

Chapter 14A

Section 3: Water Quantity, Fish Passage and Fish Screening

Reader's Guide to this Section

This section contains two major parts. The first part consists of an overview of the salmonid recovery issues related to water quantity, fish passage, and fish screening. This overview includes a discussion of institutional constraints and associated remedies. It also directs the reader to the corresponding measures. The second part of the section lists the specific factors for decline, the biological objectives, the specific objectives and the measures to meet these objectives. To assist the reader in identifying the measures, the actual measures are shown in *italics*. Any supporting or background information is presented beneath the measure in regular text. The numbering system of the measures parallels that of the March 10, 1997, Oregon Plan. For example, WRD 1 in the Oregon Plan and WRD S-1 in the Steelhead Supplement of the Oregon Plan both correspond to "Additional Public Interest Review to Protect Salmonids."

Some measures, such as WRD S-9, are broken into Phase 1 and Phase 2 tasks. The Phase 1 tasks will occur this budget biennium (1997 - 1999) and have funding and staffing. The Phase 2 tasks will occur after this biennium and require additional funding. Where neither Phase 1 or Phase 2 is explicitly listed, the reader should assume that the measure is a Phase 1 task which will occur this biennium with existing resources.

Issue Background

Statement of Issue

To restore native salmonid populations to productive and sustainable levels, Oregon's comprehensive management plan must include water quantity, fish passage and fish screening components. These three parameters of concern are the focus of this section. In order to meet salmonid life history needs, there must be sufficient water quantity, adequate fish passage at all human induced barriers, and adequate fish screening to keep salmonids out of water diversions. Studies show that reduced flows provide less habitat for fish and may result in increased aggression, competition, and predation. Reduced flows may also increase water temperature, exacerbate other water quality problems, and affect fish migration. Inadequate fish passage at human induced barriers can block salmonids from essential spawning and rearing grounds. Inadequate fish screening can result in stranding fish in irrigated fields.

The State of Oregon is responding to the challenge of protecting the critical habitat by effectively managing fish passage and screening in coastal basins, as well as protecting, maintaining and restoring streamflows. The driving force behind the proposed actions, and the ultimate goal of this effort, is the recovery of all salmonid populations.

Implementing Agencies

Six state and ten federal agencies have primary responsibility for working with landowners to ensure implementation of the laws, policies, and rules related to managing for water quantity, fish passage and fish screening. The state agencies are: Oregon Water Resources Department (WRD); Oregon Department of Fish and Wildlife (ODFW); Oregon Division of State Lands (DSL); Oregon State Police (OSP); Oregon Department of Environmental Quality (DEQ); and Oregon Department of Agriculture (ODA). The federal agencies are: Bonneville Power Administration (BPA); Bureau of Land Management (BLM); Bureau of Indian Affairs (BIA); Bureau of Reclamation (BOR); National Oceanic and Atmospheric Administration - National Marine Fisheries Service (NOAA-NMFS); National Oceanic and Atmospheric Administration - National Ocean Service (NOAA-NOS); Natural Resource Conservation Service (NRCS); U.S. Fish and Wildlife Service (USFWS); and U.S. Forest Service (USFS). As part of the increasing coordination and cooperation between state and federal agencies, federal measures have been integrated with state measures in the Steelhead Supplement. The federal measures are presented in an abbreviated form in this section. A more detailed description of the federal measures can be found in Chapter 17B.

Initiative Comprised of a Targeted, Regional Approach

The Oregon Plan emphasizes the need for incremental improvements in a prioritized, basin by basin manner, focusing on the role of flow, passage and screening to restore runs in particular areas. The plan lays out a strategy for addressing these three parameters in both a comprehensive and targeted manner to *1) maintain, and 2) restore salmonid habitat values*. Problem identification will occur on a regional basis, as will the development of appropriate remedies. Recognizing that no remedy will fit every location, the implementation of the Oregon Plan will rely on appropriate combinations of tools tailored specifically for each geographic area. The Oregon Plan addresses water quantity, fish passage and fish screening parameters that affect steelhead in the following Evolutionary Significant Units (ESU) (Attachment A):

- Southwest Washington
- Lower Columbia River
- Upper Willamette River
- Oregon Coast
- Klamath Mountains Province
- Middle Columbia River
- Snake River Basin

PARAMETERS OF CONCERN

- I. Quantity of Streamflows**
- II. Fish Passage**
- III. Salmonid Mortality**

I. QUANTITY OF STREAMFLOWS

1. Institutional Constraint: Historical water allocation decisions did not adequately address instream flow needs.

Oregon's water code is based on the Doctrine of Prior Appropriations which provides a structured, legal mechanism for the management of streamflows. The Doctrine, and thus Oregon's water laws, have historically emphasized protection of out-of-stream uses. Distribution of water to senior water rights has been the "historical driver" for how water is managed in Oregon. The growing recognition of the need to protect instream values such as fish and wildlife requires that creative, new approaches be crafted within the existing legal framework that already allows for changing consideration of the public interest values and critical instream needs.

Oregon law determines which water rights are legally entitled to water on the basis of priority date. In theory, the Doctrine is simple. In water-short times, the appropriator with the oldest—most "senior"—water right can demand the water specified under the right regardless of the needs of other users. If there is water in excess of the needs of this senior right holder, the person with the next oldest priority date can take as much as necessary to satisfy needs under that right, and so on down the line until all needs are met, or until no water is available. Junior water right holders are protected by laws that prohibit senior users from making changes in use that harm junior users. The primary responsibility for enforcing this water law resides with the WRD watermasters and their county assistants.

Instream water rights are an institutionally recent phenomenon. In 1955, state law for the first time authorized the establishment of "minimum perennial streamflows." These flow levels could be protected against junior consumptive rights, but were established by rule and did not carry the full weight of a water right. In 1987, the Oregon Legislature passed a law allowing the issuance of instream water rights. However given that in many streams, historically, much of the flow had already been fully allocated to out-of-stream uses for portions of the year, the legal authority to establish instream rights did not ensure that sufficient flow would be available to meet all instream purposes. This plan recommends implementation of a variety of actions targeted to key streams, to incrementally provide for streamflow enhancement. In summary, water has been allocated historically through highly structured means that focused for many years on satisfying only out-of-stream consumptive uses. Now, in times of increasing water shortages, the needs of fish and wildlife and the results of historic water management practices are more fully known. It is critical that while working within the existing legal framework, recovery efforts also work to accommodate the full range of beneficial uses, balancing both instream uses and values with out-of-stream, consumptive uses. There are many tools available to do this, each described in the following pages of this section.

B. Remedies to Institutional Constraints: Water Resources Department Programs and Policies

A growing number of mechanisms are being employed to protect the public interest as it relates to fish and wildlife, specifically. These mechanisms include the public interest review required at the time of issuance of new water rights, the development of new instream water rights, the use of tools such as voluntary instream leases and increased enforcement against illegal and wasteful water uses to add to instream flows, and cooperative efforts with ODFW and water right holders to find alternative methods to divert water which eliminate the presence of diversion dams instream.

1. STRATEGIES FOR MAINTAINING STREAMFLOWS

I. Maintaining Streamflows: Public Interest Review in Issuing New Water Rights

The Oregon Water Resources Department is the agency responsible for monitoring and regulating water use and promoting wise long-term water management. This responsibility includes the issuance of water rights for domestic, municipal, agricultural, industrial, and other out-of-stream uses; and since 1987 allows water rights for fishery, water quality, and recreational instream uses.

Before issuing a new water right, the application must undergo a thorough technical and public interest review. A positive technical review must show that (1) there is water available for a given month at least 80 percent of the time, including instream water rights and pending applications, (2) there are no statutory restrictions against the use, (3) the use conforms with all rules of WRD, and (4) the use will not impair or be detrimental to the public interest.

Public Interest Test

Determination of whether the proposed use will impair or be detrimental to the public interest is based at a minimum on the following factors found in OAR 690-310-120: (1) water use efficiency and the avoidance of waste; (2) sensitive, threatened, or endangered species; (3) water quality; (4) fish or wildlife; (5) recreation; (6) economic development; and (7) local comprehensive plans. Additional requirements to ensure that new water uses do not adversely affect fish are found in OAR Chapter 690, Division 33. These administrative rules further clarify the public interest test as related to sensitive, threatened, and endangered fish species. The rules require an additional public interest determination involving an interagency team composed of fish biologists and resource managers to ensure that habitat for sensitive, threatened and endangered fish species is protected as a prerequisite to issuance of water rights in identified areas.

Although the steelhead are not currently listed as sensitive, threatened, or endangered in all ESUs, an additional water right review is occurring in all steelhead areas since either the steelhead or other fish species are listed. While this may not be an ideal situation, the end result is that the water quantity restrictions which benefit one fish species, benefit other fish.

Corresponding Measures:

- Additional Public Interest Review to Protect Salmonids (WRD S-1)
- Water Right Transfer Review for Fish Concerns (WRD S-2)
- Coordinated Enforcement Plan (WRD S-7)
- Increased Compliance Monitoring (WRD S-8)

b. Maintaining Streamflows: Instream Water Rights

Beginning in 1958, the State of Oregon began protecting instream flows through the establishment of “minimum streamflows.” From 1958 to 1987 flows in 547 stream segments were given protection by setting “minimum streamflows.” Minimum streamflows were adopted by rule and managed similar to water rights. The date of adoption was considered to be the priority date.

Junior water users were regulated as necessary to maintain the minimum flows. Senior users were unaffected by adoption of or regulation for minimum streamflows. Then in 1987, the Oregon Legislature passed a law allowing the issuance of instream water rights (ISWRs). Like other water rights, these instream rights did not ensure that a certain quantity of water to be available in the stream, but rather assigned a priority date for instream flows, so that if the ISWRs were not being met, junior water rights would be regulated.

Out-of-stream and ISWRs are generally treated equally under Oregon law (first in time, first in right). One significant difference relates to the determination of water availability. In considering new applications for out-of-stream uses, WRD must first determine whether water is “available” for the new use: that is, whether the stream flows in question have already been allocated to other uses. If water is not available, the application is denied. However, ISWRs can be issued for up to the estimated average natural flow of the stream even if this flow is not currently present. Higher flows may be approved for ISWRs if there is a documented reason, such as a fish passage barrier below a certain flow level. This approach allows the state to take a first step toward future restoration of needed instream flows without disadvantaging senior stream rights. The law also directed WRD to convert the existing minimum streamflows into instream water rights.

In order to apply for ISWRs, ODFW must identify the flows which fish species need in their life history. When ODFW applies for an ISWR, it applies for that flow necessary to maintain, restore or enhance specified fish needs.

ISWRs provide an effective way of protecting instream flows which are vital to maintaining and enhancing salmonid habitat. However, ISWRs are a relatively new concept in the century old system of prior appropriations. As a result, most ISWRs are junior in priority to out-of-stream water rights. As of June 1997, 1,332 ISWRs exist statewide. These ISWRs are designed to conserve, maintain, and enhance aquatic and fish life (ORS 537.336). Since ISWRs are generally based upon the average natural flow levels of a stream rather than existing flows (subject to prior withdrawals), they frequently appropriate all of the remaining water in a stream and thus prevent additional out-of-stream uses of water. Several measures have been developed to enhance the effectiveness of ISWRs in maintaining and restoring flows.

Corresponding Measures:

- Coordinated Monthly Field Meetings (WRD S-3)
- Apply for Additional Instream Water Rights (ODFW IVA3)
- Issuance of Instream Water Rights (WRD S-4)
- Identify Unmet Instream Flow Needs (WRD S-6)
- Identify Instream Flow Priorities (ODFW IVA8)
- Instream Transfers and Leases (WRD S-15 and ODFW IVB5)

2. STRATEGIES FOR RESTORING STREAMFLOWS

The Oregon Plan has a three-fold approach to incrementally add to existing flows over time on a prioritized basis. The approach is comprised of the following interlocking elements: 1) distribution and enforcement, 2) data collection and inventory, and 3) tools and incentives.

a. Restoring Streamflows: Distribution and Enforcement

It is a priority of WRD to distribute water based on the priority dates of the rights of record and to protect water rights from encroachment by illegal water uses. Under state law, when there is insufficient water for all rights, water is distributed to the most senior rights, without regard to the nature of the use, instream or out-of-stream. Illegal water use may be any one of the following: a) use of water without a water right or other water use authorization; b) use of water in excess of or contrary to the terms and conditions of a water right; and c) continued use of water after use has been denied by WRD to satisfy more senior rights. By closely monitoring streamflows, WRD is able to better ensure that water which is available to satisfy instream water rights remains instream. Reducing and eliminating illegal water use increases streamflows and allows other water rights users to benefit from the flows. Since most ISWRs are junior in priority to older out-of-stream uses, elimination of illegal water uses may increase streamflows so that the ISWR needs can be more fully met, thereby benefiting salmonids.

Distribution and enforcement is initiated either by the watermaster conducting an investigation, on a complaint basis or when other information indicating that water rights are not being met or water is being used illegally. The watermasters and ODFW district biologists keep in close contact, and have set priorities for monitoring and enforcing ISWRs. WRD and ODFW are continuing to review these priorities and evaluating methods to ensure that water is distributed according to the priority dates of the water rights. Knowing where all the diversions are aids a watermaster to distribute water based on the rights of record. Oregon's watermasters and district biologists are regionally based and have extensive knowledge of the factors affecting streamflows in their districts. Historically, regulation and distribution activities have been prioritized because staff resources are insufficient to provide complete regulation of rights on all streams.

Due to the fact that an infrastructure for enforcing water rights already exists, it is relatively easy for WRD to increase activities to distribute water and monitor compliance when additional resources become available and as existing resources are reprioritized. A reprioritization of resources occurred in 1996, when WRD opened two additional coastal offices and re-oriented the primary focus of watermaster activities from the Willamette Valley to the coast. Additional field personnel to monitor streamflows and water use were included in the 1997-99 budget.

WRD has a strong regulatory role throughout the state. In addition to, and as part of their regulatory function, watermasters monitor streamflows. Not only does this create the base informational data layer to determine the flows that are present, but it is also critical for shepherding water past junior water users to senior users—of both instream and out-of-stream rights.

Corresponding Measures:

- Coordinated Enforcement Plan (WRD S-7)
- Increased Distribution and Enforcement (WRD S-8)
- Compliance Rate Monitoring (WRD S-25)

b. Restoring Streamflows: Data Collection and Inventory

Data collection and inventory are key prerequisites for prioritizing streamflow activities and developing a baseline for compliance monitoring. In order to effectively monitor compliance of water rights, and in particular ISWRs, streamflow monitoring are needed. The simplest monitoring site may be a staff gage placed in the stream, while more complicated monitoring sites may involve weirs and permanent gaging stations with recorders and telemetry giving instantaneous water depth measurements (stage). Since rivers and streams meander and change courses, and because of other natural factors such as ice, debris, and new beaver dams, frequent flow measurements must be made to ensure that a river stage accurately correlates to the amount of water in the stream. Stream flow measurements must be made every 4-6 weeks and require 1-2 hours of time to complete.

In order for watermasters to effectively and efficiently practice compliance monitoring that will result in increased streamflows for salmonids, they need to know where all the diversion points are located. Information collected during the inventory effort will include identification of push-up dams, unscreened diversions, sites where diversions could be moved to hydrologically connected ground water and uses not covered by existing water rights. This will be used to: work cooperatively with water users in finding methods to divert water that will produce less impact on fish; work with owners of unauthorized diversions to find alternative sources of water; eliminate illegal uses, and work with users to cooperatively increase efficiencies.

Corresponding Measures:

- Identify Unmet Instream Flow Needs (WRD S-6)
- Identify Instream Flow Priorities (ODFW IVA8)
- Installation of Monitoring Stations (WRD S-9)
- Inventory Water Diversions (WRD S-10)
- Inventory Water Diversions (ODFW IB5)
- Dissemination of Streamflow Data (WRD S-11)

c. Restoring Streamflows: Tools and Incentives

Following is a discussion of numerous measures that will provide for incremental additions of streamflows to meet state restoration flow objectives.

Improving Efficiency and Prohibiting Waste

A fundamental principle in Oregon water law authorizes water right holders to the beneficial use of water without waste. Inherent to this concept is that reasonably efficient water uses must be utilized in order to avoid wasteful practices. Yet, the line between efficiency and waste is difficult to ascertain.

Understanding the interconnection between efficiency and waste is critical to developing useful tools for restoring streamflows. Increasing water use efficiencies and eliminating wasteful water use practices can provide an effective tool to help to restore streamflows by reducing the total amount of water diverted from streams and by protecting the water realized as instream flows. While many water use practices may be “inefficient” when compared to state-of-the-art technologies, that does not mean they are subject to regulation for “waste.” Yet, such outdated practices could be voluntarily improved with conservation measures to the benefit of both the water user and public.

It is also true that certain water use practices may be so inefficient when compared to the norm of reasonable practices within a region that they constitute “waste.” Historically, WRD has taken enforcement action against only the most obvious wasteful practices—such as sprinklers spraying roads instead of fields, or excessive tail water at the end of ditches or canals.

Moving beyond this point will require that the Department conduct a process that formally identifies water use practices that do not meet a basic test of reasonable efficiency under the particular circumstances of use within a given region. The process outlined in this measure will attempt to do so by first promoting voluntary conservation measures to improve efficiency, and later by identifying standards to regulate against waste.

In order to promote efforts to improve water use efficiency and eliminate wasteful water use practices, interdisciplinary working groups will be formed in basins identified by ODFW and WRD as key to needing streamflow improvements to help recover salmonids. Varying agricultural practices and regional conditions necessitate that this effort be undertaken collaboratively, on a local, basin-oriented basis. As a first step, these working groups will develop goals and model practices for promoting increased efficiency and conservation in water uses. Next, the working groups will develop standards for identifying highly inefficient water use practices which constitute waste, and which shall be used as a basis for regulatory action by WRD.

Corresponding Measure:

- Improving Efficiency and Prohibiting Waste (WRD S-12)

Agricultural Water Conservation Program

Irrigation districts proposing to transfer certain water rights within the district are required to prepare these conservation plans. The Agricultural Water Conservation Program rules (OAR Chapter 690, Division 86) prescribe the standards for preparation of the plans. Any agricultural water supplier participating in the water transfer provisions is also required to submit an annual report describing the progress to date in implementing the water management and conservation plan. Under the rules, districts are required to evaluate a range of water conservation alternatives and to schedule implementation of any alternatives which are determined to be feasible.

Many irrigation districts are also required to prepare conservation plans under federal law. The Water Resources Department has a cooperative program with the U.S. Bureau of Reclamation to assist districts in the preparation of plans and to encourage the implementation of conservation projects that increase streamflows.

Corresponding Measure:

- Agricultural Water Conservation Program (WRD S-13)

Municipal Water Management Program

Municipal water conservation is an evolving way to help meet future water demands and is being increasingly recognized by community water suppliers as an important tool. Municipal water suppliers are encouraged to prepare water management plans, (OAR Chapter 690, Division 86), but are not required to do so unless a plan is prescribed by a condition of a water use permit. Municipal water conservation plans involve a comprehensive study of water supply, water demand, and demand management. The goal of this program is to promote water savings as a viable *source* of water that can be counted on to help meet future demands.

Plans are typically due within one year of permit issuance. Absent a permit requirement, but where community actions could have significant effect upon streamflow, WRD makes it a high priority to assist communities in plan preparation. Water management plan rules require communities to consider environmental, as well as economic costs when considering new water supplies. This has resulted in a greater understanding of environmental issues and a broadening of water supply options. Importantly, it also results in greater protection for salmonids, as dependence upon instream flow is reduced.

WRD rules require that communities evaluate, on equal footing, demand-side measures (water conservation) along with supply-side means. This has resulted in communities reducing their reliance upon instream flows or not seeking additional appropriative water rights.

Corresponding Measure:

- Municipal Water Management Program (WRD S-14)

Instream Transfers and Leases

Instream water rights provide an effective way of protecting instream flows that are vital to maintaining and enhancing salmonid habitat. However, instream water rights are a relatively new

concept in the century old system of prior appropriations. As a result, most instream water rights are junior in priority to out-of-stream water rights, and often are not fully met. However, there are opportunities in Oregon to restore and protect instream flows by transferring or leasing senior, out-of-stream rights. In 1987, Oregon passed legislation (ORS 537.348) allowing any person to purchase, lease, or receive as a gift any existing water right or portion thereof for conversion to an instream water right.

Water rights may be changed to instream rights through a lease agreement, a temporary transfer or a permanent transfer. A lease agreement may be up to two years long, and may be renewed. Temporary transfers are for a specified period of time, not to exceed five years. At the end of the specified period, the water right reverts to the original use, just as it would under a lease after the term is up. Temporary transfers to instream use are accomplished by going through the formal transfer application process, whereas leases undergo a more limited public review.

WRD and ODFW are working in partnership with interested entities to facilitate opportunities to protect and enhance instream flows by transferring and leasing senior, out-of-stream rights. One such group is the Oregon Water Trust, a private nonprofit organization formed in 1993. The Trust takes a free-market approach to restoring and protecting critical stream habitat for fish and wildlife, and works with water right holders who are willing to sell, lease, or gift all or a portion of their water right for instream flows. The Trust works with ODFW to identify critical streams where salmonids would benefit the most from increased flows. WRD provides assistance to the Trust in processing water right transfers and leases by giving these applications priority over pending transfers. WRD has also worked with the Trust to streamline the leasing process.

Instream transfers and leases provide a method for the State to incrementally increase streamflows by working cooperatively with water right holders. Transfers and leases also provide the opportunity to strategically address flow problems on specific stream reaches. Existing water rights can be acquired on a voluntary basis and converted to instream water rights on stream reaches that are in need of additional flows for salmonid restoration.

Corresponding Measure:

- Instream Transfers and Leases (WRD S-15 and ODFW IVB5)

Water Right Forfeiture

Under state law, most water rights not used for five consecutive years are presumed to be forfeited. If through legal processes, it is demonstrated that the water rights were unused, then they will be canceled and removed from the books. Cancellation of these unused rights, particularly those which have been unused for a long period of time, frequently will not result in increased streamflows. However, cancellation can help ensure that use under forfeited rights does not resume improperly. WRD will first seek to cancel water rights in key habitat areas that have been unused for five years. WRD will also work with water right holders wishing to retain current water rights that are at risk of forfeiture for non-use by facilitating lease agreements for instream flows.

Corresponding Measures:

- Instream Transfers and Leases (WRD S-15)
- Water Right Forfeiture (WRD S-16)

Public Outreach and Information

Effective public outreach and information are critical to the success of all of the actions and measures outlined in this restoration plan. In order to bring about long-term change in water use, the public must have accessible information. WRD realizes that many of the programs that protect or restore streamflows and address fish passage and screening rely on a strong commitment to educating water users. WRD conducts this on-the-ground education through a network of field and regional staff with central office coordination. These staff work directly with water users to inform them of alternatives that can help restore salmonid habitat. Educational objectives are pursued through literature, on-line information, speaking engagements, and personal contact with landowners, water users, local officials and the public.

Corresponding Measure:

- Public Outreach and Information (WRD S-17)

Ground Water Studies

Ground water studies aid in defining where the potential for hydrologic connection between ground water and surface water exists. Studies can help identify whether and whether how new ground water uses will affect surface water flows, and subsequently salmonids.

Under existing rules for ground water use, if a well develops water from an unconfined aquifer within 1/4 mile of a surface water source, the well is presumed to be hydrologically connected to surface water flows (OAR Chapter 690, Division 09). The use is then conditioned to ensure protection of the surface water. Other ground water applications are reviewed by WRD hydrogeologists to determine if the proposed withdrawal is likely to impact surface water.

Proposed ground water studies will provide WRD ground water staff and the salmonid recovery effort with a working knowledge of priority area ground water/surface water interaction. This knowledge base will be a technical resource for decisions concerning ground water withdrawals as they relate to streamflow. Study results may be used to influence allocation decisions where hydrologic connections have been proven to cause injury to instream flows resulting in negative impacts on salmonids.

Corresponding Measure:

- Ground Water Studies (WRD S-18)

Off-Stream Storage

In 1992, The Water Resources Commission adopted a statewide policy (OAR 690-410-080) to encourage the development of environmentally acceptable storage projects. Off-stream storage projects, built in swales, and other areas where a natural water body does not exist, provide an opportunity for multi-purpose storage projects that can include an instream flow restoration

component. All new permit applications for storage projects, whether large or small, are subject to interagency review under existing Department rules (OAR 690-310 and 690-33).

Corresponding Measure:

- Off-Stream Storage (WRD S-19)

Reservations

In 1987, under legislation allowing the establishment of instream water rights, the Water Resources Commission was authorized to establish “reservations” of water for future economic development purposes (ORS 537.249 and 537.356). These reservations provided a mechanism to allocate water to meet future needs while encouraging sound water supply planning and management. Reservations are for a limited time period, usually 20 years, and may be renewed by the WRC. Once water is reserved, it may only be used when a water right is obtained following the standard public interest review processes (OAR 690 Divisions 310 and 33). Until a water right is applied for and approved, reservations prevent the reserved water from being diverted.

In 1997, the Oregon Legislature passed House Bill 3523 which clarified that reservations of water for future economic development are established through administrative rulemaking and allows for a local government, local watershed council or state agency to file a request for a reservation. House Bill 3523 also limited the reservation of water to multi-purpose storage. This ensures that water is available for future storage projects designed to supply a variety of needs including instream flow.

Reservation requests have been applied for in the Willamette, Deschutes, Hood, John Day, Umatilla, Grande Ronde, Powder, Malheur, and Owyhee Basins as well as on the mainstem Columbia/Snake Rivers.

Corresponding Measure:

- Reservations (WRD S-26)

Water Measurement and Management

The Commission is authorized under state law to require water users to install and maintain headgates and measuring devices on ditches, canals and reservoirs as necessary to allow watermasters to perform distribution according to the water rights of record (ORS 540.310 and .330).

In addition, under certain circumstances, the Water Resources Commission has the authority to require water users in designated areas to measure and report annual water use through the establishment of Serious Water Management Problem Areas. Under the designation, measurement and reporting can be required for the use of water under all water rights, even if this was not a condition of the original water right (which is the case of most water rights certificated prior to the 1980s) (ORS 540.435, OAR 690-85-020).

While measurement and reporting do not directly require a reduction in water use, the experience of WRD in working with water users indicates that measurement and reporting does increase water users' understanding about the way they use water. This may lead to water being used more efficiently, resulting in increased instream flows for salmonids. It would also increase the knowledge of how water is used in the subbasin in conjunction with ground water studies of the hydrologic connection between ground and surface water supplies. This can help ensure effective compliance monitoring resulting in increased instream flows for salmonids.

Corresponding Measures:

- Increased Distribution and Enforcement (WRD S-8)
- Serious Water Management Problem Areas (WRD S-20)

Peak Flow Protection

Annual and semi-annual peak flows are important to salmonids for access to and from winter spawning grounds and for triggering biological responses. These peak flows may also wash out fine sediments, thereby preventing holding pools from being filled in. There is a concern that storage projects may capture all of the peak flows and prevent salmonids from accessing spawning grounds. This concern will be addressed by conditioning storage projects to ensure the protection of peak flows needed for fish.

Corresponding Measure:

- Peak Flow Protection (WRD 21)

II. FISH PASSAGE

A. Scope of Problem

Movement of fish throughout a watershed is necessary for a number of life history needs. Upstream and downstream migration of juveniles during low summer flow is often needed to avoid warm water temperatures. During winter, juveniles may move upstream or into side tributaries to escape flood flows. The Botkin Report identified "impediment construction" as a major factor leading to the decline of salmonids in western Oregon. The National Research Council Report also concludes that migration barriers have substantially impacted fish populations.

The primary fish passage problems relating to water diversions are caused by "push-up" dams in the Rogue, South Coast, and John Day Basins. Push-up dams are not a primary means of diverting water in the North and Mid Coast Basins, the Willamette, Sandy, Deschutes, or Umatilla. In the Grande Ronde, push-up dams are commonly used, but most fish passage problems associated with push-up dams have been resolved, or are in the process of being resolved.

Push-up dams are seasonal structures used to divert water. They are usually made from gravel or other locally available material. Push-up dams can be critical migration barriers during late summer and early fall low flows.

B. Institutional Background

Existing state laws (ORS 498.268 and 509.605) require that fish passage be provided and maintained on all stream crossing and instream structures. Diversion or push-up dams and reservoirs have been identified to potentially disrupt fish passage.

Although no single agency has the authority to regulate all push-up dams, in 1996, the State developed a cooperative, voluntary approach to enforcement of push-up dams with a pilot program in the Illinois Basin, the area of greatest concern. The primary state partner agencies were DSL, ODFW, WRD, and OSP. These agencies worked cooperatively with private landowners, local groups, and other state and federal agencies to promote voluntary compliance with fish passage requirements. The rapport and trust developed and the key involvement of the Illinois Valley Watershed Council and Soil and Water Conservation District made a potentially volatile initiative into a successful program. In 1997, efforts continued in the Illinois Basin to seek voluntary compliance whenever possible. Enforcement actions were initialized, when necessary, to ensure fish protection. The program also expanded to the Little Butte Creek, Williams Creek, and Applegate basins during the summer of 1997.

C. Remedies to Fish Passage Problems

1. MAINTAINING EXISTING FISH PASSAGE: PUBLIC INTEREST REVIEW IN ISSUING NEW WATER RIGHTS

WRD works cooperatively with ODFW to ensure that any new water diversions do not create a fish passage barrier. To ensure that any new water right permit which occurs in a fish habitat area maintains existing fish passage, WRD sends ODFW information on every new water right application. WRD includes fish passage conditions on all permits where requested by ODFW. Additionally, an interagency team reviews and requires barrier-free fish passage to the specifications requested by ODFW, as part of the Division 33 review process.

Corresponding Measure:

- Public Interest Review to Protect Salmonids (WRD S-1)

Replacement of Diversion Dams

Push-up dams, whether temporary or permanent, can prevent fish passage, as well as cause localized water quality or habitat problems. Since fish migrate on a seasonal basis, not all diversion dams are fish passage barriers at all times of the year. The fish passage problems may be easily corrected, such as rupturing the dam during the end of the irrigation season to allow fish migration, or it may require a change in the way water is diverted. One alternative is development of an infiltration gallery and elimination of the need for a diversion point altogether. Regulating diversion dams has been a difficult problem since no single agency has exclusive jurisdiction.

Corresponding Measures:

- Modification or Replacement of Diversion Dams which Interfere with Fish Passage (WRD S-22 and DSL 11)
- Cooperative Removal of Barriers (ODFW IVC1)

2. REQUIRE FISH PASSAGE ON PONDS

In 1995, the Oregon Legislature passed House Bill 2153 which exempted some existing ponds from permitting requirements. Once an exemption is granted, a dam is free from permitting requirements and from regulation by WRD--so long as the storage and use do not increase over the pre-January 1, 1995, amounts. The law was enacted out of recognition that many small, existing ponds throughout the state have historically been unpermitted.

To be exempt the pond owner must have filed a registration by January 31, 1997, the pond must have existed before January 1, 1995, store less than 9.2 acre-feet of water or have a dam less than 10 feet high, and the impoundment must not harm existing water users or fish. ODFW had until August 1, 1997, to provide information to WRD on any impoundments potentially causing detrimental impact to existing fishery resources. Where ODFW has provided this information, WRD will work with ODFW and the applicant, and will require mitigation where necessary and in accordance with the statute.

Corresponding Measure:

- Require Fish Passage on Ponds (WRD S-23)

III. SALMONID MORTALITY

A. Institutional Background

The Water Resources Department requires fish screening on all new diversions that occur in areas where fish are present. Existing diversions are dealt with in different ways depending upon the size of the diversions. State law requires fish screening on water diversions greater than 30 cubic feet per second (cfs), and a cost share program exists to fund screening on diversions less than 30 cfs.

B. Scope of Problem

Juvenile (and some adult) salmonids are often killed by contact with unscreened water intake or diversion structures because they lack the swimming ability necessary to avoid entrainment, mechanical damage or subsequent dislocation from the aquatic environment. Another means of direct mortality is the elimination of spawning or rearing areas caused by the inundation of a reservoir.

The National Research Council Report indicates that unscreened water diversions constitute a potential migration blockage if downstream migrating juvenile salmonids are entrained in diverted water. They report that Nichols (1990) identified 1,300 unscreened water diversions on coastal

rivers that potentially affected salmonid-rearing streams. The Botkin Report concluded that irrigation diversions could be a potentially important factor contributing to the decline of salmonids.

C. Remedies for Unscreened Diversions

1. REQUIRING FISH SCREENING ON NEW DIVERSIONS: PUBLIC INTEREST REVIEW IN ISSUING NEW WATER RIGHTS

WRD works cooperatively with ODFW to ensure that all new water diversions which occur in fish habitat areas have adequate fish screening. To accomplish this, an interagency team reviews and requires fish screening to the specifications requested by ODFW, as part of the "Division 33" application review process.

Corresponding Measure:

- Public Interest Review to Protect Salmonids (WRD S-1)

1. Screening of Diversions

ODFW has an existing fish screening program to address diversions less than 30 cfs, is providing technical assistance to water diverters, and is working with OSP to ensure enforcement of state law which requires screening on diversions greater than 30 cfs.

Water Development Loan Fund

The Water Development Loan Fund provides an affordable funding alternative for individual and public entities developing fish protection and watershed enhancement projects in Oregon.

The Oregon Water Resources Department administers the Water Development Loan Fund which offers low-interest loans for qualifying water-related projects in Oregon (OAR Chapter 690, Division 90). Eligible applicants include individual Oregon residents, soil and water conservation districts, irrigation districts, cities, counties and others. Funds to finance water development loans are obtained through the issuance and sale of self-liquidating bonds. The bonds are repaid by participants in the program.

The loan program offers loans for fish protection and watershed enhancement projects, as well as community water supply, irrigation and drainage projects. Fish protection projects include installation of fish screening or by-pass devices, fishways, passage, and all other structures and facilities necessary or convenient for providing fish protection. Watershed enhancement projects include methods and materials to restore, maintain and enhance the biological, chemical and physical integrity of the riparian zones and associated uplands of the state's river, lake and estuary systems.

Corresponding Measures:

- Inventory Water Diversions (ODFW IB5)
- Screen Diversions Less than 30 cfs (ODFW IVC2)
- Watershed Health Funds for South Coast Fish Screening Needs (ODFW IVC3)
- Screening of Water Diversions Greater than 30 cfs (ODFW IVC4)
- Water Development Loan Fund (WRD S-27)

D. Remedies Against Direct Habitat Loss

Instream reservoir releases can increase streamflows and improve salmonid habitat during critical low flow periods. Small impoundments can also provide valuable overwinter habitat, if fish passage is provided. However reservoirs can also cause the destruction of salmonid habitat by the inundation of spawning and rearing grounds. Although this sort of habitat loss is generally associated with large storage projects, small projects can also have a cumulative effect on the loss of habitat. To address these concerns, WRD has developed a storage policy (OAR 690-410-080) and an interagency review of all proposed storage projects (OAR Chapter 690, Division 33), to ensure that new storage projects are in the public interest and are environmentally appropriate.

Corresponding Measure:

- Protection Against Direct Habitat Loss (WRD S-24)

1. TIE TO MONITORING STRATEGY

1. Measuring Progress of the Oregon Plan through the Monitoring Program

Effective monitoring is essential to determine the success of measure designed to restore salmonid population. Three types of monitoring have been identified: implementation monitoring, compliance rate monitoring, and a comprehensive long-term monitoring strategy.

b. Implementation Monitoring

The purpose of implementation monitoring is to track the accountability of agencies in following through on proposed actions. Some actions, such as opening new coastal offices have already been completed. Other actions are not yet completed, or in the case of staffing the new coastal offices, are ongoing tasks. The accountability for these actions is identified in the agency workplans.

Compliance Rate Monitoring

Compliance rate monitoring examines the percent of water users who are using water in accordance with the law. WRD does not currently measure the extent of compliance with state water law, rather the Department monitors the number of regulatory contacts which field staff have with water users. Beginning with the 1998 field season, this will change so that when taking a regulatory action, each watermaster will assess whether the use of water is in substantial compliance with water law.

Corresponding Measure:

- Compliance Rate Monitoring (WRD S-25)

Comprehensive Monitoring Strategy

In the comprehensive monitoring strategy, the State will monitor to see that the factors for decline are being halted and reversed, and that the State's comprehensive recovery strategy is producing the desired biological results. An Independent Multidisciplinary Scientific Team (IMST) has been established to serve as an independent scientific peer review panel to oversee the implementation of the Oregon Plan. The IMST and Oregon Plan Monitoring Team will track research needs, the overall accountability of the plan, and will measure changes in salmonid populations and in the environmental conditions necessary to support salmonid populations. An adaptive management approach will be used to allow for responding to new information, and setting priorities.

Although, the overall monitoring strategy is evolving, the cooperative approach to data-sharing and standardization of data formats has been put in place. For instance, streamflow monitoring protocols are being developed to ensure a specified accuracy level, which while being cost-effective will produce the necessary data to see if streamflow levels are increasing. A more detailed description of Oregon's comprehensive monitoring strategy can be found in the Oregon Plan Coordinated Monitoring Program, Chapter 15B and 15C.

1. FACTOR FOR DECLINE: Inadequate streamflows to complete salmonid life history

Upstream migration of adult salmonids can be prevented by shallow water resulting from inadequate streamflow. As flow increases, more gravel is covered and becomes suitable for spawning. Flows required for incubation are generally assumed to be similar to those needed for spawning. Streamflows affect juvenile rearing by altering food production, cover, and availability of microhabitat. Decreased flows decrease the amount of available habitat. Seaward migration of smolts is triggered by the occurrence of flows suitable for downstream passage.

A. BIOLOGICAL OBJECTIVE: To protect and maintain the existing streamflows in areas providing significant salmonid habitat value.

Objective IA-1: Ensure that the issuance of additional out-of-stream water rights will not adversely affect streamflows that provide significant salmonid habitat value.

*MEASURE: WRD S-1 (also involves ODFW, DEQ, ODA)
PUBLIC INTEREST REVIEW TO PROTECT SALMONIDS*

All applications for new uses of water must undergo a public interest review by the Water Resources Department as described in OAR 690-310-120. This public interest review shall at a minimum consider "a) water use efficiency and the avoidance of waste; b) threatened, endangered or sensitive species; c) water quality, with special attention to sources either listed

as water quality limited or for which total maximum daily loads have been set under section 303 (d) of the federal Clean Water Act and sources which the Environmental Quality Commission has classified as outstanding resource waters as defined in OAR 340-41-006(42); d) fish or wildlife; e) recreation; f) economic development; and g) local comprehensive plans, including supporting provisions such as public facilities plans.”

In May 1997, WRD began providing the ODFW District Offices with the WRD initial review and the water right application map for all surface water applications, hydraulically connected ground water applications, and reservoir applications. To ensure that WRD receives adequate information on how a proposed use could affect fish, the ODFW District Offices have been provided with a standard form to indicate if an application would negatively impact fish and if so, how the application could be conditioned, or if it should be denied. This is similar to the form used for the OAR Chapter 690, Division 33 rules which are described below.

Based on the information provided by ODFW, and others, WRD will determine if a proposed water use would be detrimental to steelhead. If so, the public interest determination will weigh the overriding public policy concerns in restoring the fishery as part of the public interest test mandated by ORS 537.170(8), and will deny or condition the proposed use so that steelhead are not negatively impacted.

The Water Resources Commission has adopted a series of three rules in Division 33 to ensure that new water right applications, if granted, would not negatively impact the habitat of sensitive, threatened or endangered fish. The Upper Columbia rules apply to all applications in the Columbia and Snake Rivers and tributaries above Bonneville Dam which could affect the habitat of threatened or endangered fish. The Lower Columbia rules apply to all applications in the Columbia River and its tributaries below Bonneville Dam which could affect the habitat of threatened or endangered fish. The Statewide rules apply to all threatened or endangered fish habitat outside the Columbia Basin and all state listed “sensitive” fish habitat.

Although there are differences in how the rules are implemented, all rules protect the habitat of fish and follow the ODFW Fish and Wildlife Habitat Mitigation Goals and Standards, OAR Chapter 635, Division 415, Section 030 with respect to “no loss of essential habitat” for threatened or endangered fish species and “no net loss of essential habitat” for sensitive fish species. The rules also require barrier-free fish passage and fish screening where fish are present, to the specifications requested by ODFW.

The Division 33 rules (Attachment B) clarify and expand the public interest review of new water use applications for fish species listed as sensitive, threatened or endangered. An interagency team composed of ODFW district biologists, WRD watermasters, and staff from the headquarters offices of ODFW, WRD, DEQ and ODA reviews and comments on all applications which could affect sensitive, threatened or endangered fish species habitat. Attachment C is an interagency MOU which describes how this process works, and Attachment D is the map referred to in the MOU.

Lower Columbia River (Hood Basin part), Middle Columbia River, & Snake River Basin ESUs

The Upper Columbia rules were adopted by the Water Resources Commission in September 1994. All applications for permits in the Upper Columbia Basin are affected by these rules. The rules protect mainstem Columbia and Snake River flows, since the Snake River Sockeye, Fall Chinook, Spring/Summer Chinook, and Steelhead are listed under the federal Endangered Species Act.

All applications which could affect the habitat of sensitive fish will undergo a review by an interagency team for adverse impacts to fish habitat. The purpose of this review is to grant the application with appropriate conditions that protect the habitat of sensitive fish species, or deny the application when that is not possible.

Southwest Washington, Lower Columbia River (Excluding the Hood Basin), & Upper Willamette River ESUs

The Lower Columbia rules were adopted by the Water Resources Commission in June 1995. All applications in the Lower Columbia Basin are affected by these rules. In addition to the mitigation and fish screening and passage standards which apply to all Division 33 applications, applications in the Lower Columbia are conditioned to meet water quality standards.

All applications which could affect the habitat of sensitive fish must undergo a review by an interagency team for adverse impacts to fish habitat. The purpose of this review is to grant the application with appropriate conditions that protect the habitat of sensitive fish species, or deny the application when that is not possible.

Oregon Coast & Klamath Mountains Province ESUs

The Statewide rules were adopted by the Water Resources Commission in June 1996. All applications for new water rights in the coastal basins must undergo a review by an interagency team for adverse impacts to fish habitat. The purpose of this review is to grant the application with appropriate conditions that protect the habitat of sensitive, threatened, and endangered fish species, or deny the application when that is not possible.

Implementation of the Division 33 rules is an ongoing action that is funded in the base level budget of ODFW, WRD, DEQ, and ODA.

Adequacy of measures to meet objective

Prior to the late 1980s, water rights were issued which allowed the diversion and use of water for an entire year, or irrigation season, and were primarily restricted by basin programs or statutory withdrawals. Since then a water availability model has been developed. The model is used by WRD to limit the issuance of new water rights to only those months when water is available to meet all existing rights, including ISWRs. In many coastal areas and most of Eastern Oregon,

water availability limits the issuance of new rights to the non-summer months, and sometimes to only the winter months. Additionally, a special public interest review conducted by an interagency team, which includes ODFW district biologists, has been formalized by rule to ensure that any new water rights granted are appropriately conditioned to protect sensitive, threatened, or endangered fish habitat.

Objective IA-2: Ensure that water right transfers do not adversely affect streamflows that support significant salmonid habitat value.

*MEASURE: WRD S-2 (also involves ODFW)
WATER RIGHT TRANSFER REVIEW FOR FISH CONCERNS*

Since April 1997, WRD has been soliciting input from ODFW district biologists on all transfers to ensure that instream rights are being protected and to determine, consistent with ORS 540.525, if fish screen or bypass facilities are needed.

By February 1, 1998, WRD and ODFW will formalize the process for soliciting input from local fish biologists.

All new water right applications must undergo a public interest review. An additional review for injury to existing water rights is required for transfers which are changing the point of diversion or use of the original right. By directly soliciting input from ODFW district biologists (see Measure ODFW IVA1), the State protects instream and fishery values by ensuring that no water right transfers will adversely impact instream water rights. WRD will also ensure conditions are placed on transfer orders requiring that new points of diversion will be appropriately screened.

Adequacy of measures to meet objective

ODFW district biologists are commenting on water right transfers, to ensure that instream water rights will not be injured by the transfer of a consumptive water right. Unscreened diversion structures will also be replaced by appropriately screened structures at new points of diversion, if requested by ODFW. This provides the fullest protection possible under law.

Objective IA-3: Ensure that existing ISWRs are fulfilled in accord with priority date of issuance.

*MEASURE: WRD S-3 (also involves ODFW, OSP)
COORDINATED AGENCY FIELD MEETINGS*

Southwest Washington, Lower Columbia River, Upper Willamette River, Middle Columbia River & Snake River Basin ESUs

By February 1998, region managers will initiate or participate in regularly scheduled coordination meetings with staff from ODFW, OSP and other involved natural resource agencies to coordinate data collection, compliance monitoring, and ongoing status of local factors directly bearing on steelhead habitat. The frequency of meetings will be set based on need, but once established will occur on a fixed schedule.

Oregon Coast & Klamath Mountains Province ESUs

Beginning in April 1997, WRD, ODFW, and OSP field personnel began regularly scheduled meetings to coordinate data collection, compliance monitoring, and ongoing status of local factors directly bearing on fish habitat concerns.

Adequacy of measures to meet objective

By developing a prioritization for enforcing ISWRs and holding regular meetings to ensure that the prioritization is meeting fishery needs, ISWRs are ensured to be fulfilled in accord with the priority date of issuance.

Note: Also see Measure WRD S-8 under Biological Objective IB-2.

Objective IA-4: Establish ISWRs on streams, rivers, and lakes that can provide significant salmonid habitat values in order to protect existing streamflow amounts.

*MEASURE: ODFW IVA3 (also involves WRD)
APPLY FOR ADDITIONAL INSTREAM WATER RIGHTS*

Obtain funding and staff necessary to collect flow requirement information and prepare applications for new ISWRs. By May 31, 1998, ODFW will submit a budget request for funding and staff necessary to collect flow requirement information and prepare applications for new ISWRs during the 1997-99 biennium. ODFW will also seek federal funds for this purpose. Increased staff requested in other actions may also be used to increase survey activity to identify instream flow needs and monitor or spot-check for compliance with ISWRs in priority areas for steelhead and other salmonids, and work with partners to increase flow protection.

By March 1, 1999, ODFW will prepare and submit applications for new ISWRs where existing data on flow requirements of fish are available, or where flows of existing ISWRs are not adequate to protect fish resources. By March 1, 1999, ODFW will prepare a plan for collecting data on streams that do not have existing information on flow requirements and submitting

applications for new ISWRs. The plan will be based on priorities established under ODFW IVA8.

ODFW may have existing data for flow recommendations on stream reaches for which it has not yet applied for an ISWR. The ISWRs for which ODFW has applied for to date were selected as high and medium priority reaches prior to recent declines in salmonid populations and the Oregon Plan. The plan ODFW will develop for obtaining streamflow requirements for key area stream reaches will include data collection, analysis, development of flow recommendations and applications of ISWRs, as well as strategies for obtaining funding and staff necessary to complete the measures.

Snake River Basin ESU

By November 15, 1997, ODFW will use existing streamflow requirement information on 17 reaches or streams from ODFW's Basin Investigation Studies to apply for new ISWRs in the Imnaha River basin.

MEASURE: WRD S-4 ISSUANCE OF INSTREAM WATER RIGHTS

Since 1995, WRD has certificated 826 of the 959 ISWRs requested by ODFW. These rights have been certificated at the flow level requested by ODFW, or at the estimated average natural flow level. Proposed Final Orders have been issued on the remaining 117 pending applications and are the subject of protests filed by entities objecting to proposed rights. WRD intends to resolve the majority of these protests in 1997 and 1998 in a manner preserving essential flows for fish recovery.

The issuance of ISWRs ensures that future appropriations will only be allowed when there is sufficient water to meet instream fish needs.

Adequacy of measures to meet objective

ODFW is taking advantage of existing data to apply for new ISWRs on water bodies that provide significant salmonid habitat. ODFW is also taking the next steps of determining where instream flow needs are not being met and developing a workplan to establish ISWRs in those areas.

Note: *Measure WRD 5 in the Oregon Plan was completed on time. Since the water availability model was updated for the entire state, there is no reason to reiterate this measure, thus there is no corresponding Measure WRD S-5.*

B. BIOLOGICAL OBJECTIVE: Restore streamflows in areas providing significant salmonid habitat value which is dependent on flow by securing incremental additions to existing streamflow amounts on a prioritized basis and according to an established schedule.

Objective IB-1: Identify areas providing significant salmonid habitat which is highly dependent on flow restoration, and establish a schedule for restoring identified flow amounts.

*MEASURE: WRD S-6
IDENTIFY UNMET INSTREAM FLOW NEEDS*

WRD shall complete an evaluation of water availability to determine the months during which the instream flow needs of steelhead are not being met and shall quantify the monthly deficit. Information will be provided for all water availability basins within each ESU according to the following schedule:

*Oregon Coast & Klamath Mountains Province ESUs (Coastal basins) - Completed
Southwest Washington, Lower Columbia River (Willamette and Sandy Basins), & Upper Willamette River ESUs - August 1, 1998
Lower Columbia River (Hood Basin), Middle Columbia River & Snake River Basin ESUs - October 1, 1998*

By February 1, 1998, WRD and ODFW will mutually determine the types of information and analysis necessary to characterize the unmet instream flow needs for each water availability basin in the ESUs. The analysis for water availability basins without ISWRs will be generally similar that for water availability with ISWRs, and will be based on available information and may use relationships or conversion factors derived from stream reaches with ISWRs to estimate flow needs and unmet flow levels.

The quantification of the extent to which instream flow needs are met and to which water use affects streamflows is important in developing priorities for restoring streamflows for fish recovery.

*MEASURE: ODFW IVA8 (also involves WRD)
IDENTIFY INSTREAM FLOW PRIORITY*

ODFW will identify streams where quantity of flow is limiting steelhead production and establish priorities for obtaining new ISWR's. ODFW will identify and prioritize the areas where steelhead habitat is most dependent on restoration of streamflows according to the following schedule:

*Oregon Coast, Klamath Mountains Province, and Southwest Washington ESUs -
September 1, 1998
Lower Columbia River, Middle Columbia River, Upper Willamette River, and Snake
Rivers Basin ESUs - January 1, 1999*

ODFW and WRD will establish a schedule for annual incremental restoration of flows over time as the targets for streamflow restoration measures according to the following schedule:

Oregon Coast, Klamath Mountains Province, and Southwest Washington ESUs -
February 1, 1998
Lower Columbia River, Middle Columbia River, Upper Willamette River, and Snake
Rivers Basin ESUs - March 1, 1999

Watershed councils will review the prioritized areas, amounts of flow restoration and the schedule and provide comments to ODFW and WRD according to the following schedule:

Oregon Coast, Klamath Mountains Province, and Southwest Washington ESUs - July 1,
1998
Lower Columbia River, Middle Columbia River, Upper Willamette River, and Snake
Rivers Basin ESUs - July 1, 1999

Oregon Coast & Klamath Mountains Province ESUs

Wild summer steelhead are a scarce and valuable resource present in only three coastal basins: the Rogue, Umpqua, and Siletz basins. Because adults are present in summer when recreational and esthetic interest in rivers is highest, and their fight and physical appearance is especially attractive to sport anglers, healthy populations provide substantial environmental, cultural, and economic benefits. Adults must have adequate summer streamflow and water quality to survive holding through the summer low flow period. The three basins where summer steelhead are indigenous will be considered as one of the highest priorities for stream flow protection measures.

Upper Willamette River ESU

Completion of the conversion of Minimum Perennial Streamflows in the Willamette River basin is considered a priority by ODFW. The benefit that converting these unconverted Minimum Perennial Streamflows may have for protection and restoration of steelhead populations in the Willamette River will be considered in establishing priorities for new ISWRs.

Passage, stranding, delay, spawning and other flow related problems at diversion dams and other obstructions, such as at Geren Island near Stayton on the North Santiam, will be considered during prioritization. Opportunities to resolve problems through obtaining new ISWRs may be limited and these concerns may be better resolved through development of flow and/or operational agreements.

Adequacy of measures to meet objective

WRD and ODFW are working together to develop a prioritization of where streamflow restoration is most important for salmonids and are working together to establish targets for the annual incremental restoration of the flows. The federal agencies are providing technical support

in the identification of key salmonid habitat dependent upon flows and are providing assistance in securing the necessary flows.

MEASURE: BOR1a
HYDROLOGIC MODEL FOR THE BEAR CREEK WATERSHED

Continue to assist RVCOG and local irrigation in implementing a hydrologic model developed for the Bear Creek watershed in FY 1996. This model helps decision makers assess the consequence of proposed actions that would change water use or timing of runoff.

MEASURE: BOR1c
HYDROLOGIC MODEL FOR THE ILLINOIS VALLEY WATERSHED

Develop hydrologic model for the Illinois Valley watershed to help decision makers assess the consequences of proposed actions that would change water use or timing of runoff.

MEASURE: BOR1f
SURFACE WATER BUDGET FOR THE NEW RIVER AREA

Prepare surface water budget for the New River area in the Coquille River basin to assess ground water resources for multiple purposes to include regulatory control by the OWRD, protection of natural resources, and assess water resource development opportunities.

MEASURE: BOR1g
WATER CONSERVATION IN THE BEAR CREEK DRAINAGE

Conduct a feasibility study of water conservation opportunities in the Bear Creek drainage to improve streamflows, enhance water quality in Bear Creek, and improve the reliability of irrigation water supplies.

MEASURE: BOR3e
FUNDING FOR UPPER ROGUE BASIN CONSERVATION DISTRICTS

Propose to provide some financial assistance to Upper Rogue basin irrigation districts on the Federal project to implement water conservation measures. Such measures should result in improved stream flows and improved water quality.

MEASURE: NOAA-NMFS15
WATER SUPPLY PROJECTS

Provide recommendations to protect and mitigate damage to salmonids to sponsors of new water storage projects and increased water withdrawals.

MEASURE: NOAA-NMFS30

SNAKE RIVER RECOVERY PLAN

Proposed plan contains measures pertaining to water quantity, screening, and an improved regional decision-making forum, plus other elements which benefit all migratory fish.

MEASURE: NRCS3 SNOW SURVEY AND WATER SUPPLY FORECASTING

Coordinate the snow survey and water supply forecasting program on Oregon's 98 snow courses, 34 aerial markers, and 70 SNOTEL sites (system sending information on snow water equivalent, total precipitation and ambient air temperature to a computerized center).

MEASURE: USFWS3 AQUATIC HABITAT CONSERVATION AGREEMENT DEVELOPMENT AND CONSERVATION ACTIVITIES

Establish Conservation Agreements with cooperating private landowners and agencies to conserve special status species.

MEASURE: USFWS4 TECHNICAL ASSISTANCE ON 1996 AND 1997 FLOODS

Provide technical assistance in response to recent floods to Federal and state agencies in three areas: (1) site-specific damage repairs; (2) longer-term rehabilitation efforts; and (3) planning efforts that address floodplain restoration at the watershed level.

MEASURE: USFWS5 PARTNERS FOR WILDLIFE (PFW) PROGRAM

Through the PFW Program, provide financial and technical assistance to private (primary focus) and non-federal landowners to restore and enhance wetland, riparian, instream and associated upland habitats in partnership with local watershed councils, SWCDs, COGs, Tribes, NRCS, ODFW, OPRD, or any non-profit or governmental entity willing and fiscally able to participate.

MEASURE: USFWS9 BIOLOGICAL OPINIONS TO PREVENT OR REDUCE IMPACTS TO LISTED SPECIES.

Provide consultation technical assistance to Federal agencies trying to meet obligations under section 7(a)(2) of the Endangered Species Act, recommending or requiring minor modifications to projects that reduce impacts to listed species and their habitat.

*MEASURE: USFWS10
FISH AND WILDLIFE COORDINATION ACT REPORTS ON FEDERAL PROJECTS*

Provide recommendations under authority of the Fish and Wildlife Coordination Act into water development programs of the Army Corps of Engineers, Bureau of Reclamation, and Natural Resources Conservation Service.

Objective IB-2: Ensure compliance with existing water right laws on a ranked priority basis with the objective of increasing stream amounts.

*MEASURE: WRD S-7 (also involves OSP)
COORDINATED ENFORCEMENT PLAN*

In October 1997, WRD and OSP entered into an enforcement plan that established a formal prioritization and scope of services OSP officers will provide to WRD field programs (Attachment E).

This plan does not alter the enforcement policies of WRD, but will integrate OSP into WRD's programs in a manner designed to enhance and coordinate current efforts.

*MEASURE: WRD S-8
INCREASED DISTRIBUTION AND ENFORCEMENT*

By June 30, 1998, WRD will develop a plan in consultation with ODFW, DEQ, OSP, to increase distribution of water and enforcement in priority areas where salmonid habitat is most dependent on restoration of streamflows as identified by ODFW IVA8 or the best available information, evaluate the extent to which the plan can be implemented with existing resources, and identify any increased staffing needs to implement the plan.

In developing the plan, WRD will evaluate alternatives for obtaining assistance from ODFW staff and volunteers to monitor streamflows and notify the watermaster when instream water rights are not satisfied and to provide training to the monitors in streamflow measurement. The plan will include an evaluation of the situations in which additional headgates and measuring devices would aid in the distribution of water and will describe a process aimed at ensuring installation is accomplished in accordance with streamflow needs.

Based on the priorities identified by ODFW IVA8, starting in 1999, WRD will give increased priority to distribution and enforcement on streams in which salmonid habitat is most dependent on restoration of flows as permitted by existing resources.

WRD will increase its enforcement capabilities by increasing the number of watermasters and field personnel, thereby decreasing the area for which each watermaster is responsible. This will result in more water being left instream for salmonids in areas where it will mean the most because field staff develop an intimate knowledge of individual basin uses and needs by working with landowners, district biologists, and watershed groups.

Increased field presence in the area will result in increased streamflow monitoring, ability to work with water users to find new ways to divert water that will have fewer impacts on fish, facilitating instream leasing opportunities, and regulation of illegal uses.

Enforcement is important to salmonids because it will identify where water is being taken without a water right or in excess of existing water rights. Field staff will act to ensure that water once diverted illegally will remain in the stream to satisfy other water rights including instream rights for fish.

Oregon Coast & Klamath Mountains Province ESUs

In 1996, as part of the Oregon Plan, WRD opened two new branch offices, one each in Newport and Florence and increased its presence in the Tillamook office. In addition, reprioritization of staff from outside the coastal area resulted in an additional 15 person-days/month of monitoring and enforcement activities occurring in the North and Mid Coast Basins. This added enforcement will continue and will also contribute to steelhead recovery in Oregon Coast ESU.

The WRD budget, for 1997-99 includes funding for one additional watermaster, a hydrographer, and a hydrologist for the Southwest Region along with \$98,800 in contract money for water rights inventory work. These additional staff will contribute to salmonid recovery efforts.

Prior to the grant funds and the salmonid recovery effort, a watermaster would spend one day per month in WRD's Tillamook office. With the help of grant funds, WRD staffing in the Tillamook office increased. Staff working out of the Tillamook office inventoried water use, provided water right information, and assisted the public with water use issues. The results of this added enforcement are shown in the annual enforcement report which was presented to the Water Resources Commission on May 29, 1997 (Attachment F). The increased field presence in the North Coast Basin identified a number of locations where water was used for domestic purposes, and for lawn and garden irrigation without a water right.

Lower Columbia River (Willamette and Sandy Basins) & Upper Willamette River ESUs

Existing staff responsible for the Willamette Basin are focusing their efforts in Coastal Basins to implement the Oregon Plan. Additional resources will be needed to replace the staff dedicated to the coastal measures to allow WRD to fully address the compliance monitoring needs in the Willamette Basin.

Lower Columbia River (Hood Basin), Middle Columbia River, & Snake River Basin ESUs

The new water right specialists will augment existing staff, thus allowing increased compliance monitoring on some priority streams. However, additional watermasters and assistant watermasters will be needed in the Hood, John Day, Umatilla and Grande Ronde Basins to

increase compliance monitoring in all priority areas. These additional staffing needs will be identified in the compliance monitoring plan.

MEASURE: WRD S-25
COMPLIANCE RATE MONITORING

Monitor the rate of compliance with state water law by:

Beginning in April 1998, quarterly report the percentage of water uses identified through stream surveys which were determined to be in substantial compliance with water law.

Beginning in April 1999, annually report the percentage of regulatory contacts made in which the water user was found to be in substantial compliance with water law.

The Water Resources Department does not currently measure the extent of compliance with state water law, rather the Department monitors the number of regulatory contacts which field staff have with water users. Each year, watermasters distribute water to water right holders based on the priority dates of the rights and water availability. During this distribution, junior users are shut off as necessary to deliver water to senior users. In addition, unauthorized diversions are identified and shut off. At the end of each year, the field offices prepare a report summarizing the number of regulatory actions by stream for each watermaster district. However, since many of the contacts have involved shutting off junior water rights which were being used consistent with state law, the data which we have collected does not provide a method for determining compliance rates. Beginning with the 1998 field season, when taking a regulatory action, each watermaster will assess whether the use of water is in substantial compliance with water law.

WRD will work towards the development of a protocol which assesses the rate of compliance of water rights with seasonal conditions. The effort will be focused on those streams identified as priorities for flow restoration. WRD will work to determine if there is a further subset of water rights with specific seasonal conditions that should receive the highest priority for compliance rate monitoring. WRD will work toward a protocol that uses statistically valid sampling methods.

The Oregon Plan also includes surveys of diversions of water from streams in critical habitat areas (WRD-10). After these surveys are conducted, staff review water right records to verify if the identified diversions are authorized. The Department will maintain a tally of the number of diversions verified through this process and will track the percentage of diversions which have been determined to be in substantial compliance with state water law.

Adequacy of measures to meet objective

WRD is ensuring compliance with existing water rights law in a number of ways including adding additional WRD branch offices in Newport and Florence and an increased presence in the Tillamook office; a new Watermaster based in Medford; additional field personnel in all five

regions; an enforcement plan with the Oregon State Police; and, field meetings between the state agencies to discuss enforcement needs.

Objective IB-3: Ensure that adequate flow measurement and monitoring data collection occurs, and that the data are disseminated and used to support restoration of flows in key areas.

*MEASURE: WRD S-9
INSTALLATION OF MONITORING STATIONS*

Phase 1(this biennium).

WRD and ODFW will identify the location and type, cost, and number of gaging stations necessary to adequately monitor priority areas identified by ODFW (IVA8) and will develop funding proposals for the installation, operation and maintenance of the sites according to the following schedule:

Oregon Coast & Klamath Mountains Province ESUs - April 1, 1998

Southwest Washington, Lower Columbia River, Upper Willamette, & Snake River Basin, and Middle Columbia River ESUs - April 1, 1999

The funding proposals may include cost share agreements with other organizations, grant proposals, or 1999-2001 budget requests.

Measurement of streamflow is critical for monitoring and protecting ISWRs and salmonid habitat. This hydrologic data provides historic or background information to compare with current information as recovery efforts work to improve conditions for salmonids. Additionally, measuring devices are essential for enforcement and protection of senior rights, including instream water rights. A simple way to monitor flows involves the installation of staff gages which measure the stream stage or elevation. When calibrated with repeated cross-sectional flow measurements, staff gages provide a means to establish a record of stream flow. If the staff gages indicate that instream flows are not being met, the watermaster can regulate accordingly, protecting instream flows that may be needed for salmonids.

Telemetry allows for remote monitoring by WRD field staff. This will allow verification of existing streamflow and alert the watermaster when there is a need to regulate in order to protect senior rights, including instream flow for salmonids.

Phase 2

(After the current biennium ends in June 1999). New monitoring sites will be installed as funding for installation, operation and maintenance is obtained.

Oregon Coast & Klamath Mountains Province ESUs

In 1996, WRD installed approximately 40 staff gages on priority streams and the core habitat areas identified by the Oregon Plan Science Team.

*MEASURE: WRD S-10
INVENTORY WATER DIVERSIONS*

Phase 1.

Oregon water right maps identifying the location of all permitted water diversions will be digitized and available in electronic format to the public according to the following schedule.

- *Southwest Washington, Oregon Coast, Klamath Mountains Province Lower Columbia River (except Hood River Basin), Upper Willamette River, & Snake River Basin ESUs - completed*
- *Lower Columbia River (Hood River Basin) ESU - July 1, 1998*
- *Middle Columbia River ESU - July 1, 1999*

Effective compliance monitoring by watermasters requires an accurate inventory of all diversions. Attachment F addresses these issues including subsequent water right cancellations, transfers, and new filings.

The digitized water right maps involved electronically mapping over 26,000 points of diversion and the associated water use. The maps identify both the place of water use and the associated diversion points (where known). These maps are available to resource agencies upon request. Prior to this effort, watermasters manually traced the water right map information onto base maps. This effort required many months to create and update. Now, watermasters and assistant watermasters can create maps for water use management within a short period of time. Time saved is used to work with the customers and manage water use. Stream inventories will both verify and improve the accuracy of WRD's water right mapping data base, and identify illegal uses that diminish flows at critical seasons of the year.

Oregon Coast & Klamath Mountains Province ESUs

In 1996, approximately 2,000 miles of streams were inventoried for water diversions. Approximately 98 percent of the North Coast Basin core area streams were surveyed.

Water use inventory in the core area streams and stream segments in the South Coast and Rogue Basins began in 1997, and will be completed by September 30, 1998.

By June 30, 2004, WRD will complete the inventory of all streams in the South Coast and Rogue Basins if contract dollars for water rights inventory are continued.

In 1996, WRD digitized water right maps identifying the location of all permitted water diversions for the entire coast from California to Washington.

In 1996, WRD purchased three additional global positioning systems, to facilitate accurate location of the points of diversions. These units will be used in future inventories.

When diversions are identified which appear to be detrimental to salmonids, staff will notify ODFW. If ODFW concludes that a diversion is detrimental to salmonids, staff will work with ODFW, the landowner, and potential funding agencies to aid in securing modifications in the diversion structure to reduce impacts on fish.

In 1996, twelve stream walkers were hired using grant funds to locate points of diversion on streams in the North Coast Basin. The Water Resources Department's budget includes \$98,800 to hire ten temporary summer employees as stream walkers for two summers to inventory water use from critical streams in the South Coast and Rogue Basins.

Information collected during the inventory effort will include identification of push-up dams, unscreened diversions, sites where diversions could be moved to hydrologically connected ground water and uses not covered by existing water rights. This will be used to work with users in finding methods to divert water that will produce fewer impacts on fish, and to increase streamflows by regulating illegal uses and working with users to cooperatively increase efficiencies.

Southwest Washington, Lower Columbia River, Upper Willamette River, Middle Columbia River, & Snake River Basin ESUs

By June 1, 1999, WRD will develop a program to inventory priority areas identified by ODFW IVA8 in the Hood, Deschutes, John Day, Umatilla, and Grande Ronde Basins and identify funding alternatives to implement the program. The inventory program will be based on the WRD's experience in the North Coast, South Coast and Rogue Basins and will include the purchase of additional global positioning systems to field inventory points of diversion and field verify other related water information. In addition, WRD will identify potential funding sources which may include cost share agreements with other organizations, grant proposals, or 1999-2001 budget requests.

Phase 2 (After the current biennium).

As funding becomes available, WRD will inventory priority areas identified by ODFW IVA8 in the Hood, Deschutes, John Day, Umatilla, and Grande Ronde Basins. When diversions are identified which appear to be detrimental to salmonids, staff will notify ODFW. If ODFW concludes that a diversion is detrimental to salmon, staff will work with ODFW, the landowner, and potential funding agencies to aid in securing modifications in the diversion structure to reduce impacts on fish.

***MEASURE: ODFW IB5 (also involves WRD and OSP)
INVENTORY WATER DIVERSIONS***

Lower Columbia River & Upper Willamette River ESUs

In 1996, the mainstem of the Willamette River, from the mouth to Dexter Dam, was inventoried for water withdrawal diversions. Two hundred and seventy-seven pump sites were located and recorded by using a Global Positioning System. All permitted water rights of the Willamette

River were identified and compared to the initial survey, using digitized water rights maps and WRD databases.

In 1997, the mainstem Willamette River was resurveyed to identify brand of pump, intake and discharge diameter, plus viewing the screens using an underwater video camera attached to a pole.

By June 30, 1999, ODFW will contact identified water rights holders on the Willamette River for screening requirements.

By December 31, 1999, WRD will contact Willamette River mainstem water users to ensure that pre-existing rights and fish passage are not adversely affected by unauthorized uses.

In 1996, OSP officers performed an initial survey of withdrawal sites on the Willamette River. As the project progressed, it has become a cooperative effort between OSP, WRD and ODFW with each agency providing equipment and manpower.

The Oregon State Police, Fish and Wildlife Division, will assist with inventory assessment and permit condition compliance; enforce appropriate water use, water allocation and fish screening law. Through patrol presence, the State Police provide a deterrence to unpermitted water use; investigate, document and report issues regarding inadequate fish passage, fish screening and water flow; assist in educational/outreach programs, compliance indexing and organization of volunteer programs.

Information collected during the survey will include the location of each diversion, the size and volume of the pumps, and the screening of each diversion. This information will be used to verify that the site is connected to a water right, to determine current ownership, to identify users with a greater than 30 cfs capability, and to verify proper screening of the diversion.

Later portions of this project will involve contacting the land owners and water users on the Willamette River. This will benefit ISWRs and salmonids by providing a means to increase voluntary compliance with Oregon's water laws and screening requirements. This contact will also allow for the introduction of the Fish-screening Cost-share Program to users, which will lead to increased screening of diversions.

The federal government, through the Mitchell Act, provided funds to ODFW to identify water diversion sites and to assist landowners in developing adequate screens to protect fish and wildlife at diversion sites. The 1995 Legislature passed HB 3212 creating a Fish-screening Cost-share Program. ODFW will administer funds to pay irrigators part of the cost of designing, constructing and installing fish protection devices. Another program, the State Tax Credit Program covers fish screening devices and fish ladders. This program allows a tax credit for irrigators up to 50 percent to a maximum of \$5,000.

*MEASURE: WRD S-11 (also involves ODFW)
DISSEMINATION OF STREAMFLOW DATA*

By November, 1997, WRD developed a plan to ensure that WRD streamflow measurement information is readily available to appropriate federal, state and local entities, as well as the general public, so that wise resource management decisions may be made.

*MEASURE: BLM/USFS4
INVENTORIES*

Collect data that is compatible with State efforts.

*MEASURE: BOR1b
FUNDING FOR OREGON WATER RESOURCES DEPARTMENT*

Continue to fund OWRD to maintain gages and develop records for information gathering in surface and ground water studies.

*MEASURE: BOR3b
FUNDING FOR OREGON WATER RESOURCES DEPARTMENT FOR
HYDROGRAPHIC EQUIPMENT.*

Provide funding to OWRD to purchase hydrographic equipment for water measurements at diversions on coastal streams.

*MEASURE: BOR3c
FUNDING FOR EQUIPMENT AND ANALYSIS ON BEAR CREEK*

Provide funding to purchase water measuring equipment, install and calibrate gauges, and gather and analyze data on Bear Creek.

*MEASURE: NOAA-NMFS1
HABITAT RESTORATION PROGRAM*

Fund fishers for \$2.7 M to do stream and watershed surveys, inspect irrigation culverts, and improve channel conditions in Oregon coast streams.

*MEASURE: WRD S-35
RESTORING AND MAINTAINING STREAMFLOWS: PROCESS MEASURE*

WRD will work cooperatively with the National Marine Fisheries Service to document amounts of water (streamflow) conserved by WRD measures, over time. WRD will work to incorporate amounts of streamflow conserved into the reporting structure on WRD measures by providing periodic quantification of flow restoration, wherever possible. For example, the state currently can provide quantification of flow restoration provided by the following actions:

- *The number of instream leases signed and the corresponding cubic feet per second of flow returned to the system.*
- *The number of conserved water applications signed and the corresponding cubic feet per second of flow returned to the system.*

Adequacy of measures to meet objective

In 1996, 40 new staff gages were installed; more were installed in 1997, the exact number is still being determined. WRD and ODFW will identify the type and number of additional gaging stations needed and develop a plan to collect and disseminate this information to resource managers. In 1996, over 2,000 miles of stream were inventoried, including nearly all of the core habitat areas in the North Coast Basin. In the 1997-99 biennium, additional funding is being provided to inventorying diversions in the South Coast and Rogue Basins, with completion of the inventories proposed by 2004. In the Willamette River a multi-agency effort is inventorying mainstem diversions and, in other areas of the state, a program to inventory diversions is being developed. Additionally, digitized maps of all known diversions are being developed.

Objective IB-4: Provide technical assistance and appropriate incentives to existing water right holders with the objective of increasing streamflow amounts in a manner consistent with Objective IB-1.

MEASURE: WRD S-12 (also involves ODA)
IMPROVING EFFICIENCY AND PROHIBITING WASTE

Increased water use efficiency and elimination of wasteful water use practices can help restore streamflows. Interdisciplinary working groups will be formed in basins identified as key to needing streamflow improvements to help recover salmonids. These working groups will first develop goals and model practices for promoting increased efficiency and conservation in water use. As a second step, the working groups will develop standards for identifying highly inefficient water use practices which constitute waste, and which shall be used as a basis for regulatory action by WRD.

Oregon Coast & Klamath Mountains Province ESUs

Work has begun leading to the formation of interdisciplinary working groups in the basins identified by ODFW and WRD as needing streamflow improvements to recover salmonids. These working groups will develop basin specific efficiency goals by June 30, 1999. WRD will use these goals first to promote voluntary conservation efforts, and then as the starting point in a process which will identify waste practices waste in connection with compliance monitoring.

WRD is currently evaluating water use in Trail Creek (Rogue Basin) to establish a more efficient water management program which could result in more water being left instream.

Southwest Washington, Lower Columbia River, Upper Willamette River, Middle Columbia River, & Snake River Basin ESUs

By December 1, 1998, WRD will complete an evaluation of the progress and success of development of efficiency criteria in Oregon Coast and Klamath Mountains Province ESUs. If WRD determines that the program has been successful, development of efficiency goals will be expanded to other basins. However, based on the evaluation, modifications may be made, including the identification of additional funding requirements, prior to the expansion of the measure to the other basins.

***MEASURE: WRD S-13 (also includes ODFW)
AGRICULTURAL WATER CONSERVATION PROGRAM***

Oregon Coast & Klamath Mountain ESUs

By April 1, 1998, WRD will determine where preparation of water management and conservation plans by irrigation water users will yield increased streamflows for restoration of key habitat, and will initiate a cooperative program with irrigation water users in those areas to develop water conservation plans.

No later than January 1, 1999, WRD will work with the three irrigation districts in the Rogue Basin to prepare voluntary water conservation plans, and evaluate the feasibility of conservation measures. WRD will also work with the Bureau of Reclamation, which is targeting water conservation projects to increase instream flows for salmon in Bear Creek.

The development of the agricultural water conservation plans, and collaborative work with the irrigation districts and Bureau of Reclamation will incrementally restore streamflows for salmon recovery.

Southwest Washington, Lower Columbia River, Upper Willamette River, Middle Columbia River & Snake River Basin ESUs

By June 1, 1998, WRD will evaluate and prioritize where preparation of water management and conservation plans by irrigation water users will yield increased streamflows for restoration of key habitat, and will initiate a cooperative program with irrigation water users in those areas to develop water conservation plans.

By June 1, 2000, WRD will work with the irrigation districts in priority areas to prepare voluntary water conservation plans, and evaluate the feasibility of conservation measures.

ODFW will continue to work with the Farmers Irrigation District to ensure that the improved water delivery system that Farmers Irrigation District is planning results in more flow left in the Hood River.

MEASURE: WRD S-14
MUNICIPAL WATER MANAGEMENT PROGRAM

In October 1997, WRD held a workshop in Newport for municipalities related to the preparation of water management plans. Over fifty cities, water districts, and consultants attended the workshop. Annual workshops will continue.

Under WRD's permitting process, virtually all communities receiving new water rights or extensions are required to prepare plans which are consistent with the municipal water management rules (OAR Chapter 690, Division 86). The "Water Management Plan Outline/Checklist" (Attachment G), provides additional information on what is required in these plans, including annual water audits, installation of meters on all service connections, a program for leak detection, a meter testing program, public education, and any other feasible conservation measures.

Oregon Coast & Klamath Mountains Province ESUs

By April 1997, WRD determined which municipalities have water rights in core habitat areas (Attachment H).

By October 1997, WRD contacted the municipalities in core habitat areas to explore their willingness to prepare voluntary water management plans. Several municipalities with existing water rights in core habitat, including the Cities of Hillsboro, Newport, Manzanita, and Toledo, attended the Newport Workshop which focused on the Oregon Plan and how municipalities can meet their water needs while leaving adequate streamflows for salmon.

Southwest Washington, Lower Columbia River, Upper Willamette River, Middle Columbia River & Snake River Basin ESUs

By March 1, 1999, WRD will determine which municipalities have water rights in high priority areas as indicated by ODFW's list of priority streams for increasing streamflows.

By June 1, 1999, WRD will contact the municipalities in high priority areas as indicated by ODFW's list of priority streams for increasing streamflow and will explore the municipalities willingness to prepare voluntary water management plans.

Approximately 90 percent of the communities seeking new water rights are required to develop and implement a water management plan. Generally, communities are required to develop a plan if they are seeking more than 0.01 cfs, have more than 500 people, if there are salmonids present, or other instream resources are of concern.

After preparing a water management plan, some cities, like the City of Ashland have concluded that they could best meet projected water demand through water conservation. The city then abandoned its plans for diverting water from the Rogue River, leaving instream flows for salmonids. While WRD rules do not mandate plans from cities not requesting new rights or

extensions, WRD will staff an effort to engage key municipalities in the planning process in a collaborative, voluntary effort to support the salmonid recovery effort.

**MEASURE: WRD S-15 and ODFW IVB5
INSTREAM TRANSFERS AND LEASES**

The WRD and ODFW are committed to continuing their efforts to pursue partnerships with entities such as the Oregon Water Trust to protect and enhance instream flows that are vital to salmonid restoration. In addition, WRD and ODFW are also engaged in efforts to protect streamflows by working with individual water right holders to voluntarily transfer, purchase, lease, or donate out-of-stream rights to instream uses. This is occurring in connection with other streamflow restoration measures as part of the effort to meet the long-term streamflow objectives established by ODFW through incremental increases.

WRD Regional Managers and Watermasters will provide information and work with water right holders on streams identified by ODFW as priorities to increase streamflows by providing information on, encouraging and assisting with the leasing of existing water rights to instream.

Efforts to facilitate lease agreements to augment instream flows will be pursued by WRD according to the prioritization established by ODFW in Objective IB-1. The first instream water right lease was completed in 1992. By 1996, 50 additional leases have been signed statewide, with Oregon Water Trust involvement in 34 of these leases. In 1996, instream leases with priority dates ranging from 1857 to 1977 added 24.9 cfs to instream flows.

Oregon Coast & Klamath Mountains Province ESUs

ODFW will assist the Oregon Water Trust in identifying and developing priorities for pursuing additional instream flow leases, such as those in the Rogue Basin where much of the summer steelhead spawning and early rearing occurs in small perennial and intermittent streams.

**MEASURE: WRD S-16
WATER RIGHT FORFEITURE**

By June 1, 1998, WRD field staff will develop a process to identify water rights in high priority areas as indicated by ODFW's list of priority streams (Measure ODFW IVA8), or other known priorities, for increasing streamflows which are subject to forfeiture for non-use and institute cancellation proceedings.

Once the process is developed, and each year thereafter, staff will identify rights which may be nearing the five-year period of non-use. Staff will contact the water right holders to seek voluntary cooperation in transferring or leasing the rights for instream use to avoid forfeiture and to increase streamflows. If the U.S. Bureau of Reclamation or a water delivery district is involved in the delivery of water for the right, the region manager will notify the Bureau or district of the potential forfeiture and will seek their cooperation and assistance in securing the water for instream use.

A water right maybe forfeited if there is documented non-use of the right for five continuous years in accordance to ORS 540.610. This results in the unused water being left in the system for appropriation. However, cancellation of these unused rights will not result in increased streamflows. If water rights in danger of being forfeited are leased for instream use, instream flows can be protected for salmonids while allowing the holder of the right to avoid forfeiture.

MEASURE: WRD S-17
PUBLIC OUTREACH AND INFORMATION

In 1997, WRD introduced revised and enhanced on-line water right information and services to the public and produced an educational brochure for livestock management in riparian areas and use of off-stream water supplies. WRD also became a member of Oregon Trout's "Salmon Watch" program.

By April 1, 1998, WRD will become a partner with the Bureau of Reclamation in the "Agricultural Water Conservationist of the Year" award for irrigation districts. By November 1, 1998, WRD develop a program with the League of Oregon Cities and the Oregon Water Resources Congress to recognize cities and irrigators excelling in water conservation activities.

By April 1, 1998, WRD will develop education materials for the public on instream leasing, allocation of conserved water, and the agricultural and municipal conservation programs.

Effective public outreach and education are critical to the success of all of the measures outlined in the State's restoration plan. In order to bring about long-term change in water use, the public must have accessible information. WRD realizes that many of the programs that protect or restore streamflows and address fish passage and screening rely on a strong commitment to educating water users.

MEASURE: WRD S-18
GROUND WATER STUDIES

WRD will continue to review new applications for ground water rights for their effect on surface water. Existing ground water use will be managed conjunctively with surface water according to agency rules, and WRD staff will review ground water use to resolve interference problems. Existing ground water monitoring sites will be maintained, and new monitoring sites will be added as funds become available. WRD will continue to work with USGS and Bureau of Reclamation to establish cooperative funding partnerships wherever possible.

Quantifying ground water supplies and identifying surface and ground water relationships is important to salmonid recovery because it will prevent the inadvertent allocation of ground water that is hydrologically connected to surface water and would thereby cause injury to instream flows resulting in a negative impact on salmonids. It will also provide an opportunity to use non-hydrologically connected ground water to enhance stream flows by eliminating existing surface water use in favor of ground water.

Phase 1.

Lower Columbia River & Upper Willamette River ESUs

WRD is currently studying the ground water resources of the Willamette Valley cooperatively with the US Geological Survey. That study will provide valuable information bearing on the impacts of ground water use on flows in the Willamette River. Phase 1 of the study is due for completion in September, 1998. Phase 2 will include a transient flow model of the basin ground and surface water system and with continued funding is scheduled for completion in 2000.

Oregon Coast & Klamath Mountains Province ESUs

By December 31, 1997, WRD will complete a ground water monitoring plan and scope of work according to salmonid recovery priorities in the Rogue and South Coast Basins.

By July 1, 1999, work accomplished in the top priority areas will include installation of monitoring sites for ground water levels and surface water/ground water interaction, geologic mapping as it relates to ground water, and assembly and verification of all existing ground water data.

Middle Columbia River ESU

The Department is currently studying the ground water resources of the Deschutes Basin cooperatively with the US Geological Survey. That study will provide valuable information bearing on the impacts of ground water use on flows in the Deschutes River within Middle Columbia River ESU. The study is due for completion in December 1998.

Phase 2.

Southwest Washington & Snake River Basin ESUs

WRD will evaluate needs for additional studies directed at documenting the impact on surface water of ground water use and will identify alternatives for funding the studies. The alternatives may include cost share agreements with other organizations, grant proposals, or 1999-2001 budget requests. As funds are obtained, WRD will initiate the additional ground water studies in prioritized basins.

Middle Columbia River ESU

WRD will characterize the shallow ground water resource in the Umatilla Basin alluvium and develop a model of the resource. The model will be used to evaluate the impacts of existing and potential new development of the resource and to develop management strategies to mitigate the impacts of ground water development on Umatilla River streamflows.

MEASURE: WRD S-19

OFF-STREAM STORAGE

WRD field staff will continue to provide technical assistance to locate and encourage the development of multi-purpose off-stream storage facilities. These storage projects will augment low flows for fishery benefit and will not result in the inundation or impairment of fish habitat.

MEASURE WRD S-26 RESERVATIONS

WRD will continue to use the administrative rulemaking process to establish reservations for multi-purpose storage where reservation applications have been received. The rulemaking process will follow the process established in 1996 and 1997 which required additional conditions to protect fishery and instream values beyond those established in OAR Chapter 690, Divisions 310 and 33. The model rules require an assessment of the effect of the proposed reservoir on fish and wildlife in consultation with ODFW; an assessment of the effect of the proposed reservoir on water quality in consultation with DEQ; an analysis of water supply alternatives; and an analysis summarizing and describing how the proposed project will enhance instream values, including but not limited to instream flows.

Basin program revisions for reservations for multi-purpose storage will follow the following schedule:

Phase 1.

*Lower Columbia ESU (Hood Basin) - Completed
Middle Columbia River ESU (Hood Basin) - Completed
Middle Columbia River ESU (John Day Basin) - June 30, 1999
Snake River Basin ESU (Grand Ronde Basin) - Completed*

Phase 2.

*Upper Willamette River ESU (Willamette Basin) - will be revised in conjunction with the Willamette Basin Reservoir Study
Middle Columbia River ESU (Deschutes and Umatilla Basins, Mainstem Columbia River) - the Deschutes Basin will be revised in conjunction with the Prineville Reservoir Reauthorization Study
Snake River Basin ESU (Mainstem Snake River)*

MEASURE: WRD S-20 SERIOUS WATER MANAGEMENT PROBLEM AREAS

By January 1, 1998, WRD will complete an evaluation of whether Serious Water Management Problems Areas (SWMPA) designations would provide an effective method for increasing streamflows in high priority areas as indicated by ODFW's list of priority streams for increasing streamflows (Measure ODFW IVA8). This management tool allows the Water Resources Commission to adopt a rule requiring measurement

and reporting of water use by all permit holders in a designated area. If it is determined that SWMPA designation, which enables WRD to require measurement and annual reporting of water use, will help increase streamflows, then WRD will initiate a process to make the designation in localized areas where flow restoration is key to the recovery effort.

Oregon Coast & Klamath Mountains Province ESUs

In March 1998, recommendations on adoption of rules, based on site specific proposals for the development of SWMPAs, will be made to the Water Resources Commission. WRD will also monitor the effects on water use and streamflows resulting from the designations and, as a long term measure, will consider designation of additional SWMPAs if the anticipated increases in streamflow are realized.

Southwest Washington, Lower Columbia River, Upper Willamette River, Middle Columbia River, & Snake River Basin ESUs

By March 1, 1999, recommendations on adoption of rules will be made to the Water Resources Commission. WRD will also monitor the effects on water use and streamflows resulting from the designation and, as a long term measure, will consider designation of additional SWMPAs if the anticipated increases in streamflow are realized.

While measurement and reporting do not directly require a reduction in water use, there is anecdotal evidence that imposing such a requirement does raise the water users' consciousness about the way they use water leading to water being used more efficiently. Increased efficiency results in increased instream flows for salmonids, and the information reported may also increase the knowledge of how water is used in a particular subbasin.

MEASURE: BLM/USFS6 TECHNICAL TRAINING

Continue to coordinate technical training of resource management personnel to ensure a high level of competency in defining restoration and recovery treatments

MEASURE: BOR1e TECHNICAL ASSISTANCE AND A WATER BUDGET FOR THE ILLINOIS RIVER WATERSHED ASSESSMENT

Provide technical assistance and preparation help on water budget for the Illinois River Watershed Assessment in cooperative effort with the Natural Resources Conservation Service and others.

MEASURE: BOR1h

TECHNICAL ASSISTANCE FOR THE UMPQUA RIVER BASIN WATER MANAGEMENT PROGRAM

Discuss potential partnership with Douglas County, Oregon to provide BOR technical assistance to update the County's Umpqua River Basin Water Management Program for incorporation into the OCSRI.

MEASURE: BOR3a

TECHNICAL ASSISTANCE TO IRRIGATION DISTRICTS ON FEDERAL PROJECTS

Provide technical assistance to irrigation districts on Federal projects to prepare and implement water conservation plans and monitoring programs.

MEASURE: USFWS4

TECHNICAL ASSISTANCE ON 1996 AND 1997 FLOODS

Provide technical assistance in response to recent floods to Federal and state agencies in three areas: (1) site-specific damage repairs; (2) longer-term rehabilitation efforts; and (3) planning efforts that address floodplain restoration at the watershed level.

Adequacy of measures to meet objective

The Doctrine of Prior Appropriation makes restoring streamflows much harder than protecting current flows. Given the constraints of prior appropriation, incremental additions of streamflows will be accomplished by selectively applying a series of tools to restore streamflows, including: (1) enforcement of existing water rights, (2) enhanced data collection, (3) regional efficiency goals, (4) agricultural water conservation programs, (5) municipal water conservation programs, (6) instream transfers and leases, (7) prioritizing the transfer of rights in danger of being forfeited to instream leasing, (8) public outreach and information, (9) using ground water to augment instream flows, (10) using stored water to augment instream flows, and (11) declaring Serious Water Management Problem Areas.

The measures listed in this section when taken together will incrementally increase the streamflows for prioritized stream reaches in a manner consistent with Biological Objective IB-1.

Objective IB-5: Preserve peak flows which are necessary for access to and from winter spawning grounds, for triggering biological responses, and for habitat maintenance.

MEASURE: WRD S-21 (also involves ODFW IVA10)

PEAK FLOW PROTECTION

In September 1997, WRD and ODFW jointly developed a policy on implementation of WRD Division 310 and Division 33 rules to ensure that peak flows are available for triggering the biological responses and salmonid access to and from winter spawning grounds. The policy

acknowledges “that the Division 310 and 33 review process shall recognize the need for peak flows to create, maintain and provide fish habitat; that comments, concerns, and proposed permit conditions which address protecting peak flows are a welcome and necessary component of the public interest review process.”

A Peak Flow Working Group has recently been established with multiple disciplines and interests represented. This group is working to provide WRD with information and advice on how to protect peak flows in a systematic, scientifically based manner as permit decisions are made. The existing policy may be revised as this Group develops new information and recommendations.

Annual and semi-annual peak flows are important to salmonids for access to and from winter spawning grounds and for triggering biological responses. These peak flows may also wash out fine sediments, thereby preventing holding pools from being filled in. Permitting processes must ensure that storage projects do not capture all peak flows, or prevent salmonids from accessing spawning grounds. Division 310 and Division 33 rules referenced in earlier measures can ensure adequate consideration of this issue at the time individual projects are permitted.

WRD encourages the National Marine Fisheries Service to bring language and/or concepts regarding habitat protection forward to the peak flow working group for discussion. For example, NMFS supports the following language:

“The Water Resources Department’s calculation of water availability for purposes of considering applications for a permit to store water will be done in a manner that is consistent with managing peak flows to provide substantial net benefits for fish and their habitats.”

Depending on the level of consensus among the peak flow work group members, this language may be used to bring the peak flow work group into sharper focus and to move the discussion forward. Another outcome could be modification of the WRD S-21 measure to include specific language or commitments agreed on by the work group.

Scientists on the peak flow work group will be encouraged to discuss the feasibility of developing a science-based evaluation/analysis to determine when additional storage can be accommodated while maintaining a peak flow regime that provides substantial net benefits for fish and their habitats.

*MEASURE: BOR1a
HYDROLOGIC MODEL FOR THE BEAR CREEK WATERSHED*

Continue to assist RVCOG and local irrigation in implementing hydrologic model developed for Bear Creek watershed in FY 1996. This model helps decision makers assess the consequence of proposed actions that would change water use or timing of runoff.

MEASURE: BOR1c

HYDROLOGIC MODEL FOR THE ILLINOIS VALLEY WATERSHED

Develop a hydrologic model for the Illinois Valley watershed to help decision makers assess the consequences of proposed actions that would change water use or timing of runoff.

MEASURE: BOR1f

SURFACE WATER BUDGET FOR THE NEW RIVER AREA

Prepare a surface water budget for the New River area in the Coquille River basin to assess ground water resources for multiple purposes to include regulatory control by the OWRD, protection of natural resources, and assess water resource development opportunities.

MEASURE: BOR1g

WATER CONSERVATION IN THE BEAR CREEK DRAINAGE

Conduct a feasibility study of water conservation opportunities in the Bear Creek drainage to improve streamflows, enhance water quality in Bear Creek, and improve the reliability of irrigation water supplies.

MEASURE: BOR3e

FUNDING FOR UPPER ROGUE BASIN CONSERVATION DISTRICTS

Propose to provide some financial assistance to Upper Rogue basin irrigation districts on the Federal project to implement water conservation measures. Such measures should result in improved stream flows and improved water quality.

MEASURE: NOAA-NMFS15

WATER SUPPLY PROJECTS

Provide recommendations to protect and mitigate damage to salmonids to sponsors of new water storage projects and increased water withdrawals.

MEASURE: USFWS4

TECHNICAL ASSISTANCE ON 1996 AND 1997 FLOODS

Provide technical assistance in response to recent floods to Federal and state agencies in three areas: (1) site-specific damage repairs; (2) longer-term rehabilitation efforts; and (3) planning efforts that address floodplain restoration at the watershed level.

MEASURE: USFWS10
FISH AND WILDLIFE COORDINATION ACT REPORTS ON FEDERAL PROJECTS

Provide recommendations under authority of the Fish and Wildlife Coordination Act into the water development programs of the Army Corps of Engineers, Bureau of Reclamation, and Natural Resources Conservation Service.

Adequacy of measures to meet objective

WRD and ODFW have jointly developed a policy to ensure that peak flows will be protected. The federal agencies are providing technical support and assistance in the preservation of peak flows.

II. FACTOR FOR DECLINE: Obstructions to fish passage necessary to access habitat during critical life stages

Discussion of Factor: Salmonid survival requires relatively barrier-free passage for fish migrating upstream and down, and locally for all life stages as necessary to obtain food or cover. Artificial structures designed to divert or store water can create insurmountable barriers to these fish movements.

1. **BIOLOGICAL OBJECTIVE:** Eliminate artificial obstructions to fish passage necessary to access key habitat for critical life stages of salmonids.

Note: For measures addressing fish passage issues related to culverts, refer to Section 2: Physical Habitat of the Oregon Plan.

Objective IIA-1: Protect and maintain existing barrier-free passage to access habitat during critical salmonid life stages.

MEASURE: WRD S-1 (also involves ODFW, ODA, DEQ)
PUBLIC INTEREST REVIEW TO PROTECT SALMONIDS

All new permit applications require barrier-free fish passage where there are fish present, to the specifications requested by ODFW. WRD's public interest standards and Division 33 rule process (protection of sensitive, threatened, and endangered fish habitat) ensure that this occurs. (See the section on Maintaining Streamflows for additional information on the public interest review process.)

MEASURE: WRD S-2 (also involves ODFW)
WATER RIGHT TRANSFER REVIEW FOR FISH CONCERNS

Since April 1997, WRD has been soliciting input from ODFW district biologists on all transfers to ensure that instream rights are being protected and to determine, consistent with ORS 540.525, if fish screen or bypass facilities are needed.

All new water right applications must undergo a public interest review. An additional review for injury to existing water rights is required for transfers that are changing the point of diversion or use of the original right. By directly soliciting input from ODFW district biologists (see Measure ODFW IVA1), the State protects instream and fishery values by ensuring that no water right transfers will adversely impact instream water rights. WRD will also ensure conditions are placed on transfer order requiring that new points of diversion will be appropriately screened, if requested ODFW.

**MEASURE: BLM/USFS1
WATERSHED/HABITAT RESTORATION**

Continue implementation of comprehensive watershed restoration programs on coastal systems.

**MEASURE: BLM/USFS12
KEY AQUATIC HABITAT ACQUISITION**

Continue to work within existing policies with willing sellers, to acquire key aquatic habitat.

**MEASURE: NOAA-NMFS1
HABITAT RESTORATION PROGRAM**

Fund fishers for \$2.7 M to do stream and watershed surveys, inspect irrigation culverts, and improve channel conditions in Oregon coast streams.

**MEASURE: NOAA-NMFS6
IRRIGATION SCREENING AND FISHWAYS**

Fund about \$1.9M annually for construction and maintenance of irrigation diversion screens and fishways in Oregon, and \$8M for repair of Willamette Falls fishway recently destroyed by floods.

**MEASURE: NOAA-NMFS12
HIGHWAY PROJECTS**

Provide recommendations on culverts, etc. to reduce impacts from highway projects; support streamlined environmental review processes.

**MEASURE: NOAA-NMFS15
WATER SUPPLY PROJECTS**

Provide recommendations to protect and mitigate damage to salmonids to sponsors of new water storage projects and increased water withdrawals.

*MEASURE: NOAA-NOS19
COASTAL MANAGEMENT AND NONPOINT SOURCE PROGRAMS*

Provide funding for Oregon's Coastal Management Program; with EPA, review Oregon's Coastal Nonpoint Source Program for compliance with federal standards and guidance.

*MEASURE: USFWS1
JOBS-IN-THE-WOODS PROGRAM*

Provide funding to hire displaced workers from timber-dependent communities to implement watershed enhancement projects on non-federal lands to benefit species of Federal significance and their habitats.

*MEASURE: USFWS2
HABITAT CONSERVATION PLAN DEVELOPMENT*

Work with non-federal applicants, under section 10(a)(1)(B) of the Endangered Species Act, to develop habitat conservation plans (HCPs) to minimize and mitigate for the impacts of land and water management activities on listed species and their ecosystems.

*MEASURE: USFWS3
AQUATIC HABITAT CONSERVATION AGREEMENT DEVELOPMENT AND
CONSERVATION ACTIVITIES*

Establish Conservation Agreements with cooperating private landowners and agencies to conserve special status species.

*MEASURE: USFWS5
PARTNERS FOR WILDLIFE (PFW) PROGRAM*

Through the PFW Program, provide financial and technical assistance to private (primary focus) and non-federal landowners to restore and enhance wetland, riparian, instream and associated upland habitats in partnership with local watershed councils, SWCDs, COGs, Tribes, NRCS, ODFW, OPRD, or any non-profit or governmental entity willing and fiscally able to participate.

*MEASURE: USFWS9
BIOLOGICAL OPINIONS TO PREVENT OR REDUCE IMPACTS TO LISTED SPECIES*

Provide consultation technical assistance to Federal agencies trying to meet obligations under section 7(a)(2) of the Endangered Species Act, recommending or requiring minor modifications to projects that reduce impacts to listed species and their habitat.

*MEASURE: USFWS10
FISH AND WILDLIFE COORDINATION ACT REPORTS ON FEDERAL PROJECTS*

Provide recommendations under authority of the Fish and Wildlife Coordination Act into water development programs of the Army Corps of Engineers, Bureau of Reclamation, and Natural Resources Conservation Service.

*MEASURE: USFWS20
NATIONAL ESTUARY PROGRAM*

Serve on the Science and Technical Advisory Committee for the Tillamook Bay National Estuary Project (TBNEP), and on the Science and Technical Advisory and Management committees for the Lower Columbia River Estuary Program. Identified priority problems are fish and wildlife habitat and excessive sedimentation for the TBNEP, and habitat loss and modification for the Lower Columbia.

*MEASURE: USFWS21
CONSERVATION STRATEGY FOR BULL TROUT*

Continue working with ODFW in designing and implementing bull trout conservation plans for the Upper Willamette, Deschutes and Hood river basins.

Adequacy of measures to meet objective

WRD requires fish passage wherever ODFW indicates that fish are present. WRD's public interest standards, Division 33 rules, and transfer review process ensure that ODFW district biologists will review and comment on new water right applications, and transfer applications, thereby ensuring that fish passage is required as part of any new water diversion where fish are present. The federal agencies are providing technical support and assistance to ensure barrier-free passage to access critical habitat.

Objective IIA-2: Restore adequate fish passage at diversion and push-up dam structures where it does not presently exist.

*MEASURE: WRD S-22, DSL 11, ODFW IVC1, DEQ 1S, DEQ 4S and ODA 9
(also involves OSP)
MODIFICATION OR REPLACEMENT OF DIVERSION DAMS
WHICH INTERFERE WITH FISH PASSAGE*

Phase 1.

Klamath Mountains Province ESU

In 1996, an interagency effort was initiated to resolve fish passage problems associated with diversion or "push-up" dams, as well as other concerns such as erosion, stream channel changes, and disruption of spawning and riparian habitat. A pilot project targeted the Illinois

River Drainage, where many water users have historically relied on push-up dams to divert water for agricultural use.

As part of the Illinois project, an extensive public information effort was conducted and owners were given an opportunity, (along with financial support) to voluntarily resolve push-up dam passage problems. Remaining structures that continue to pose fish passage concerns are being addressed in 1997 and 1998 in a more structured, regulatory approach that is coordinated and prioritized by involved agencies based on fishery concerns.

In March 1997, an “Interagency Action Plan--Southwest Region Push-Up Dams” report was completed and submitted to NMFS. This plan is the model for future efforts and has been expanded to other areas in the Rogue and South Coast Basins. Attachment I lists the proposed implementation schedule for expansion of the program to other areas.

The cooperating agencies and organizations include: DSL, ODFW, WRD, OSP, DEQ, ODA, Illinois Valley Watershed Council, soil and water conservation districts, Rogue Valley Council of Governments, Bureau of Reclamation, Natural Resources Conservation Service, and Governor’s Watershed Enhancement Board (GWEB). The stakeholders include private landowners, the Oregon Water Trust, and the sportsman and conservation groups.

The action plan implemented by the agencies began in the summer of 1996, when streams in the basin were surveyed using aircraft, and ground-truthed to determine structure locations and the degree of impediments of fish passage. DSL and WRD reviewed their records and determined which structures were permitted.

Four of 26 structures were found in compliance with removal and fill and other laws. The Soil and Water Conservation District and Illinois Valley Watershed Council contacted property owners with diversion structures, and efforts were made to obtain willing compliance by October 1996. WRD expedited requests for changes in points of diversion and from surface to ground water, where doing so was deemed appropriate to end use of the structures. Three gravel dams were eliminated through the installation of infiltration galleries, and permit applications were prepared for two push-up dams that do not present fish passage problems.

Exact estimates on the number of miles with increased fish access due to the 1996 actions are not yet available, but this type of quantitative information is expected in the final report being developed on the push-up dams.

Oregon Coast, Southwest Washington, Lower Columbia River, Upper Willamette River, Middle Columbia River & Snake River Basin ESUs

By June 30, 1998, ODFW in conjunction with local watershed councils, will prioritize the basins which need to have fish passage problems associated with push-up dams resolved.

Phase 2.

Oregon Coast, Southwest Washington, Lower Columbia River, Upper Willamette River, Middle Columbia River & Snake River Basin ESUs

By September 30, 1999, DSL, WRD, OSP, ODFW, ODA, and DEQ will develop a proposed implementation schedule for the priority basins in conjunction with local watershed councils based on the experience gained in implementing the program in the Rogue and South Coast Basins.

Measure WRD S-10, the inventory of water diversions, will be useful not only for improving water management, but it is also part of the program to modify or replace diversion dams which interfere with fish passage.

**MEASURE: ODFW IVC1
COOPERATIVE REMOVAL OF BARRIERS**

Pursue removal of artificial fish passage barriers or the establishment of adequate fish passage at these barriers, including those at ODFW fish hatcheries. Despite long-standing legal requirements to provide passage, many barriers still exist. ODFW will promote installation of passage capability cooperatively, but will also work with OSP to identify where enforcement approaches are needed. Until the last few years, salmon and steelhead were still prevented from migrating above some ODFW hatcheries because of risks to hatchery production from diseased fish of related species living in the hatchery water supply. New technologies and fish culture practices have reduced some of the risks and fish are now allowed to pass or they are captured and placed above hatchery barriers, but detailed plans and procedures need to be refined regarding species, types (e.g., hatchery versus wild fish), and numbers to pass to protect wild fish areas from excessive numbers of hatchery fish and species exotic to the basin.

ODFW will continue to seek ways to reduce disease risks to hatchery production from salmon and steelhead passed above hatcheries and will remove artificial barriers at hatcheries or actively pass fish around the barriers to restore species that were indigenous to each stream blocked by a hatchery facility.

The 1997-99 ODFW budget includes funds for an engineer specializing in fish passage to increase the State's ability to assist owners in developing passage and screening. ODFW will work toward development of additional non-regulatory incentives to encourage compliance with passage requirements.

Southwest Washington ESU

The following are priority sites for improving passage or actively passing adults around barriers:

Sandy Hatchery on Cedar Creek, Sandy River Basin (passage has been initiated; use of hatchery juveniles reared from wild broodstock to aid in the reintroduction is being explored).

Six adult fishways on irrigation diversions in the Fifteenmile Creek Basin (fishways are in place, but require annual or more frequent maintenance).

Upper Willamette River ESU

The following are priority sites for achieving or improving fish passage through agreements with owners of the dams:

- 1. Geren Island, North Santiam River*
- 2. Sodom Dam, Calapooia River*
- 3. Lebanon Dam, South Santiam River*
- 4. Hartman Dam, Butte Creek*
- 5. City of Silverton Dam, Abiqua Creek*

Oregon Coast & Klamath Mountains Province ESUs

“Push-up” dams for diverting water are priorities in the Rogue and South Coast Basins. Passage of wild winter steelhead above Alsea Hatchery (possibly aided by transfer of wild steelhead from other Alsea Basin streams) to re-establish a self-sustaining run of several hundred is a program that was initiated the winter of 1996-97.

MEASURE: ODFW IB4 INVENTORY ARTIFICIAL BARRIERS

Complete an inventory of artificial structures which serve as barriers to fish passage. ODFW will conduct inventories of fish passage barriers, including road culverts, tide gates, diversion dams, and other artificial features that may block migration (culverts and tide gates are addressed in the “Habitat” section of the Oregon Plan). ODFW will maintain a database of fish passage problem structures.

Pursue removal of artificial fish passage barriers. Despite long-standing legal requirements to provide passage, many barriers still exist. ODFW will promote installation of passage capability cooperatively, but will also work with OSP to identify where regulatory enforcement for compliance is needed.

Snake River Basin ESU

The current fish passage database lists known in-channel dams that block passage in this ESU.

*MEASURE: NOAA-NMFS6
IRRIGATION SCREENING AND FISHWAYS*

Fund about \$1.9M annually for construction and maintenance of irrigation diversion screens and fishways in Oregon, and \$8M for repair of Willamette Falls fishway recently destroyed by floods.

*MEASURE: NOAA-NMFS15
WATER SUPPLY PROJECTS*

Provide recommendations to protect and mitigate damage to salmonids to sponsors of new water storage projects and increased water withdrawals.

Adequacy of measures to meet objective

Potentially, the most significant fish passage problems in many basins are caused by diversion “push-up” dams. In 1996, the State initiated interagency approach to resolving fish passage problems caused by these dams. A pilot project of this effort in the Illinois Basin is proceeding with success, and is being expanded to other basins. Basin by basin efforts by agency field staff is necessary to collaboratively work with landowners to address fish passage concerns.

Objective II-3: Maintain and restore adequate fish passage on all exempt ponds and permitted reservoirs located in habitat areas.

*MEASURE: WRD S-23 (also involves ODFW)
REQUIRE FISH PASSAGE ON PONDS*

By August 1997, ODFW identified fishery concerns in written comments pertaining to the certificates and exempt pond notices filed under statutes passed in 1993 (House Bill 2153) and 1995 (House Bill 2376).

By February 1, 1998, WRD will issue mitigation orders on the ponds where there is a “detrimental impact to an existing fishery” as substantiated in ODFW comments.

The majority of pre-existing ponds filed under House Bills 2153 and 2376 are off-channel, but in-channel ponds are also covered under ORS 537.405.

ODFW reviewed reservoirs applied for under House Bills 2153 and 2376 for significant detrimental impact to existing fisheries. If WRD determines that a pond does injury to an existing fishery resource, then WRD will issue an appropriate mitigation order which considers the recommendations of ODFW.

*MEASURE: NOAA-NMFS6
IRRIGATION SCREENING AND FISHWAYS*

Fund about \$1.9M annually for construction and maintenance of irrigation diversion screens and fishways in Oregon, and \$8M for repair of Willamette Falls fishway recently destroyed by floods.

*MEASURE: NOAA-NMFS15
WATER SUPPLY PROJECTS*

Provide recommendations to protect & mitigate damage to salmonids to sponsors of new water storage projects and increased water withdrawals.

Adequacy of measures to meet objective

Where WRD deems it appropriate and in accordance with House Bills 2153 and 2376, WRD will require appropriate mitigation on all ponds where ODFW has indicated there would be a negative impact on fish if the ponds were listed as exempt.

III. FACTOR FOR DECLINE: Salmonid mortality

Discussion of Factor: Unscreened water diversions have the potential to kill many juvenile salmonids and some adult salmonids. Diversions can also dry up channels exposing spawning beds or causing mortality of either juvenile or adult salmonids.

A. BIOLOGICAL OBJECTIVE: Prevent juvenile salmonid mortality caused by entrainment in water intake structures.

Objective IIIA-1: Ensure all diversion intake structures that take fish are appropriately screened to prevent mortality.

*MEASURE: ODFW IB5
INVENTORY WATER DIVERSIONS*

Lower Columbia River & Upper Willamette River ESUs

By June 30, 1999, ODFW will contact identified water rights holders on the Willamette River for screening requirements.

Note: For additional information see the description of this measure under the section describing the restoration of streamflows.

MEASURE: ODFW IVC2
SCREEN DIVERSIONS LESS THAN 30 CFS

Oregon's Fish Screening Cost Share Program was started in 1991 by the Oregon Legislature to screen water diversions less than 30 cfs to prevent entrainment of salmonids. Since the first screen in this program was installed in 1992, 265 screens that protect fish have been installed statewide by November 30, 1997..

Federally funded fish screens have been installed in 502 diversions in Middle Columbia River and Snake River Basin ESUs.

Funding from the ODFW Restoration and Enhancement Board, WRD Water Development Loan Fund, and GWEB may be available to accelerate the installation of all the needed screens.

Fish screening effectiveness will be evaluated at selected screened diversion sites by trapping, enumerating, and identifying species of fish saved.

Phase 1.

The Oregon Fish Screening Cost Share Program is making progress toward screening more than 75 small diversions per year to protect fish as directed by the Oregon Legislature.

Phase 2.

More than 1,000 cost share screens could be installed by 2007 assuming additional funding. ODFW plans to pursue additional funds from various sources including state and federal.

Under the federal program, remaining diversions should be screened by 2007 in Middle Columbia River and Snake River Basin ESUs as funding becomes available.

Southwest Washington ESU

Phase 1.

By June 30, 1993, three diversions were screened in the Lewis and Clark River Basin.

Phase 2.

By June 30, 2001, the one known remaining diversion will be screened.

Lower Columbia River ESU

Phase 1.

By January 30, 1996, 131 diversions were screened. The Hood River Basin has 10 screens in place. The Fifteenmile Creek Basin has more than 108 pump screens and 8 gravity diversion (ditch) screens.

Phase 2.

By June 30, 2007, the remaining known 12 diversions in the Lower Willamette River, Sandy River and Sauvie Island will be screened.

Upper Willamette River ESU

Phase 1.

By November 30, 1997, 66 pump diversions were screened. By September 1996, 277 pump diversions were identified by OSP.

Phase 2.

By June 30, 2007, more than 200 diversions are planned for screening.

Oregon Coast ESU

Phase 1.

By November 30, 1997, 59 pump diversions were screened.

Phase 2.

By June 30, 2007, more than 600 diversions are planned for screening. The Umpqua River Basin is a high priority with federally listed cutthroat trout. Most unscreened or improperly screened diversions reside in this basin and the Coquille River Basin.

Klamath Mountains Province ESU

Phase 1.

By November 30, 1997, 92 diversions were screened in the Rogue River Basin, which remains a high priority.

Phase 2.

By June 30, 2007 more than 200 diversions are planned for screening. Most unscreened or improperly screened diversions are in the Rogue River Basin.

Middle Columbia River ESU

Phase 1.

By May 1, 1997, 377 diversions were screened. These include 5 ditches in the Umatilla River Basin, 28 ditches in the Walla Walla River Basin, and 293 ditches in the John Day River Basin, and 51 diversions in the Deschutes River Basin (lower). The Deschutes River screened diversions are in Trout Creek with 17 ditch and 34 pump screens.

Pump diversions in the John Day, Umatilla, and Walla Walla River Basins were surveyed by November 30, 1997.

Phase 2.

Only five screens in the John Day River Basin meet current NMFS fish screening criteria. These criteria are not met by any screens in the Umatilla and Walla Walla River Basins. Federal funds will be sought to replace these screens each year.

By June 30, 2007, 12 diversions in the John Day Basin and 15 diversions in the Umatilla River Basin will be screened. The 12 ditches in the John Day Basin reside in Butte Creek and Rock Creek.

Snake River Basin ESU

Phase 1.

By May 1, 1997, 125 ditches were screened. These include 97 ditches in the Grande Ronde Basin and 28 ditches in the Imnaha River Basin.

Phase 2.

By June 30, 2001, all ditches in the Grande Ronde Basin will be screened. By April 30, 1999, 170 pump diversions in the Grande Ronde and Imnaha River Basins will be screened.

MEASURE: ODFW IVC3

WATERSHED HEALTH FUNDS FOR SOUTH COAST FISH SCREENING NEEDS

By May 1, 1997, Watershed Health funds (\$200,000) provided 14 screens in the Oregon Coast ESU (Coquille River) and 43 screens in the Klamath Mountains Province ESU (Rogue River). By November 30, 1997, 27 additional screens were installed with the remainder of the Watershed Health money.

MEASURE: ODFW IVC4

SCREENING OF WATER DIVERSIONS GREATER THAN 30 CFS

Screen water diversions greater than 30 cfs. State law requires screening with all costs paid by water users. Cooperation with water users is occurring, and ODFW will work with OSP as necessary to ensure compliance.

Fish screening effectiveness will be evaluated at selected screened diversion sites by trapping, enumerating, and identifying species of fish saved.

Phase 1.

ODFW and OSP will cooperatively continue to identify and work with water users to encourage screening compliance. By June 30, 1997, ODFW and OSP completed ground truthing the current screening status of more than 60 diversions in the Southwest Washington, Oregon Coast and Klamath Mountains Province ESUs; some of these diversions were not in use.

Phase 2.

The 1997-99 ODFW budget includes funding for an engineer to specialize in fish passage to increase our ability to assist water users in developing passage and screening. By June 30, 1999, ODFW will have obtained from water users screening plans including timelines for all diversions.

Irrigation districts will screen their diversions by June 30, 2007, utilizing federal funds.

Southwest Washington ESU

Phase 1.

By December 1996, OSP had inspected all Columbia River pump stations.

Phase 2.

By June 30, 2007, pump stations not screened to current standards will be screened.

Lower Columbia River ESU

Phase 1.

By April 1, 1997, East Fork Irrigation District's diversion (greater than 130 cfs) on the East Fork of Hood River was screened.

Phase 2.

By June 30, 2005, PacifiCorp's Powerdale Dam on Hood River will be screened through the FERC relicensing process if PacifiCorp does not discontinue operations.

Upper Willamette River ESU

Phase 1.

By June 30, 1996, Weyerhaeuser's Springfield Plant on the McKenzie River was screened.

Phase 2.

High priorities for screening by June 30, 2005, exist in the North Santiam River, including the City of Salem's Geren Island, Stayton Canal, and Sidney Canal. The Sullivan Plant bypass system is currently under evaluation at Willamette Falls.

Oregon Coast ESU

Phase 1.

By December 31, 1996, one pump diversion in the Coquille River was screened.

Phase 2.

By June 30, 1999, two diversions in Rock Creek, Umpqua River Basin will be screened. Hydroelectric diversions in the Umpqua River Basin will be assessed for screening under the FERC relicensing process.

Klamath Mountains Province ESU

Phase 1.

By May 15, 1997, two diversions in Bear Creek were screened.

Phase 2.

By June 30, 1999, five diversions in Bear Creek and Little Butte Creek will be screened with help from BOR and ODFW. By June 30, 2003, five more diversion screens needing retrofitting to meet current standards should be screened. By June 30, 2002, Savage Rapids Dam, mainstem Rogue River, will be rescreened to current standards if the dam is not removed.

Middle Columbia River ESU

Phase 1.

By June 30, 1993, OSP had inspected all Columbia River pump stations. By June 30, 1996, all these screens were in compliance with federal screening criteria.

MEASURE: WRD S-27 WATER DEVELOPMENT LOAN FUND

By November 1, 1998, WRD will determine whether administrative or legislative changes to the Water Development Loan Fund are needed to increase the program's utility for fish protection and watershed enhancement projects proposed by private entities. In November 1997, WRD completed two brochures to increase public awareness of the loan program. WRD will continue outreach efforts to promote the program as a funding source for fish protection and watershed enhancement projects.

MEASURE: NOAA-NMFS1 HABITAT RESTORATION PROGRAM

Fund fishers for \$2.7 M to do stream and watershed surveys, inspect irrigation culverts, and improve channel conditions in Oregon coast streams.

MEASURE: NOAA-NMFS3 HABITAT CONSERVATION PLANS

Issue incidental take permits where appropriate. Also encourage nonfederal entities to develop plans to minimize take and to conserve salmon while conducting other activities.

*MEASURE: NOAA-NMFS6
IRRIGATION SCREENING AND FISHWAYS*

Fund about \$1.9M annually for construction and maintenance of irrigation diversion screens and fishways in Oregon, and \$8M for repair of Willamette Falls fishway recently destroyed by floods.

*MEASURE: NOAA-NMFS15
WATER SUPPLY PROJECTS*

Provide recommendations to protect and mitigate damage to salmonids to sponsors of new water storage projects and increased water withdrawals.

*MEASURE: NOAA-NMFS30
SNAKE RIVER RECOVERY PLAN*

Proposed plan contains measures pertaining to water quantity, screening, and an improved regional decision-making forum, plus other elements that benefit all migratory fish.

*MEASURE: USFWS2
HABITAT CONSERVATION PLAN DEVELOPMENT*

Work with non-federal applicants, under section 10(a)(1)(B) of the Endangered Species Act, to develop habitat conservation plans (HCPs) to minimize and mitigate for impacts of land and water management activities on listed species and their ecosystems.

*MEASURE: USFWS3
AQUATIC HABITAT CONSERVATION AGREEMENT DEVELOPMENT AND
CONSERVATION ACTIVITIES*

Establish Conservation Agreements with cooperating private landowners and agencies to conserve special status species.

*MEASURE: USFWS9
BIOLOGICAL OPINIONS TO PREVENT OR REDUCE IMPACTS TO LISTED SPECIES*

Provide consultation technical assistance to Federal agencies trying to meet their obligations under section 7(a)(2) of the Endangered Species Act, recommending or requiring minor modifications to projects that reduce impacts to listed species and their habitat.

MEASURE: USFWS10
FISH AND WILDLIFE COORDINATION ACT REPORTS ON FEDERAL PROJECTS

Provide recommendations under authority of the Fish and Wildlife Coordination Act into water development programs of the Army Corps of Engineers, Bureau of Reclamation, and Natural Resources Conservation Service.

MEASURE: USFWS13
REVIEW OF DREDGE AND FILL PROJECTS

Review applications for permits issued by the U.S. Army Corps of Engineers for construction activities in waters of the United States, including wetlands. Evaluate work proposals for effects on fish and wildlife and recommend measures to avoid or minimize any adverse impacts

Adequacy of measures to meet objective

ODFW has an existing cost-share program for fish screening diversions less than 30 cfs, and is working with OSP to require fish screening of diversions greater than 30 cfs. Incremental increases in screening the smaller diversions will occur, but timing is highly dependent on funding alternatives. *The federal agencies are funding several projects to ensure that appropriate diversions are screened.*

Objective IIIA-2: Ensure that all new water right permits are appropriately conditioned to prevent mortality.

MEASURE: WRD S-1 (also involves ODFW, DEQ, ODA)
PUBLIC INTEREST REVIEW TO PROTECT SALMONIDS

All new permit applications require barrier-free fish passage where there are fish present, to the specifications requested by ODFW. WRD's public interest standards and Division 33 rule process (protection of sensitive, threatened, and endangered fish habitat) ensure that this occurs. (See the section on Maintaining Streamflows for additional information on the public interest review process.)

MEASURE: NOAA-NMFS15
WATER SUPPLY PROJECTS

Provide recommendations to protect and mitigate damage to salmonids to sponsors of new water storage projects and increased water withdrawals.

Adequacy of measures to meet objective

WRD requires fish screening wherever ODFW indicates that fish are present. The Division 310 and Division 33 rules ensure that ODFW district biologists will review and comment on new water right applications thereby ensuring that fish screening is required as part of any new water diversion where fish are present.

A. BIOLOGICAL OBJECTIVE: Prevent direct salmonid mortality due to loss of habitat by reservoirs.

Objective IIB-1: Ensure that any new reservoirs are environmentally responsible and do not have a net negative impact on salmonids.

*MEASURE: WRD S-24
PROTECTION AGAINST DIRECT HABITAT LOSS*

All new permit applications for storage projects, whether large or small, are subject to an interagency public interest review for impacts to fish species habitat under existing WRD rules (OAR Chapter 690, Division 310 and Division 33) (see Measure WRD 1).

Inundation of spawning or rearing grounds caused by large reservoirs can cause major loss of salmonid habitat. Some loss of habitat may also be associated with the cumulative effects of numerous, smaller, in-channel ponds, although in some circumstances small ponds can increase the amount of overwinter habitat if passage is provided. Future consideration of proposed projects will include public interest and Division 33 interagency review to ensure protection of fish habitat concerns.

*MEASURE: NOAA-NMFS1
HABITAT RESTORATION PROGRAM*

Fund fishers for \$2.7 M to do stream and watershed surveys, inspect irrigation culverts, and improve channel conditions in Oregon coast streams.

*MEASURE: NOAA-NMFS3
HABITAT CONSERVATION PLANS*

Issue incidental take permits where appropriate. Also encourage nonfederal entities to develop plans to minimize take and to conserve salmon while conducting other activities.

*MEASURE: NOAA-NMFS6
IRRIGATION SCREENING AND FISHWAYS*

Fund about \$1.9M annually for construction and maintenance of irrigation diversion screens and fishways in Oregon, and \$8M for repair of Willamette Falls fishway recently destroyed by floods.

*MEASURE: NOAA-NMFS15
WATER SUPPLY PROJECTS*

Provide recommendations to protect and mitigate damage to salmonids to sponsors of new water storage projects and increased water withdrawals.

MEASURE: USFWS3
AQUATIC HABITAT CONSERVATION AGREEMENT DEVELOPMENT AND
CONSERVATION ACTIVITIES

Establish Conservation Agreements with cooperating private landowners and agencies to conserve special status species.

MEASURE: USFWS9
BIOLOGICAL OPINIONS TO PREVENT OR REDUCE IMPACTS TO LISTED SPECIES

Provide consultation technical assistance to Federal agencies trying to meet their obligations under section 7(a)(2) of the Endangered Species Act, recommending or requiring minor modifications to projects that reduce impacts to listed species and their habitat.

MEASURE: USFWS10
FISH AND WILDLIFE COORDINATION ACT REPORTS ON FEDERAL PROJECTS

Provide recommendations under authority of the Fish and Wildlife Coordination Act into water development programs of the Army Corps of Engineers, Bureau of Reclamation, and Natural Resources Conservation Service.

MEASURE: USFWS13
REVIEW OF DREDGE AND FILL PROJECTS

Review applications for permits issued by the U.S. Army Corps of Engineers for construction activities in waters of the United States, including wetlands. Evaluate work proposals for effects on fish and wildlife and recommend measures to avoid or minimize any adverse impacts.

Adequacy of measures to meet objective

New reservoirs that are proposed must undergo public interest review, including recommendations by the ODFW field offices, to ensure that the reservoir will not harm salmonids.

The following federal measures apply to all of the overarching biological objectives in the Water Quality, Fish Passage, and Fish Screening Section:

MEASURE: BIA1
CO-MANAGER CONSULTATION

Respond to requests for consultation on plans and policies that may affect tribal resources. This would include habitat protection and restoration projects, as well as development of terminal and selective fishing sites. The BIA can act as liaison between Oregon, local watershed councils, private landowners, and individual tribes regarding issues that affect tribal resources.

*MEASURE: BLM/USFS1
WATERSHED/HABITAT RESTORATION*

Continue implementation of comprehensive watershed restoration programs on coastal systems.

*MEASURE: BLM/USFS5
PLANNING AND ASSESSMENT*

Seek to expand opportunities for State and watershed council involvement in watershed analysis and continue to share results of these analyses with all interested and involved parties.

*MEASURE: BLM/USFS7
COOPERATIVE FUNDING*

Continue to seek opportunities to cost-share resource assessments, restoration prescriptions and treatments across whole watersheds, regardless of ownership, with the State and watershed councils.

*MEASURE: BLM/USFS9
NATURAL DISASTER COORDINATION*

Continue to work cooperatively with the State and watershed councils in assessment and prioritization of actions involving natural disturbances and disasters.

*MEASURE: BLM/USFS11
WATERSHED COUNCIL SUPPORT AND COORDINATION*

Work with watershed councils to ensure a high degree of coordination for actions occurring both on public and private lands.

*MEASURE: BOR1d
TECHNICAL ASSISTANCE FOR WATERSHED COUNCIL ACTIVITIES*

Propose initiation of Oregon statewide program in FY 1999 that would provide technical assistance for watershed council activities.

*MEASURE: BOR1e
TECHNICAL ASSISTANCE AND A WATER BUDGET FOR THE ILLINOIS RIVER
WATERSHED ASSESSMENT*

Provide technical assistance and preparation help on water budget for the Illinois River Watershed Assessment in cooperative effort with the Natural Resources Conservation Service and others.

MEASURE: BOR1h
TECHNICAL ASSISTANCE FOR THE UMPQUA RIVER BASIN WATER MANAGEMENT PROGRAM

Discuss potential partnership with Douglas County, Oregon to provide BOR technical assistance to update the county's Umpqua River Basin Water Management Program for incorporation into the OCSRI.

MEASURE: BOR3a
TECHNICAL ASSISTANCE TO IRRIGATION DISTRICTS ON FEDERAL PROJECTS

Provide technical assistance to irrigation districts on Federal projects to prepare and implement water conservation plans and monitoring programs.

MEASURE: BPA9
ACCESS TO COMPUTER AND GIS DATA BASES

Provide state and private parties with access to the Bonneville-funded Computer Information System (CIS) and Geographic Information System (GIS) resources. Access to the CIS and the GIS resources will be through the Pacific States Marine Fisheries Commission based in Portland.

MEASURE: NOAA-NMFS1
HABITAT RESTORATION PROGRAM

Fund fishers for \$2.7 M to do stream and watershed surveys, inspect irrigation culverts, and improve channel conditions in Oregon coast streams.

MEASURE: NOAA-NMFS2
WATERSHED COUNCILS

Develop technical guidance documents and provide staff assistance to watershed councils.

NOAA-NMFS3
HABITAT CONSERVATION PLANS

Issue incidental take permits where appropriate. Also encourage nonfederal entities to develop plans to minimize take and to conserve salmon while conducting other activities.

MEASURE: NOAA-NMFS15
WATER SUPPLY PROJECTS

Provide recommendations to protect and mitigate damage to salmonids to sponsors of new water storage projects and increased water withdrawals.

MEASURE: NOAA-NMFS30

SNAKE RIVER RECOVERY PLAN

Proposed plan contains measures pertaining to water quantity, screening, and an improved regional decision-making forum, plus other elements which benefit all migratory fish.

MEASURE: NOAA-NMFS40 MEMORANDUM OF UNDERSTANDING WITH THE NATURAL RESOURCE CONSERVATION SERVICE

The NMFS will continue working with state agencies, the U.S. Fish and Wildlife Service, the Environmental Protection Agency and the Natural Resource Conservation Service (NRCS) to streamline the process for private land users and NRCS to comply with the Endangered Species Act and contribute to the conservation of species of concern and their habitats. Under a nearly completed Memorandum of Understanding, one of the first efforts will be to jointly review the NRCS Field Office Technical Guides and identify any enhancements or adjustments that could better address conservation of species of concern or their habitat.

MEASURE: NOAA-NOS19 COASTAL MANAGEMENT AND NONPOINT SOURCE PROGRAMS

Provide funding for Oregon's Coastal Management Program; with EPA, review Oregon's Coastal Nonpoint Source Program for compliance with federal standards and guidance.

MEASURE: USFWS1 JOBS-IN-THE-WOODS PROGRAM

Provide funding to hire displaced workers from timber-dependent communities to implement watershed enhancement projects on non-federal lands to benefit species of Federal significance and their habitats.

MEASURE: USFWS2 HABITAT CONSERVATION PLAN DEVELOPMENT

Work with non-federal applicants, under section 10(a)(1)(B) of the Endangered Species Act, to develop habitat conservation plans (HCPs) to minimize and mitigate for the impacts of land and water management activities on listed species and their ecosystems.

MEASURE: USFWS3 AQUATIC HABITAT CONSERVATION AGREEMENT DEVELOPMENT AND CONSERVATION ACTIVITIES

Establish Conservation Agreements with cooperating private landowners and agencies to conserve special status species.

MEASURE: USFWS5

PARTNERS FOR WILDLIFE (PFW) PROGRAM

Through the PFW Program, provide financial and technical assistance to private (primary focus) and non-federal landowners to restore and enhance wetland, riparian, instream and associated upland habitats in partnership with local watershed councils, SWCDs, COGs, Tribes, NRCS, ODFW, OPRD, or any non-profit or governmental entity willing and fiscally able to participate.

MEASURE: USFWS7 ASSISTANCE TO WATERSHED COUNCILS

Provide technical assistance to local watershed councils to assist in development of watershed assessments, regulatory requirements, identification of restoration needs, development of restoration projects, and support for watershed council coordinators.

MEASURE: USFWS8 NORTHWEST FOREST PLAN IMPLEMENTATION ASSISTANCE

Coordinate with USFS and BLM staff on all aspects of planning and analysis related to implementation of the Northwest Forest Plan (NFP), to include assisting and advising watershed analysis teams, working on adaptive management area planning, advising and reviewing late successional reserve assessments, and providing early input on project-level planning.

MEASURE: USFWS9 BIOLOGICAL OPINIONS TO PREVENT OR REDUCE IMPACTS TO LISTED SPECIES

Provide consultation technical assistance to Federal agencies trying to meet obligations under section 7(a)(2) of the Endangered Species Act, recommending or requiring minor modifications to projects that reduce impacts to listed species and their habitat.

MEASURE: USFWS10 FISH AND WILDLIFE COORDINATION ACT REPORTS ON FEDERAL PROJECTS

Provide recommendations under authority of the Fish and Wildlife Coordination Act into water development programs of the Army Corps of Engineers, Bureau of Reclamation, and Natural Resources Conservation Service.

MEASURE: USFWS16 TECHNICAL ASSISTANCE FOR PLANNING

Provide technical assistance in state-wide, city and county planning actions to encourage use of environmentally sound methods.

MEASURE: USFWS17

ADOPT-A-RIVER AND SALMONWATCH PROGRAMS

Provide \$10,000 annually in funding to the Oregon Adopt-A-River Program, which encourages and coordinates restoration, enhancement, and protection of waterways, riparian areas, and watersheds throughout the state. Provide \$10,000 annually to support SalmonWatch, an environmental education program coordinated by Oregon Trout that emphasizes importance of wild fish conservation in watershed management.

MEASURE: USFWS18

SUPPORT TO ONGOING EDUCATIONAL PROGRAMS (OUTDOOR SCHOOL AND SALMON CAMP)

Provide \$10,000 annually to support Outdoor School Programs in Multnomah County (\$5,000) and the Northwest Regional Educational Service District (\$5,000) for educating sixth-grade students in ecological and environmental concerns. Also provide \$10,000 annually to the Salmon Camp Program, an environmental education project for Native American youth that focuses on ecological systems and watersheds and the life-cycle of salmon.

MEASURE: USFWS19

NATURAL RESOURCE EDUCATION AND COMMUNITY AWARENESS OF AQUATIC RESOURCES

Develop natural resource education and general information materials, conduct teacher workshops on special status species, and regularly participate in educational public events promoting natural resource conservation.

MEASURE: USFWS24

INTERIOR COLUMBIA BASIN ECOSYSTEM MANAGEMENT PROJECT

Per the Draft Eastside EIS, assist in design and implementation of ecosystem restoration activities by participating in watershed analyses and sub-basin reviews.

References

Botkin, D.B., H.J. Schenk, K. Cumming, T. Dunne, H. Regier, M. Sobel, and L.M. Talbot. 1993. Status and Future of Anadromous Fish of Western Oregon and Northern California, The Center for the Study of the Environment, Portland, Oregon.

National Research Council. 1996. Upstream, Salmon and Society in the Pacific Northwest, National Academy Press, Washington D.C.

Nichols, D. 1990. An inventory of water diversion in Oregon needing fish screens. Habitat Conservation Division, Oregon Department of Fish and Wildlife, Portland, Oregon. 27 pp. + appendices.

Additional Relevant Information Available for Reviewing the Plan¹

Maps showing the location of core habitat streams (Oregon Coast and Klamath Mountains Province ESUs), instream water rights, and gaging stations

October 17, 1996 WRC Instream Report "Informational Report on Instream Water Use 1995 Water Year (October 1, 1994 - September 30, 1995)

Water Right Application Process Flow Chart

WRD World Wide Web Site: <http://www.wrd.state.or.us>

ORS Chapters 498 and 509 on Fish Passage and Fish Screening - Contact person Roy Elicker, ODFW, (503) 872-5252, ext. 5411

¹ Unless otherwise indicated the contact person for this material is Bob Rice, WRD, (503)378-8455, ext. 238.

Chapter 14A

Section 3: Water Quantity, Fish Passage and Fish Screening

Attachments

- Attachment A: Map of Steelhead Evolutionary Significant Units in Oregon
- Attachment B: OAR Chapter 690, Division 33
- Attachment C: Memorandum of Understanding Between WRD, ODFW, DEQ, and ODA on Implementation of Division 33
- Attachment D: Division 33, Section 310 to 340 Map
- Attachment E: Enforcement Plan MOA Between WRD and OSP
- Attachment F: May 29, 1997 WRC Enforcement Report “Informational Report on 1996 Field Regulations and Enforcement Activities
- Attachment G: Municipal Water Management Plan Outline/Checklist
- Attachment H: Municipalities with Water Rights in Core Habitat Areas (Oregon Coast and Klamath Mountain Province ESUs)
- Attachment I: Proposed Implementation Schedule to Expand the Push-Up Dam Modification or Replacement Program to Other Areas in the Rogue and South Coast Basins
- Attachment J: Regional & Watermaster District Map
- Attachment K: 1997-99 Strategic Plan for Managing Oregon’s Water Resources
- Attachment L: Water Rights in Oregon: An Introduction to Oregon’s Water Law and Water Rights System
- Attachment M: 1995-97 Biennial Report on Fish Screening Activities

Attachment N: Interagency Action Plan
Southwest Region Push-Up Dams

Note: Attachments B, J, K, L, M and N: See March 10, 1997 Oregon Plan