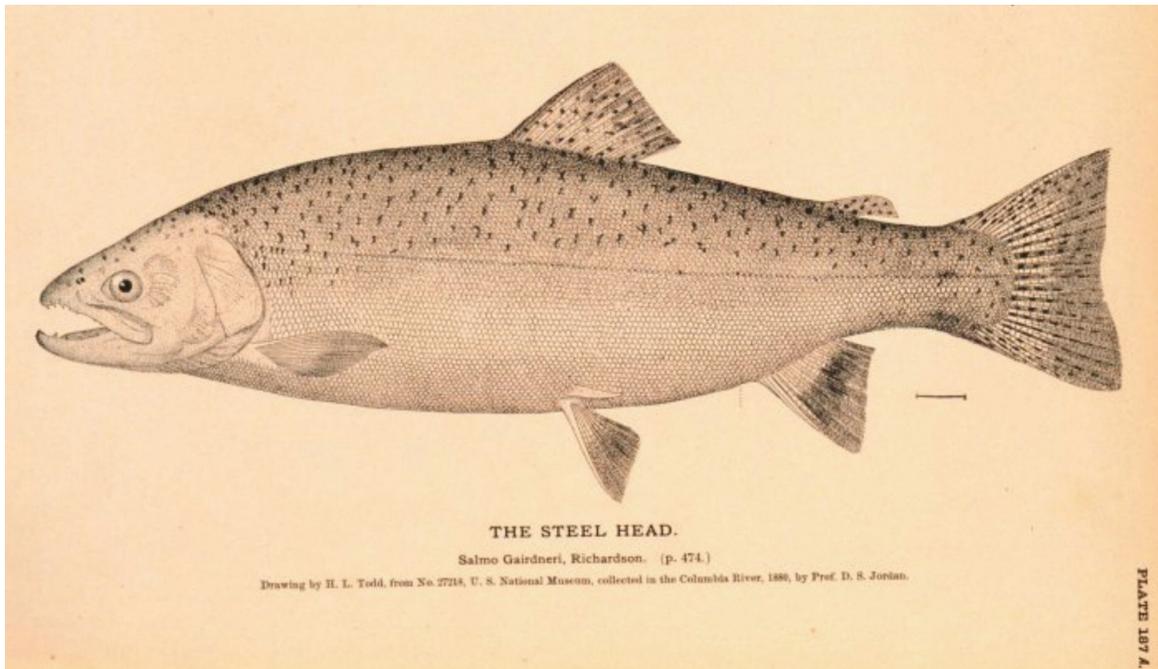


# AN INTERIM WATERSHED RESTORATION STRATEGY

## A Commitment made as part of the Biological Opinions for Chinook salmon and Steelhead (Snake River and upper Columbia River) and Bull Trout (Columbia and Klamath Rivers-- areas not covered by the Northwest Forest Plan)



MAY 2000

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## **An Interim Watershed Restoration Strategy**

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May 2000

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## EXECUTIVE SUMMARY

An interim Watershed Restoration Strategy (Strategy) for listed steelhead and chinook salmon (Snake River and upper Columbia River) and bull trout (Columbia and Klamath River--outside the area of the Northwest Forest Plan) is provided. This Strategy was developed, by an interagency team, to provide interim direction for watershed restoration. Comprehensive guidance for restoration was not provided in PACFISH/INFISH. The strategy will improve the focus, effectiveness, and integration of watershed restoration programs within and among participating agencies. These agencies are the U.S. Forest Service (FS) (Regions 1, 4, and 6), the Bureau of Land Management (BLM) (Oregon, Washington, and Idaho State Offices), the U.S. Fish and Wildlife Service (FWS) (Region 1) and the National Marine fisheries Service (NMFS) (Northwest Region). The Strategy will provide a "jump start" for near term restoration activities and will provide a transition to the anticipated, long-term management strategies for the interior Columbia Basin.

Primary elements of the Strategy include: restoration philosophy; setting of biologically focussed priorities at multiple scales; a "step down" process for analysis and planning; guidelines to promote inter- and intra- agency coordination; an approach for funding; and cooperation and the assignment of roles and responsibilities for implementation monitoring and oversight. Summary information, for these elements, is provided below.

### Restoration Philosophy

- Focus a full spectrum of restoration activities on a limited number of watersheds (2 to 5 per Forest or BLM District).
- Secure existing habitat, that supports the strongest fish populations, first by addressing threats to long-term habitat and watershed stability.
- Extend favorable habitat conditions into adjacent watersheds and then into more parts of the subbasin with less favorable conditions.

### Prioritization Model

- Is biologically focussed.
- Can be used at multiple scales.
- Includes the following categories and elements:
  - I. Biological (weight = 3)
    - a. Index of Aquatic Integrity.
    - b. Priority Watersheds (by species)

- II. Watershed Integrity (weight = 1)
  - a. Management Area Categories.
  - b. Road Density.
  - c. Percent FS/BLM Ownership

and

- III. Watershed Risk (weight = 1)
  - a. Sediment Delivery Index

### Step Down Process

- Subbasins are prioritized, using the model, into high, medium, and low priority categories for restoration.
- Application of the subbasin review process, focussed on aquatic issues, identifies highest priority watersheds for restoration.
- Use of the Watershed Analysis, focused on aquatic issues, identifies priority subwatersheds and establishes watershed scale restoration strategy.
- The project planning process selects a specific mix of treatments and locations for restoration.

### Program Coordination

- An annual cycle of coordination meetings to scope funding opportunities, program trends and accomplishments, coordination requirements, and opportunities for cooperation is established.
- Coordination meetings, between core agencies, are initiated at broad- and mid-scales. Broad-scale will cover one, or more, FS Regions and BLM State areas. Mid-scale will cover individual, or groups of FS Forests and BLM Districts.

### Funding Approach

- Provide a base restoration program for all units across the range of listed chinook, salmon, steelhead, and bull trout.
- Focus a portion of discretionary funding, above the base level, on selected "high priority" or emphasis areas.

- Focus and integrate funding among programs within each agency and among agencies, to make the best use of available resources and to accomplish shared objectives.

### Monitoring and Oversight

- Policy level oversight and broad issue resolution will be the responsibility of the Interagency Implementation Team (IIT).
- Strategy implementation monitoring oversight and initial issue clarification/resolution will be the responsibility of the Restoration Task Group.



# I. INTRODUCTION

## Background

Interim strategies for the conservation of anadromous fish (PACFISH) and Inland Native Fish (INFISH) established a comprehensive approach for habitat conservation in the upper Columbia and Klamath River basins. These strategies were intended to be short-term (less than 2-3 years). Accordingly, they did not fully address strategic planning, implementation and monitoring of watershed and fish habitat restoration. In FY 1998, about 5 years after initiation of PACFISH/INFISH, the lack of a formal watershed restoration strategy was addressed in the Biological Opinion (BO) for newly listed chinook salmon (upper Columbia River Basin), steelhead (upper Columbia and Snake River basins), and bull trout (upper Columbia, Snake River, and upper Klamath basins). A commitment was made to provide an interim strategy (Strategy) for watershed and habitat restoration for these newly listed species. The Strategy will provide, short-term direction (1 to 5 years) to serve as a transition to the long-term management direction to be provided in the Interior Columbia Basin Ecosystem Management Project (ICBEMP).

Amplifying direction for the development of the Strategy was provided by the Interagency Implementation Team (IIT). A copy of the IIT letter to the Restoration Task Group is included as Appendix 1. Key elements of this direction include:

1. Accelerate watershed restoration at the subbasin scale.
2. Use a variety of information sources - priority watershed maps, road inventory information, roadless areas assessment and other information.
3. Develop a stratified list of subbasins where restoration activities should be accelerated.

## The Team

An interagency group, the Restoration Task Team, was formed for this effort. Members include:

Dave Heller - Team Leader, Forest Service (FS)-R6; Bill Putnam, FS-R1; Dan Duffield, FS-R4; Rick Edwards, National Marine Fisheries Service (NMFS)-Boise; Ron Rhew, U.S. Fish and Wildlife Service (USFWS)-Portland; Steve Grabowski, Bureau of Land Management (BLM)-Boise; Trish Carroll, FS-ICBEMP, and Mike Lohrey FS-R6. Due to competing demands, the last two participants were not able to actively participate in the Strategy development.

## Guiding Principles

Guiding principles were developed for the Strategy. They include:

- Should be simple and have broad applications. Needs to be flexible to accommodate new information and/or changed conditions.
  - Should guide restoration programs for all participating agencies (FS, BLM, USFWS, and NMFS).
  - Emphasis will be for restoration which provides long-term benefits to aquatic habitat for listed fish.
  - Should allow links to other restoration efforts (CWAP, State and Tribal Plans, Northwest Power Planning Council (NPPC), Columbia Basin Fish and Wildlife program, etc.).
  - Will provide consistent, integrated guidance to improve accomplishment of near-term restoration priorities.
  - Will improve integration in restoration activities among participating agencies and between resource programs within each agency.
  - Will focus on "active" restoration activities. These will compliment protection/passive restoration currently provided by PACFISH/INFISH and BO commitments.
  - Should apply over a relatively broad geographical area.
  - Needs to be hierarchal--provide a consistent framework to guide restoration at broad, mid and project scales.
  - Should provide a step down analysis/prioritization process which draws upon currently used procedures (subbasin review and watershed analysis).
- and finally,
- The Strategy is intended to be interim, with an operational life of 1-5 years.

The ultimate focus, and real measure of success of the Strategy, will be its contribution to recovery of aquatic habitat and watershed function.

### Restoration Philosophy

In general, the Strategy embraces broad restoration concepts provided in the ICBEMP Science Assessment, Vol. III, pp 1354 to 1373, and embodied in the Watershed

Restoration Strategy for the NW Forest Plan. Key concepts, in relative priority order, include the following:

1. Secure existing habitats (subwatershed) that support the strongest fish populations, and that have the highest native species diversity and aquatic integrity.
2. Address and fix/minimize threats to the long-term stability of high quality habitats/subwatersheds.
3. Extend favorable habitat conditions into adjacent watersheds.
4. Extend good habitat/healthy watershed conditions into more poorly represented parts of the subbasin with less favorable habitat conditions.
5. Focus work on a "limited" number of areas/subwatersheds to increase the chance of meaningful change.

#### Strategic Framework

Two components are included in the Strategy. First, there is a process for geographic focus/prioritization of restoration activities. This will help to focus scarce resources on a limited number of areas. It should improve "on-the-ground" effectiveness and integration of work activities. Second, guidelines are proposed to facilitate strategy implementation, through institutional and operational integration of restoration programs and activities. These are critical components of the strategy. They focus on changing and broadening the way restoration programs and projects are developed and implemented. Improved integration will often require changes in operational behavior. When implemented, the guidelines will serve to increase coordination and cooperation and expand the support and the resource base for restoration activities. The application of each of these components is discussed in the Prioritization (Section II) and Implementation (Section III) Sections of this document.



## II. PRIORITIZATION MODEL

### Development and Application

A model for stratifying/prioritizing areas for watershed restoration was developed. It is intended to provide priorities responsive to the ecological needs of listed fish species and their habitat. Although developed primarily to stratify subbasins into three restoration priority groups (high, medium, and low), the model is structured to allow its use at multiple scales. In this way it can provide a consistent approach for developing biological priorities at both subbasin review and watershed analysis scales.

The model has three primary categories: (1) Biological, (2) Watershed integrity, and (3) Watershed Risk. These were selected after review of numerous other prioritization models and extensive group discussions. A mix of variables, within each of these categories, were reviewed prior to the selection of six individual elements two in the Biological category, three in the Watershed Integrity category, and one in the Watershed Risk category). The model framework is displayed in Figure 1. These elements, by category, are:

#### 1. Biological

1. Index of Aquatic Integrity- aggregated into 3 classes, 1 = Undeveloped Areas, 2 = Developed Areas, and 3 = Highly Developed Areas. This variable was derived in the ICBEMP Science Review and integrates a number of variables including: number of listed species; number of key salmonid populations; fish community index, etc. This category is given a weight of 3 (multiplied 3 times) for the final score. It emphasizes that priorities are biologically driven.
2. Priority watersheds (strongholds) mapped for individual, listed fish species. This element was not used in subbasin stratification due to incomplete information.

#### 2. Watershed Integrity

1. Management Area Categories which were aggregated into 3 categories: 1 = Near Natural Conditions, 2 = Intact Managed Areas, 3 = Degraded Managed Areas.
2. Predicted Road Density aggregated into 3 classes 1 = Low, 2 = Moderate, 3 = High.
3. Percentage of the subbasin in FS or BLM ownership aggregated into 3 classes, 1 = 0% to 36.5%, 2 = 36.5% to 73%, and 3 greater than 73%. This category is given a weight of 1.

#### Watershed Risk

Sediment Delivery Hazard Score aggregated into 3 classes, 1 = low, 2 = moderate, and 3 = high. This category is given a weight of 1.

FIGURE 1. PRIORITIZATION MODEL

<u>CATEGORY</u>	<u>WT.</u>	<u>ELEMENTS</u>
I. Biological	3	1. Aquatic Integrity Index   <u>1</u> 2. Priority Watersheds   <u>2</u> a. Chinook b. Steelhead c. Bull Trout
II. Watershed Integrity	1	1. Road Density   <u>3</u> 2. Land use allocation mix   <u>4</u> 3. Federal Ownerships   <u>5</u>
III. Watershed Risk	1	1. Sediment delivery Index   <u>6</u>

Key:

1. AQINTEG 5 from ICBEMP - integrates 9 factors including number of listed species, number of narrow endemic species, composite index of fish community integrity, index of species richness, etc.
2. Percent of area in priority watersheds.
3. Road density class.
4. Land use allocation class based on likely level of disturbance from various groups of land allocations.
5. Percent Federal ownership.
6. TSED from ICBEMP - integrates several factors including: drainage density, slope steepness, erodibility class, etc.

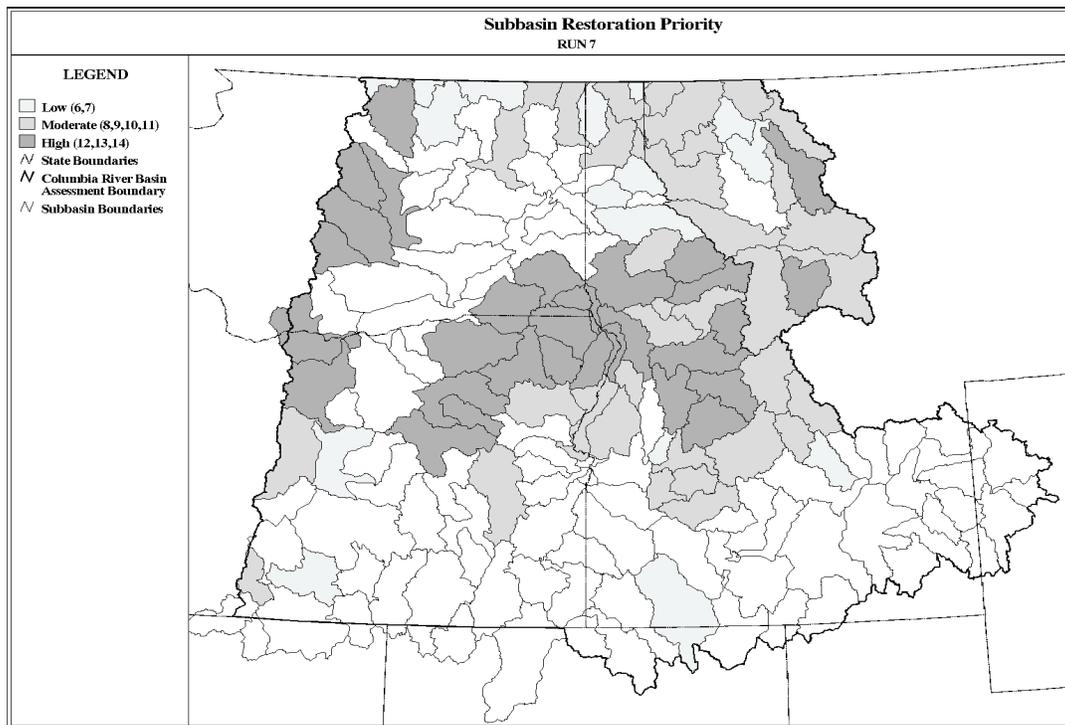
The initial model was run on a subsample of six subbasins, These subbasins were selected to reflect varying degrees of active management. They include: Imhaha River; upper Middle Fork Salmon; upper Grand Ronde; Lochsaw; Asotin; and Middle Fork Payette. The final model was tested on all subbasins. A total of 8 individual "test" runs were made using a mix of category weights, mix of elements, and variety of approaches for scoring individual elements. A full discussion of model development and the testing process is contained in Appendix II. In general, the pattern of high and medium priority subbasins is similar to priorities ("categories") identified in the ICBEMP Science Assessment. The current model tends to emphasize areas with relatively high fish community integrity but also having some degree of management risk to the maintenance of that integrity. Figure 2 shows subbasin, watershed restoration priority categories (high, medium, and low) for subbasins with fish species covered in the BO commitments. Subbasins not having these listed species are not shown. An example of this would be those mid-Columbia subbasins not containing Bull trout.

There are 164 subbasins in the Columbia Basin, east of the Cascade Range, (Washington, Oregon, and Idaho). Only those containing one or more of the listed species covered by the BO, and having greater than five percent BLM or FS ownership, were addressed. Of the 164 subbasins 79 met the above criteria and analyzed for this effort. The results were: 30 were rated as high priority; 34 as moderate priority; and 15 as low priority for restoration.

Although the model elements were analyzed at the subbasin scale, most data also exist at the watershed scale (fifth field hydrologic unit). This information could be used, for any selected subbasin, to identify priority classes watersheds for watershed analysis and restoration. As stated above, the model tends to emphasize areas with high biological integrity, possessing one or several risk factors to watershed integrity, and containing a relatively high percentage of Federal land ownership. This approach was taken to emphasize protecting subbasins with high value fisheries resources and at-risk subbasins with relatively high fish community integrity.

Federal road density data, developed for the BO by the Road Team, can be used instead of the predicted road densities from the ICBEMP, for subbasin review and watershed analysis. These data are compiled at the watershed scale, and again could assist identification of watershed priorities within a subbasin or subwatershed priorities within a watershed. Priority watersheds designated for steelhead, chinook salmon, and bull trout were not used in the model at this time. This is because mapping for bull trout was not available. Further modification of the existing data sets for steelhead and chinook salmon would need to be made before they could be integrated into this model. It is expected that incorporating priority watershed data into the model will likely not result in a significant departure from present results. This is due to the overlap in areas with high integrity and those identified as priority watersheds.

**FIGURE 2. SUBBASIN, WATERSHED RESTORATION PRIORITY CATEGORIES** (high, medium, and low) for subbasins with fish species covered in the BO commitments. Subbasins not having these listed species are not shown. An example of this would be those mid-Columbia subbasins not containing Bull trout.



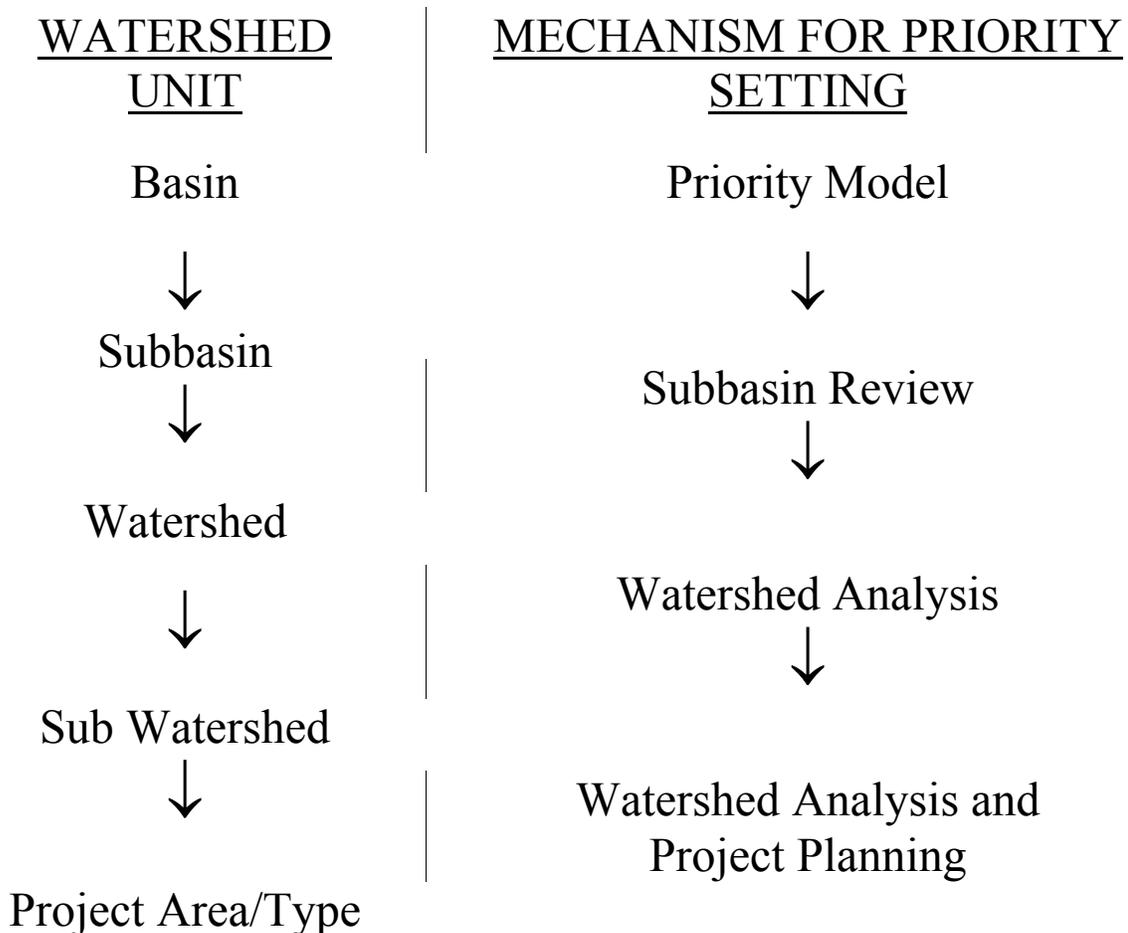
A final model category, not formally included in subbasin prioritization, is called Special Considerations. This category acknowledges a range of factors that could influence the effectiveness and success of watershed restoration. Such factors can include: especially strong escapements of one, or more, species of fish into a given subbasin or watershed; relatively high mainstem adult and juvenile passage survival due to a limited number of dams; additional programs, organization and funding that are in place to compliment proposed restoration actions (model watershed programs, State, or Tribal programs, etc.) and significant prior implementation of formal restoration strategies, etc.

Because this category includes a number of qualitative and/or non biological considerations, it was felt that it could be best used as an adjustment factor when considering selections between otherwise equal priority areas or in making priority funding decisions. It includes important considerations that need to be applied when developing and implementing restoration strategies at subbasin, watershed, and subwatershed scales.

### Step Down Process

This process provides an organized approach for analyzing/prioritizing watershed restoration needs at a variety of scales. The conceptual process, shown in Figure 3, provides a consistent approach for considering watershed restoration from the basin scale all the way down to the project scale. This hierarchy is similar to that being proposed as part of the ICBEMP planning process. It however, has a narrower focus. For this Strategy, the analytical processes--subbasin screening/review and watershed analysis, will be focussed primarily on issues of aquatic habitat protection and restoration. In the first year of implementation, it is envisioned that the primary elements of each process will be employed to select a "limited" number (two to five) of watersheds on each Forest (FS) and District (BLM) and to develop a restoration strategy for each of these. It is expected that subbasin screening/review and watershed analysis will be an interdisciplinary and interagency effort. Similar direction for watershed analysis is provided in the Federal Guide for Ecosystem Analysis at the Watershed Scale.

FIGURE 3. STEP DOWN PROCESS



It is expected, that in subbasin screening/review, broadscale landscape patterns and processes will be examined and will be considered along with aquatic communities, metapopulations of listed fish and their connectivity. The highest priority subbasins will generally be selected for initial review. This process will guide the identification and selection of individual, or groups of, watersheds which are highest priority for watershed analysis and future restoration. Use of the Prioritization Model, in this effort, may be useful. In this application, local watershed-scale information may replace ICBEMP-derived information which was used in setting subbasin priorities. A specific example of this would be the use of local road density information for subbasin review (watershed scale information) and watershed analysis (subwatershed scale information) in the place of ICBEMP-derived information. Additional elements may also be added to better address local environmental/ecological conditions.

The next step is to schedule watershed analysis for selected "high priority" watersheds within a selected subbasin. In some cases, watershed analysis may already have been completed. In others, a streamlined analysis should be performed, prior to development and selection of projects targeted for restoration in FY 2001.

For each watershed, it is expected that watershed analysis will provide a restoration framework/strategy. This strategy will provide direction and context for restoration activities. To be most effective at guiding restoration, a number of "products" should be expected from this analysis. They include: historic and current fish distribution, habitat condition and key production areas/strongholds; primary watershed processes and specific areas of the watershed needing attention; identification and prioritization of key restoration activities; special timing or project sequencing considerations and coordination requirements and opportunities for a restoration program and project cooperation and cost sharing. Not every analysis will contain all of this information. Each analysis should provide enough of this information to provide a strong foundation and strategic framework for watershed restoration and for the development and implementation of individual restoration projects. If such a foundation is not provided, existing analyses should be amended to include this important information to guide restoration activities.

### III. IMPLEMENTATION

#### Funding Approach

A combination of base restoration program funding, for all units (FS Forests and BLM Districts) coupled with additional funding, for selected high priority units/acres is proposed. Base funding is to be focused on a limited number of watersheds for each unit. This allows accomplishment of priority work across a wide geographic range for listed species. Second, additional funds, above the base program level, will be focused on a more limited number of high priority areas. Such an approach develops and draws upon a range of technical skills and helps to spread workload across the units. It recognizes that all units have priority restoration work which is needed to benefit listed species. In general, it will only be possible to accomplish the highest priority work with base level funding. In general, base program funding will likely involve use of 50 to 60 percent of available watershed restoration funding. The remaining "discretionary" restoration funding will then be targeted to a smaller number of high priority areas. This additional funding will support a broader array of activities and will allow more rapid completion of work in high priority areas. Selection of priority areas, for additional funding, will be tied to biological needs, unit restoration capabilities, special opportunities for program coordination and leveraging, and other conditions likely to provide relatively higher watershed and biological response to restoration.

In addition to base program and priority area funding, the integration and leveraging of funds to support restoration is also critical. This should occur within each agency and between agencies. Such an integrated approach demands selection and implementation of work that will satisfy multiple priorities in a given area. Such integration has been used successfully, in many watersheds, for over 5 years in the Northwest Forest Plan Watershed Restoration Program. It successfully diversifies and broadens the total funding base available for accomplishing work and diversifies the various types of work needed on any given watershed. Further coordination of funding opportunities among agencies, and leveraging with other programs (Oregon/Washington Salmon Plans, Columbia River Fish and Wildlife Program, Tribal programs, etc.) can further broaden the amount of available resources.

#### Coordination and Planning

Initial implementation of the Strategy is expected to begin in the last quarter of FY 1999. Efforts will emphasize using forest or multi-forest interagency and interdisciplinary teams (IT) to move through the step down process and select a "limited" number of watersheds on which to focus restoration activities and provide a tentative list of projects to accomplish in FY 2001. The teams should use a core set of interagency (FS/BLM/FWS/NMFS) individuals and augment them with other key resource disciplines (silviculture, engineering, hydrology, recreation, etc). In the first year of implementation, the selection of focus watersheds should be completed by October 1999.

Following selections of the focus watersheds, individual Forests and BLM Districts should begin discussing opportunities for improved coordination of work and leveraging of funding. Before the end of January 2001, an annual restoration coordination meeting should be held. This will involve a core group of participants, likely the same as the IT. This meeting, or meetings, will focus on planned restoration programs, likely budgets and opportunities for multi-resource programs and multi agency funding. The ultimate outcome from this effort will be a coordinated and focused outline of interagency restoration work for FY 2001.

Some time prior to the meetings, discussed above, there will be a broad-scale regional or multi-regional coordination meeting. This will involve a similar core group of agencies and participants. The meeting(s) will focus on: programmatic coordination for FY 2000; anticipated funding levels; emphasis areas; new/emerging programs/opportunities; budget needs and allocation considerations. The intent will be to improve the exchange of information and the coordination between individual agency programs. It is anticipated that this will ultimately enhance the voluntary integration of programs and achieve an improved focus to funding and overall program direction and understanding. Information from these broad-scale meetings will be shared with the mid-scale IT.

#### Implementation Monitoring and Oversight

A final component of the strategy involves oversight and implementation monitoring. Given the relatively short timeframes for the Strategy, it will be important to oversee initial implementation of the process and to share information, clarify direction, remove barriers and to resolve any potential conflicts. It is anticipated that broad programmatic oversight will be provided by the IIT. Individual programs and project level oversight will be provided by the Restoration Task Team (Team). In addition, the Team will develop simple, efficient techniques for tracking implementation reporting and suggesting necessary changes for improved efficiency and effectiveness of the Strategy. Additionally, the Team will conduct short, 1 day reviews to get feedback from units on the Strategy and its implementation. For FY 2000, it is expected that at least 3 of these visits should be completed. A summary of results and recommendations should be prepared and shared with participating units, the IIT, etc.

## **IV APPENDICIES**

APPENDIX I- March 12, 1999, Restoration Vision from the Interagency Implementation Team

APPENDIX II- Documentation of the Restoration Task Team Watershed Restoration Prioritization Model.