Klamath River/Quality Assessment	62,136	50,121
96	HP	HP-03	University of California	Ag irrigation asessment- Phase II	5,380	--------
96	HP	HP-07c	Utah State University	Review of water quantity / routing model	5,000	5,000
97	HP	HP-08	Great Northern Corp.	Water quality study (instrument 2)	46,000	--------
97	HP	HP-02	Siskiyou RCD	Scott River watershed temp monitoring progran	7,948	-------
97	HP	HP-03	UC Davis	Pilot coldwater refugia study (part 2)	21,128	-------
97	HP	HP-08a	Utah State University	Review of water quantity / routing model	4,000	---------
HP Total					**835,983**	**691,462**

Appendix 3-2. Summary of Annual Project Expenditures

FYP	Abbrv	PRJ_ID	COOPERATOR	PROJ_TITLE	FUNDED	SPENT
89	HR	HR-4.15	City of Yreka	Control bank erosion	10,000	10,000
91	HR	HR-65	Hoopa Valley Tribe	Control or prevent erosion of sediment into Pine	61,811	61,811
91	HR	HR-112	USFS Klamath National Forest	Provide native plants to reseed riparian zones i	13,960	13,960
92	HR	HR-24	Northern Calif. Indian Dev Council	Yurok Reservation/Tarup Creek stream mouth r	10,192	-------
92	HR	HR-17	Shasta Valley RCD	Easton bank protection and riparian fencing	7,191	7,191
93	HR	HR-33	Great Northern Corp.	Parker riparian fence construction	45,356	45,356
93	HR	HR-25	USFS Klamath National Forest	Big Flat slide stabilization	7,260	5,705
93	HR	HR-38	USFS Klamath National Forest	Native seed collection - Salmon River drainage	4,544	--------
94	HR	HR-34	Great Northern Corp.	Riparian planting evaluation	31,816	16,551
94	HR	HR-37	Great Northern Corp.	Generic fencing	59,929	51,930
94	HR	HR-23	Klamath Forest Alliance/SRRC	Community restoration of riparian ecosystems	7,500	7,500
94	HR	HR-15	Siskiyou RCD	Scott River riparian woodland revegetation	31,039	31,039
94	HR	HR-32	Siskiyou RCD	Stockwater for chinook - Scott Valley Irr Dist	7,580	7,580
94	HR	HR-33	Siskiyou RCD	Scott River riparian woodland revegetation	12,117	12,117
94	HR	HR-10	USFS Klamath National Forest	Horse Creek restoration project	30,057	25,331
94	HR	HR-21	USFS Klamath National Forest	Stabilization analysis for the Monte Creek - 86 l	25,721	---------
94	HR	HR-23a	USFS Klamath National Forest	Community restoration of riparian ecosystems	1,100	1,100
95	HR	HR-23	Great Northern Corp.	Fiock ranch pumping system	24,058	19,256
95	HR	HR-25	Great Northern Corp.	Shasta River riparian fencing project	60,809	19,615
95	HR	HR-19	Siskiyou RCD	Scott River flow enhancement pilot project	11,819	11,438
95	HR	HR-21	Siskiyou RCD	Demo alt bank stabilization methods	54,857	54,857
95	HR	HR-12	USFS Klamath National Forest	Horse Creek migration improvement barrier	65,000	62,939
95	HR	HR-18	USFS Klamath National Forest	Canyon Creek spawning gravel development	5,336	5,336
96	HR	HR-05	Great Northern Corp.	Shasta riparian restoration	16,200	14,362
96	HR	HR-20	Siskiyou RCD	Streambank protect/fencing Tozier Ranch	50,000	50,000
96	HR	HR-06	Siskiyou RCD/CRMP	Riparian woodland revegetation	30,281	---------
97	HR	HR-01	CCC/USFS	Coop Lower/Mid Klamath Sub Basin	33,865	---------
HR TOTAL					**719,398**	**534,974**

Appendix 3-2. Summary of Annual Project Expenditures

FYP-Abbrv	PRJ_ID	COOPERATOR	PROJ_TITLE	FUNDED	SPENT
89 PA-KFO		Klamath Field Office - Yreka	Administration	178,105	178,105
90 PA-KFO		Klamath Field Office - Yreka	Administration	228,151	228,151
91 PA-KFO		Klamath Field Office - Yreka	Administration	333,694	333,694
92 PA-KFO		Klamath Field Office - Yreka	Administration	329,815	329,815
93 PA-KFO		Klamath Field Office - Yreka	Administration	306,083	306,083
94 PA-KFO		Klamath Field Office - Yreka	Administration	306,989	306,989
95 PA-KFO		Klamath Field Office - Yreka	Administration	344,382	344,382
96 PA-KFO		Klamath Field Office - Yreka	Administration	302,558	302,558
97 PA-KFO		Klamath Field Office - Yreka	Administration	321,146	321,146
PA-KFO Total				**2,650,923**	**2,650,923**
89 PA-RO		Portland USFWS RO	Administration	50,000	50,000
90 PA-RO		Portland USFWS RO	Administration	114,061	114,061
91 PA-RO		Portland USFWS RO	Administration	80,000	80,000
92 PA-RO		Portland USFWS RO	Administration	80,000	80,000
93 PA-RO		Portland USFWS RO	Administration	80,445	80,445
94 PA-RO		Portland USFWS RO	Administration	80,000	80,000
95 PA-RO		Portland USFWS RO	Administration	----------	----------
96 PA-RO		Portland USFWS RO	Administration	----------	----------
97 PA-RO		Portland USFWS RO	Administration	80,000	80,000
PA-RO Total				**564,506**	**564,506**

Appendix 3-2. Summary of Annual Project Expenditures

FYP-Abbrv	PRJ_ID	COOPERATOR	PROJ_TITLE	FUNDED	SPENT
93 PC-319	PC-01a	Siskiyou RCD	Scott River Coordinator	31,780	31,780
PC-319 Total				**31,780**	**31,780**
92 PC-CRM	PC-2	Great Northern Corp.	Shasta Rvier CRMP Field Projects Coordinator	56,791	56,791
92 PC-CRM	PC-2	Shasta Valley RCD	Operating expenses for Shasta Valley CRMP	2,090	2,090
93 PC-CRM	PC-03	Klamath Forest Alliance/SRRC	Develop and implement Salmon River Comm. I	30,500	28,675
93 PC-CRM	PC-01	Siskiyou RCD	Scott Valley CRMP	24,134	24,095
94 PC-CRM	PC-01	Great Northern Corp.	Salmon River Community Restoration Program	10,000	10,000
95 PC-CRM	PC-05	Great Northern Corp.	Shasta River CRMP	25,920	25,920
95 PC-CRM	PC-03	Klamath Forest Alliance/SRRC	Salmon River Community Restoration Program	15,775	15,775
95 PC-CRM	PC-04	Siskiyou RCD	Scott River Watershed Coordinated Resource	32,258	32,258
96 PC-CRM	PC-FLOW	Great Northern Corp.	Geomorphic and sediment evaluation	13,836	--------
96 PC-CRM	PC-05	Great Northern Corp.	Shasta CRMP	35,477	22,309
96 PC-CRM	PC-06	Salmon River Restoration Council	Salmon River Community Restoration Program	21,375	21,375
96 PC-CRM	PC-04	Siskiyou RCD	Scott CRMP	32,340	29,058
97 PC-CRM	PC-05	Great Northern Corp.	Shasta River CRMP Coordinator	25,000	--------
97 PC-CRM	PC-04	Karuk Tribe of California	Middle Klam River Sub-basin Planning	25,000	---------
97 PC-CRM	PC-07	Salmon River Restoration Council	Salmon River Comm Rest Program (CRP-97)	25,000	18,750
97 PC-CRM	PC-03	Siskiyou RCD	Scott River Watershed Co Res Mgt Plan (CRMI	39,006	--------
97 PC-CRM	PC-06	Yurok Tribe	Watershed Analysis and Planning in Low. Klam	25,000	10,190
PC-CRMP Total				**439,502**	**297,286**
91 PC-HSU	PC-10	Humboldt State University	A Comparitive Analysis of Klamath Basin Ecosy	10,281	10,281
95 PC-HSU	PC-06	Humboldt State University	Sub-basin Planning and Project Development	50,400	50,399
97 PC-HSU	PC-01	Humboldt State University	A Comparitive Analysis of Klamath Basin Ecosy	42,618	38,458
PC-HSU Total				**103,299**	**99,138**
89 PC-PlRe	PC-1.1	William M. Kier Associates	Kier, Develop Long Range Plan and Enviro. As	142,057	142,057
90 PC-PlRe	PC-1.1	William M. Kier Associates	Long Range Plan to include Upper Klam Sub ba	28,226	27,905
97 PC-PlRe	PC-10	William M. Kier Associates	Mid Program Review	90,000	28,937
PC-PlRev Total				**260,283**	**198,899**

Appendix 5: Habitat Trends and Restoration

1986-1997

Substantial habitat change in various Klamath River sub-basins has occurred since the inception of the Klamath River Restoration Program in 1986. The following discussions will focus on limiting factors and their abatement or exacerbation since 1986 and the resultant impacts on stream channels and water quality. Positive changes in some part are owing to in-stream restoration such as structural improvements, bank stabilization or riparian restoration. Several factors have also caused major declines in the quality of aquatic habitat during this period, some man-caused and others due to natural forces, and these are included in discussions below.

Kier Associates staff visited the field, consulted local experts and reviewed literature where it was available to gauge habitat change since 1986. Hundreds of photographs of site conditions were reviewed and acquired from local cooperators such as the USFS, Shasta CRMP, Scott CRMP, Salmon River Restoration Council and CDFG. A substantial number of photos were also taken during field tours of the Scott River, Shasta River, Indian Creek, Elk Creek, Beaver Creek and Dillon Creek. Most photographs were entered into the Klamath Resource Information System database (KRIS DB) and these will become part of the next CD release. Where databases were available to interpret habitat conditions quantitatively, they were also captured and summaries presented as graphs in this report.

Major fires, a prolonged drought and damaging storm events have all occurred since the inception of the Restoration Program. These natural events make it difficult to discern in some cases which negative impacts on fish habitat are natural and which are human caused. Luckily, Klamath National Forest has produced a report that explains the patterns of watershed damage and changes to stream habitat (De La Fuente, 1998). Information from the storm damage report (De La Fuente, 1998) is included in habitat change discussions where relevant. A brief synopsis of the findings of the report follows with summary descriptions of habitat change by Klamath sub-basins. Recommendations for continued actions by the Task Force are included in Chapter 3.

Lower Klamath Basin: Watersheds Downstream of the Trinity River

The primary limiting factor in the Lower Klamath Basin is high sediment yield (Earth Science Associates, 1981; Coates and Miller, 1980). Sediment problems and erosion risk has increased since 1986. Logging on private land, sometimes in combination with fire, has removed up to 90% of the cover from some watersheds. There are signs of improving cooperation between the Yurok Tribe and Simpson Timber Company that increase the prospect of future cooperation in watershed restoration. In addition, protection of Federal lands in upper Blue Creek as part of the Northwest Forest Plan (FEMAT, 1993) insures that the refugia, on which Lower Klamath salmon restoration relies, will be protected. The changes in aquatic habitat in

Lower Klamath tributaries have also lead to a change of salmonid distribution and abundance (see Chapter 2). Below is a review of habitat conditions by tributary sub-basin.

Hunter Creek: Hunter Creek has almost no mature forest in its entire watershed. The combination of wildfire in 1988 and intensive timber harvest over the last two decades has left the watershed in a very unstable condition. Steep upland areas have road networks that were built for logging but which are now poorly maintained (Figure A5-1). Several miles of the lower reaches of Hunter Creek still run underground as a result of severe aggradation (Figure A5-2). Over $100,000 has been spent on habitat improvement structures in Hunter Creek in the reach above where it flows underground. Hopelain (in press) inventoried in-stream structures in 53 northern California streams, including Hunter Creek (see In-Stream Structures in this chapter). Hunter Creek had one of the five lowest scores relative to other streams measured. No photos or data were available from this stream after the January 1997 storm but a post flood reconnaissance was conducted and results of the surveys should be available in the future (John Schwabe, personal communication).

Salt Creek, a tributary to Hunter, runs through a very low gradient reach of marshes and pastures. Sedimentation and eutrophication have combined to block access to anadromous fish in Salt Creek (Dan Gale, personal communication). Some tributaries to upper Salt Creek, such as High Prairie Creek, are in recovery from past flood damage but there is no access to this improving fish habitat for salmon and steelhead. Extensive grazing along lower reaches of Hunter Creek also impairs habitat recovery.

Fewer than 100 fall chinook salmon have returned to Hunter Creek in recent years and half of those were from the small scale rearing program operated on Hunter Creek. There is no baseline information on populations in this stream; however, Hallock (1952) marked thousands of juvenile coho in this stream. It would seem that highly disturbed watershed conditions are confounding recovery in Hunter Creek despite expenditures of the Task Force on both in-stream habitat improvement structures and artificial culture to aid in the recovery of this watershed.

Terwar Creek: This watershed has been disturbed in over 90% of its area since 1978 by green timber sales, fire and salvage logging (Figure A5-3). Coates and Miller (1980) pointed out that harvest of over 30% per decade in Terwar Creek would lead to unacceptably high sediment yield and other cumulative watershed effects. Timber harvest has continued to the present and. CDFG has tried to halt timber sales due to requirements for old growth retention in the California Forest Practice Rules but their non-concurrence was over-ridden and timber harvest continued (Bill Condon, personal communication). Terwar Creek, like Hunter Creek, runs underground as a result of severe aggradation in lower reaches during low flows in late summer. The January 1997 flood transported very large quantities of gravel through lower Terwar Creek, negatively impacting private agricultural land and threatening a community water supply (Mark Meissner, NRCS Eureka).

Figure A5-1. Upper Hunter Creek watershed with deteriorating road networks. October 1990.

Figure A5-2. Hunter Creek running underground in its lower reaches. October 1990.

Figure A5-3. Terwar Creek watershed on private industrial timberlands. October, 1990.

Figure A5-4. Lower Blue Creek inner gorge area with recent clear-cut timber harvests in the riparian zone. October 1990.

While high bed load transport would preclude lower Terwar Creek from being productive salmonid habitat, there is still some functional fish habitat in higher gradient reaches or areas with channel confinement (John Schwabe, personal communication). The flat lower reaches of Terwar Creek were formerly some of the highest quality chinook and coho salmon habitat in the Lower Klamath Basin (Rankel, 1979). It is likely that high sediment contributions will continue to depress fishery productivity in Terwar's lower reaches. Although regeneration in redwood dominated watersheds is usually vigorous because redwoods sprout from stumps, very little of the Terwar and Hunter Creek watersheds are coming back in conifers. If trees fail to establish, it may have long term implications for watershed health and fisheries productivity.

Blue Creek: Lower Blue Creek on private, industrial timber lands has been extensively logged, including in the riparian zone during the course of the Restoration Program (Figure A5-4); consequently, fish habitat has deteriorated since 1986. The channel of lower Blue Creek has widened substantially in response to an over-supply of sediment related to logging activities. USFWS (1993) has expressed concern over gravel quality and stability in lower Blue Creek with regard to survival of fall chinook salmon redds. The West Fork of Blue Creek has been heavily logged and has an extensive road network. Although a complete survey has not been conducted, weirs in the West Fork of Blue Creek were at least partially destroyed by the 1997 storm. Difficulty maintaining in-stream structures would be expected because most of the West Fork is in early seral conditions and there is an extensive un-maintained road network. Logging on private lands in inner gorge areas of lower Blue Creek was continuing during winter 1997.

While private timberlands comprise about 20% of the Blue Creek watershed, the U.S. Forest Service manages the upper 80% of the basin. The Northwest Forest Plan provides protection for most of Blue Creek as a Key Watershed with the exception of the Crescent City Fork that is in Matrix (FEMAT, 1993; ROD, 1994). While some Matrix lands are scheduled for timber management, the Crescent City Fork watershed is part of the National Recreation Area, which makes timber harvest unlikely (Jerry Boberg, personal communication). Upper Blue Creek is the last intact salmonid habitat in the Lower Klamath Basin and is, therefore, of extreme importance as a refugia. The Yurok Tribe has conducted extensive annual surveys of spawning adult fall chinook salmon in Blue Creek and counts show a resurgence in the population since 1994 over previous years, when data was collected by U.S. Fish and Wildlife Service (see Fish Population Trends). The Crescent City Fork of Blue Creek also has one of the highest concentrations of coho salmon juveniles in the Lower Klamath Basin (Voight and Gale, 1998). Habitat quality in upper Blue Creek has remained high.

Pine Creek: The Pine Creek watershed is crossed by two major faults and, therefore, is inherently highly unstable (Hoopa Fisheries Department, 1997a). The watershed is also highly disturbed as a result of timber harvest, road building and past fires. Between 1940 and 1960, 77% of Little Pine Creek was harvested (ESA, 1980). Landslides in the watershed averaged 1 per square mile in 1950 but jumped to 30 per square mile in 1965. While the 1964 flood obviously exacerbated the situation, the watersheds were more vulnerable as a result of land management activities (ESA, 1980). Pine Creek is in mixed ownership; the Hoopa Tribe owns

the eastern portion of the basin but the steep, headwall areas of the creek to the west are owned by private forest companies.

Fine sediment measurements taken by the Hoopa Fisheries Department at 16 sites in Pine Creek during 1992 and 1993 showed that fine sediment levels were higher than optimal for salmon and steelhead. Using the FREDLE Index (Lotspeich and Everest, 1979), survival to emergence was calculated as averaging 61.1% for steelhead, 42.8% for coho salmon and 19.3% for chinook salmon (Figure A5-5). Cross sections in Pine Creek showed that the channel tends to migrate, which indicates bedload mobility (Hoopa Fisheries, 1997). The study was initiated after several years of drought and benchmarks for cross sections were not anchored far enough above the active flood plain. Large flows during the winter of 1992-93 destroyed survey markers. Therefore, it was not possible to determine the exact magnitude of changes in bed elevation caused by large storms in that year or subsequent years with high flow. Scour chains are lengths of chain buried in the bed of the stream to determine gravel mobility. They had been installed in Pine Creek and were lost due to a major bedload shift.

The Task Force invested in watershed restoration and erosion control activities in Pine Creek in 1990 and also funded a follow up study to see if sediment transport in the stream decreased. Pacific Watershed Associates (1993), estimated that 120,000 cubic yards (cy) of material from roads and landings could be contributed to Pine Creek if sediment prevention was not implemented. An estimated 10-15% of these sediment sources were treated as a result of erosion control activities funded by the Task Force (Hoopa Fisheries, 1997a). Because other sediment sources remain so high, it is difficult to measure the beneficial effects of these activities (Hoopa Fisheries, 1997a).

The extremely high bedload movement and channel instability in Pine Creek indicate that the watershed remains well above thresholds for cumulative effects. While Task Force investments to decrease sediment have prevented some additional supply, current changes in the channel could have resulted from remobilization of stored materials alone. Active logging also continues in Pine Creek with related disturbances, so other new sources could also have contributed. Habitat conditions within Pine Creek have continued to deteriorate since 1986, despite Task Force investments.

Other Lower Klamath Tributaries: Of the 17 streams sampled for juvenile salmonids by the Yurok Tribe, 14 run under ground in their lower reaches during summer (Voight and Gale, 1998) (Figure A5-6). Major sources of sediment, in the form of abandoned road networks, exist in all these watersheds. It is unlikely that these streams will go into recovery and regain surface flow in the near future unless hillslopes are stabilized and watersheds allowed to rest (Roper et al., 1997). Hopelain (in press) found low success rates for in-stream structures in Tarup Creek, similar to Hunter Creek (see In-Stream Structures). A post 1997 flood inventory for lower Klamath tributaries has been conducted but results were not available at the time this report went to press.

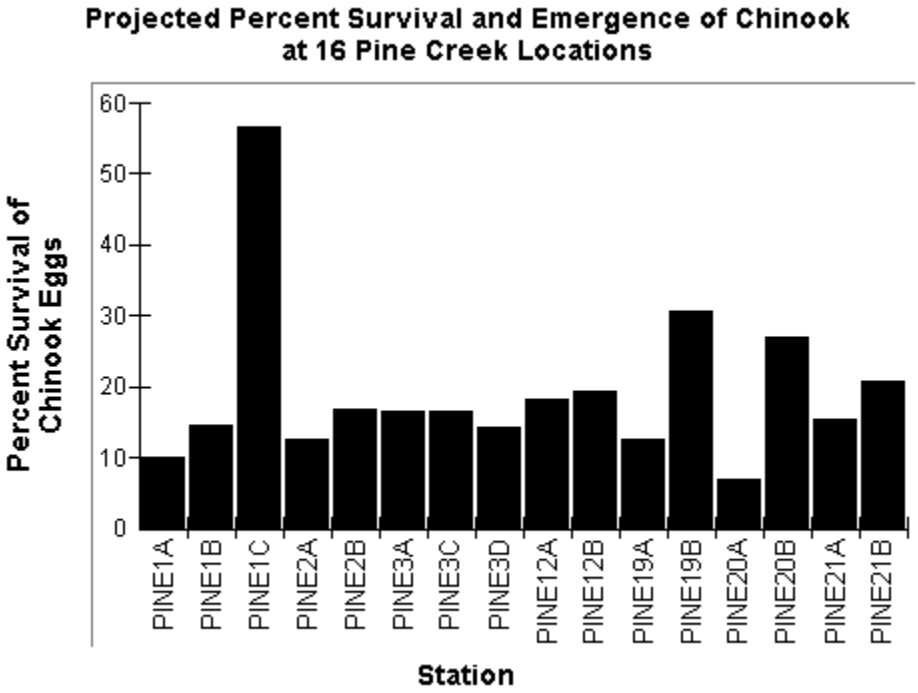

Figure A5-5. FREDLE Index estimate of chinook salmon survival to emergence based on sediment analysis. Hoopa Tribal Fisheries (1997a).

Figure A5-6. Cappell Creek represents a typical Lower Klamath Basin tributary delta. These large sediment deposits cause the streams to go under ground in late summer.

Ah Pah and McGarvey Creek suffered considerable damage from the U.S. Highway 101 by-pass in October, 1989 when construction operations were not erosion proofed prior to the storm. Ah Pah also was damaged by logging in the early 1990's, with clear cutting of old-growth redwoods taking place in the riparian zone (Ronnie Pearce, personal communication). The failure rate of in-stream structures in Ah Pah Creek was much higher than in Hunter Creek in 1997 (John Schwabe, personal communication). Cal Trans has provided funding for mitigation of the water quality infraction that is being applied in part to the McGarvey Creek watershed.

Mc Garvey Creek has been surveyed with Cal Trans funds to estimate potential sediment yield related to roads in the drainage. The Yurok Tribe has acquired funding from the U.S. Fish and Wildlife Service Jobs in the Woods program and sediment reduction activities will take place in that watershed during the summer of 1998. The projects will take place on Simpson Timber Company lands with their permission. McGarvey Creek still has coho, chinook, steelhead and cutthroat trout.

Middle Klamath Tributaries (Trinity to Iron Gate Dam)

The Middle Klamath Basin in this report is comprised of all tributaries between the Trinity River and Iron Gate Dam, excluding larger basins such as the Salmon, Shasta and Scott Rivers. Habitat changed dramatically in some Middle Klamath tributaries during the January 1997 storm. The Klamath National Forest 1997 Flood Damage Report (De La Fuente, 1998) indicates that a substantial amount of sediment was contributed by road failures and from landslides within areas that were recently clear cut (see Storm Damage). While discussions of the flood damage report follow the habitat trends section, results from the study are included in sub-basin discussions below.

Bluff, Camp and Red Cap Creeks: All three of these Six River National Forest streams have been classified as Key Watersheds under the Northwest Forest Plan (FEMAT, 1993). Timber harvest was limited in these watersheds over the past ten years and all three watersheds are in advanced recovery from the 1964 flood. Structures in all three streams were surveyed in 1997 and failure rates in Bluff Creek and Camp Creek were below 10% (Jerry Boberg, personal communication)(Figure A5-7). While structures in Red Cap Creek had a very low failure rate, many structures were isolated when the channel meandered and left structures out of the active channel (Figure A5-8). Red Cap Creek may have experienced a slightly greater impact from a rain-on-snow event as its upper watershed is at higher elevations.

Dillon Creek: While Dillon Creek experienced extensive burns in 1994 and 1996 (Figure A5-9), it still produces some of the highest quality water in the Klamath Basin. Large areas of the Dillon Creek watershed were proposed for salvage logging in 1996 but community pressure forced the USFS to confine activity to the perimeter of the watershed. Sediment yield may still increase 30 years after a fire, as root strength of burned trees is lost. No landslides occurred as a result of the 1997 storm but there were 14 road failures (De La Fuente, 1998).

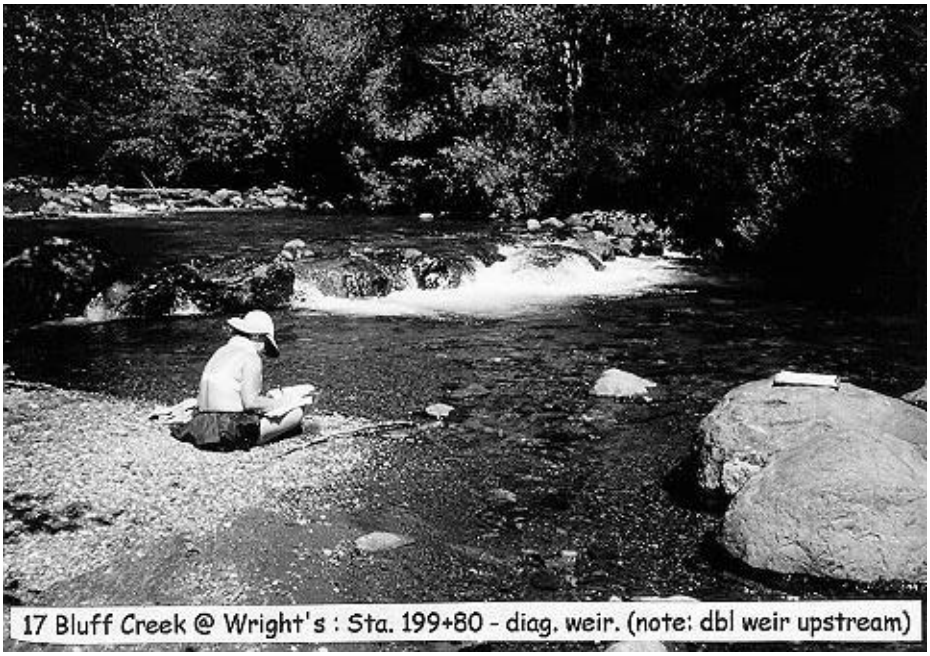

Figure A5-7. Boulder weir on Bluff Creek in September 1997. Photo courtesy of Six Rivers National Forest.

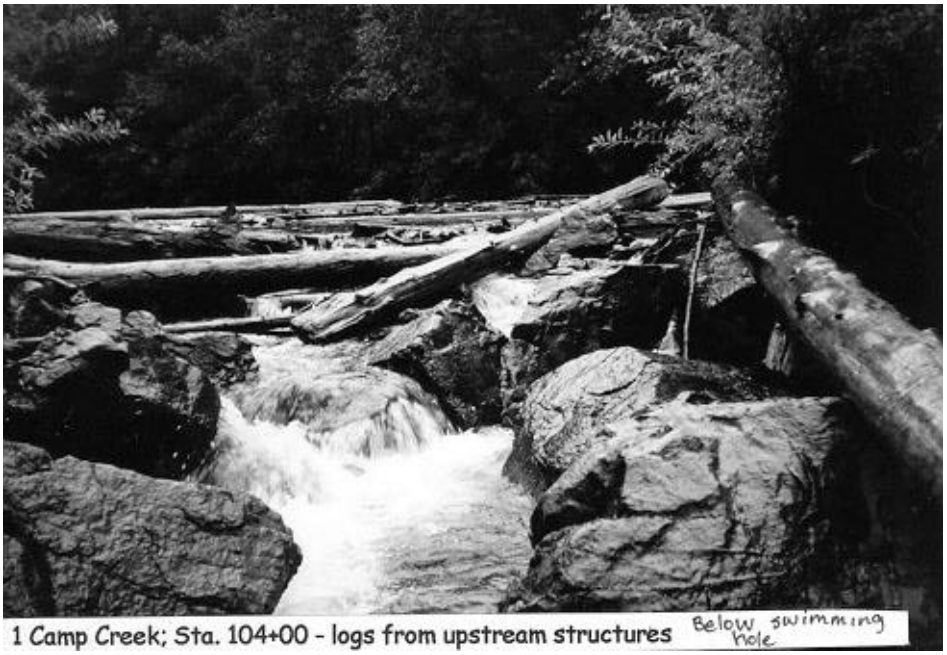

Figure A5-8. Camp Creek boulder weir with large wood above delivered by the January 1997 storm. Photo courtesy of Six Rivers National Forest.

Ukonom Creek: This Marble Mountain tributary has less than a mile of anadromous fish habitat, but is an important cold water source for the Klamath River. The entire length of the Ukonom Creek channel changed in response to the 1997 flood (De La Fuente, 1998). The large extent of the area burned in 1987 may have increased susceptibility of this watershed to the rain-on-snow event. The Ukonom watershed experienced 21 major landslides as the result of the storm but only 7 road related failures. A large delta formed at the mouth of Ukonom Creek after the January 1997 storm (Figure A5-10) and it is likely that fine sediment will increase for a few years. Most of Ukonom Creek is deeply incised and, therefore, it is unlikely that major temperature changes will occur in response to the 1997 storm event.

Independence Creek: The Klamath National Forest increased access to Independence Creek by altering the delta at its convergence with the Klamath River in 1986. While access to the creek remains open, salmonid habitat quality in Independence Creek has deteriorated. Headwater tributaries arise at high elevation (4,000-6,000 feet) and the upper watershed was extensively burned during 1987 and subsequently salvage-logged. The January 1997 storm left a delta at the mouth of the Klamath approximately 10 feet high (Figure A5-11). De La Fuente (1998) noted that the upper two-thirds of the Independence Creek channel was re-configured by the 1997 storm which triggered numerous natural debris torrents in the Marble Mountain Wilderness. Multiple stream crossing failures also occurred in the watershed and contributed to sediment problems in the lower reaches of the stream.

Clear Creek: This large Siskiyou Mountain tributary is a fairly intact watershed, although it was extensively burned in the 1987 Fires. Water quality has remained high and lower Clear Creek is an important cold water refugia. It is also designated as a Key Watershed under the Northwest Forest Plan (FEMAT, 1993), except for some of the lower drainage which is classified as Matrix. Clear Creek suffered only six landslides and eight road failures during the January 1997 flood and habitat remains in excellent condition over-all.

Elk Creek: This Key Watershed was extensively burned in 1987 and subsequently salvage logged. Elk Creek has coho salmon, winter and summer steelhead, fall chinook and occasional spring chinook. The U.S. Forest Service, with some funding from the Klamath Task Force and other sources, had installed a number of in-stream structures of many types in Elk Creek (Olsen and West, 1990). The January 1,1997 storm initiated debris torrents at the headwaters of Elk Creek and major channel changes occurred in treated reaches. De La Fuente (1998) showed over 80% of the channel of Elk Creek was scoured by debris torrents or otherwise altered by the flood. Significant quantities of big wood were entrained by floodwaters (Figure A5-12) and major bed aggradation also occurred. Consequently, the failure or impairment rate of structures was high (see In-Stream Structures). While 53 landslides occurred, over 70 road failures contributed substantially to natural watershed damage. Some tributaries from undisturbed watersheds like Granite Creek also had debris torrents (De La Fuente, 1998). Debris slides in these areas contribute large trees which subsequently add to habitat complexity in lower Elk Creek.

Figure A5-9. Dillon Creek watershed after fires in 1994 and 1996. Notice that areas near ridges burned hotter while green timber was retained in moister draws. October 1996.

Figure A5-10. Delta at the mouth of Ukonom Creek in February 1997. Note substantial flood depositions from the January storm event.

A high amount of fine sediment remained in the active channel when field visits occurred in late September 1997 (Figure A5-13). The California Department of Fish and Game measured gravel quality in Elk Creek during the summer of 1997 and found fine sediment levels less than 1 mm at 19.6% and sand size particles (<6.3 mm) at 35.2% (Jong, 1997). CDFG concluded that fine sediment levels in Elk Creek were likely to impede salmonid production. USFS temperature monitoring showed that Elk Creek had increased substantially from past years when it was almost always below 68^0 F, the threshold for stress for salmonids. Although the data is not yet available, the USFS characterized Elk Creek as having a serious water temperature problem in 1997 (De La Fuente, 1998).

Indian Creek: This stream was showing improvement until the 1997 storm, although the eastern portion of the basin had burned in 1987. Indian Creek had major shifts in bedload as a result of the January 1997 but damage was not nearly as severe as Elk Creek. Field inspections during September 1997 of Indian Creek showed that failure rates for in-stream structures were variable (see In-stream Structures section in this Chapter). Bed elevation increased by 4-6 feet (Ken Baldwin, personal communication) at some locations, and some boulder structures remained intact but were buried in place. Jong (1997) also found high levels of fine sediment in Indian Creek (<1 mm = 19.9% and <6.3 mm = 36.9%) and noted that salmon and steelhead egg survival were likely to be negatively impacted.

De La Fuente (1998) showed that there were 70 road failures in Indian Creek but only 15 non-road related slides. The most extensive channel changes were in the South Fork and upper mainstem reaches where road failures occurred. De La Fuente (1998) estimated that the storm recurrence interval at only 16 years. The substantial damage incurred in this moderate storm event is indicative of poor watershed health. The Indian Creek watershed has a large amount of its area in the high Siskiyou and is, therefore, inherently susceptible to rain-on-snow events. Potential problems with rain-on-snow induced flood events may continue to recur unless the watershed is rested and is allowed to attain a greater component of mature trees, particularly at high elevations. The USFS has extensive timber harvests planned for this watershed despite its poor watershed health

Transitory water quality problems may still be occurring in Indian Creek below the old Gray Eagle Mine. Although the entire bed of Indian Creek was turned over during the January 1997 storm, the embedded cobble on the stream bottom was dyed orange in reaches below the mine during summer 1997. Leachate from the mine tailings appears to be causing the discoloration of the rocks in Indian Creek and there may be high levels of metals associated for short periods. Dive observations in areas with discolored rocks found two age classes of steelhead, suckers and sculpin; therefore, no year round problem from this pollution was evident. Work has been done recently by the U.S. EPA and the Karuk Tribe to cap the Grey Eagle Mine tailings (Leaf Hillman, personal communication).

The U.S. Forest Service has done extensive planting in the riparian zone of Indian Creek, with a special emphasis on coniferous trees to create a secondary over-story in the future (Figure A5-14). Planting projects were in evidence throughout the lower nine miles of

Figure A5-11. The delta at the mouth of Independence Creek in February 1997 was several hundred feet wide. Sediment in alders at center left of photo is about ten feet deep.

Figure A5-12. Large wood deposit in Elk Creek after January 1997 storm. USFS biologist Bill Beamis can be seen at the bottom center of the photo. September 1997.

Indian Creek and will help advance Indian Creek's recovery over the next several decades. No flood damage to riparian plantings resulted from the 1997 storm.

Beaver Creek: This streams flows from the Siskiyou Mountains just west of Mt. Ashland. The Beaver Creek watershed suffered extensive damage in the 1955 Haystack Fire from which it has not fully recovered. Much of the burned area did not come back in conifers. A major debris torrent in decomposed granitic terrain occurred in a tributary of Beaver Creek (Grouse Cr.) during a summer thunderstorm in 1989 (Kier Associates, 1991). The USFS has acknowledged that Beaver Creek had "stream channel embeddedness greatly in excess of the accepted level for anadromous fish for survival" (Ford, 1992).

The USFS discontinued timber harvest in Beaver Creek in the late 1980's in recognition of cumulative effects problems and began an aggressive program of stream and upland rehabilitation. Subsequently in-stream structures were funded through the California Wildlife Conservation Board with extensive placement of boulder weirs in the lowest two miles of Beaver Creek. Reaches above the West Fork had dozens of boulder clusters and wood structures including digger logs, cover logs and weirs. Upland restoration was funded by the USFWS (Ecosystem Restoration Office) but there was a substantial cost share from Fruit Growers Supply Company, a large private timberland holder in Beaver Creek.

Photos of Beaver Creek in 1994 show the willows closely encroaching on the stream channel as a result of several years of consecutive drought (Figure A5-15). The January 1997 storm did not transport sufficient bedload to kill the alder and willow in the riparian zone of Beaver Creek. While the riparian zone widened somewhat, only moderate increases in stream temperature are likely to have resulted from the 1997 storm. The mobilization of the stream bed disrupted all but two of many boulder weirs in lowest two miles of Beaver Creek (Figure A5-16) and resulted in a loss of habitat complexity in this reach. Shallow riffles and runs habitats predominated after the storm. The upper reaches of Beaver Creek, above the West Fork, faired better with regard to retention of in-stream structures which reflects less channel scour (see In-Stream Structures).

The extensive areas in early seral stage, high elevations at the headwaters, erodible soil types and a road network of over 450 miles make Beaver Creek a high risk for cumulative watershed effects. There were 64 road-related failures in the watershed and only 28 landslides away from roads in January 1997. Road failures at higher elevations were a substantial contributor to channel scour in some tributaries. Approximately one third of the Beaver Creek channel changed as a result of the 1997 storm. Timber harvest on private land has accelerated in the Beaver Creek watershed and the USFS is also planning a timber sale in the watershed in the near future.

Horse Creek: This creek flows out of the Siskiyou Mountains and joins the Klamath from the north. This watershed had been identified as being over cumulative effects thresholds by the USFS (Larsen, 1976) with regard to a rain-on-snow event. Larsen (1976) suggested that increased risk of peak flows warranted a cessation of timber harvest for 11 years.

Figure A5-13. Partially buried boulder cluster on Elk Creek, September 1997. Note the lighter colored fine sediment in the active channel behind boulders.

Figure A5-14. Indian Creek flood plain with conifers planted by the U.S. Forest Service to help restore riparian over-story. September 1997.

Figure A5-15. Boulder weirs in lower Beaver Creek in fall 1994. Notice encroaching riparian. Photo courtesy Klamath National Forest.

Figure A5-16. Lower Beaver Creek in July 1997 after high flows earlier in the year had washed out boulder weirs.

Fires burned part of the watershed in 1987 and significant salvage logging followed (Fox, 1992). Fox also noted that the watershed has an extremely high number of roads and that geology in the basin was inherently unstable with both decomposed granitic and schist formations.

Horse Creek did not receive the same level of "habitat improvement" from the USFS as Beaver Creek and there were few structures installed in the drainage (Alan Tanner, personal communication). However, the Oak Knoll Ranger District did contract with USFWS (Klamath Task Force) to build a cattle exclusion fence and a fish passage at a diversion dam on a private land in-holding on lower Horse Creek. This project was specifically referenced in the Long Range Plan (Kier Assoc., 1991) and construction was completed during the summer of 1996. Unfortunately, the January 1997 flood removed over 300' of the 600' of culvert installed as part of the diversion and the entire concrete apron that anchored the project disappeared. Large portions of the riparian forest in lower Horse Creek were removed by the 1997 high water so some increase in stream temperature is expected.

Only eight landslides apart from road failures were identified by Klamath National Forest staff (De La Fuente, 1998) after the January 1997 storm in this basin but approximately 20 road failures occurred. Approximately 30% of the channel of Horse Creek was altered by the storm, with the most severe damage occurring in the lowest reaches. Such heavy flood damage in a moderate storm event is a result of human caused watershed disturbance. The large amount of this watershed in early seral conditions continues to pose significant risk of cumulative effects. Extensive road networks exist in upper Horse Creek and timber harvest is still being actively pursued by private timber companies in the basin.

Grider Creek: This stream suffered major damage from the 1997 storm event and yet it retains a substantial component of old growth trees. Extensive areas of the Grider Creek watershed burned in 1987, which may have increased susceptibility to erosion. In addition, numerous road failures occurred in the Rancheria Creek sub-basin which had been logged. The rain-on-snow event in January 1997 triggered over 63 landslides but only 15 road failures. The lowest reaches of Grider Creek widened substantially and water temperatures increased. A small number of in-stream structures in lower Grider Creek were destroyed by the storm as were two diversion screens (Ron Dotson, personal communication). The riparian vegetation along lower Grider Creek should recover within five to ten years, depending on the frequency of high scouring flows. The mouth of Grider Creek formerly produced one of the most important large, cold water refuge areas on the mainstem Klamath (Belchik, 1997), but the storm raised temperatures and reduced the benefit of this area as a refugia substantially. Mostly natural forces caused the downturn in habitat quality in Grider Creek.

Walker Creek: This tributary suffered the worst flood damage of any stream on the Klamath National Forest and its stream channel was scoured from its headwaters to the mouth. The Walker Creek drainage likely had extremely high rainfall intensity, similar to Grider Creek, but it also had a much more extensive road network. Over 45 road failures combined with 60 other

active landslides in this relatively small watershed. Walker Creek also had extensive areas of its watershed burned in the 1987 fires. One reach of Walker Creek went from approximately 50 feet wide to over 200 feet wide (Figure A5-17). It will be decades before this tributary recovers. It had provided a medium sized refuge area of cold water at its convergence with the Klamath according to Belchik (1997), but stream temperatures are likely to have risen substantially as a result of flood damage.

Cottonwood Creek: Fisheries resources of this Klamath River tributary remain substantially impaired. This creek has been heavily impacted by a number of sources. The Cottonwood Creek watershed includes a substantial amount of decomposed granitic terrain that can contribute fine sediment to the stream. A major impoundment and irrigation cause the stream to go dry in some reaches during summer. Spawning gravel supplies were also depleted during the construction of Interstate Highway 5. Although boulder structures installed on lower Cottonwood Creek have withstood recent flood events, but they have failed to improve spawning habitat because there is no gravel supply.

Bogus Creek: Stream temperatures at most locations in Bogus Creek remain below stressful to salmonids. However, recent McNeil samples taken by Jong (1997) found fine sediment levels higher than optimal for survival of eggs and alevins. The fine sediment level at a station 0.3 km above the convergence with the Klamath was 19.2% less than 1.0 mm and 36% less than 6.3 mm (sand sized). Optimal salmonid habitat has less than 14% fines less than 0.85 mm and less than 30% 6.3 mm (EPA, 1998). The samples in this reach may not be representative of the whole of Bogus Creek as it is the lowest in gradient. Sources of fines might be minor areas of bank erosion. Bogus Creek is also largely spring fed and extremely high flows that would mobilize fine sediment are less common than in watersheds with higher rainfall. Bogus Creek has retained habitat quality since the Klamath Restoration Program's inception and all structures within the creek remain intact. Fall chinook salmon counts in Bogus Creek are some of the highest in the Klamath River Basin (A5-18).

Salmon River

The Salmon River remains one of the healthiest of Klamath River sub-basins but recent fires, extensive road networks and disturbance related to logging have greatly elevated potential sediment yield should a large storm occur (De La Fuente and Hassig, 1994). While fine sediment delivery may have increased somewhat related to the 1987 fires, habitat quality has not decreased substantially over the last decade.

The 1987 fires that burned over 100,000 acres of the Salmon River watershed (A5-19), including sub-basins with decomposed granitic soils (De La Fuente and Haessig, 1994). A substantial area burned by the 1977 Hog Fire re-burned in 1987 and extensive salvage logging took place after both fires. Table 1 shows the number of acres burned in 1977 and 1987 by intensity class. Some Salmon River tributaries that had high intensity burns and decomposed granitic soils, such as Crapo, Olsen and Kanaka Creeks, began to yield

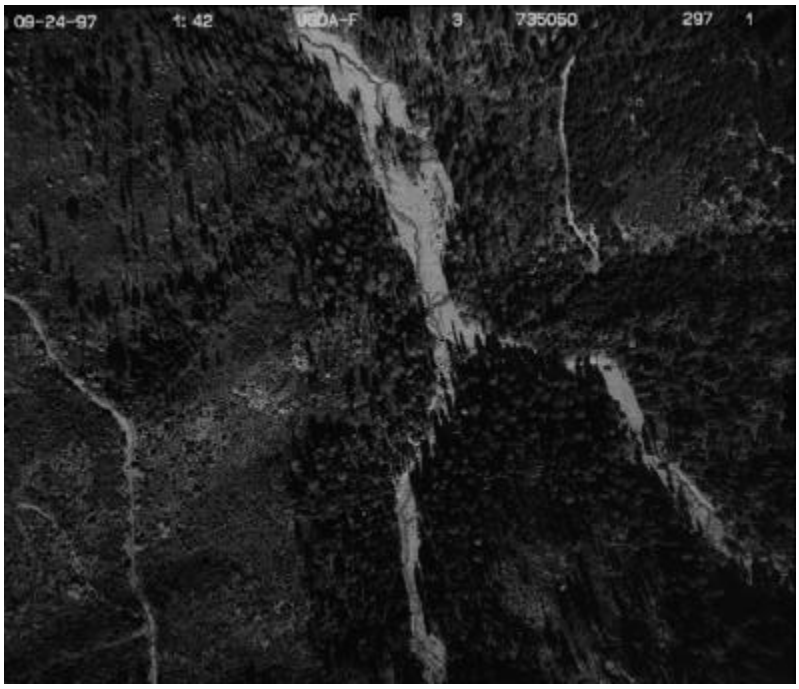

Figure A5-17. Mid-reach of Walker Creek where convergent debris torrents caused the channel to widen to 200 feet during the January 1997 storm. Photo courtesy of Klamath National Forest and Redwood Sciences Lab, Arcata.

A5-18. California Department of Fish and Game staff have help from Siskiyou County high school students in conducting salmon counts annually in Bogus Creek.

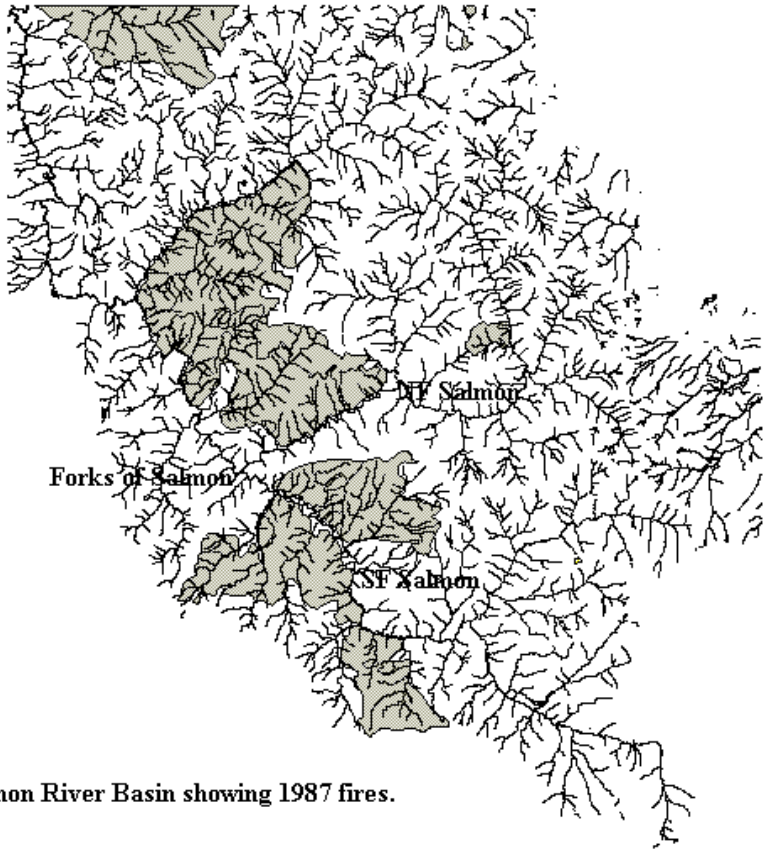

Figure A5-19 Salmon River Basin showing 1987 fires.

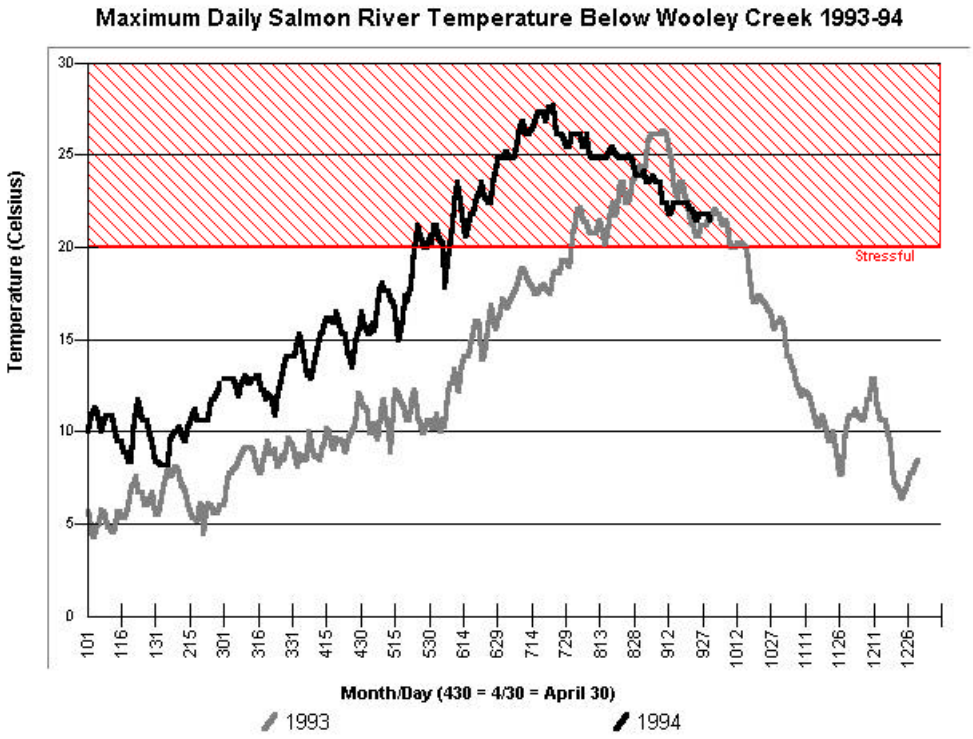

Figure A5-20. Salmon River maximum daily temperatures below Wooley Creek were cooler in 1993 than 1994.

high amounts immediately after the 1987 fires (Figure A5-21). An estimated 105,100 cubic yards of sediment entered the Salmon River immediately following the 1987 fires as a result of surface erosion, increasing from 15,800 cubic yards prior to the fire (De La Fuente and Haessig, 1994). Lisle (personal communication) noted high amounts of sand in main channel reaches in years following the fire, but flushing flows in 1992-93 reduced storage in these areas. Because rainfall was extremely low until 1992-93, much less surface erosion occurred than if intense rain had followed the 1987 fires more closely.

Fire	High	Moderate	Low	Total
1977 Hog Fire	14,106	30,341	13,042	57,489
1987 Fire	16,654	21,510	64,205	102,369

Table 1. Acres burned in the Salmon River basin in 1977 and 1987 by intensity class.

The extremely steep terrain of the upper South Fork in the Trinity Alps Wilderness has yielded high sediment levels even in moderate rainfall years. Robbie Van De Water (personal communication) found that fine sediment in pools increased substantially in the South Fork in 1992-93 and that sediment was contributed from undisturbed areas in the upper watershed.

Some slides and erosion triggered by the 1997 storms may have been delayed response from areas disturbed by the 1987 fires (Robbie Van De Water, personal communication). Slides in occurred in Hotelling Gulch and filled sediment basins that had been constructed immediately after the fire. Slides in the Methodist Creek sub-basin were also thought to be attributable to disturbances caused by the 1987 fires. Specimen Gulch on the Little North Fork Salmon River burned in 1994. U.S. Forest Service studies indicated that some aggradation did take place in the lowest reaches of the creek in 1995 (Robbie Van De Water, personal communication).

The Salmon River is potentially limited by high sediment yield and water temperatures, although the mainstem Salmon may have been naturally warm because of its orientation to the summer sun (USFS, 1997). Water temperatures stressful to salmonids occur in the lower Salmon River annually, but the extent and duration may change in different flow years (Figure A5-20). The North Fork and South Fork may also rise above stressful for salmonids.

Restoration Projects: The January 1997 storm was a 37-year recurrence interval event in the Salmon River (De La Fuente, 1998), which was larger magnitude than in some other Klamath basins that experienced greater damage. The South Fork experienced extremely high flows and did cause some restoration projects to fail. The Salmon River Restoration Council had assisted the USFS with a riparian restoration project on a high bar at Petersburg on the South Fork Salmon River. Seedlings and cuttings were surviving well with shade cards and irrigation leading to high survival; however, the high flows of January 1997 washed out the project. The long-term objective of reclaiming areas

Figure A5-21. Olsen Creek in the Salmon River Basin with decomposed granitic sand in channel after the 1987 fires and moderate rainfall. Photo courtesy Andy Collonna.

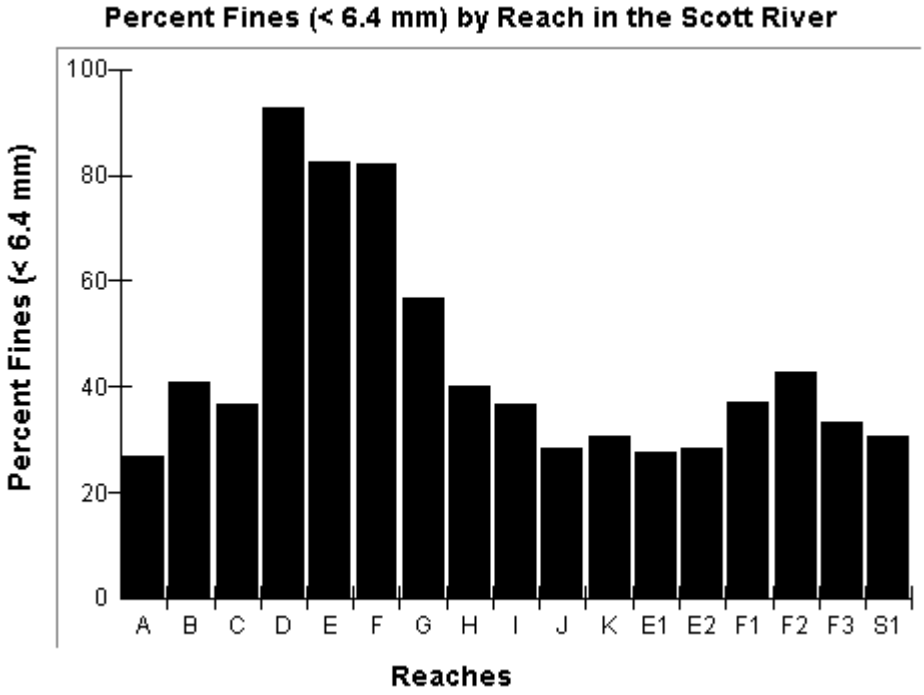

Figure A5-22. Scott River fine sediment less than 6.4 mm (sand size particles) for the mainstem Scott River reaches (A-K), Etna Creek (E1-E2), French Creek (F1-F3) and Sugar Creek (S1) from 1990. Results from Sommersrom (1990).

disturbed by hydraulic mining is still valid, but future projects may need to be further from the active channel (Petey Brucker, personal communication).

A large slide along the South Fork at Big Flat in erodible glacial till soils had been stabilized using local cottonwood cuttings. Approximately 5000 feet of stream bank had been treated but the high water in 1997 resulted in remobilization of part of this slide. Boulder weirs near Petersburg that had been extensively used by spring chinook salmon (Kier Associates, 1991) were disrupted by the flood but large woody structures near the margin of the stream were maintained (Orion Dix, personal communication). The East Fork South Fork in the same area did not experience channel change or substantial structure loss.

In order to improve riparian shade, the USFS and Salmon River Restoration Council (SRRC) planted extensive areas in burned tributaries such as Crapo, Negro, Indian Creek and Specimen Creek. Tree planting in Negro Creek was also used to stabilize numerous, small, active landslides. Rooted cuttings or small nursery starts did not survive well in Salmon River locations but buried willow starts and large cottonwood cuttings did much better. SRRC also helped stabilize mine tailings adjacent to Black Bear Creek. The SRRC has also won several Jobs in the Woods grants from USFWS to restore landscape health and to reduce fire risk in riparian zones through fuels management projects.

The Salmon River Ranger District, in cooperation with the Karuk Tribe, is currently moving to decommission the Steinacher Road in the Wooley Creek drainage. Strategic planning is also underway by the USFS to determine which roads in the upper South Fork basin are essential and which could be decommissioned (Robbie Van De Water, personal communication). Sections of the Steinacher Road decommissioned before the 1997 storm yielded little sediment to Steinacher and Wooley Creeks (De La Fuente, 1998).

The Salmon River Restoration Council (SRRC) works cooperatively with the USFS to keep road networks open, particularly those leading to private in-holdings. SRRC members and community volunteers cruise roads during storms to unplug culverts and stop storm damage before it starts. SRRC has also organized volunteer efforts to clean culverts and decrease flooding on Godfrey Road which was formerly one of the most problematic for the USFS to maintain. Low road failure rates in some portions of the Salmon River basin may have been in part owing to the active partnership between the USFS and SRRC (Petey Brucker, personal communication).

Potential for Cumulative Effects Remains High: Although the Salmon River has remained relatively intact despite some increased rainfall in 1995 and 1997, erosion risk is greatly elevated. The Salmon Sub-Basin Sediment Analysis (De La Fuente and Haessig, 1994) characterized current erosion potential as follows:

> "The large landslide producing events of the 1960's and 1970's occurred when the Salmon River watershed had less than 3% of its area disturbed by roads, harvest or recent fires. In 1989, about 18% of the watershed was in disturbed condition, due in large part to the 1977 and 1987 fires.Roaded lands were

found to produce landslides at a rate 100 times greater sediment undisturbed land, and harvested lands produced landslides at a rate about five times greater than undisturbed land. This study estimated that if a climatic sequence such as that of 1965-1975 (excluding the 1964 flood) were to occur when the watershed were completely undisturbed (no roads, harvest or recent fire), 1.33 million cubic yards of sediment would be delivered to the river system. If the same disturbance conditions which existed in 1989, it is estimated that 2.68 million cubic yards of would be delivered."

A major storm event in the Salmon River basin, with current watershed conditions, could result in extensive scour of channels and resultant degradation of fish habitat. Despite the promising steps taken to reduce erosion, a great deal more resources are needed to accomplish sediment prevention in the Salmon River basin in a prudent time frame in order to avoid potential catastrophic sediment yield.

Scott River

While some habitat improvements have occurred in the Scott River basin since the inception of the Klamath River Fishery Restoration Program, some set backs have also taken place. Progress is being made on remediation of problems related to agricultural activities in the Scott with cattle exclusion fences, riparian re-vegetation, bank stabilization and innovative stock water systems. However, the anadromous fish production of the Scott River continues to be impaired by high sediment levels and high water temperature, which is partially related to flow depletion. There are some signs of sediment abatement through cooperative efforts in the French Creek drainage. However, sediment yield from some lower Scott River tributaries increased as a result of the 1997 flood and many reaches of the East Fork Scott, Moffett Creek and Shackleford Creek also suffered flood damage.

Sediment/Erosion Control: The Task Force funded report by Dr. Sari Sommerstrom (1990) measured fine sediment at many different locations on the mainstem Scott River and also on some tributaries. McNeil samples of fine sediment in the mainstem Scott showed sand size particles (<6.3 mm) to comprise more than 90% of the bed at some locations (Figure A5-22). Optimal levels of fine sediment of this size would be less than 20%. Sommerstrom (1990) noted that the principle source of fines was watersheds with granitic terrain and more specifically from road surfaces, road cuts and road fills.

Following the sediment study, a French Creek Watershed Advisory Group was formed to help coordinate activities in this a highly erodible Scott River sub-basin. The U.S. Forest Service, private timber landowners, ranchers, the County of Siskiyou and the Scott Valley CRMP all contributed to erosion control projects in French Creek (Figure A5-23). Studies to determine fine sediment in pools (V*) were conducted by the U.S. Forest Service in French Creek to determine the progress of restoration. The volume of fine sediment in pools decreased from approximately 30% in 1992 to nearer 10% in the following three years (Figure A5-24). It is possible that erosion control efforts in the French Creek watershed have contributed to the decrease in fine sediment. However, further work is needed with regard to sediment stored on terraces in French Creek before there is definitive proof that the net sediment yield from the basin is decreasing.

Figure A5-23. Road in French Creek drainage that has been rocked to prevent sheet erosion. Photo courtesy Scott CRMP.

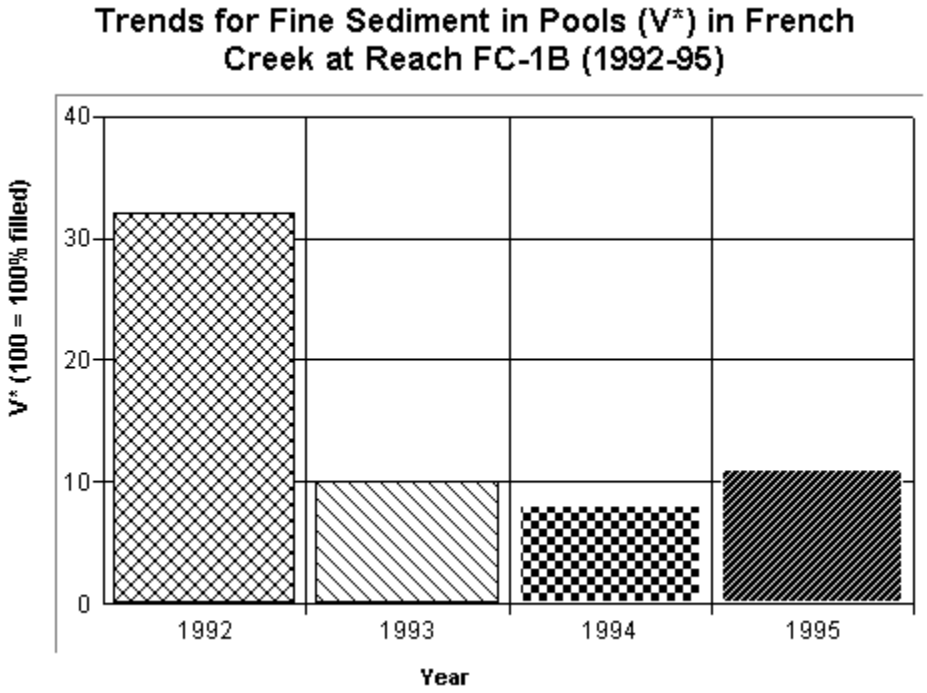

Figure A5-24. V Star results for French Creek from 1992 to 1995. The decrease in fine sediment happened at the same time as erosion control work was being implemented. Data supplied by Klamath National Forest and Redwood Sciences Lab, Arcata.

The Scott CRMP and RCD have made several attempts to fund follow up Mc Neil sampling surveys in the mainstem Scott to see if fines are also decreasing, but proposals have not been successful. The 1997 high water seemed to shift a great deal of fine sediment to reaches of the Scott River just above its convergence with the Klamath. These reaches are often the most important for spawning, particularly in drought years. However, the flows in fall of 1997 allowed fish access to reaches further upstream that had lower levels of fine sediment.

Sediment yield increased in lower Scott River tributaries on USFS lands as a result of the January 1997 storm event. Tributaries from the Marble Mountains that help provide cool water for the lower Scott River during summer include Canyon, Kelsey, Deep, Middle and Tompkins Creeks. Although Canyon Creek had 11 landslides and 19 road failures, it sustained only minor flood damage and less than 20% of its channel length experienced scour. Kelsey Creek had 17 landslides and 11 road related failures but experienced scour in 70% of its length. The channel of Kelsey Creek aggraded substantially as a result of the flood and lateral scour undermined a streamside home. Lower Kelsey Creek also was re-routed around the Kelsey Creek spawning channel (Figure A5-25). This channel was created by the USFS to enhance spawning areas for coho and chinook salmon which had difficulty accessing Kelsey Creek because of its steep gradient. It had had some spawning activity from chinook and coho salmon but in more recent years had been used predominantly by spawning steelhead (Sue Mauer, personal communication). The sediment from Kelsey Creek filled in a hole at its convergence with the Scott River, greatly decreasing the volume of a pool that typically has provided a refuge for thousands of juvenile salmonids.

Tompkins Creek, a tributary of the lower Scott River, also experienced scour in 90% of its channels and suffered 56 landslides and 34 road related failures. This tributary was second only to Walker Creek with regard to damage suffered by streams on Klamath National Forest as a result of the January 1997 flood. Deep Creek and Middle Creek were also scoured in almost their entire length and both experienced both natural landslides and road related failures. Many of the landslides in lower Scott River tributaries initiated on areas that had been recently harvested (see Storm Damage section in this Chapter).

The U.S. Forest Service acquired $27 million to repair flood damage to roads and other infrastructure by the 1997 storms. The most intensive area of activity for road repair in 1997 was in the Canyon Creek and Kelsey Creek watersheds. The Klamath National Forest improved drainage structures and stream crossings in these watersheds so that future flood damage is much less likely (see Storm Damage). Anywhere that recurrence of a debris torrent was likely, the USFS installed cement crossings (Figure A5-26).

Moffett Creek has been noted to have major erosion problems in recent years (Figure A5-27). Even during moderate flows, Moffett Creek has such high turbidity levels that it discolors the Scott River down to its convergence with the Klamath. This stream as well as the East Fork Scott and Schackleford Creek experienced bank erosion during the January 1997.

Figure A5-25. Kelsey Creek spawning channel de-watered by flood effects. Photo taken July 1997.

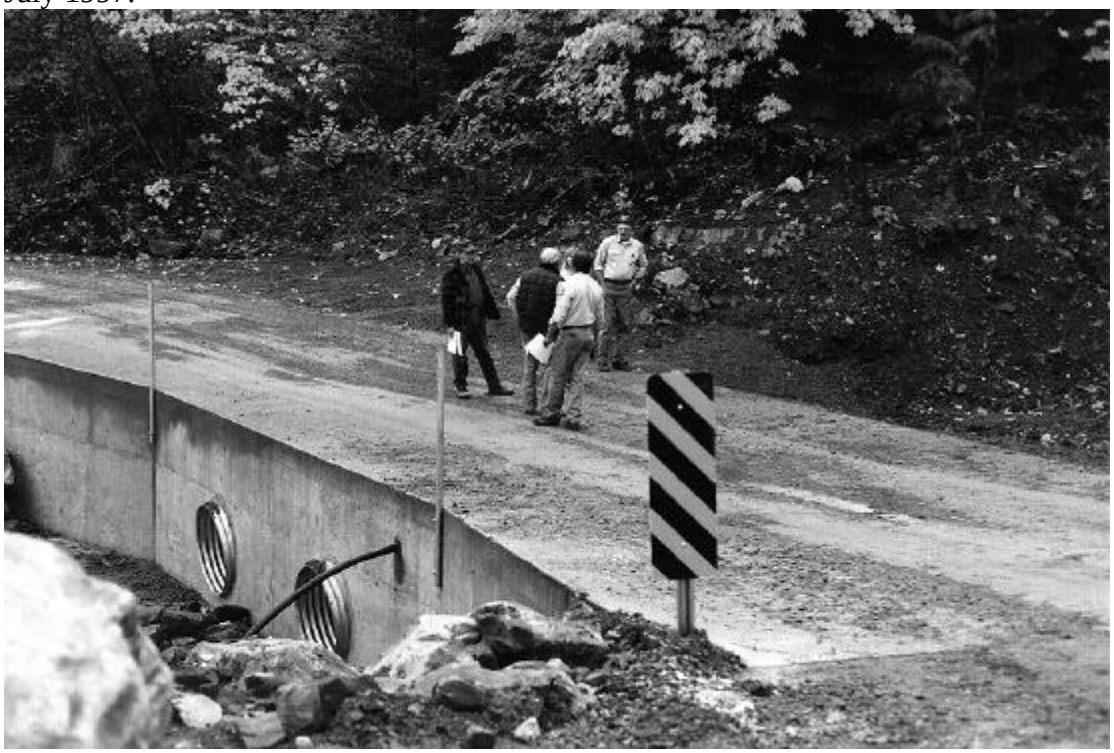

Figure A5-26. New cement ford on Kelsey Creek installed by Klamath National Forest with flood relief money. This approach should reduce long term maintenance and prevent sediment input into Kelsey Creek. October 1997.

Figure A5-27. Moffett Creek channel during summer 1997. Riparian vegetation in Moffett Creek has decreased, most likely as a result of a drop in the water table.

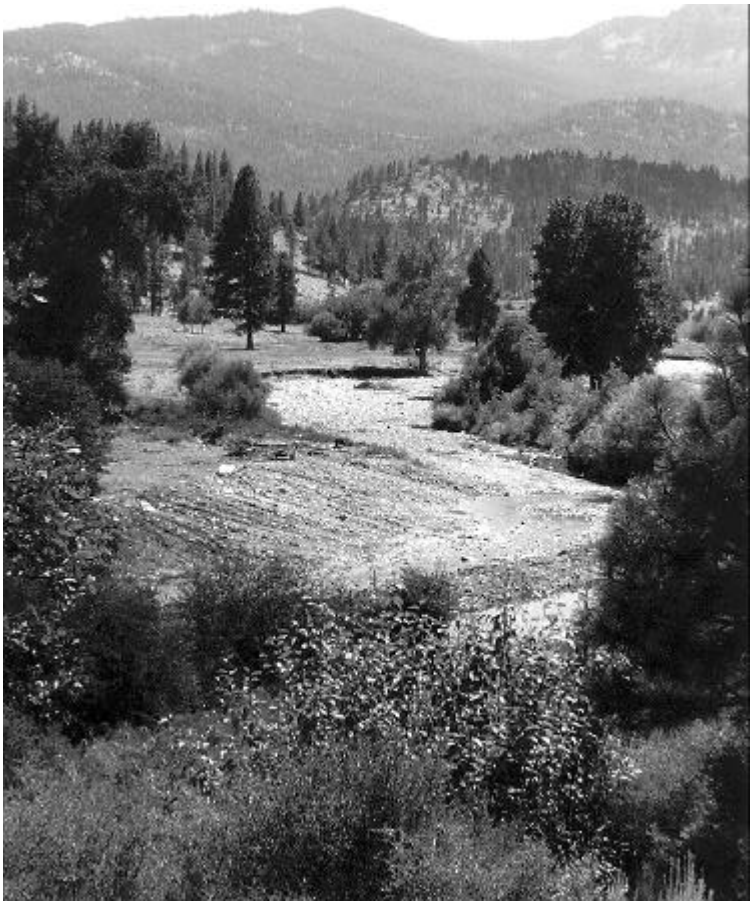

Figure A5-28. East Fork Scott River after excavation with heavy equipment under emergency flood relief. July 1997.

Subsequently, NRCS funded emergency manipulation of the channel with heavy equipment (Figure A5-28). While bulldozing bedload to form a berm increased channel capacity temporarily, this action does not promote long-term channel stability and riparian restoration. Therefore, such activities lead to chronic problems with bank erosion. Removing large wood during these activities also decreases fish habitat complexity.

Water Temperature, Flows and Water Conservation: Water temperatures in the Scott River can be limiting for salmonids, particularly in dry years. Flow depletion tends to contribute to temperature problems. Comprehensive temperature monitoring on the Scott and its tributaries has provided a greater understanding of how varying water years can effect temperature. The Task Force and SWRCB have provided assistance to the Scott River RCD and CRMP for temperature monitoring. Cooperative efforts in the Scott River watershed for temperature monitoring also include private timber companies, the USFS, Etna High School and Scott Valley High school. As a result of these efforts, nearly 50 automated temperature sensing devices have been deployed annually and a great deal has been learned about water temperatures in the basin. The substantial amount of baseline information should allow the CRMP and RCD to track success of restoration efforts, as stream temperatures decrease over time in response to riparian vegetation increases and water conservation measures are implemented.

The Scott River can exceed stressful for salmonids in low gradient valley reaches in dry years, but remains below stressful on average in wet years (Figure A5-29). The warmest reaches of the Scott mainstem in the valley are at Highway 3 and Jones Beach. The lower Scott River flows in a gorge which is completely open to the full arc of the summer sun and very subject to warming.

Cold water tributaries flowing from USFS lands in the Marble Mountains moderate mainstem Scott River temperatures in this reach and provide substantial refugia at their mouths (Figure A5-30). While Kelsey Creek attained a maximum temperature of 62^0 in 1995, widening of it's channel lead to a substantial increase in summer stream temperatures in 1997. Kier Associates measured a temperature of 68 degrees F in the field in August 1997. Channel scour in other lower Scott River tributaries may have also contributed to temperature increases. Loss of cold water contributions from these lower tributaries may have profound impact on ecosystem function in the lower Scott River.

Reaches in the lower Scott Valley at Highway 3 may go dry in drought years as well. During the sequence of drought years from 1987 to 1992, tributaries such as Kidder Creek were dry even during winter months. Shackleford Creek continues to dry up before joining the Scott during late summer annually as a result of irrigation diversions. Long-term trends show that periods of critically low flow have tended to increase since 1942, when flow records began to be monitored consistently on the Scott River. A comparison was made of the number of days

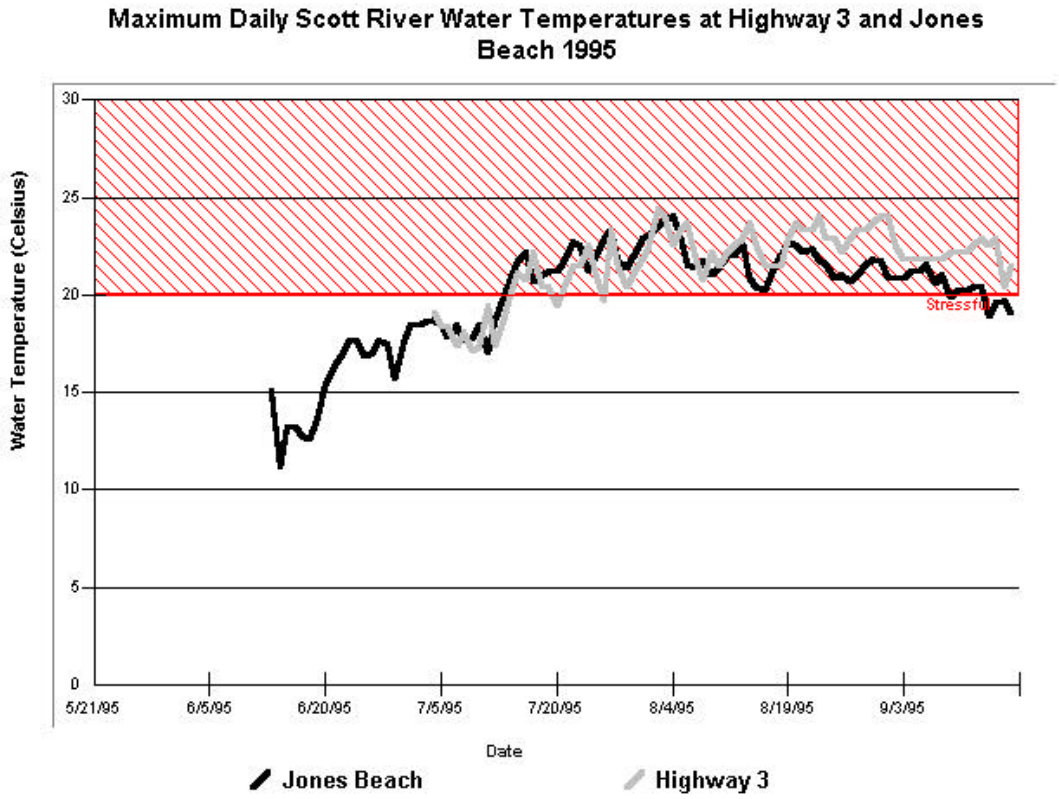

Figure A5-29. Maximum daily water temperature at Jones Beach and Highway 3 during 1995. Most other Scott River locations were below stressful for salmonids during most of the summer.

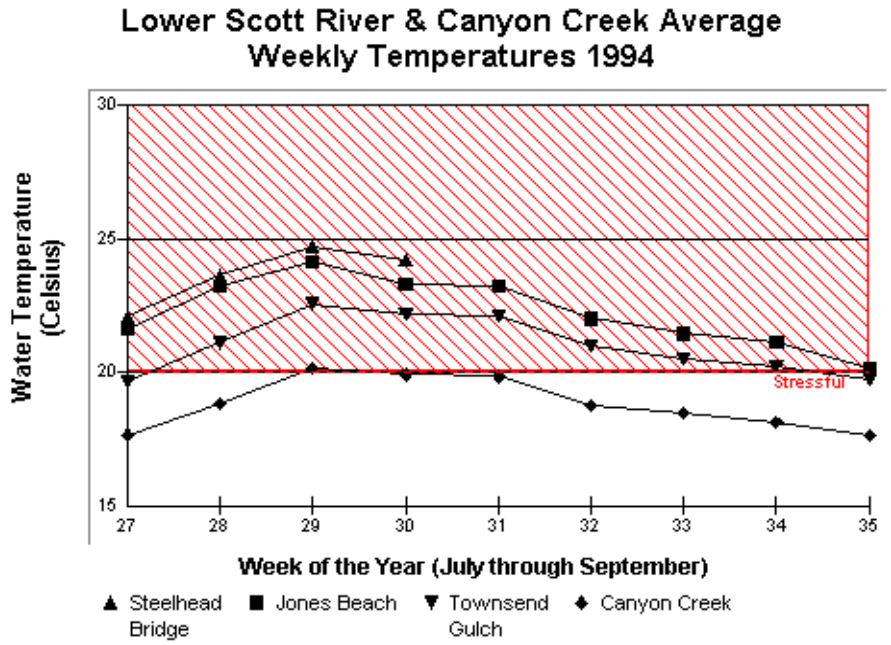

Figure A5-30. Maximum weekly temperatures for the lower Scott River and Canyon Creek during summer 1994. Canyon Creek and other Marble Mt. tributaries buffer the lower main Scott River temperature.

the Scott River has dropped below 40 cubic feet per second using U.S. Geologic Survey flow data. There appears to be a substantial increase in the number of days with extremely low flows (Figure A5-31). Moffett Creek lost perennial surface flow in the late 1950's as a result of ground water depletion (DWR, 1958). The drop in ground water has contributed to loss of riparian vegetation that in turn effects bank stability.

Stock water systems funded by the Task Force are making diversions for livestock un-necessary. These cost-effective pump and trough systems require far less maintenance than typical stock water diversion systems and are economical to run (Figure A5-32). Stock water systems also obviate the need for cattle to access the mainstem Scott River which allows riparian recovery. Experiments have also been conducted on ground water recharge using "beaver ponds" to help provide higher base flows in fall to aid chinook salmon migration. These impoundments did elevate the water table by four feet and it was calculated that 5.5 acre feet of water had percolated into ground water as a result of this activity (Gary Black, personal communication). The pool formed by the structure was 10 feet deep and was stratified so that temperatures below 4 feet deep remained under 68^0 F all summer.

Low flows are a major constraint for access to spawning areas for fall chinook salmon in drought years. In 1994, fall chinook were able to spawn only in the lowest six reaches of the Scott River (approximately 25 miles). In years with high flows, such as 1995, fall chinook can move upstream through the Scott Valley, more than 60 miles upstream. Confining fall chinook spawning to the reaches just upstream of the convergence with the Klamath poses substantial risk to egg and alevin survival in the event of a large winter storm event. A comprehensive strategy for increasing efficiency of water use and providing improved flows for fish is still needed. The Scott CRMP has addressed fall flow issues for adult passage as a planning element but not summer low flow issues.

Riparian Condition and Recovery: Many of the projects funded by the Task Force in the Scott River Basin are for riparian restoration. A complete map of the project sites funded through USFWS in the basin is shown as Figure A5-33. Extensive restoration efforts have been carried out on private lands in the Scott Valley to restore riparian zones to improve fisheries and water quality and to protect farm lands from erosion. These efforts include cattle exclusion fences, riparian planting and bank stabilization (Figure A5-34). Funding sources for these projects include the U.S. Fish and Wildlife Service on behalf of the Klamath Task Force and the Jobs in the Woods program, the California Wildlife Conservation Board, the State Water Resources Control Board and the California Department of Fish and Game. Private landowners have also contributed substantially by funding projects themselves or providing sweat equity.

Through cooperative efforts promoted by the Siskiyou RCD and the Scott Valley CRMP, farmers and ranchers have excluded cattle from thirteen miles of the Scott River from above Schackleford Creek to above Serpa Lane. This reach is all private land and all landowners cooperated willingly with some covering the entire cost of fencing. Getting livestock out of the riparian zone is an essential first step in re-establishing trees. Fences that ran perpendicular to the Scott River in areas where the Scott jumped its banks were damaged but most fences withstood flood flows.

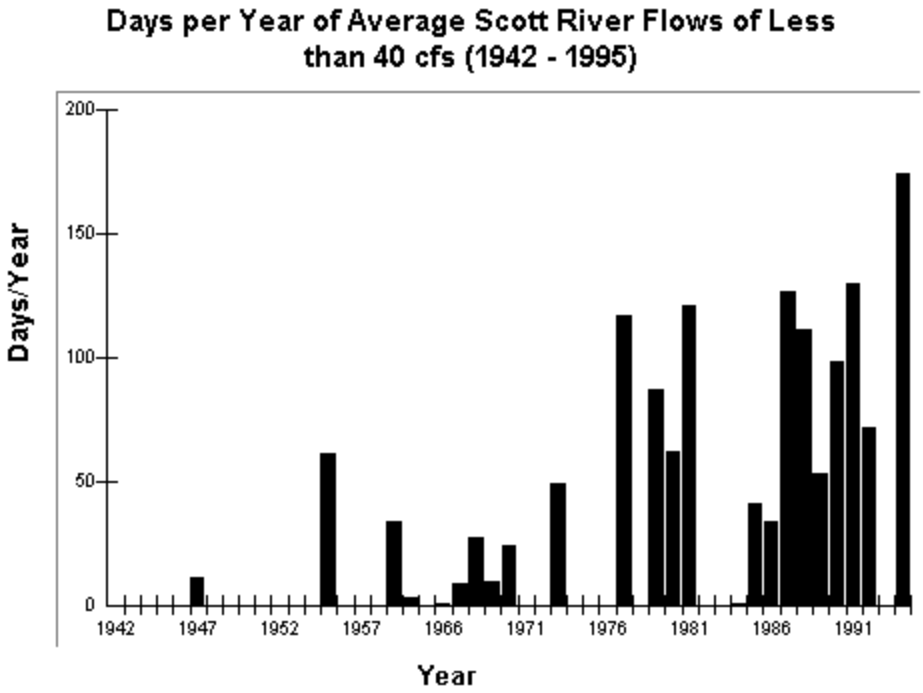

Figure A5-31. The number of days per year that Scott River average daily flow drops below 40 cubic feet per second from 1942 to 1994. Part of the increase in the latter period is a result of prolonged drought. Data from USGS flow gauge at Jones Beach.

Figure A5-32. Off-stream stock water system just outside the Scott River riparian zone. Photo taken in July 1997.

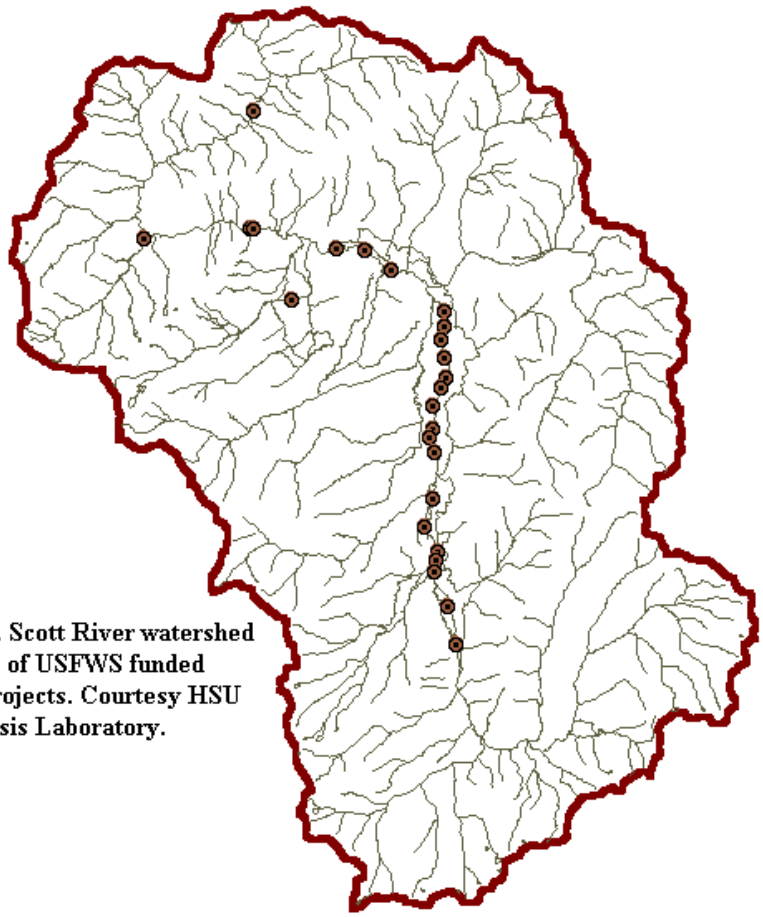

Figure A5-33. Scott River watershed with locations of USFWS funded restoration projects. Courtesy HSU Spatial Analysis Laboratory.

Figure A5-34. Bank stabilization project on the mainstem Scott River at Pastures of Heaven, combining rip-rap with tree planting. Photo July 1997.

Figure A5-35. Deep-planted cottonwood stakes survived high flows of 1997 at Pastures of Heaven along the Scott River. July 1997.

Willows, cottonwoods and conifers have been planted extensively in Scott River riparian areas. Grubbing away competing plants before planting improves survival of tree starts. Over 23 acres were being planted during the summer of 1997 alone (Gary Black, personal communication). Getting trees established is difficult because the Scott River runs within levees at many locations and trees planted along its banks may be well above the water table. Two methods have been used to help get riparian trees established: drip irrigation and deep planting of long stakes or poles. Success of drip irrigation was increased by allowing periods with no water so that the young trees send down taproots. Shade cards are necessary to prevent burning in some locations, such as exposed gravel bars (Gary Black, personal communication). The most successful planting method is digging a hole 6-7 feet deep and planting long, stout cuttings of willow or cottonwood (Figure A5-35).

Success of riparian plantings was monitored in 1996 and success rates ranged from 61-90% with an average of 79% success. The January 1997 high water scoured some of the trees that had been planted in the active flood plain that may have reduced the over-all success rate. Extensive experimental plantings in 1997 undertaken on extremely harsh gravel bar locations could also reduce over all success rates.

Scott River banks have been stabilized using a combination of rip rap and willow mattresses. Groins of large rock are keyed into the banks and extend out into the river and deflect the main flow of the river away from the bank. Areas immediately downstream of the structures are planted intensively with willows. The combination of riprap and vegetation provides more complex fish habitat than use of riprap alone and has been successful in preventing bank erosion. The failure rate of bank stabilization structures as a result of the January 1997 storm was approximately 15% despite the fact that companion vegetation had not become established on many recently completed projects.

Bank stabilization, fencing and riparian planting projects are showing promise in reversing habitat trends on the mainstem Scott River.

Shasta River

The Shasta River watershed experienced a prolonged period of drought in the late 1980's and early 1990's. Water quality measurements taken during the drought period indicated that the Shasta had severe water quality problems for salmonids, including high water temperatures and low dissolved oxygen (Gwynne, 1993). High fine sediment levels in Shasta River spawning gravels have also been noted as a problem (Jong, 1995). The formation of the Shasta CRMP in 1992 lead to an increase in restoration projects aimed at reversing water quality problems. Some improvement in habitat related to these projects is already in evidence. While there are some positive signs with regard to habitat trends in the Shasta, there was some has been substantial degradation to the critical habitat area in riparian zones at two locations.

Flows/Water Quality: The North Coast Regional Water Quality Control Board (NCRWQCB), CDFG and the Shasta CRMP all have collected extensive amounts of data on Shasta River water quality. The data has helped raise community awareness about the magnitude of problems and has lead to cooperative efforts to improve conditions. CDFG (1997) noted that low flows in summer were contributing to water quality problems and also directly hindering migration of salmon and steelhead in some years.

Gwynne (1993) showed that dissolved oxygen at some locations in the lower Shasta River was dropping below stressful or lethal levels for salmonids (Figure A5-36). Although algae blooms contributed to the depressed dissolved oxygen levels, high biological oxygen demand related to detritus in impounded areas above diversion dams was contributing significantly to the problem (Gwynne, 1993). CDFG and the Klamath Task Force have funded a pump and paid electricity costs to remove the Fiock diversion dam near Montague (Figure A5-37). This action should have at least partially remedied problems with low dissolved oxygen in this reach and below. Unfortunately, dissolved oxygen measurements have not been continued in recent years in the project area. Removal of the diversion dam also had the additional benefit of improving fish passage for adult and juvenile salmonids.

Water temperatures in the Shasta River can reach lethal temperatures for salmon and steelhead with highest water temperatures in the lower Shasta Valley (Gwynne, 1993; CDFG, 1997). Lack of shade canopy contributes to stream temperature problems, but warm agricultural runoff may exacerbate the problem. The Shasta CRMP has worked cooperatively with a number of riparian landowners to reduce livestock access, restore bank stability and increase shade canopy (see Riparian Condition and Recovery). A pilot project has also been initiated to recover tail-water on the Meamber Ranch (Figure A5-38) funded by the SWRCB. This project prevents heated agricultural drain water from entering the Shasta River. The reclaimed water has also induced better growth in the pasture areas where it was used. A second SWRCB funded tail-water project on the Ekstrom property does not re-use the agricultural drain water. Instead it shunts the tail-water into an old river channel which is a marsh area which strips it of nutrients and reduces temperature impacts to the Shasta River.

Yreka Creek is sustained by out flows of tertiary treated wastewater from the city of Yreka. The water is of sufficient quality to sustain juvenile steelhead year around and fall chinook used the lower creek in 1995. Recently a golf course was proposed that would have used Yreka's wastewater for irrigation. The city should fully study the use of Yreka Creek by steelhead and chinook juveniles before re-allocating waste water toward other uses.

CDFG (1997) noted that flow regimes have changed substantially in the Shasta River since the construction of Dwinell Dam. The Shasta River Biological Needs Assessment for Anadromous Salmonids (CDFG, 1997) pointed out that average daily flows in April through June was 132 cfs before dam construction but 87 cfs from 1985-1994. Similarly, July and August flows were 42 cfs before and 28 cfs in recent years and September flows

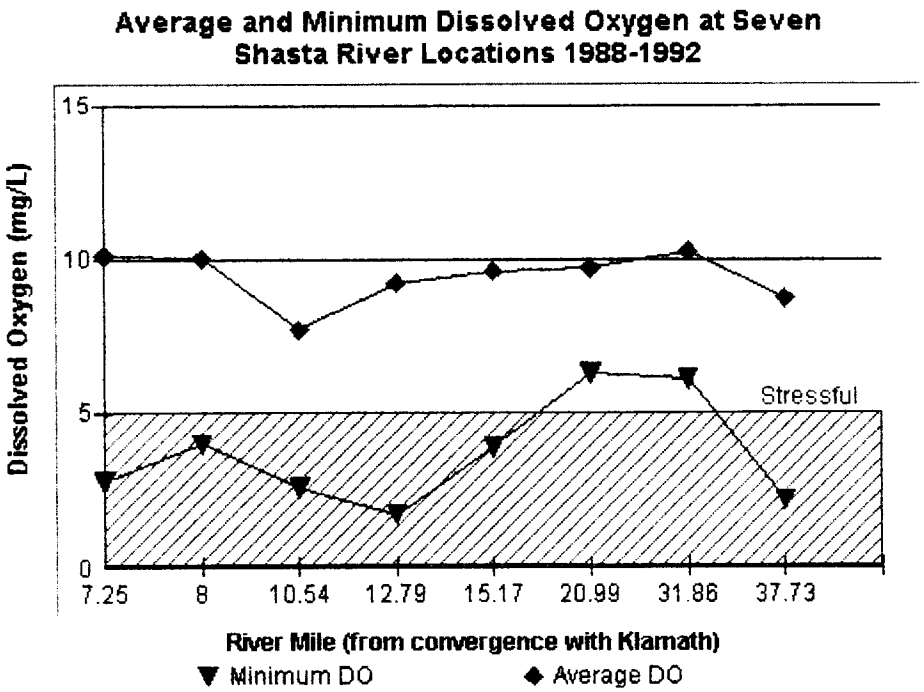

Figure A5-36. Minimum and average of all readings of dissolved oxygen in the Shasta River as measured by Gwynne (1993). Dissolved oxygen of less than 5 is stressful for salmonids. River Mile 0 is the convergence with the Klamath River.

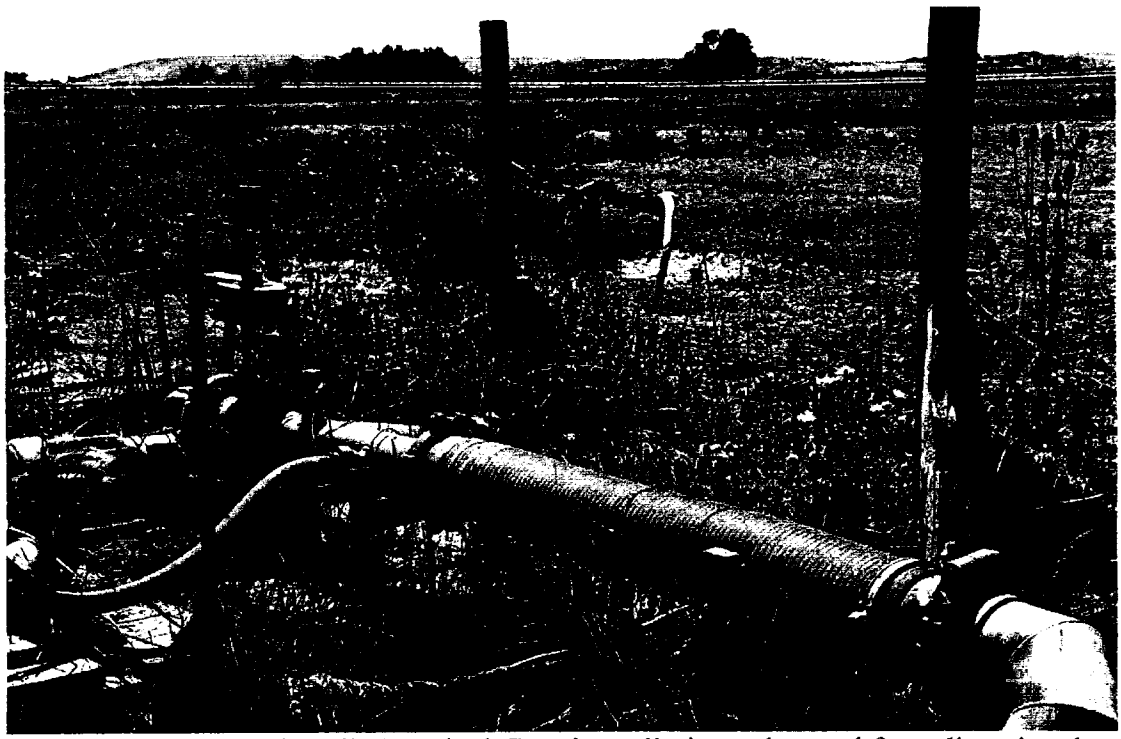

Figure A5-37. Pump installed at Fiock Ranch to eliminate the need for a diversion dam on the lower Shasta River. Dam removal should help improve dissolved oxygen conditions locally.

Figure A5-38. CRMP coordinator Dave Webb shows Jason Johnson of Kier Associates the sump pump for tailwater recovery at the Meamber Ranch on the Shasta River. July 1997.

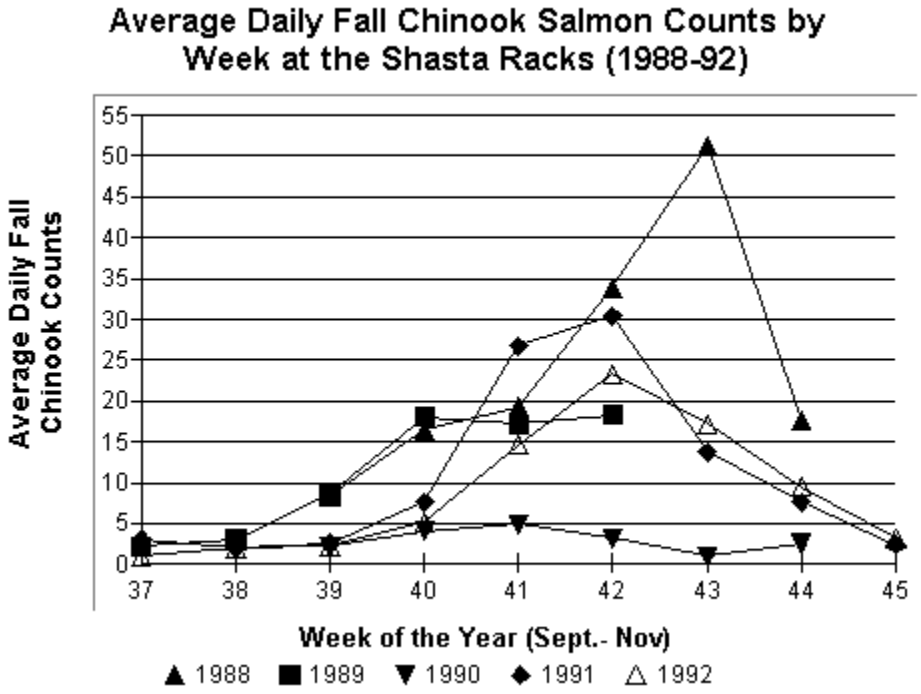

Figure A5-39. The average daily fall chinook counts by week in the Shasta River form 1988-1992 show that the majority of fish wait until October 1 to move upstream. Data courtesy of CDFG.

were 79 cfs before and 61 cfs from 1985-1994. CDFG (1997) concluded that quick drawn down of the Shasta River in 1992 resulted in a fish kill of juvenile salmonids.

Adult salmon may also delay their migration into the river and spawning from early to mid-September to early October (CDFG, 1997). Delayed spawn timing and the stress associated with holding in the warm Klamath River waters could reduce spawning success. In recent years, Shasta River fall chinook entered the river after October 1, when irrigation season ends (Figure A5-39). CDFG (1997) noted that low fall flows may also inhibit access to the Big Springs area which has been the most important spawning area for chinook salmon (CDWR, 1982).

As the farming and ranching community became aware of the extreme seasonal temperature problem for salmon and steelhead, they devised a strategy to try to induce migration out of the system prior to stream warming. "Flushing flows" were initiated in 1993 and have been carried out in three years since. Water is first spilled at Dwinell Dam and then downstream landowners with diversion impoundments pull their flashboards. The extremely robust return in 1995 may have been as a result of flushing flows increasing survival of the 1992 year-class of Shasta River chinook salmon juveniles (see Chapter 2). Increasing flows in September for returning adults has not yet been addressed.

Surface flows in the Shasta River are often strongly tied to springs and ground water (USGS, 1960). CDFG (1997) pointed out that the number of new wells in the Shasta Valley continues to increase. The flow at Big Springs was decreased from approximately 50 cfs when the Montague Irrigation District established a well for domestic water supply. Later a court order required that flows not be reduced to less than 17 cfs. In recent years, the Louie Ranch at Big Springs has been sold and the new owner appears to further decreasing surface flows in Big Springs and Little Springs Creeks because of changes in irrigation practices. Bruce Gwynne (personal communication) noted that Little Springs Creek was drying up where it crossed Louie Road and also noted juvenile salmonids in irrigation ditches on the Louie Ranch. He notified the CDFG wardens of his observations to act on at their discretion. Further habitat loss as a result of flow depletion in the Big Springs area could have substantial impact on the long-term viability of fall chinook, coho salmon and steelhead in the Shasta River.

Gravel Quality and Supply: Gravel quality studies of the Shasta River by CDFG in 1994 (Jong, 1995) demonstrate a substantial increase in fine since 1980 (Scott and Buer, 1981). Jong (1995) measured fine sediment less than 0.85 mm, which is most damaging to egg survival, at 36.3%, 34.8% and 31.9% in the middle, lower and upper reaches of the Shasta River. Fine sediment less than 0.85 mm should be less than 15% to allow for optimal survival to emergence of salmon and steelhead eggs and larvae (Hall and Lantz, 1969). The 1994 fine sediment levels were approximately 2.5 times those found in 1980 (Scott and Buer, 1981), although sieve sizes used in both studies were not directly comparable. The Parks Creek overflow is causing severe gully erosion and contributing fine sediment to the Shasta River (A5-40) and CDFG has also identified over 23,000 feet of bare banks in riparian areas in the Shasta Valley in surveys between 1991 and 1993 (CDFG, 1997).

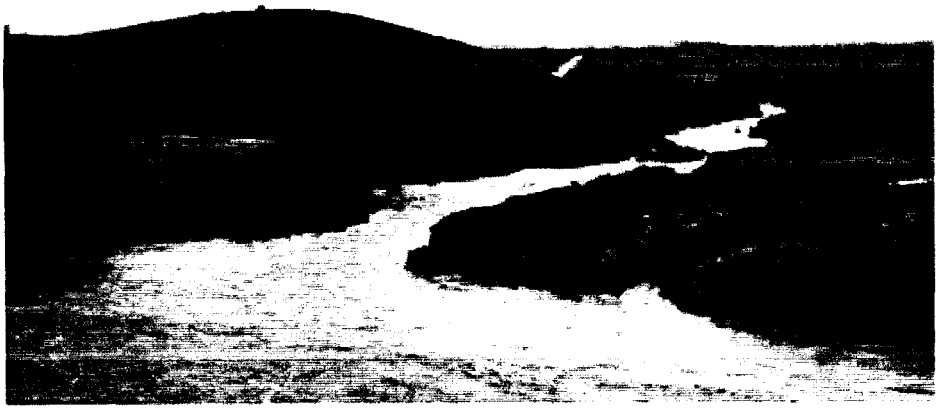

Figure A5-40. The Parks Creek overflow causes major problems with gully erosion during high water and increases the supply of fine sediment to the Shasta River.

Figure A5-41. CRMP coordinator Dave Webb next to new tree starts on the Peter's Ranch along the Shasta River just below Interstate 5. July 1997.

Riparian restoration is underway to remedy this problem (See Riparian Condition and Recovery).

A Department of Water Resources study (Scott and Buer, 1981) described the distribution of chinook salmon spawning in 1980. Most spawning took place either in the canyon in the lowest reaches of the river or in Big Springs Creek. Reduced flow at Big Springs may be decreasing critical spawning and rearing habitat for all anadromous salmonid species. Dwinell Dam stops recruitment of gravel from the upper Shasta River and peak flows from Parks Creek are diverted into Dwinell Reservoir as well. Without a change in winter flow regimes to allow increased gravel supply from Parks Creek to enter the Shasta River, long-term depletion of spawning gravels for salmon and steelhead is inevitable.

Riparian Condition and Recovery: The Shasta CRMP has facilitated implementation of riparian restoration projects on numerous farms and ranches along the Shasta River. Projects include fencing, bank stabilization, riparian replanting and stock water access. Funding has come from such diverse sources as CDFG, USFWS, State Water Resources Control Board, California Wildlife Conservation Board and Cal Trans. USFWS projects include both Klamath Restoration Program and Jobs in the Woods. Landowners have contributed both in cash and services to restoration efforts. Local high school students have volunteered in many ways to assist riparian restoration efforts in the Shasta River.

Riparian restoration projects along the Shasta River have established many new trees that will provide a substantial increase in shade over the next decade. However, getting riparian trees to grow in some reaches of the Shasta is problematic because of alkaline soils and clay pans (Dave Webb, personal communication). A Great Northern Corp. study funded by the Task Force should answer questions about what areas of the Shasta River have conditions that may confound success of tree planting. Some benefit is derived from excluding livestock from riparian zones, even if trees cannot be established, as tule beds often colonize. Tule beds can provide filter capacity for agricultural runoff, trap sediment during high flows and help prevent bank erosion.

Many of the trees planted to help restore the Shasta River riparian zone have been provided by a Yreka High School HROP program in Yreka that has operated a nursery for native trees. Trees will usually grow in soils that have some colluvium that allows drainage (Dave Webb, personal communication). Plantings by the HROP students and also Discovery High School in the Shasta gorge are doing well in some areas. Riparian conditions on Bureau of Land Management land has continued to improve with no cattle grazing allowed in recent years. Sparse soils in the riparian zone of the lower Shasta limit opportunities for establishing a complete canopy (Dave Webb, personal communication).

Sites like the Peter's ranch in the lower Shasta Valley above Interstate 5 have good soil types in the riparian zone and there has been a high success rate for establishment of trees (Figure A5-41). Areas further upstream between A-12 and Montague Grenada Road may have locally adverse conditions. Riparian conditions upstream of A-12 generally improve and the Freeman Ranch project provides a model in this reach. All tree starts in the

riparian zone on the Freeman property were drip irrigated to increase the success rate of plantings. Riparian conditions along the Shasta River below Dwinell Dam are good but there is little fish habitat in this reach because of insufficient flows released from the dam.

A major volunteer effort that included angling groups, schools and the California Conservation Corp planted over 10,000 trees (mostly willow) on the A.C. Marion Ranch on the Shasta River below A-12 in 1990-91. Unfortunately, success of tree recruitment was less than 10% in the long term. Some soil conditions in the riparian were unsuitable for tree growth, beaver browse caused a surprisingly high mortality rate and fences to exclude cattle were not sufficiently maintained. Late season plantings (April) without subsequent irrigation also limited survival. The experience on the Marion Ranch, while not a success, provided a learning experience and most riparian plantings on the Shasta are now protected from beavers using cages. Figure A5-42 shows the location of all USFWS funded projects in the Shasta Basin.

Because much of the peak flow from the upper watershed of the Shasta River and Parks Creek is captured in Dwinell Reservoir, the river has less erosive force during flood events. Much of the river in agriculturally impacted reaches is also of low gradient with a wide flood terrace where flood energy can be released. Consequently, very few cattle exclusion fences on the Shasta River were seriously damaged during the January 1997 storm. Fences near the edge of the river often caught substantial amounts of debris but could simply be cleaned off and stood back up (Dave Webb, personal communication). Short sections of cross-fences that ran perpendicular to the river in the flood plain, such as at cattle crossings, were dislodged by the 1997 storm. Cattle access gates have been specially designed for the ranches on the Shasta River to allow selected drinking access of crossings for livestock. These gates can be retracted during high flows and sustained minimal flood damage in the 1997 high water.

Bank stabilization using only willow waddles is a technique employed by the CRMP with a great deal of success at a number of sites on the mainstem Shasta River (Figure A5-43 and A5-44) and in Yreka Creek as part of the Yreka Greenway Project. Bundles of live willow sticks are secured to sections of eroding banks. Scour is prevented and silt from high flows is trapped. As the willows sprout and increase their root mass, bank stability and shade cover both result. There were no failures of willow waddle projects during the 1997 storms.

There are two notable areas where riparian conditions have deteriorated in the last few years. The riparian zone adjacent to Louie Road along the upper Shasta River was bulldozed and partially filled in 1996 (Figure A5-45). Although CDFG cited the landowner, the courts dismissed the case under the condition that the landowner negotiate a 1603 permit from the Department (see Policy/Administration). The January 1997 storm also caused flood damage to a field adjacent to Highway 263 that was in the river flood plain. During the summer of 1997, the landowner at the site built a berm using substrate from the river and partially armored with chunks of asphalt supplied by the city of Yreka (Figure A5-46). No Army Corp of Engineers permit was issued on this project but a

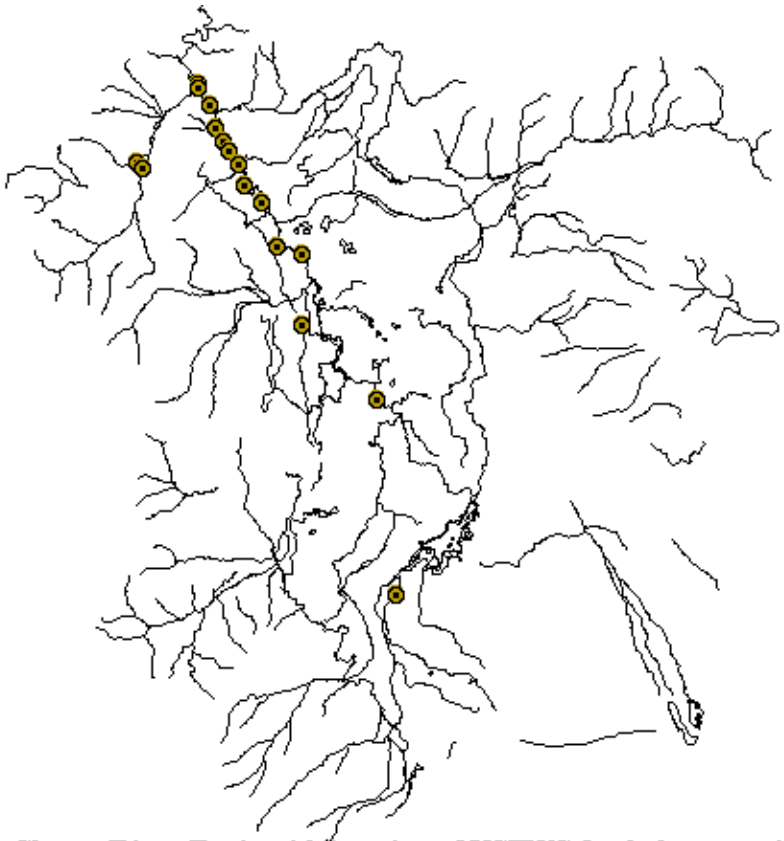

Figure A5-42. Shasta River Basin with location of USFWS funded restoration projects

Figure A5-43. Willow waddles used for bank stabilization at the Easton Ranch along the Shasta River during project construction. Photo courtesy Dave Webb.

Figure A5-44. Stabilized bank at Easton Ranch after project completion. New willow starts in the foreground are not highly visible because the photo was taken in winter. Photo courtesy Dave Webb.

Figure A5-45. Riparian zone of the Shasta River at Louie Road with heavy equipment and filled riparian wetlands.

Figure A5-46. Riparian destruction along the Shasta River at Highway 263. Berm at the center of the photo confines the Shasta River to a narrow channel against far bank. Note wetland area in foreground. Photo October 1997.

CDFG 1603 was issued. The U.S. Environmental Protection Agency (1997) has written a letter of inquiry to the landowner requesting information on whether appropriate permits were obtained.

Release of a U.C. Davis report on riparian condition of the Shasta River funded by the SWRCB should allow a quantitative assessment of riparian condition by reach. Also a study is underway regarding factors which limit the success of riparian restoration in the Shasta River conducted by Great Northern Corp. Unfortunately, results from the latter study were not available as this report went to press.

Upper Klamath

The Klamath Restoration Program has not invested in projects above Iron Gate Dam because they are not accessible to anadromous fish. None-the-less, substantial funds have been spent in recent years on restoring habitat through the U.S. Fish and Wildlife Service Klamath Ecosystem Restoration office and the Bureau of Reclamation in Klamath Falls, Oregon. Senator Mark Hatfield has also convened a committee of local citizens in the Upper Klamath to take a comprehensive approach to fisheries, water quality and water supply issues.

A major thrust of projects is restoring marsh buffer areas to filter nutrients around Upper Klamath Lake to help restore water quality. Major projects currently under way include purchase of the Wood River Ranch at the confluence of the Wood River and Upper Klamath Lake. The Bureau of Reclamation is also moving to purchase an extensive marsh area in upper Agency Lake that will also provide additional water storage. Marsh restoration is also taking place on Nature Conservancy property on the Sycan River, a tributary of the Sprague. Cumulatively, marsh restoration may help improve water supply during late summer (Gerhardt et al., 1995). Marsh restoration in the Tule Lease lands is also under study by the University of California Cooperative extension.

The USFS and SWRCB have also supported riparian restoration projects aimed at restoring Lost River and short-nosed sucker habitat in tributaries of Clear Lake in the Lost River basin (USFS, 1996). The USFWS is also becoming more involved in funding riparian restoration as part of the strategy for protecting and restoring sucker habitat.

The linkage between water quality in the Upper Klamath basin and in the Klamath River below the dams is difficult to accurately assess at this time. However, studies are currently proposed by the U.S Geologic Survey and the Klamath Compact. The former plans to apply its Total Water Quality Model to the upper Klamath River while the Klamath Compact has proposed studies related to its Klamath Basin Water Supply Initiative. The U.S. Bureau of Reclamation is also advancing a substantial funding package for flow studies that may also help to answer some of these questions (Larry Duggan, personal communication).

Mainstem Klamath River and Estuary

The mainstem Klamath River is recognized as impaired with regard to temperature and conditions that are acutely stressful or lethal to salmonids occur in many years (Figure A5-47). In August of 1997, USFWS also measured nocturnal dissolved oxygen (D.O.) levels of 3.1 ppm at Big Bar on the Klamath River below Orleans (Figure A5-48). This low D.O. is in the range of severely stressful or lethal for salmonids (EPA, 1986). Other more temperature tolerant fish species such as suckers and dace were succumbing to diseases at the time of the measurements (USFWS, 1997). Previous research and water quality monitoring had not considered the possibility that a river with the turbulence of the Klamath might be less than saturated. The USFWS findings suggest that sufficient quantities of algae must be entrained in the Klamath to cause the entire water column to fluctuate nocturnally as the algae respires. Previous samples were taken during day light hours only which would not detect nocturnal D.O. sags. NCRWQCB water quality samples have found pH values as high as 9.7 in the mainstem Klamath above the Scott River and 9.2 below the Shasta River. These high pH values could be another indicator of photosynthetic activity.

Major declines of steelhead, particularly summer steelhead, across all Klamath tributary basins (see Chapter 2: Population Trends). Because many of the sub-basins showing declining trends for summer steelhead have not suffered habitat loss, such as Wooley Creek, it suggests that life history bottlenecks could be occurring in the mainstem Klamath. Because Klamath tributary steelhead exhibit a 85-100% occurrence of half-pounder life history (Hopelain, 1998), survival problems could be owing to conditions encountered when entering the river in late summer and fall to feed when water quality is very poor. Loss of steelhead stocks at Iron Gate Hatchery may also be indicative of major problems with ecosystem function of the mainstem Klamath River (see Iron Gate Hatchery).

Belchik (1997) inventoried cold water refuge areas in the mainstem Klamath to determine their frequency, use and importance to salmonid juveniles. Between Iron Gate Dam and Seiad Valley, Belchik (1997) found 32 cold water refugia: 4 large (>1000 sq ft.), 16 medium (50-1000 sq ft.) and 11 small (<50 sq ft.). Bogus Creek was classified as an intermittent refugia because it was not always cooler than the Klamath River. Three out of four large refugia, the mouths of Beaver, Horse and Grider Creeks, suffered significant channel changes in the January 1997 storms and some significantly increased in temperature as a result (De La Fuente, 1998). Reduction in the size or quality of the limited number of refugia may have profound influence on survival of salmonid juveniles during summer in the mainstem Klamath. Cumulatively, the increase in tributary temperatures may also contribute to severe water temperature problems in the mainstem Klamath itself.

There is no quantitative measure of sediment transport in mainstem Klamath River to provide information on trends of recovery, such as increased pool depth. Sequential aerial photos of river near the location of Highway 101 today from 1941 to 1996 suggest that

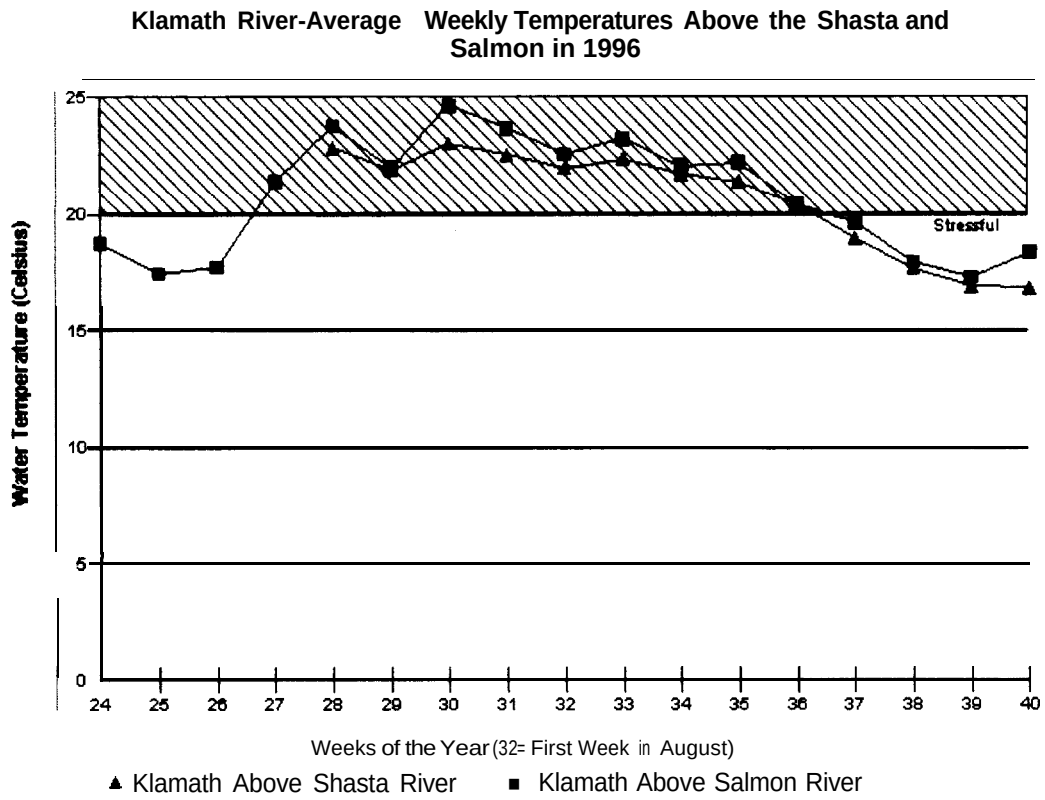

Figure A5-47. Average weekly water temperatures of the Klamath River above the Shasta and Salmon Rivers were chronically stressful for salmonids throughout the summer of 1996.

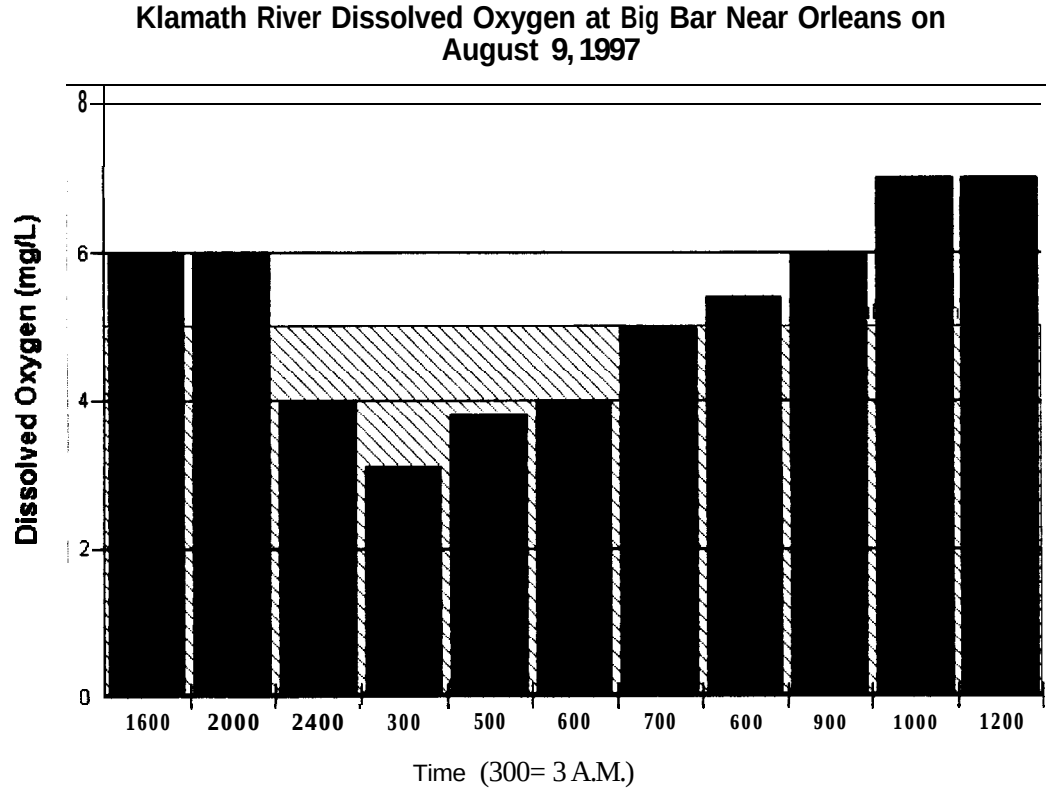

Figure A5-48. Dissolved oxygen readings taken by USFWS staff at Big Bar trap below Orleans on the Klamath River show stressful or lethal conditions for salmonids (<5ppm is stressful).

major aggradation of the lower Klamath River occurred in recent decades. This indicated by a distinct widening and shallowing from 1947-1996 (Figure A5-49 and A5-50). Note the blond colored areas within the active channel in 1996 that represent sand bars. These most recent photos do not show a marked trend toward recovery.

Mike Wallace (1998) has not found water quality problems in the Klamath estuary similar to those found by USFWS further upstream but test were conducted during summer 1997. Although some areas of the estuary filled in during recent high flows, other areas were substantially deepened. For example, the southern estuarine shore area, formerly occupied by Dad's Camp, was scoured out by recent floods and the estuary is now over 20 feet deep there. The area of the estuary just off the mouth of Hunter Creek is 30-40 feet deep and retains high numbers of juvenile salmonids throughout summer. Wallace (personal communication) has also observed a substantial number of juvenile salmonids associated with the tidal wedge of cold salt water that intrudes into the estuary. Fish seem to move back and forth in the freshwater just adjacent to the salt wedge, probably for its moderating influence on temperature.

Effectiveness of In-stream Habitat Improvement Structures

Both the Klamath and Six Rivers National Forests have had on-going efforts to inventory and maintain in-stream structures on the respective forests. The Klamath National Forest Storm Damage Assessment Report (De La Fuente, 1998) also had some findings on the pattern of failure of in-stream structures. The California Department of Fish and Game has also recently completed an evaluation study of in-stream structures and their success throughout northern California, including some Klamath tributaries (Hopelain, in press). Frissell and Nawa (1992) studied the effectiveness of structural enhancements in southwest Oregon streams. Because of the striking similarity to Lower Klamath tributaries in rainfall, geology and land use, their findings are also discussed in this section. Kier Associates gauged the effectiveness of in-stream structures in Beaver, Elk and Indian Creeks and the Scott River in summer 1997 and observations are noted below. While it was not possible to gauge the cost effectiveness of each investment in the basin, a great deal has been learned about the success of these projects overall.

Klamath National Forest

The Klamath National Forest has periodically inventoried in-stream structures throughout the Forest. Olson (1997) conducted dive observations of sites on Indian Creek and Elk Creek in order to gauge whether structural treatments were working. Dives prior to installation of in-stream structures in July 1990 usually found only young-of-the-year steelhead. After installation of boulder clusters and boulders with root wads, July 1991 dives found young-of-the-year steelhead, yearling steelhead, chinook and coho salmon juveniles. "Juvenile salmonids were associated more frequently with complex combinations of boulders and rootwads, for example, than relatively simple arrangements of boulders alone" (Olson, 1997). Observations showed that adult salmon were often used cover structures as well.

Figure 49. Lower Klamath River at the top of the estuary in 1941. Note that the channel is narrower than in the 1996 photo and that no sand bars are visible.

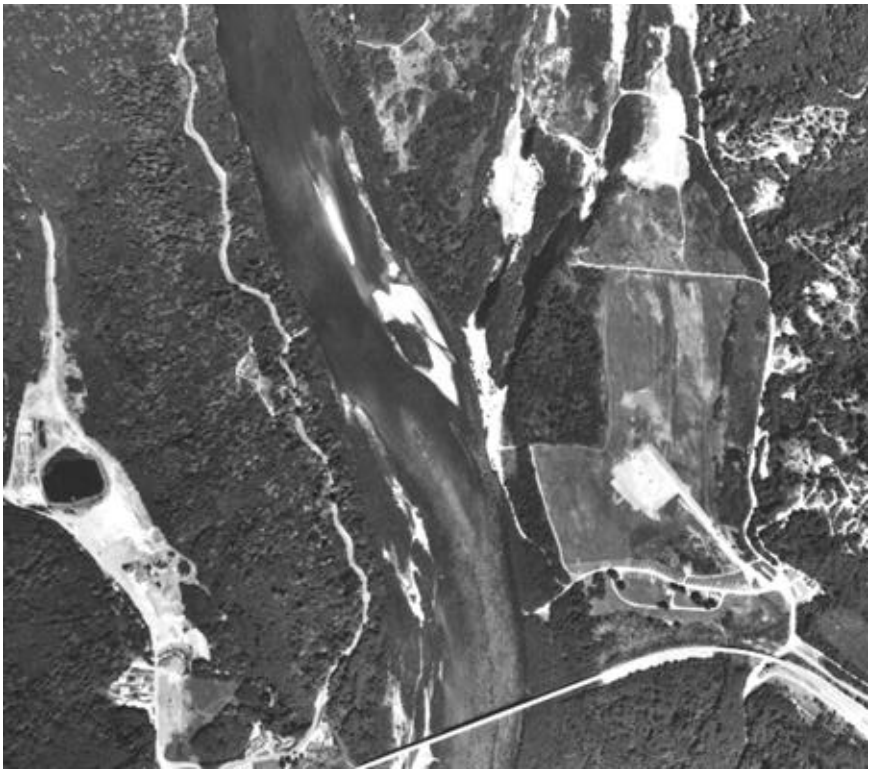

Figure 50. Aerial photo of the Klamath River at the top of the estuary in 1996 shows a wider riparian zone with sand bars both at the margins and in the main channel of the stream.

A cost-effectiveness study by Klamath National Forest, funded in part by the Restoration Program (Olson and West, 1990), rated the performance of in-stream structures and found that simple structures, such as digger logs and boulder deflectors, provided greatest cost-efficiency. They estimated the longevity of various structures at 18-57 years. Failure rates associated with the January 1997 storm, where the recurrence interval was about 10-37 years in many areas, indicate that life of structures may be lower (see Frissell and Nawa below).

Klamath National Forest staff did a reconnaissance of in-stream structures after the January 1997 storms (De La Fuente, 1998). Boulder structures had the highest durability with 70% remaining in place and retaining some function, even if re-arranged by high water. Only 50% of boulders and rootwads were still intact and working after the storm and only 30% of complex log structures survived. It is possible that large wood may have relocated to areas downstream and still providing some benefit. Boulder structures were also buried in some cases and may re-emerge as streams cut back down. De La Fuente (1998) also found that structures in the margins of streams had a higher rate of retention than in the thalweg (main current).

Six Rivers National Forest

Six Rivers National Forest has regularly inventoried in-stream structures, including taking photo-points. Summaries of field work were not available for the 1997 season but failure rates were approximately 10 % on Bluff and Camp Creeks (Jerry Boberg, personal communication). California Conservation Corp and AmeriCorps personnel assisted in the field inventories on the Forest. Red Cap Creek experienced slightly higher bedload movement that resulted in more structures being isolated by gravel bar shifts. Structures failures were noted on inventory sheets and repair work was initiated at some sites during the 1997 field season.

California Department of Fish and Game

Hopelain (in press) inventoried in-stream structures in 53 creeks and gathered statistics on 1423 structures throughout northern California, including the Klamath Basin. The purpose of the inventory was to assess partially the success of CDFG investments in in-stream restoration activities. According to the study, those investments between 1980 and 1995 totaled over $45 million. The study began in 1993 with a 25% random sampling of structures in the 53 streams selected. A sub-set of sites was revisited in 1995 after higher flows had occurred. Scores for the physical condition of the structure and for whether it was meeting its objective were: excellent =100, good = 75, fair = 50, poor = 25 and failed = 0.

Hopelain's (in press) over all assessment from 1993 found that boulder clusters had the highest condition and objective scores with an average of 81 and 75, respectively. Weirs had mean condition scores of 60 but mean objective or function scores were only 43 and log covers had almost identical performance (62/45). Log constrictors had the lowest

scores with mean conditions and objectives of about 35. Hopelain (in press) noted that a major cause of failure was use of inappropriately sized materials.

The results for streams in the Klamath Basin in Hopelain (in press) include Elk Creek, Indian Creek, Tarup Creek and Hunter Creek. Cumulative scores for all structures within Klamath tributaries are summarized as Table 2.

Stream	Condition Score	Objective Score
Elk Creek	79	61
Indian Creek	95	79
Hunter Creek	64	47
Tarup Creek	70	48

Table 2. Mean condition and objective scores for in-stream structures in Klamath River tributaries from Hopelain (in press).

Failure rates were much lower in Indian Creek and Elk Creek than in the Lower Klamath tributaries Hunter Creek and Tarup Creek. The high sediment supply in the Lower Klamath tributaries and high level of watershed disturbance are consistent with these findings. A complete inventory of some Lower Klamath tributaries, such as Hunter Creek and Tarup Creek, was conducted during summer 1997 but results could not be obtained.

Overall scores for success rates for structures for all northwestern California were higher in 1993 than in 1995 after higher flows (Table 3). The years between 1986 and 1994 did not have any significant storm events, while two storms in January and March 1995 were of a larger magnitude.

Score	Condition 1993	Objective 1993	Condition 1995	Objective 1995
Excellent/Good (75-100)	80%	60%	67%	39%
Fair/Poor (25-75)	15%	31%	22%	42%
Failed (<25)	5%	9%	11%	19%

Table 3. Cumulative scores for all sites and all structure types in 1993 versus 1995 from Hopelain (in press).

Southwest Oregon Study

Frissell and Nawa (1992) compared failure rates of in-stream habitat improvement structures in eight southwest Oregon streams with those in seven southwest Washington streams. The southwest Oregon streams studied have major similarities with Lower Klamath tributaries with regard to rainfall intensity, geology and land use. Their study classified structures as failed if they were washed away, disassembled or isolated from the

active channel. Impaired structures were those that remained in place but were no longer function as intended. The study was conducted after storms in 1990 that were of less than 10-year recurrence interval.

Southern Oregon sites showed a mean failure rate of 48% while those in southwest Washington failed only 6% of the time. Combined rates of failure and impairment in southwest Oregon were 67% and 46% in Washington. Frissell and Nawa (1992) noted that:

> "Failure of internal structure or materials - the dominant concern for most biologists and hydrologists who build these projects - appears to be a far less important cause of damage than are watershed-driven aspects of channel dynamics. Deposition of bedload sediments in wide, low-gradient alluvial valley segments and the erosion of stream banks and shifting of channels associated with this deposition were the most common causes of damage to structures."

In-stream structures on Siskiyou National Forest, which were among the southwest Oregon sites, were estimated to have a life span of 20-25 years. Frissell and Nawa (1992) found that the actual life expectancy, calculated from the field data, was 10 years or less in southwest Oregon and 15 years or less in southwest Washington. They calculated flow related to 10 year storm events and found that streams with a discharge of greater than 1 cubic meter per second per square kilometer posed a much greater risk to in-stream structures. Although use of this method was beyond the scope of this study, the Klamath Task Force's technical work group should consider this as a tool to gauge risk to in-stream restoration investments.

Frissell and Nawa (1992) concluded that use of in-stream structures would not work until watershed health had improved. With regard to southwest Oregon they found that: "Basins continue to suffer impacts from failing roads, high erosion rates along streams in second growth forests, continued logging on steep, highly erodible federal lands and repeated, short-rotation logging on private lands where there is little regulatory protection for unstable slopes and headwater stream channels." This suite of problems is also confounding restoration successful use of in-stream structures in many Klamath tributary basins.

Kier Associates Field Reconnaissance 1997

Kier Associates visited the field to directly gauge the benefits of in-stream restoration projects and damage to streams from the January 1997 storm. Field visits to Beaver Creek, Indian Creek, Elk Creek and Scott River are discussed below.

Beaver Creek: This creek experienced channel changes in its lower reaches as a result of the 1997 storm that caused failure of numerous boulder weirs (see Figures 15 & 16). Boulders with a diameter less than 3 feet were dislodged from boulder weirs and clusters.

Those with 2-2.5 foot diameters were completely mobilized and were generally not recognizably close to their original location. The two boulder weirs that did survive in this reach had a wide adjacent terrace for flood relief.

Cumulative effects damage to the Beaver Creek stream channel was significantly diminished above the West Fork. Although cables failed on wood structures in some cases, many of the wood and rock structures in the upper reaches survived intact (Figure A5-51). Some structure failures in upper Beaver Creek may have been owing to under-sized materials used in the original project (Figure A5-52). Logs were not large enough to withstand floods and some were rotting. Hopelain (in press) cited inappropriately sized materials as a prime cause of structure failure and suggested that projects for which proper materials were not available should not be implemented.

Indian Creek: This stream experienced substantial bedload mobility and aggradation. At river mile (RM) 6.4, where there was a wide terrace for flood relief, three boulder clusters with root wads remained intact. These structures were also in the margin of the stream. Just upstream 30 boulder clusters were pulled apart and partially buried in a short stretch more subject to aggradation. At RM 8.9 Indian Creek was confined in a narrow channel by alder groves. Several boulder clusters in this reach were completely buried with the top foot of one sticking up (Figure A5-53). The boulder structures at both locations were greater than three feet in diameter and were sufficiently large to withstand flows but shifting bedload caused loss of function.

Flood damage at locations further upstream decreased somewhat. At RM 11.7 three of six boulder weirs were still in place (Figure A5-54). The three that had partially failed had lost boulders from the middle of the span. Upstream of the bridge at this location near the convergence with Luther Creek, aggradation had completely filled the rearing pond that had formerly occupied the site. The pond had formerly been 60' X 60' and six feet deep. Structures in Indian Creek above the bridge boulder clusters were also partially buried. Aggradation can vary in a stream like Indian Creek that may have lead to bedload build up where there was back-pressure from the bridge. .

Elk Creek: Major channel change occurred in reaches of Elk Creek treated with in-stream structures. Channel shifts, in some cases, left structures high and dry. Wood structures suffered a high failure rate as cables broke loose from the force of the flood. Large wood was naturally mobilized by high flows, or introduced into the stream channel by debris flows, and huge logjams formed as a result. Boulder structures were pulled apart and partly buried. The amount of bedload and the magnitude of the high flows made survival of even the most well built structures problematic in Elk Creek. The complex log structure in a side channel of Elk Creek shown as Figure A5-55 was of appropriately sized materials and appeared to be excellent fish habitat. Figure A5-56 shows the result of bedload shift, leaving structures in this side channel isolated.

Scott River: The experimental use of partial rock armoring of banks has been widely employed by the Scott CRMP in combination with tree planting. These fall under the classification of in-

Figure A5-51. Upper Beaver Creek, shown here, did not experience the channel change that lower Beaver Creek did as a result of the 1997 storm. Note the wood and boulder structures still intact.

Figure A5-52. Klamath National Forest photo-point taken in 1994 of in-stream cover logs installed in 1992. The wood in this project was not sufficiently large to withstand high flows.

Figure A5-53. This reach of Indian Creek at RM 8.9 was treated with boulder clusters that were buried by the January 1997 storm event. Aggradation at this site must have been at least four feet.

Figure A5-54. Boulder cluster and root wad in the margin of Indian Creek (RM 11.7) that survived the January 1997 storm intact. Photo courtesy of Al Olson, Klamath National Forest.

Figure A5-55. Complex log-cover structure in side channel of Elk Creek installed by Klamath National Forest. Photo courtesy of Al Olson. Circa 1991. Note spawning gravels adjacent to structure.

Figure A5-56. Elk Creek side channel after January 1997 flood with log cover structures isolated from the main flow by shifting bedload.

stream structures and; therefore, bear mention here. These structures withstood high flows in January 1997 with only an approximate 10% failure rate (Gary Black, personal comm.). The one incidence of failure occurred where water from the flood plain of the river scoured out bank armoring. All such bank stabilization projects visited in the field seemed to be providing very good fish habitat as well as having the intended bank stabilizing effect. This far preferable to the former all riprap approach.

Learning From the January 1997 Storm

The Effects of the 1997 Floods on the Klamath National Forest (De La Fuente, 1998) provides an in depth analysis of the types and locations of landslides and road failures on the forest. The January 1997 storm caused catastrophic damage to the road system of the Klamath National Forest (KNF), with over $27 million dollars damage caused. Funding for repair of the roads and other forest infrastructure damaged by the storm is provided through the Emergency Relief for Federally Owned Roads (ERFO) (U.S. Department of Transportation, 1990). Flood damage site, known as ERFO sites, were predominantly road failures and 712 sites were funded for treatment. De La Fuente (1998) considered precipitation, flows, storm recurrence interval, elevation, geology, slope and previous management for links to flood damage. The geographic area of the study was from the Trinity Alps, in the headwaters of the South Fork Salmon River, north through the Marble Mountains and into the Indian Creek and Beaver Creek watersheds in the Siskiyou Mountains.

The storm recurrence interval varied from 14 to 37 years, which indicates that it was not a catastrophic event on the scale of the 1964 flood (100 year). De La Fuente (1998) found that the most severe damage to roads and streams did not necessarily coincide with the areas with the greatest recurrence interval. Over 446 miles of stream channels in the Klamath National Forest were altered by the January 1997 storm event, some sustaining complete scour and others only moderately rejuvenated. Many streams experienced major bedload movement, channel widening and shallowing and changes increases in bed composition, often an increase in fine sediment. Channel widening caused a loss of riparian vegetation that in turn allowed considerable warming in some streams. Shallower streams also are more subject to warming.

The most landslides occurred in the 4000-6000 foot elevation range, triggered by a rain-on-snow event. The greatest flood damage to roads occurred at the 2000-4000 foot elevation levels as debris torrents initiated at higher elevations took out road crossings at lower elevations. While the greatest number of landslides occurred on undisturbed sites (255), there were 243 landslides in recently burned areas, 215 in recently harvested areas (since 1977), 182 along roadbeds and 60 in old harvest sites. It is instructive to look at the number of slides per square mile with regard to undisturbed, burned, harvested and roaded areas (Figure A5-57). Roads had by far the highest failure rate per area of landscape with 7.34 landslides per square mile and burned and recently harvested units yielding similar landslide rates of 1.58 and 1.61, respectively.

Road failures at higher elevations some times were the initial source of the debris torrent. The failure of multiple crossings in one tributary can have catastrophic consequences as

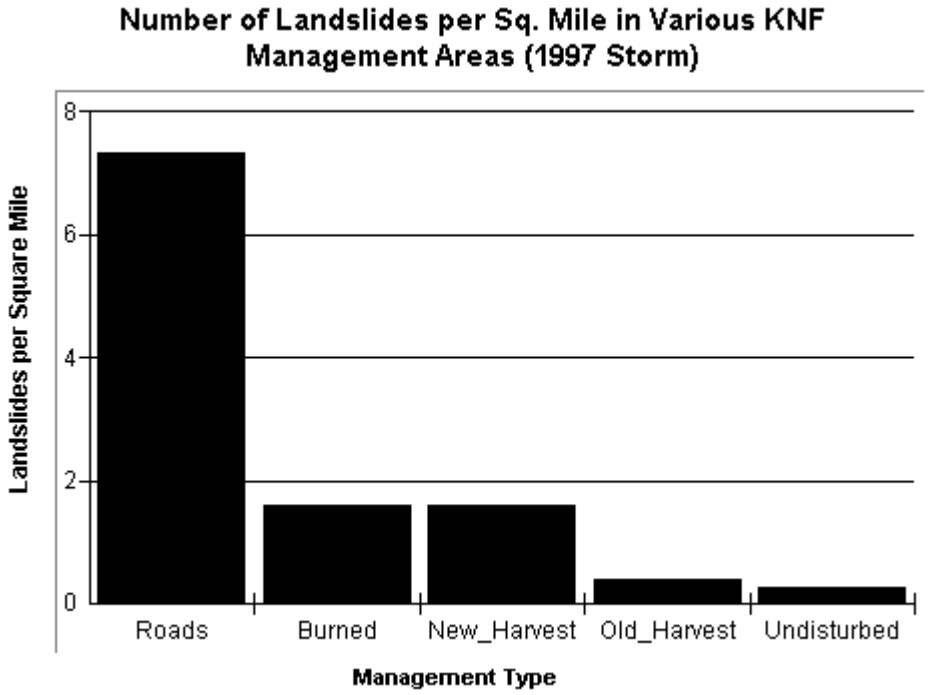

Figure A5-57. The number of landslides per square mile from various land management regimes. Data from De La Fuente (in press)

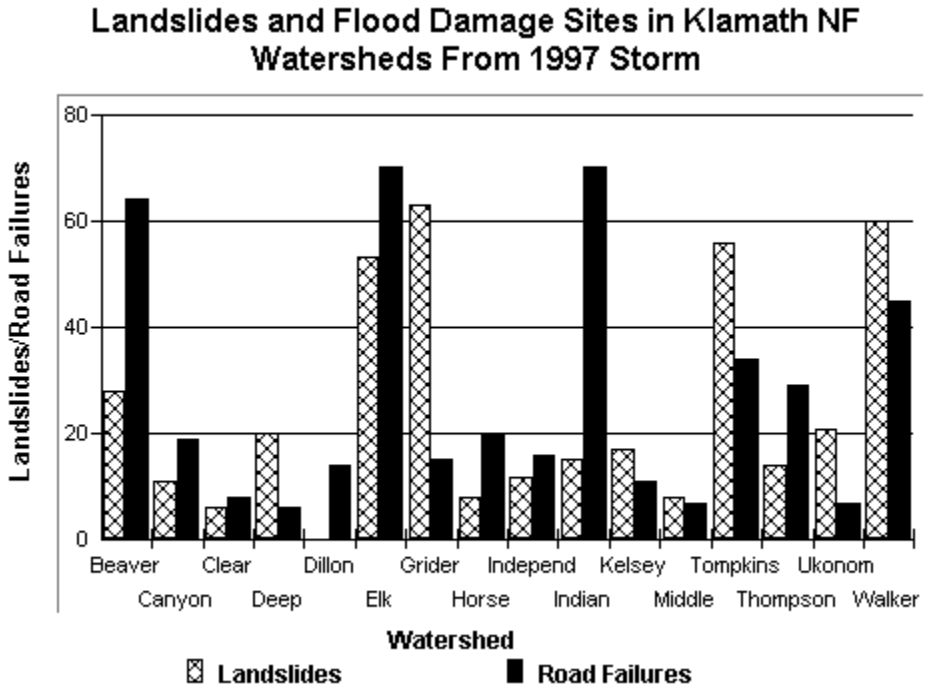

Figure A5-58. Landslides and road failures in various Klamath tributary watersheds. Data taken from De La Fuente (in press).

the fill material at each crossing is added to the debris torrent. Impacts to stream channels often continued into reaches at lower elevations. Many landslides and road failures occurred on old or active landslides or landslide deposits and in the inner gorge area adjacent to streams (De La Fuente, 1998).

De La Fuente (1998) used aerial photos and ground surveys to map landslides and road failures that occurred as a result of the January 1997 storm. Landslide and road failure raw data was not available for use in this study; therefore, estimates of the number of these features by watershed were estimated by counting points on maps. The approximate estimate of landslides and road failures is shown in Figure A5-58.

Fish Screens

While fish screens do not constitute fish habitat improvements, they certainly prevent substantial loss of salmon and steelhead juveniles and have been a major expenditure of the Klamath River Restoration Program. For the most part, the installation and maintenance of fish screens is carried out by the California Department of Fish and Game Screen Shop in Yreka. Funding for this effort has traditionally been provided by federal Sportfish Restoration funds but they have been decreasing for the last decade (Ron Dotson, personal comm.). To supplement staffing for the screen shop, the Klamath Task Force provided funds for positions for two years and, more recently, Proposition 70 funds have been used for the same purpose. The Shasta and Scott CRMP's have also begun to assist in acquisition of funding for and installation of fish screens.

Ron Dotson, supervisor of the Yreka Screen Shop, informed Kier Associates staff that 62 screens are currently installed. Each screen is custom built for the site with the installation aimed at proper sizing and orientation to reduce wear points and maintenance needs. Over 85% of the budget of the shop goes to maintenance of screens and only 15% is available for the fabrication and installation of new screens (Ron Dotson, personal comm.). After the January 1997 storm event, over 2400 hours of staff time were required for screen repairs and re-locations in some cases. On an annual basis, 10 of the 62 screens currently installed must be removed and refurbished, including sand blasting and part replacement. Because farmers and ranchers do not clean fish screens, Screen Shop employees must cover a circuit of 120 miles weekly. If screens are not maintained and cleaned, property owners sometimes remove them (Ron Dotson, personal comm.). Major damage from the January 1997 storm was sustained on fish screens on Grider Creek, Beaver Creek and upper Kidder Creek.

The listing of coho salmon under the Endangered Species Act has increased interest in the farming and ranching community for acquiring fish screens and there is a backlog of landowners that want them in the Scott Valley (Gary Black, personal comm.). The annual goal of the shop is to provide two to four new screens per year but this goal is not always met because of budget short falls (Ron Dotson, personal comm.). Actually, the number of screens in 1990 was estimated at 56 (Kier Assoc., 1991) and the number shown by CDFG

is 62 in 1997. Four screens were destroyed in 1997 on Grider, Beaver and Kidder Creeks and only one has been replaced (Ron Dotson, personal comm.).

The Scott River CRMP has attempted to help meet the demand of for additional fish screens by fabricating them locally. Etna High School has been part of this effort that has been going on since 1994. The high school has fabricated screens for smaller streams such as French Creek and Sugar Creek that are of the tube type. These screens have had some problems with maintenance because they are often at remote sites and the design is not self-cleaning. Currently there are efforts to work with high school students to perform maintenance at these sites (Jennifer Davis, personal communication).

Funding for additional screens has recently provided by the U.S. Natural Resources Conservation Service (NRCS) to the Scott River CRMP. Fish screens were also funded by the Cantara Trustees as part of an extensive riparian restoration project on the Scott River below Callahan. The CRMP screens are being designed similarly to those built by CDFG. Design review through NRCS was cumbersome in initial projects but efforts are underway to streamline the process. Thirteen screens will have been completed and installed by the Scott CRMP by summer 1998. All CRMP installed fish screens include an agreement with the local landowner for maintenance (Jennifer Davis, personal communication).

Plumb Creek type fish screens were purchased with funding from the Jobs-In-the-Woods program (USFWS) for installation in the Shasta River. However, these screens have not yet been installed because site-specific problems have to be addressed (Dave Webb, personal communication). The pre-made Plumb Creek screens can work in streams like the Shasta with low current velocity but some problems with the stock design have been encountered. Some sites have water depth of less than 24 inches which is the standard height of the Plumb Creek screen and the pump cannot function with part of the system above water. A 15-inch diameter screen based on the Plumb Creek design was locally fabricated and is currently under design review by NRCS and CDFG. The Shasta CRMP also experienced considerable delays in design review from NRCS that constrained expeditious installation of screens. The CRMP has won 50% cost share funding from the U.S. Agricultural Stabilization and Conservation Service (ASCS) for future projects.

Appenidix 9- 1 Press Coverage

Date	Page	Article Type	Headline	Lines
1/16/87	1	news	Group sues to foroe cleanup of rivers	80
1/ 28/87	16	news	California salmon runs hit new heights last fall	80
2/22/87	26	feature/art	Company experiments with salmon farming	50
2/27/87	1	news	Salt Caves Dam opponents square off	6
3/1/87	21	news	Salmon uders negotiate 5-year pact, Northern California, Southern Oregon intdrests agree on fishing quotas	70
3/4/87	20	news/art	Debate continues over coho releases, Decline in wild spawners raises questions about impact of fish from private firm	70
3/4/87	20	news	California mammal, salmon rules topics	50
4/1/87	14	news	Forest Service launched fish habitat program	20
4/1 2/87	21	news	Five-year plan to help salmon, The pact by Oregon and California fish users is expected to rebuild fall chinook runs from the Klamath and Trinity rivers	70
4/1 2/87	21	news	Council hikes quotas for Ocean fishermen	30
8/2/87	22	news	Work piles up - and hatchery workers delighted	100
8/1 2/87	17	news	Firm completes fish project on Klamath	40
8/1 8/87	1	news	DEQ denies Salt Caves certification	10
8/23/87	34	news	Studies confirm danger of dams	30
1 1/4/87	20	news	Sediment not always threat to fish habitat	80
1 1/13/87	1	news	Govenor's opposition stuns dam supporters	10
1 1/1 7/87	13	news/art	Local conservation district gets grants for Lost River	80
1 1/18/87	2	news	Dam opponents unconvinced Project plan to add whitewater raftlng leaves foes doubting	QO
1/6/95	13	news	Fisheries Chief wants a change	20
1/12/95	7	news	Man sentenced in salmon kill	10
1/19/95	1	news	Salmon plah to generate expense	10
2/1/95	11	short	Salmon forecast bad	10
2/16/95	6	news	Salmon season looks like a bust	90
2/1 7/95	1	news	Scientists waht new study of local lake	130
2/23/95	1	news	Farmers state water priority	70
2/23/95	1	box	Allocations set for lake	35
2/23/95	5	news/box	Salmon stocks trickling down, 36 rivers make thd list	5
2/24/95	2	news	Water officials face big unknown	70
3/15/95	14	news	Tribes want emergency salmon declaration	40
3/27/95	3	news	Five meetings will focus on Klamath watershed	50
3/28/95	7	feature/art	"Normal" water supply satisfies no one, reclamation under fire frdm farmers, fishery interests alike	120
5/22/95	6	guest ed.	Importance of sucker fish badly mlsuhderstood	150
5/23/95	11	news	Fishermen, farmers meet	25
6/13/95	1	news	Klamath, Lake streamflows up	80
6/21/95	1	news	Klamath River task force eyes far-reaching study on fish	100
6/23/95	13	news	Fish-counting funds OK'd by task force	50
6/23/95	14	news	Fish lawsuits loom for east side	80
6/23/95	14	news	Steelhead trout status questioned	60
6/25/95	41	column/art	Willow projects allow us to replenish wildlife habitat	180
6/30/95	1	news/box	Species ruling may jump start Congress, At a glance	180
7/3/95	4	guest ed.	Stick to facts in debating actions of environmentalists It cannot be denied that dams and irrigation have an effect on salmon runs	90
7/17/95	5	ad	Even fish need analysis - Weyerhauser {full page)	5
7/19/95	2	news	Coho listing could trigger local efforts	80
7/20/95	1	news	California salmon season ohe of best ever	50

Date	Page	Article Type	***Headline***	**Lines**
7/20/95	14	news	Forests, fisheries face fewer funds for programs	**50**
7/21/95	5	feature, art	Saving wild coho no easy task	100
7/24/95	5	ad	As it happens, fish spawn better when a lot of people are watching - Weyerhauser (full page)	5
7/25/95	10	news	Anglers catch their limit in coho while feds ponder listing	
7/28/95	8	news	Riparian bills backed	55
8/1 7/95	15	news	California DFG seeks assistance	35
8/20/95	9	box	Salmon planting opposed	5
8/25/95	1	news	Court picks suckers over Basin ranchers	55
8/31/95	9	news	Salmon debate heating up	25
9/7/95	11	news	Lawsuit launched to protect steelhead	75
9/10/95	11	news/art	Owl not used as species act mascot	75
9/24/95	28	column	Llfe goes on the line in salmonless Salmon river	80
10/2/95	5	ad	Even fish need analysis -Weyerhauser (full page)	5
10/9/95	10	ad	As It happens, fish spawn best when a lot of people are watching - Weyrehauser (full page)	5
10/27/95	2	news	KC opposes Klamath River study	100
1 0/30/95	1	news	Court acts on Klamath water rights	120
11/6/95	1	news/art	Salmon numbers rebound in Klamath	140
1 l/10/95	5	news	Study says big timber firms crucial for salmon recovery	60
1 l/14/95	11	feature/art	Recovery efforts targets Sprague, Water users hope riparian work benefits Upper Klamath Lake	120
11/17/95	1	feature/art	One man holds Klamath water key	200
11/20/95	1	feature/art	Cleansing of Klamath River baffles experts	130
12/8/95	5	news	Fish plan draws boos on **coast**	20
12/8/95	18	news	Chinook catch best since '90	40
12/14/95	1	news	Klamath Basin federal fuhds get past panel	20

Date	Page	**Article Type**	***Headline***	**Lines**
1/2/87	4	news	Salmon fishermen will get time off from punch cards	25
1/12/87		news	King salmon numbers triple	50
I/16/87	7	news/art	State's king salmon migration hits new heights, 1996 figures slightly higher than 1985 numbers in Shasta River	130
2/4/87	6	feature/art	Yreka Creek benefits from DFG stream project	400
3/30/87		news	Contract awarded for work on fishery, Three-phase modification is planned	40
4/6/87	10	news	County fly fishers have busy schedule	60
4/8/87	12	news	BLM seeking input on possible Shasta River mining	30
4/10/87		news	Quotas set for West Coast fishermen	50
5/13/87		news/art	Students learn firsthand about steelhead growth	50
5/26/87	12	short	First of meetings on salmon fisheries set for Wednesday	20
6/1 /87	10	news	Federal fishery office slated to open in Yreka	70
6/16/87		feature/art	Students examine aquatic life in visit to spawning channel	150
6/30/87		news	Millions of young salmon released from fish hatchery, Warm water affects survival	50
7/6/87	6	ad	!st Annual USI Klamath River Salmon Fishing Derby, United Scholarships, Inc.	200
7/31/87	8	news	Catch of Klamath River chinook higher than expected	60
1 1/10/87	9	news	19 million salmon eggs collected during annual spawning season at hatchery	40
1/5/95		news	KNF to sell 71 mmbf	2
1/12/95		news	Court to review ESA - is habitat covered?	
1/13/95		news	Tribe threatens suit (sucker)	
1/13/95	7	art	What a coho needs to live	50
1/16/95		news	NMFS opens way to kill sea lions, policy allowed in Washington to save scarce trout	10
1/26/95		news	Experts say fish doomed if dams not changed (Washington Oregon)	20
2/9/95	5	short	Task force to review amendment to fishery restoration project	90
2/l 0/95	11	notice	Salmon River Restoration Council meeting	10
2/17/95		news	NMFS suit threatened over coho	120
2/20/95		news	BLM issues final grating regs	
2/21/95		news	Preservation groups leave Option 9 a8 is - for now	5
2/24/95	12	short	Trinity on Internet	10
2/27/95		news	Distressed millers set to address supervisors	10
3/1/95	3	short	Scott River water law issues slated for forum agenda	5
3/1/95	4	letter	Sup&visors should do homework	60
3/3/95	11	notice	Flsh proposals	50
3/3/95	11	notice	Trinity on Internet	30
3/3/95	12	short	1995 projections same as 1994 for salmon anglers	30
3/10/95	11	notice	Fish proposals	50
3/15/95		news	Board discusses NEAI change, dump closure and "trust" land	3
3/15/95	11	news	Water supplies predicted to become critical issue	30
3/15/95	11	notice	Water users meet	5
3/16/95		news	Administration moves to speed up salvage logging without exemptions	2
3/19/95	16	notice	Fishery meeting	24
3/28/95		news	NMFS proposes steelhead listing	24
3/28l95	14	short	Ecosystem restoration office slates meetings	2
3/29/95	14	news	Scientists oppose proposal to exempt salvage logging	15
3/31/95	9	short	Required permits change for suction dredgers	8

Date	Page	Article Type	Headline	Lines
4/14/95	11	notice	Fish restoration	20
4/21/95	11	short	Go rafting to help trinity River	5
4/25/95	1	news	Miners concerned over dredging rules	15
4/26/95	5	not ice	Klamath project	3
5/4/95	1	photo	Something fishy?	10
5/5/95	14	short	Salmon season opens with new regulations	70
5/25/95	1	news	Clinton promises veto of salvage bill, logging proposal garners mlxed reactions	25
6/2/95	1	news	Salmon suit filed in West	80
6/2/95	8	notice	Salmon regulations	10
6/2/95	9	news	DFG stream protection plan doing well	120
6/5/95	1	news	Private lands at risk if NMFS lists coho, Rules could be most restrictive yet	180
6/5/95	5	short	Klamath fisheries task force to take up issues June 20, 21	70
6/7/95	3	news/art	Basin restoration projects funded, sought	50
6/20/95	1	news	Gorton offers help to sway salmon oplnioh	20
6/22/95	1	news	Five years later, Owl has faded from spotlight in forest fight	3
7/1/95	12	news	Scott diver committee approves watershed fish population habitat plan	80
7/10/95	1	short	Ecosystem restoration assistance available	20
7/20/95	1	news	Threatened status proposed for coho salmon	50
7/26/95	14	news	Wilson miffs environmentalists	50
7/26/95	14	news	Riparian protection techniques told by Tehama farm advisor	70
8/11/95	12	not ioe	Chinook survey	12
8/24/95	9	news	Scott titer users open "positive" campaign	2
8/25/95	14	notice	Salmon fishing closed	60
9/22/95	11	feature/art	Counting fish not as easy as one-two-three	150
9/22/95	11	news	Rural salmon recovery efforts to get new help	100
10/2/95	1	news	Salrnon fishing closes	20
10/13/95	10	short	King salmon fishing open on Klamath	5
11/10/95	1	news	Hatcheries may endanger species	70
11/17/95	2	news	Clinton's salmon plan OK'd by court	80
11/17/95	4	letter	Montague professor questions AP "salmon story"	120
11/17/95	10	news	CCC puts ih millionth hour in salmon project	60
11/21/95	1	feature/art	Counting salmon, Cooperative effort no numbers game	190
12/5/95	1	news	Califorhia Farm Bureau presents Peters with Distinguished Service Award	20
12/20/95	8	short	Students study development stages in salmon and witness their release	5
2/14/96	14	notice	River council to meet at Forks of Salmon	6
3/20/96	1	news	Crowd listens to salmon plan seeking "voluntary" adoption	130
3/28/96	1	news	Steelhead protection waived	10
4/1/96	4	guest ed.	Dredging not comparable to in-stream gravel mining	50
4/4/96	1	news/art	Ditch screen guiding young fish	300
4/4/96	1	box	Fish and Game busy with annual effort	80
4/18/96	9	short	Water management taught in Greenview	25
4/23/96	2	news/box	Auduboh will host program on salmon and species act	60
5/8/96	4	letter	We need to help the Irongate salmon	45
5/9/96	6	news	Salmon listing seen by Clinton dedisidn	40

Date	***Page***	**Article Type**	***Headline***	**Lines**
5/21/96	4	letter	Is there a connection between owls, salmon'?	40
5/24/96	9	news	Anglers face jump in salmon catches	10
6/12/96	4	letter	Believes some fish are suffering at Iron Gate	10
6/1 8/96	1	news	Klamath connection In Sacto River plan	35
6/18/96	1	notice	CRMP meeting set tonight, Salmon, riparian issues on agenda	20
6/20/96	8	news	Pending Trinity document involves Klamath River	50
7/5/96	8	new3	Klamath King Salmon quotas jump	100
7/9/96	1	news	Siskiyou wins big in water rights	70
7/9/96	10	news	State increases king salmon quota on Klamath, Trinity	70
7/12/96	8	news	King salmon anglers on Klamath will benefit from DFG ruling	70
7/26/96	1	news	Steelhead may be added to endangered list	80
7/30/96	1	news	Government says West Coast fish need protection	70
7/31/96	1	news	Feds say Klamath steelhead "threatened"	40
8/9/96	8	news	Salmon size set at 24 inches	60
8/20/9	3	news	CRMP hosts informational meeting tonight on spawning salmon surveys	80
9/4/96	1	news/art	DFG officials review mining operationb	140
9/11/96	1	news	DFG actions miff supervisors	70
10/1 1/96	7	news	Iron Gate Hatchery to hold open house	40
10/21/96	1	news	Election may delay salmon decision	200
10/25/96	2	news	Administration declaring more salmon threatened	180
10/25/96	8	news	Salmon catch Short of quota	70
10/28/96	3	news	Hearings set on proposed endangered species listing	50
10/31/96	1	news	Locals provide steelhead listing input	210
1 1/1/96	BI	news	Tax credit plan will aid fish	90
11/20/96	11	news/art	Students help to process salmon	50
11/21/96	14	news	Coho salmon rules input sought	80
12/27/96	1	news	Rivet area economy ohangihg; new tourist potentials seen	50
12/31/96	1	news	Ban on coho salmon fishing takes effect on central coast	70

Date	Page	Article Type	Headline	Lines
1/11/87	5	news	Agencies get ready for Klamath River restoration program	80
1/14/87		news/art	Salmon make dramatic return, Biologists count three times as many fish at hatcheries	60
2/16/87	3	news	Fishermen lash out at water-transfer proposal, Environmental groups want impact study	55
2/17/87	4	editorial	Fishermen have reason for hope	30
3/17/87	5	news	Forest Service begins effort to boost fishing	40
3/27/87		news	Salmon proposals irk local fishermen, Grievances to be aired at PFMC meeting	60
4/2/87		news	PFMC told bigger fish harvest needed	74
4/5/87	3	news/art	It's treachery on the Trinity,' Fishermen's group, federal officials clash over sale of water	80
4/10/87		news/art	Salmon compromise adopted, Season runs from June 1 until Sept. 7	90
5/2/87		short	Salmon catchers migrate south	35
5/10/87		news	Price for salmon shoots up, Lack of imports keeps supply low	20
5/21/87	11	column	Salmon fisherman should have it good this weekend	10
6/7/87		news	Salmon season gets off to a slow start	10
6/9/87	3	news	Indians able to gill-net salmon commercially	60
6/21/87		news/art	Salmon season looking up	40
6/25/87		short	King salmon quota reached	20
6/26/87	5	news	Fish farming brings promise and concern, Some fishermen angry over Atlantic salmon proposal	60
6/26/87	5	news	Hauser bill advances; would aid salmon sales	30
6/29/87		news/art	Salmon fleet stung by closure, Government halts good season	70
7/9/87		news/art	Troubled waters face gill-net fishermen	50
7/14/87	3	news	Inland rescue effort saves fish for future	60
7/15/87	5	news	Commercial gill-netting of salmon put off	90
7/15/87	5	news	Questions remain on who gets fish profits	70
7/22/87	3	news	Coho season over for commercial fishermen	60
7/23/87	3	news	Council agrees on 5-year salmon plan	70
7/23/87	6	news/art	BIA official expects fishing for profit soon	90
7/24/87	3	news	Panel to study Klamath Basin restoration	50
7/25/87		news	Bright future for fish seen	70
7/30/87	3	news	Local salmon season won't reopen, Closure aimed at protecting Klamath stock	80
8/8/87		news	Fishy meeting convenes locally	60
8/17187		news	Salmon rebound from El Nino, Questions about effects of Current remain unanswered	100
8/28/87	8	news	Commercial Indian fish quota hit; season ends	60
9/6/87	3	news	Fishermen get set for salmon season finale	70
9/9/87	5	news	Wardens seize illegal fish, Del Norte incident being probed by DFG	50
9/20/87		news	Salmon season disappointing, Area fishermen catch few fish	70
9/21/87		news/art	Fires may have devastating effect on wildlife throughout North Coast	50
9/23/87		news/art	Salmon farming plans have fishermen worried	90
10/18/87	5	guest ed.	Indian fishing a success	60
10/21/87	3	news/art	Logging is hurting fishing authorities say, Panel told that enforcement of harvest laws is inadequate	100
10/21/87	5	news	Klamath men challenge fishing-rights decision	40
10/29/87	15	column	Five streams may be closed Sunday	30
12/2/87		news	Near-record salmon run in the Eel, Big returns also in Smith, Klamath	60
12/6/87		feature/art	The sea's blessing and ourse, Fishermen's wives must accept both	100
12/12/87		feature/art	Birds do it, bees do it, but fish need some help	80
I/7/95	A5	news	Salmon catch high in '94, but prices were low, Unreliability of state supply scared buyers	70
1/19/95	A2	short	Salmon plan set	5

Date	Page	*Article Type*	***Headline***	***Lines***
2/5/98	1	news	Salmon size shrinks over decades, Human-imposed shorter life span cause decline, industry study says	***80***
2/6/95	A3	notice	Upper Klamath os focus of meeting	***20***
2/14/98	1	news	Area groups back lawsuit over salmon, Letter urges U.S. to protect coho	***70***
2/14/95	A3	news	Trinity River releases unaltered	***60***
2/14/95	A3	notice	Conference set on salmon restoration	***20***
2/18/95	A 3	notice	Hearing scheduled on Klamath water	***30***
2/22/95	A3	short	Coho stocks still dangerously low	***35***
2/23/95	A 3	short	Gravel permit on Klamath is sought	***30***
3/2/95	83	column	Coho decision comes in April	***20***
3/13/95	1	news	Chinook salmon levels up, report shows	***60***
3/24/95	A 3	short	Meeting on salmon options scheduled	***30***
3/25/95	A3	news	Tribes get Klamath restoration funds	***60***
3/26/95	G 4	news	Habitat restoration for fisheries booming	***70***
4/13/95	A3	notice	Fishermen can get restoration funds	20
4/13/95	c 4	column	Council settles on salmon season	40
4/15/95	6	feature/art	Salmon anglers anxious, Area fishermen anticipate busy spring in region	***20***
4/19/95	A3	news	Job money for fishermen close	***60***
4/20/95	A 7	news	Special listing imminent for coho	***70***
4/24/95	A3	short	trinity to receive extra water flows	***30***
4/25/95	A 3	notice	River experts meet on fish restoration	***25***
5/7/95	1	feature/art	The gravel wars, Miners, critics clash over causes of streambed deradatjon on local rivers	150
5/7/95	A8	news/art	Habitat: Miners, scientists minimize impact on wildlife	70
5/8/95	A3	news	Fishery restoration efforts get a boost	50
5/11/95	A 3	notioe	Coho survival is topic of lecture	25
5/11/95	B2	column	Salmon season opens May 17	30
5/31/95	A 6	news/art	Riggs faces fishing, farming bind, Congressman indicates break with GOP over water utilization	75
6/l/95	1	short	Coho inaction irks environmentalists	25
6/2/95	A6	news	Two Humboldt groups join coho plaintiffs, 24 groups rap U.S. for delay in listing salmon as endangered	80
6/5/95	A3	short	Officials consider Pacific fishery plan	.0
6/8/95	A3	notioe	Watershed project proposals sought	15
6/9/95	A6	news/art	Eureka woman lobbies Congress for fishing rules, Small operators join Greenpeace over bill's proposed quota system	80
6/11/95	C9	news/art	Squawfish bounty program nets big haul of fish, Project designed to help salmon in Snake, Columbia river systems	5
6/15/95	A 3	news	Riggs confirms watershed, fishery funds	40
6/18/95	A 7	news	Riggs focus of Trinity, Sacramento river-flow fight	70
6/21/95	A8	news	Riggs vote disappoints fishermen, Commercial anglers decry removal of San Joaquin river salmon study	5
6/22/95	B5	column	Chinook quota safe in the KMZ	25
6/27/95	A3	news/art	Harbor, fishery funds lauded, Riggs praised for securing $16 million for North Coast	
6/28/95	A 4	letter	No panic, doom over ocean salmon	70
6/29/95	B2	column	Deadline nears for salmon fishing	40
7/5/95	A3	ad	Yurok Tribe fisheries information meeting	30
7/6/95	B2	column	Rec salmon action closed in Klamath zone	50
7/17/95	1	feature/art	The changing Mattole, Where river meets ocean	50
7/18/95	1	news	Coho set for federal species list, California, Oregon fish scrutinized	90
7/19/95	A3	news/art	Listing of salmon hailed, Proposal would force more cooperation, fishermen say	75
7/21/95	C10	news/art	Riggs undecided on river flow legislation, Bill to recharge aquifers could hit Trinity, Sacramento levels	80
7/24/95	B5	column	Young salmon struggle to live (news quiz)	25

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7/27/95	A3	short	Trinity restoration debated by House	40
7/30/95	A3	news	State to probe salmon-run status, Series of hearings to consider decline in game fish populations	20
8/5/95		news	Pact to aid restoration on Trinity, Lawmakers act to help fisheries	80
8/6/95		news	Fishermen welcome federal aid, But disaster allotment not enough to overcome troubles, official says	60
8/17/95	B2	column	Offshore salmon fishing action open locally	40
8/18/95	A6	column	Face to face: Bill Matson	180
8/18/95	B6	news	Speaker links river, fish restoration	70
8/24/95	B3	column	Chinook still below quota	10
8/30/95	A5	news	Stream restoration work expected to take years	80
9/11/95	1	news/art	Salmon future under debate, Northwest reflects on species act	180
9/11/95		news	Good, bad news on Salmon River	90
9/14/95	B2	column	Fall fishlng could pay off in big catches	20
9/5/95	A5	news/art	North Coast fishermen monitor water-use votes, Salmon industry mulls impact of 2 House votes	80
9/8/95	A3	news	Riggs defends fisheries record	75
9/20/95	C8	news/art	Federal officials laud salmon restoration, Projects provide employment, use disaster funds to aid runs	80
9/29/95	A3	news	Indians, fishermen unite to protect Trinity	55
10/4/95	A9	news	Groups move to block logging in east Cascades, Environmentalists, fishermen say they're done being patient	90
10/12/95	B10	news	House may curb fish-limit control	70
10/16/95	A3	notloe	Restoration jobs open to fishermen	20
10/19/95		news	Sides get chance to air coho protection views	70
10/21/95	R08	feature/&t	Area angler nabs gigantic salmon, 43-pounder hauled in on first time out	60
11/3/95	A5	news	White House supports Trinity restoration bill	55
11/7/95		news	Salmon on fragile rebound, Ocean aids best runs since 1986	100
11/11/95	A3	short	Stream restoration milestone reached	20
11/11/95	A8	news	Hatchery system may hurt salmon, Fish raised in facilities push out wild varieties, recent report says	120
11/30/95	A5	news	Hoopa, Yurok leaders laud Klamath salmon decision	85
12/6/95	A6	news	Riggs' opposition to river bill sought	50
12/7/95	A3	news	Action postponed on Trinity bill, Oppositioh mounts over effort to transfer more water south	70
12/13/95	A4	editorial	Future of California salmon imperiled by bad legislation	70
12/31/95	A11	news	Salmon news good fur a change	50
1/26/96	A3	news	Trinity restoration gains ih Congress, funding for river work appears solid; fears ebb over agricultural water grab	50
2/1/96	15	column	Good news: Swarms of salmon	20
2/8/96	3	short	CCC salmon effort wins national nod	20
2/12/96	3	news	Large snowpack raises hopes, Fish, farmers to benefit from weather	15
2/21/96	5	short	Fish the focus at conference	20
2/24/96	5	news/art	Fish conference draws cutthroat crowd	10
2/27/96	3	news/art	Coho protection plan OK'd, Gravel miners reach accord to monitor Eel River salmon	10
2/28/96	6	news	Proposed river study could help gravel operators, Biological monitoring of Eel could simplify process	15
3/4/96	3	short	Klamath council to set fish quotas	30
3/14/96		news	Species act listings moratorium affirmed, Narrow vote prohibits agency from calling more "endangered"	25
3/14/96	5	news/art	Fishermen counter bid to curb salmon take, Commercial group offers plan to resolve winter chinook woes	120
3/22/96		short	Congress blocks steelhead listing	20
3/26/96		news	Judge lets steelhead rules slide	20
4/8/96	5	news	State resists chinook listing	50
4/12/96	3	news	Fishermen rap short season, Group blames water diversion, not catch, for chinooks decline	30
4/14/96	4	editorial	Failure to protect steelhead from extinction inexcusable	80

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4/16/96	1	news	Fishermen say quotas inadequate, Council Oks monthlong salmon haul	80
4/19/96	3	notice	Review scheduled on Klamath plan	18
5/12/96	3	news	Yuroks mull fishing rules, Revisions will replace outdated controls; non-indians unaffected	70
5/15/96	3	news	Water-reallocation bid fails, Fishermen delighted as GOP halts controversial reform effort	5
5/20/96	3	notice	Klalmath salmon are meeting topic	25
5/21/96	3	notice	Yurok fishing case charges dropped	10
5/21/96	D - 4	art	Fish talk, governors of three Pacific Northwest state chat with Pacific Salmon Commissioner...	10
6/1/96	4	letter	Riggs diligently pursues river act	30
6/3/96	2	news/art	A battle for the same resource, Fisherman, sea lions fight over fish rights	80
6/3/96	B4	feature/art	What if there were no more salmon? Biologists fear declining stocks threaten ocean, forest life-cycles	200
6/6/96	4	letter	Riggs and “ace” for Trinity River, fish	70
6/11/96	1	short	Groups doubt timetable on steelhead	25
6/11/96	4	letter	Congressman savvy on fishing issues	60
6/15/96	1	short	Fish protection timetable set	25
6/22/96	1	news/art	Fishermen warn of new listing for salmon, Central Valley water diversion may threaten spawning streams	10
6/24/96	1	news	High court decides fish rights, Tribes get to keep title on Klamath	70
6/25/96	1	news	Salmon recovery held vital, Sides in court battle Share common goal	70
6/29/96	3	short	Salmon landings are reported down	25
7/3/96	3	news	Sport, tribe quota for salmon soars	80
7/10/96	4	editorial	Patience, habitat efforts pay in Klamath salmon recovery	75
7/13/96	4	opinion Q.	Are you optimistic about the improvement of fishing on the Klamath River?	200
7/17/96	4	editdrial	Full citizen response needed to restore Trinity River flows	100
7/19/96	3	notice	Trinity River water struggle kicked off	30
7/20/96	3	short	Storms do damage to salmon streams	25
7/20/96	6	news/art	Help wanted in river's resoration, Door hangers will tip residentsto need for assistance on Trinity	130
7/21/96	4	letter	Indians weaken fishing industry	50
7/25/96	B2	column	New salmoh fishing regulations take effect	10
7/28/96	3	short	Action is pending to list steelhead	40
7/28/96	4	editdrial	Shunning conflict, Humboldt takes strides in fishery work	120
7/30/96	1	news	Trout gets endangered listing	40
7/31/96	1	news	Fish rulings lauded, doubted	40
8/1/96	1	news	Federal listing would help ocean catch, fishermen say	60
8/4/96	4	editorial	Action to protect steelhead late in coming, but welcome	120
8/10/96	3	short	Chinook landings seen on rebound	20
8/13/96	3	news	Yuroks revive past in salmon festival planned Saturday	25
8/17/96	4	letter	Hatcheries credited for improved fish runs	40
9/3/96	3	notice	Restoring salmon is topic of meeting	20
9/7/96	4	letter	Fixing fisheries after past excesses	30
10/4/96	3	notice	Public hearing set on steelhead plan	20
10/17/96	C I 0	news	Pressure oh to say coho endangered, Oregon seeks federal delay in designation	30
10/20/96	1	news	“Treachery,” fishermen say, Commercial salmon groups angered over water diversion	50
10/21/96	1	news	Decision on coho lags again, Listing may be dealyed past election	80
10/25/96	1	news	Coho goes on U.S. list today, Mid-state fidh to get “threatened” status	120
10/26/96	1	news	Fishermen angered at listing, Critics oppose delay in protection of coho	150
10/29/96	1	news/art	Timber, farm interests critical of coho listing	50
11/1/96	1	news	Court upholds slower listings, Species act timetable for coho can continue	55

Date	Page	Article Type	Headline	Lines
11/10/96	3	notice	Steelhead hearing period extended	40
11/16/96	1	news	Fish catch dips below last year's, 1995 netted largest haul since 1980s	60
12/6/96	3	short	Relief eligibility eased for fishers	20
12/23/96	1	news	Fingers point on salmon, Froups, governor differ over coho aid	100
12/25/96	1	news	Oregon study lauds, rebuffs hatchery fish	40

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1/9/87		feature/art	RHS and state assure that Elk Creek will live	120
1/21/87	7A	news	How fishing industry goals fared in 1966	200
1/21/87	21A	news	Economy improves for fishermen in 1966	20
1/23/87	8	news	More salmon return to Klamath River basin	50
1/28/87	10A	news	Del Norte fishermen working on 1967 goals	180
2/13/87		news	Fisheries forum sparks debate, ideas	60
3/4/87	4A	news	DFG to consider North Coast rules	40
3/4/87	7A	news	Fishermen await '87 harvest numbers	40
3/6/87	1	news/art	Chinook numbers disappointing	70
3/18/87	4A	news/art	Fishermen's leader urges attention to salmon run	110
3/18/87	7A	news	Grant funds available for fish rehabilitation	30
4/8/87	14A	news	Salmon rules coming in week	60
4/27/87	3A	news	Salmon guidelines easier this year	100
5/27/87	4A	news	Fisheries meetings to start	30
6/3/87		news	Salmon season gets off to a slow start	60
6/5/587	6	photo	Salmon anyone?	50
6/26/87		news/art	Commercial salmon season closes early, Quota caught in only 25 days	50
7/1/87		short	Salmon allocation decision could be made by July 29	60
7/15/87	7A	news	BIA drowns gill-netting	70
7/22/87	7A	news	Status of 1987 salmon fishery	80
7/24/87	4	news	Klamath Basin advisory group meets	70
7/29/87	8A	feature/art	Recreational fishery see a big week, Ocean salmon fishing is tipping the scales	120
7/31/87		news	Indians denied inupt, Commercial gill netting begins	130
8/5/87	10A	short	Five-year Klamath accord ratified	50
9/16/87	4A	news	illegal gill-netted fish seized by Sheriffs	60
9/16/87	5A	news	Forest Service urged to consider fisheries during fire clean-up	120
9/23/87	6B	news	Salmon, steelhead to notice improvements in creek	90
10/30/87	7	news	PFMC announce catches	40
11/6/87	3	short	Stream care info ready	30
12/9/87	16B	news	Three states report record numbers of spawning salmon, PCFFA reports	150
12/30/87		news	Indian salmon case goes to State Supreme Court	60
1/28/95	6A	news	Salmon fishing stopped on lower Columbia	30
2/11/95		news	Saving salmon may cut back timber salvage	50
2/15/95	7A	news	Vanishing act, State's salmon numbers continue downward trend	100
3/3/95	6A	news	DFG is planning salmon season	100
3/22/95		news	Salmon options remain limited for 1995 season	130
4/8/95		news	Salmon seasons better than '94	90
5/19/95		news	Fish habitat enhancement work funded	20
5/19/95	4A	feature/art	Salmon hatchery becomes classroom	20
5/20/95		feature/art	Salmon season should get better	50
6/1/95		news	Dnvironmentaiists sue over coho	70
6/24/95	8A	news	Steelhead fate subject of hearing	60
6/28/95		news	Residents feel fish list stinks, Local citizens don't want steelhead listed as endangered	90
7/4/95		news	Salmon quota reached early	50

Date	Page	Article Type	Headline	Lines
7/19/95		news	Coho might be listed as threatened	25
7/20/95		news	Klamath zone one of areas suggested for coho listing	100
7/22/95	4A	letter	Regulations need to be examined	70
7/25/95	3A	short	Bingham nominated for fishery position	50
8/19/95		news	Season closed for now, Chinook can't be caught until Sept. 1	85
8/25/95		news	More limits set on adult king salmon fishing	50
8/31/95		news	Fishing allowed Saturday, Sunday	30
8/31/95	3A	news	Biologists say extra water helps salmon	50
9/2/95	4A	editorial	A growing fish problem	80
9/7/95	3A	news	Environmentalists sue over steelhead	50
9/13/95	3A	news	Salmon wars heating up, Administration said to be close to agreeing to GOP plan	80
9/22/95	7A	news	Senators want money for salmon	80
10/12/95		news	Hearing planned on coho	70
10/21/95		news	Plan for salmon attacked, Administration doesn't want fish exempt from laws	80
11/10/95		news	Saving salmon will be costly	40
12/7/95		news	Salmon catch a smash, Fishermen enjoy best chinook catch since'90	50
1/9/96	3A	news	KMZ fish coalition meets in Crescent City	30
2/6/96	3A	news	Limited salmon season expected again in 1998	50
3/6/96	4A	letter	Bill will save fish, jobs	100
3/21/96		news	Water is for farms, not fish	40
3/23/96		news	Steelhead listing delayed for now	60
4/11/96		news	Salmon season possible, Commercial fishing season appears likely	70
4/13/96		news	Commercial, sports salmon fishermen get reprieve	80
4/16/96		news	Salmon seasons decided	50
5/31/96		news	Listing of coho salmon delayed	60
6/12/96		news	Panel: Salmon need natural rivers	60
6/25/96		news	Yuroks given rights to salmon	60
6/25/96		news	Fish manager asks for alliance	30
7/12/96	2A	news	Returning salmon a positive sign	40
7/12/96	3A	news	Klamath irrigation cut to save fish	50
7/30/96		news	Fish and Game alters king salmon rules	60
7/31/96		news	Steelhead endangered, Northern California fish could join threatened list	40
9/5/96	3A	news	Flooding should improve salmon runs	50
9/8/96	5A	news	Deal reached on salmon rescue	50
10/2/96	3A	news	Fishery council wants salmon plan suggestions	40
10/5/96	3A	news	Scientist says governor's salmon plan isn't adequate	20
10/22/96	4A	news	Salmon decision might be put off	50
10/23/96	3A	news	No closure expected on king salmon run	60
10/26/96		news	Coho, County fish not yet listed as imperiled	100
11/9/96	5A	news	Steelhead comment time extended	40
11/30/96	3A	news	Advice on coho salmon being sought	30
12/?%8	3A	news	Ban on coho fishing wanted	50
12/18/96	4A	guest ed.	Coho: There is no debate among scientists	120