

CHAPTER 7.0 CUMULATIVE EFFECTS

7.1 INTRODUCTION

Cumulative effects are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (USFWS and NMFS 1998).

7.2 POPULATION GROWTH

Most future cumulative actions in the Deschutes River basin may be associated with an increasing population. The Deschutes River basin population increased dramatically through the early 1900s with the improvements in irrigation facilities, then remained steady or increased at moderate levels up to the mid-1900s (Reclamation and OWRD 1997). Most of these people are in the upper basin. Even people who do not rely upon the agricultural industry for their livelihoods still rely upon storage reservoirs and river systems for domestic and industrial water supplies, food, and recreation. From 1970 to 1990 there was a dramatic increase in population centered around the major cities, especially Bend and Redmond. Deschutes County more than doubled in population during this period and continues to grow at a higher than average rate. The area's beauty, lifestyle, land values, and other positive "pull" factors have attracted many new residents, resulting in growth unusual in a small, rural county without major industrial development. Tourism and recreation have also become a major industry in the basin.

The increasing population and associated housing developments and increased services may not directly influence ESA-listed species and their habitats in the basin. However, there may be indirect effects related to a decrease in water quality and more disturbance to biological and ecological needs of the species, as described below.

7.3 RECREATION

The demand for recreational opportunities in the Deschutes River basin is expected to increase (CTWSRO 1999). Much of the water-based recreation in the Deschutes River basin is focused on the lakes formed by storage dams. Reservoir and stream fishing and boating account for much of this water-based recreation. Rafting and canoeing on Wild and Scenic River sections located downstream of many of the major dams are increasingly important recreational endeavors in the basin. Recreation interests pressure

state and Federal agencies to maximize water conditions, streamflows, and reservoir pool elevations for recreation.

Other than at access points and public use locations, increased recreation would seldom have adverse impacts on ESA-listed species. These desires may not be compatible with operations for irrigation or power production, and conflicts can arise. The indirect impacts of recreation include water quality degradation that results from constructing access to rivers and streams. Access points to recreation areas, ski resorts, boat docks, marinas, launch ramps, trails, hunting and fishing areas, can impact the habitat of listed species by degrading water quality, introducing noxious or competitive pest species, and can directly or indirectly interfere with species biological or ecological needs.

7.4 NON-FEDERAL LAND MANAGEMENT PRACTICES

The effects of land management practices involving grazing, timber harvest, mining, or recreational uses, will continue to influence the respective watersheds in the basin by affecting land surfaces, water retention and runoff, and water quality of surface water and groundwater (USDA and USDOJ 2000).

State, county, and local zoning ordinances and comprehensive plans may help ameliorate the adverse effects from land-use practices and developments directly or indirectly affecting streams and other water bodies.

The Warm Springs Reservation lands are managed under the Tribes' integrated resource management plans (CTWSRO 1999 and 2000). In these plans, the Tribes have designated management goals for specified land areas. The objective of these goals is to protect and conserve natural resource values of the reservation lands for the benefit of tribal members and provide recreational opportunities for the general public at specified sites.

7.5 WATER SUPPLY

Additional large-scale irrigation developments are not anticipated in the Deschutes River basin. Future irrigation needs center mainly around the continued demand for hobby farm and ranchette types of development. Some of these needs may be provided by existing infrastructure and water rights. In areas where there is no existing source of water, and/or no means of conversion, there will be more demand on groundwater supplies through drilling of wells.

The demand for increased and a more stable water supply for local communities is expected to continue as residential areas expand. Conversions of agricultural land to residential space will also create more demand for sustained municipal water supplies.

Water conservation measures are expected to be pursued in the basin by local governments and private irrigation companies in a continued effort to stretch water supplies and reduce costs of operation (Reclamation and OWRD 1997). Lining and piping of irrigation canals and farm laterals have been a growing interest in the basin and is expected to continue.

As demands increase in the basin, there is the potential for further depletions of stream flows. This may especially be the case as groundwater resources are reduced through 1) more well development and 2) implementation of conservation projects, which have the potential to reduce groundwater recharge, therefore, reducing contributions to spring discharge to the middle and lower Deschutes River.

The State of Oregon has put into effect several measures that may help ameliorate or counteract the effects which future water demands and conservation measures could have on streamflows.

“The Allocation of Conserved Water Program is a voluntary activity that provides benefits to both water right holders and instream values. The law allows a water user who conserves water to use a portion of the conserved water on additional lands, lease or sell the water, or dedicate the water to instream use...In exchange for granting the user the right to “spread” a portion of the conserved water to new uses, the law allocates a portion to the state for instream use. After mitigating the effects on any other water rights, the Water Resources Commission allocates 25 percent of the conserved water to the state (for an instream water right) and 75 percent to the applicant, unless the applicant proposes a higher allocation to the state or more than 25 percent of the project costs come from Federal or state non-reimbursable sources.” (OWRD 1999)

If public funding is used to complete the project, the allocation for instream use may go as high as 75 percent, depending on the percent of non-repayable public funding.

In a March 2001 published report, the OWRD and USGS determined a hydraulic connection between groundwater and surface water existed in the Deschutes River basin. To address this issue, the Oregon Legislature passed HB 2184 giving the Oregon Water Resources Commission the authority to create a system of mitigation credits under existing Department programs and to adopt rules to recognize local mitigation banks to facilitate transactions of mitigation credits.

In 2002, the Oregon Water Resources Commission adopted Deschutes Basin Groundwater Mitigation Rules to be administered by the OWRD (See OAR 690-505.0600.) These rules require applicants for new groundwater permits in the Deschutes River basin to mitigate its consumptive use by restoring streamflows equal to the consumptive use. The OWRD will limit the issuance of new groundwater permits not to exceed a cumulative total of 200 cfs.

The Oregon Water Resources Commission also adopted rules to establish a mitigation bank in the Deschutes River basin (see OAR 690-521-0100). The rules define the process to recognize and establish mitigation banks and establish, obtain, and assign mitigation credits. The DRC has applied with the Oregon Water Resources Commission and been approved as a chartered entity to manage the mitigation bank in the Deschutes River basin. The mitigation credit and banking program's intent is to mitigate the impacts of new groundwater uses on surface water rights and scenic waterway flows in the lower Deschutes River and prevent any reductions in instream flows in the basin from additional groundwater pumping.

7.6 WATER QUALITY

M&I water usage can result in water quality degradation. Perhaps the greatest effect from future M&I water use may be the increased wastewater return flows that could add to the nutrient and bacteria loads in stream sections that have depleted flows. The total impact of a growing population on water quality are cumulative and would add to impacts coming from ongoing and future economic development sectors such as logging, food processing, sand and gravel mining, mineral mining, and grazing. Most discharge related to point source activities are regulated under the NPDES permitting program.

Water quality in the Deschutes River basin is managed by the State of Oregon under a framework provided in the Clean Water Act (CWA). The State of Oregon promulgates water quality standards in the Deschutes River basin for specific physical and chemical parameters in order to provide suitable conditions for the support of the recognized beneficial uses.

Section 303(d) of the CWA requires states to identify and develop a list of waters for which water quality is inadequate to fully support beneficial uses. The states then use the list to develop and implement water quality management plans, including pollutant load allocations. These water quality management plans and pollutant load allocations, commonly called Total Maximum Daily Load (TMDL), is scheduled for completion in 2005 for the Deschutes River basin.

Through an EPA and State of Oregon effort, the establishment of TMDLs are scheduled for completion in 2003 for the upper Deschutes River subbasin, 2004 for the lower and upper Crooked subbasins, and 2006 for the Lower Deschutes River subbasin. Oregon must develop these TMDLs to define pollutant discharge targets and responsibilities of point and non-point source contributors in achieving water quality goals. Activities associated with TMDL implementation should contribute to long-term improvements in the water quality of the Deschutes and Crooked Rivers by reducing point and non-point source pollutant loads. (<http://www.deq.state.or.us/wq/TMDLs/TMDLs.htm>)

Another program which may help to maintain or improve water quality in urban areas of the basin is EPA's Phase II Stormwater regulations. The Phase II regulations apply to smaller communities/cities requiring them to manage their stormwater (through the NPDES permit process) where they were not regulated in the past. This should reduce the amount of untreated stormwater from urban areas entering streams and rivers (http://cfpub.epa.gov/npdes/stormwater/swphase2.cfm?program_id=6).

7.7 WATERSHED RESTORATION

There has been a wide variety of ongoing conservation and restoration programs in the Deschutes River basin which promote improvements in instream flows and restoration of riparian ecosystems.

Currently, the Oregon Watershed Enhancement Board provides funding through a small grant program for watershed restoration and enhancement projects on forest, agricultural, range, urban, and rural residential lands that use existing technical guidance (OWEB 2003).

The DRC also provides matching funds for restoration projects throughout the basin, striving to improve Deschutes River basin water quality and quantity through on-the-ground restoration projects. Anyone is eligible for DRC support. The DRC has funded projects from watershed councils, irrigation districts, private landowners, tribes, soil and water conservation districts, environmental organizations, state and Federal agencies, and local businesses (DRC 2003).

The DRC is also working with the Deschutes Basin Coordination Group, a 16-party consortium of private, Federal, state, and tribal interests, to produce a comprehensive watershed restoration plan for the Deschutes River basin. The plan will be submitted to the Northwest Power Planning Council for adoption as a subbasin plan under the Council's Fish and Wildlife Program. The plan will follow the subbasin planning guidance adopted by the Council and will also be submitted to the OWEB for consideration and adoption by OWEB as the goals and priorities for watershed restoration in the Deschutes Basin under ORS 541.371(1)(c) [www.nwppc.org/fw/subbasinplanning/deschutes].

Local governments (e.g., soil and water conservation districts), private entities (e.g., watershed councils), and tribal efforts are expected to continue in supporting programs that benefit listed species. They will continue to participate with state and Federal agencies throughout the basin to implement ecological restoration measures which would incrementally improve instream flows and restore riparian ecosystems.

7.8 OREGON BULL TROUT STRATEGIES

By 1996, restrictive angling regulations (catch and release/no harvest) protected most bull trout populations throughout the State of Oregon. Statewide stocking of non-native brook trout has been discontinued in locations where ODFW managers believe they could migrate downstream and potentially interact with native bull trout. Also, hatchery stocking of legal-sized rainbow trout for recreational fisheries has been discontinued by ODFW managers in most locations near bull trout populations to reduce the incidental catch of bull trout.

In 1997, ODFW published a report titled “Status of Oregon’s Bull Trout; Distribution, Life History, Limiting Factors, Management Considerations, and Status” (Buchanan et al. 1997). This document summarized the best scientific information presently available for bull trout throughout Oregon and reviewed their historical and current status, in addition to providing management considerations for the maintenance and recovery of existing bull trout populations.

The State of Oregon has established a collaborative approach to restoration and protection of bull trout populations and their habitat by making use of local working groups comprised of fishery biologists, land managers, aquatic scientists, and concerned citizens to develop basinwide strategies for the protection and conservation of bull trout. These strategies will be incorporated into local watershed and regional ecosystem management plans, as well as Federal ESA recovery plans.

ODFW recommends that working groups focus their conservation and restoration efforts on the identification of factors limiting individual bull trout populations and then prioritize strategies to address these factors. These groups have played an integral part in recommending recovery measures, through the USFWS’ recovery planning effort.

7.9 OREGON PLAN FOR SALMON AND WATERSHEDS

As early as 1996, the Governor of Oregon launched the Coastal Salmon Restoration Initiative to help preserve and restore native coastal salmon and steelhead populations throughout the State. The State of Oregon through this program developed the “Oregon Plan” (www.oregon-plan.org) which is a conservation plan designed to restore salmon to a level at which they can once again be a part of people's lives (Oregon 1998). The emphasis is on coho salmon in coastal river basins. However, it is a model that will expand to include all salmon and trout throughout the state, including MCR steelhead. While the plan focuses on the needs of salmon, it will conserve and restore crucial elements of natural systems that support fish, wildlife, and people. No other state has ever attempted such a comprehensive program.

The Oregon Plan involves the following:

1. Coordination of effort by all parties (including government agencies such as Reclamation),
2. Development of action plans with relevance and ownership at the local level,
3. Monitoring progress, and
4. Making appropriate corrective changes in the future.

7.10 ODFW FISHERIES MANAGEMENT PLANS

The ODFW has prepared fisheries management plans, adopted by the Oregon Fish and Wildlife Commission, which establish policy and action items for the management and conservation of fisheries resources in the upper and lower Deschutes River, Crooked River, and Metolius River subbasins (See Fies et al. 1996a, ODFW 1997, Stuart et al. 1996, Fies et al. 1996b). These plans provide directions for specific fish species and waterways and include objectives to guide habitat maintenance or improvements and restoration of anadromous fish (Chinook salmon, sockeye salmon, and summer steelhead) and bull trout into historic ranges within the basin. Action items include restoration of fish passage, biological monitoring, enforcement actions, as well as hatchery fish stocking regimes, angling regulations, and maintenance of public angling access.

Consistent with the plans' objectives, ODFW has pursued improving fish passage at barriers within the Deschutes River basin. Specifically, it has worked with the Deschutes Valley Water District and other entities to examine construction of a fish ladder at the Opal Springs Dam to allow anadromous fish and bull trout to migrate up and downstream.

The ODFW is currently amending these fisheries management plans to provide additional direction for reintroduction of anadromous fish above the Pelton-Round Butte hydropower complex (Kunkel 2003). ODFW is developing draft administrative rules for approval by the Oregon Fish and Wildlife Commission and for subsequent comment by the public.

7.11 SUMMARY OF POTENTIAL CUMULATIVE EFFECTS ON LISTED SPECIES

7.11.1 Bald Eagle

- Degradation of potential breeding and nesting habitat could occur from future development and land practices on state and private lands, but most of the available habitat for the bald eagle is on Federal lands where habitat values would most likely be preserved.
- Increased number of recreationists and recreational pursuits in forested habitats may result in more disturbance to the breeding, reproductive, and foraging habits of the bald eagle.
- Future stream depletions and degradation of water quality could impair the habitat of the fish and waterfowl prey species.
- Ongoing stream and riparian restoration measures, TMDL processes, State of Oregon statutes and regulations, and other conservation activities in the basin would help ameliorate or reduce any adverse future effects on streamflows and water quality.

7.11.2 Bull Trout

- Future stream depletions and degradation of water quality could impair the habitat of fluvial and adfluvial bull trout populations.
- Ongoing stream and riparian restoration measures, TMDL processes, State of Oregon statutes and regulations, and other conservation activities in the basin would help ameliorate or reduce any adverse future effects on streamflows and water quality.
- Continued programs promoted under the Oregon Bull Trout Strategies, in conjunction with Federal recovery efforts, would help preserve and possibly improve habitat conditions for Deschutes River basin bull trout populations.

7.11.3 Steelhead

- Future stream depletions and degradation of water quality could impair the habitat of wild Deschutes River steelhead stocks.
- Ongoing stream and riparian restoration measures, TMDL processes, State of Oregon statutes and regulations, and other conservation activities in the basin would help ameliorate or reduce any adverse future effects on streamflows and water quality.

- Continued programs promoted under the Oregon Plan for Salmon and Watersheds, in conjunction with Federal recovery efforts, would help preserve and possibly improve habitat conditions for Deschutes River wild steelhead stocks.

7.11.4 Canada Lynx and Northern Spotted Owl

- Degradation of potential habitat could occur from future development and land practices on state and private lands, but most of the available habitat for these species is on Federal lands where habitat values would most likely be preserved.
- Increased numbers of recreationists and recreational pursuits in forested habitats may result in more disturbance to the breeding, reproductive, and foraging habits of these species.

