



United States  
Department of  
Agriculture



Forest Service  
Pacific Northwest  
Region

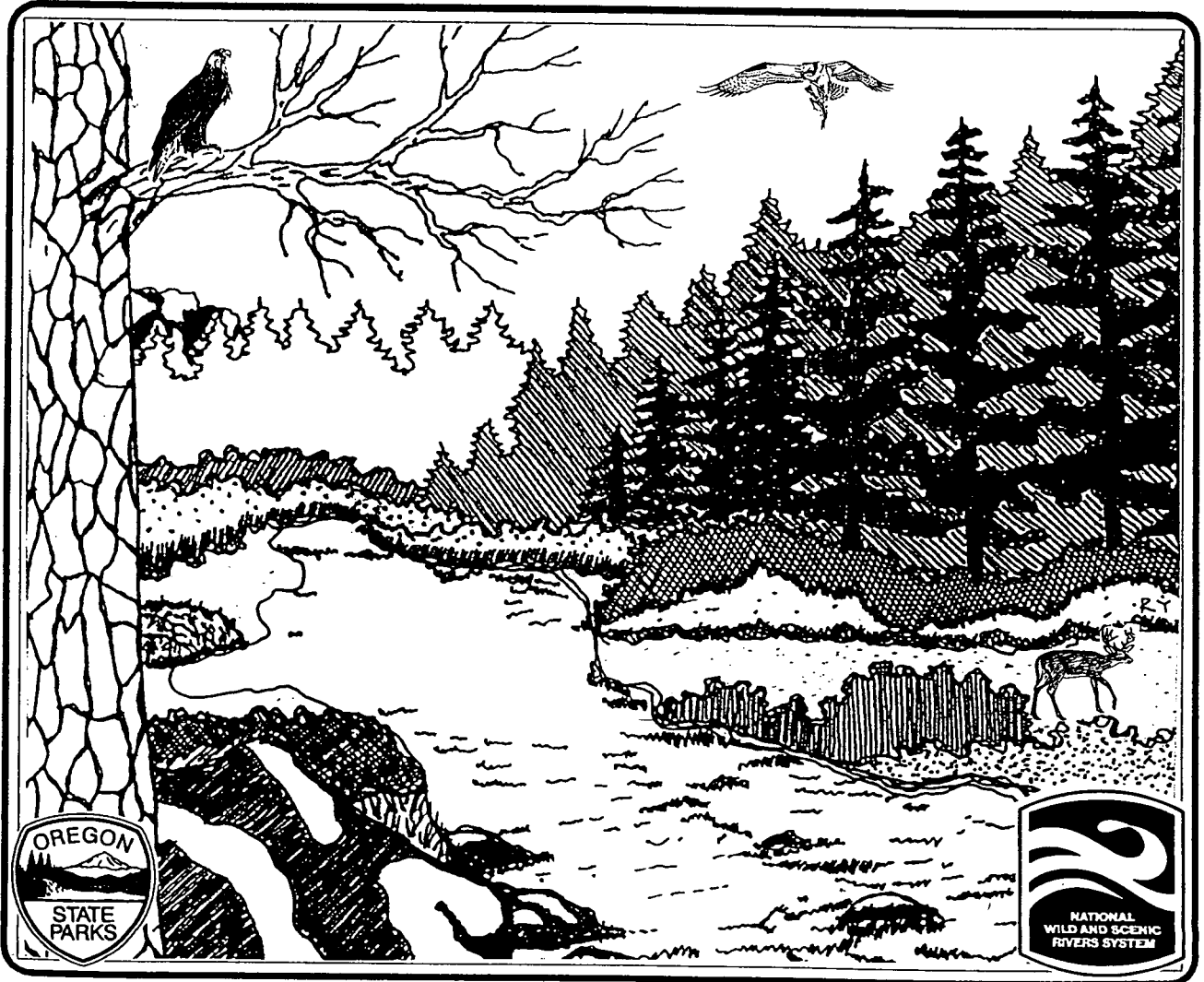


Deschutes  
National  
Forest

# Upper Deschutes Wild and Scenic River and State Scenic Waterway

## Comprehensive Management Plan

July 1996



## MEMORIAL

*During the preparation of this plan, Tom Felando, a Forest Service hydrologist and a key contributor to the plan, died suddenly of a heart attack. He left behind a wife and two children.*

*Tom lived life with zest and passion. He fished, he played sports, he hiked and explored. He shared his joy for life with his family and friends. Tom always had a smile and a kind word for those he met.*

*Early in the planning process, Tom recognized the potential that water conservation held for returning water to the river, while continuing agricultural uses. He was an advocate for sound management, and building bridges between people to benefit the Deschutes River. His contributions and his caring will continue to live on through this plan, and through the people he touched during his life.*

*He will be greatly missed.*



**Upper Deschutes**

**Wild and Scenic River  
and  
State Scenic Waterway**

**Comprehensive  
Management Plan**

July 1996

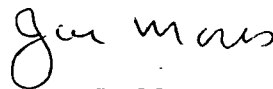
# Upper Deschutes River Management Plan



Sally Collins  
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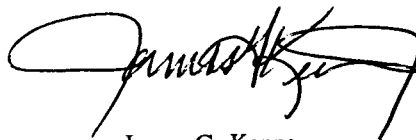
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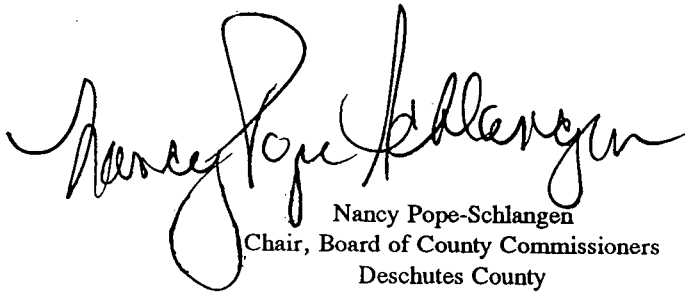
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# Upper Deschutes Wild and Scenic River Comprehensive Management Plan

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# **Introduction**

## **Purpose**

This comprehensive management plan for the Upper Deschutes Wild and Scenic River and State Scenic Waterway corridor establishes programmatic management direction for the river corridor for the next decade. It has been developed to implement the direction of the Wild and Scenic Rivers Act of 1968 as amended by the Omnibus Oregon Wild and Scenic Rivers Act of 1988 and to implement the direction of the State Scenic Waterways legislation. The Wild and Scenic Rivers Act requires the Forest Service to develop a management plan for the Upper Deschutes River which will protect and enhance the Outstandingly Remarkable Values.

The Upper Deschutes River Plan guides all development, management, and restoration activities within the River Corridor. It establishes management and development goals and objectives for the Upper Deschutes. It defines desired characteristics of specific river segments and sets standards and guidelines for activities within these segments as well as for the River Corridor as a whole. It outlines a monitoring program and identifies probable actions. The goals, standards and guidelines are a statement of the Plan's management direction; however the projected activities and rates of implementation are estimates and depend on site-specific analysis and the budgeting process.

## **Location**

The Upper Deschutes River Wild and Scenic River and State Scenic Waterway is located entirely within Deschutes County, Oregon; and mostly within the boundaries of Deschutes National Forest.

This includes the 40.4-mile segment from Wickiup Dam to the northern boundary of Sunriver at the southwest quarter of section 20, township 19 south, range 11 east ; the 11-mile segment from the northern boundary of Sunriver at the southwest quarter of section 20, township 19 south, range 11 east, to Lava Island; and the 3-mile segment from Lava Island to the Bend Urban Growth Boundary at the southwest corner of section 13, township 18 south, range 11 east; and the approximately 1-mile segment from the Bend Urban Growth Boundary to the COID diversion at the southwest corner of section 7, township 18 south, range 11 east of the Willamette Meridian.

## Designation

The Upper Deschutes River was designated as a Wild and Scenic River by Public Law 100-557, the Omnibus Oregon Wild and Scenic Rivers Act of 1988, which amended Public Law 90-542, Wild and Scenic Rivers Act. The first section of the Wild and Scenic Rivers Act sets out the purpose for designating rivers as wild and scenic:

**"It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations."**

In 1987 the State of Oregon passed legislation designating most of the Upper Deschutes River as a State Scenic Waterway. Much of this area was subsequently included in the Federal Wild and Scenic River System. The sections included are from the Wickiup Dam stream gauge to General Patch Bridge; and Harper Bridge to the north boundary of the Deschutes National Forest.

In 1988 a statewide ballot measure was passed to include the section from the north boundary of the Deschutes National Forest to the Central Oregon Irrigation District diversion structure as part of the State Scenic Waterway Program. This reach of the river is not within the Federally Designated Wild and Scenic River.

Both state and federal designation are shown on the map in Figure 1.

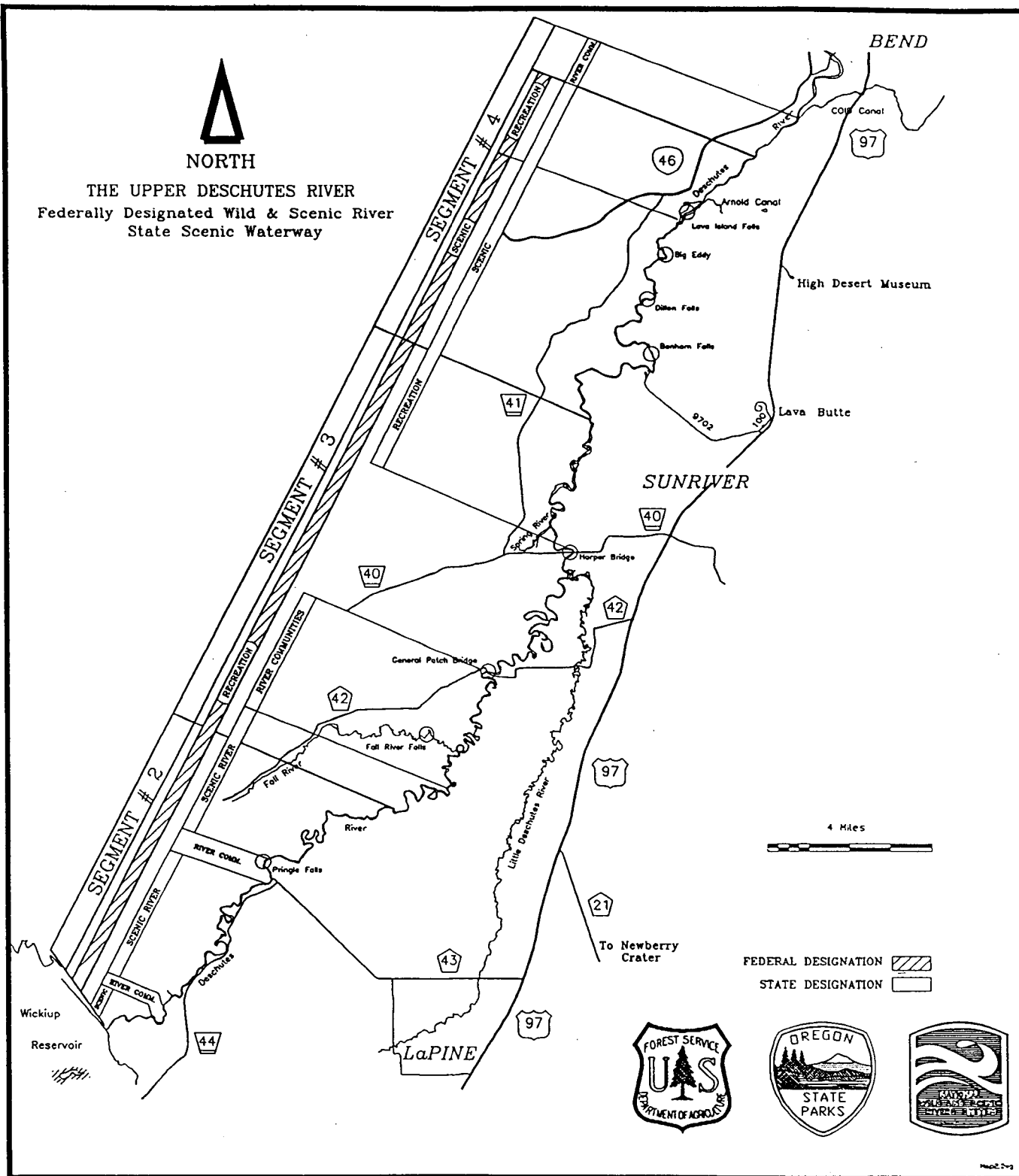
## Authorities

The bed, banks, and waters of the Upper Deschutes River fall under the authority and/or jurisdiction of a variety of governmental bodies. The Federal Wild and Scenic Rivers Act of 1968 as amended includes specific encouragement for the administering agencies to develop cooperative planning and administrative agreements. (SEC. 3(d)1; SEC. 6(c); SEC. 10(e) SEC. 11(b); SEC. 12(c); SEC. 105 for the 1989 amendment). In addition, because of the intermingling of jurisdictions and authorities, no one agency has sufficient authority to independently implement a comprehensive management plan for the Upper Deschutes Basin. Further, actions which may result from such a plan could affect downstream resources and authorities, and must be coordinated with those authorities to be successfully implemented.

Recognizing this need for interagency cooperation, the signing authorities (cooperators) have participated in a coordinated planning effort with the intent of having one management plan all authorities can adopt.

The Upper Deschutes River Management Plan includes the final proposed rules for all sections of the Upper Deschutes designated State Scenic Waterway, including the reach from the north boundary of the Forest to the COID diversion structure which is outside of the federally designated Wild and Scenic River.

This plan will also serve as the guiding management direction for all other agencies with jurisdiction within the river corridor.



**Figure 1**



# **How This Plan Works**

## Who Will Implement This Plan

The Upper Deschutes River Plan was developed through intergovernmental collaboration. Implementation of this plan is the responsibility of all of the cooperators. Ultimately, its overall success will depend on community commitment. The plan is focused on implementation through partnerships and cooperative efforts.

## How This Plan Will Be Implemented

This plan will be implemented through three primary mechanisms, including intergovernmental coordination, individual agency action, and partnerships with the public.

- **Individual agencies** will continue to operate existing programs consistent with the goals of the plan. With the adoption of this plan, each of the cooperators will begin to implement the plan within their own regulatory authority.
- **Intergovernmental coordination** will provide an appropriate forum to develop budget and resource partnerships and to monitor the overall effectiveness of the plan's goals and practices. Where authorities overlap or where the plan specifically notes, formal or informal interagency teams will develop, comment on, or assist in implementing specific projects.
- **Partnerships with the public** (community support and participation) will be needed for many of the actions called for in the plan.

The following sections describe these efforts in more detail.

## Agency Responsibilities and Authorities

### US Government

The Department of Agriculture, through the Forest Service (USFS), manages all National Forest lands. The Forest Service is the federal agency charged with administering the Upper Deschutes Wild and Scenic River.

The Department of Defense, through the Army Corp of Engineers issues and administers permits for fill and removal within the federally designated river corridor.

The Department of Interior, through the Bureau of Land Management (BLM), manages locatable mineral claims on federal lands and manages timber resources on BLM lands and lands leased to the State of Oregon in the LaPine State Recreation Area.

The Department of Interior, through the Bureau of Indian Affairs (BIA), manages the trust responsibility between the US government and Sovereign Indian Tribes.

The Department of Interior, through the Bureau of Reclamation (BOR), manages the safety and maintenance of Wickiup Dam and coordinates water conservation practices with the State and irrigation districts.

## **Tribal Governments**

Portions of the Upper Deschutes Wild and Scenic River corridor are located within lands ceded to the U.S. Government as a result of an 1855 Treaty with the Confederated Tribes of the Warm Springs Reservation of Oregon. This includes lands along the river from the Bend Urban Growth Boundary to the 44th parallel. In addition, there are tribal interests in usual and accustomed places, as defined by the Treaty of 1855, on lands upriver from the 44th parallel. The Confederated Tribes of the Warm Springs Reservation of Oregon hold an unquantified consumptive water right to waters of the Upper Deschutes River, the quantity of which is being negotiated at present with the State of Oregon and the federal government.

Klamath Tribes retain off-reservation interests in portions of the Upper Deschutes corridor as well. This includes from the 44th parallel upstream to Wickiup Dam.

## **State Agencies**

The Oregon Parks and Recreation Department manages the State Scenic Waterways program.

The Division of State Lands manages fill and removal authorizations and protection of wetlands.

The Department of Environmental Quality manages water quality issues for point and nonpoint sources of pollution.

The Department of Fish and Wildlife manages fish and wildlife populations

The State Marine Board regulates motorized use on the river.

The Department of Forestry administers the State Forest Practices Act for timber harvest on private lands within the corridor, and assists landowners in managing timber resources.

The Water Resources Department allocates and manages water rights and instream flows.

Oregon State Police enforce laws, including hunting and fishing regulations.

## **Local Agencies**

The Deschutes County Commissioners, through the Planning and Development Department, manage land uses along the Upper Deschutes River outside of the city limits of Bend.

Deschutes County Sheriff Department enforces laws, patrols the river, and does search and rescue.

The City of Bend Commissioners, through the Planning and Development Department, manage land uses within the City limits.

Bend Urban Planning Commission reviews major land use applications within the Bend Urban Growth Area.

## **Irrigation Districts**

Irrigation districts hold water rights to natural and stored flows of the Upper Deschutes River and are organized under Oregon State law as quasi-municipal corporations. They operate and maintain diversion structures for delivery of water to their users.

# **Intergovernmental Coordination**

## **Overall Coordination**

The Upper Deschutes Coordination Group will coordinate overall implementation of this plan. The group will include designated representatives of the following governmental or quasi-governmental bodies:

USDA Forest Service - Lead agency

USDI Bureau of Land Management

USDI Bureau of Reclamation

USDI Bureau of Indian Affairs

Confederated Tribes of the Warm Springs Reservation of Oregon

Oregon State Parks and Recreation Department

Oregon State Marine Board

Oregon State Water Resources Department

Oregon Department of Fish and Wildlife

Oregon Department of Environmental Quality

Oregon Division of State Lands

Deschutes Basin Alliance (including any or all of the associated irrigation districts)

Deschutes County

City of Bend

Other federal, state, and local agencies as appropriate

The purpose of this coordination is to ensure that:

1. Opportunities for collaboration on upcoming projects are identified, and resources combined and efficiently used to achieve the overall goals of the plan.
2. Changes to the plan can be made as needed, consistent with the intent of the plan.
3. Progress is made toward achieving the goals of the plan. This includes coordinating the establishment of an institutional framework to lead and direct actions to achieve the goals identified in the Adaptive Flow Management Strategy. (Currently a great many committees or consortiums are in existence or are being developed to deal with water issues over a larger area than just the Upper Deschutes River. One of the goals of the Coordination Group is to utilize, to the extent possible, the committees currently existing. Integrating the goals of this Adaptive Flow Management Strategy into broader basin goals will provide a framework for building broad-based community support and improving the field of funding sources.)
4. Communication between cooperators and with the public and users of the Upper Deschutes River is enhanced.

The Forest Service has the lead role in scheduling and arranging this coordination level.

## **Other Interagency Coordination**

### **Adaptive Flow Management Team**

A technical team made up of representatives of the cooperative agencies will develop a schedule of actions for achieving short-term incremental increases in instream flow; develop an inventory of specific projects and programs that might provide for more instream flow and more reliable supply for offstream users; and monitor the progress and effectiveness of the strategies in achieving the resource condition goals. The team may utilize outside consultants or organizations as appropriate to help in achieving instream goals.

Members of the technical team will meet as needed; however, an annual meeting will be held each December to review the progress on instream flow goals, monitoring results, and to evaluate the effectiveness of the Adaptive Flow Management Strategy. These meetings will be open to the public. The Forest Service will issue a summary of the meeting as an annual report in January.

During the first year of implementation, this team will:

- Flesh out the monitoring program by agreeing on the methodology and locations of sampling. Put together and distribute all the data which has been collected in the past.
- Develop a schedule of actions for achieving short-term incremental increases in instream flow.
- Develop an inventory of specific projects and programs that might provide for more instream flow and more reliable supply for offstream users. Help provide technical information and assistance.
- Develop necessary agreements so that if water availability allows, experimental ramping rates could be implemented within 1-3 years.
- Develop an improved water-forecasting model.

### **Upper Deschutes River Stewardship Team**

The Deschutes River Stewardship Team is an informal consortium of federal, state, and local agencies with management authority over a variety of activities on the Deschutes River. The purpose of the team is to provide a single sounding board for agencies to present issues and promote timely and coordinated responses to private landowners as they apply for permits from one or more of the agencies. The team meets to discuss issues of mutual concern, overlapping jurisdiction, communication and cooperative work agreements.

Within the scope of this plan, the team may be involved with activities such as developing criteria to identify and acquire, from willing sellers, lands or easements for conservation or access; development of joint permits for land development proposals; and coordinate enforcement activities to best utilize agency resources.

### **Water Resources Projects**

Section 7 of the Wild and Scenic Rivers Act provides for protection of the free-flowing and other natural river values from the effects of construction of any water resources project. ({36 CFR 297) A water resources project is defined as "any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act... or other construction of developments which would affect the free-flowing characteristics of a Wild and Scenic River...." Any water resources project which includes federal assistance or permitting

is subject to a determination by the Forest Service of the effect of that project on the free-flowing character and other river values prior to the approval or permitting of that project. The Forest Service is responsible to conduct the Section 7 analysis (See Appendix D for analysis process) and make a determination under the statute. This responsibility does not preclude utilizing staff expertise of the proposing/permitting agency in the evaluation process.

### **Fish Habitat Protection**

Under provisions of the Upper Deschutes River Plan, naturally occurring log jams will be allowed to form and will be manipulated the minimum extent possible (See Fisheries Standards and Guidelines). As needed, Oregon Department of Fish and Wildlife (ODFW), Division of State Lands, Army Corps of Engineers, Oregon State Marine Board, Deschutes County, Deschutes County Sheriff Search and Rescue will be consulted to determine most effective strategy consistent with the Plan.

### **Fish Habitat Improvement Activities**

Planning and implementation of fish habitat projects will be a joint effort between the Forest Service, Oregon Department of Fish and Wildlife (ODFW), Division of State Lands, Army Corps of Engineers, and any pertinent landowners. As needed, State Marine Board and Deschutes County Search and Rescue will be consulted during project design to identify potentially life-threatening navigation hazards. For federal actions, the Forest Service will conduct the analysis required by the National Environmental Policy Act. Analysis of water resources projects as required by Section 7A of the Wild and Scenic Rivers Act will be done as described under water resources projects. ODFW will obtain the necessary CWA 404 permits from Division of State Lands and/or the Army Corps of Engineers.

Current management of fish populations through the development of Oregon Department of Fish and Wildlife *Deschutes Subbasin Fish Management Plan* will continue. Federal, State, and Tribal parties will work in coordination with the Oregon Department of Fish and Wildlife to ensure that the provisions of the Upper Deschutes Wild and Scenic River Plan and the Deschutes Basin Plan are consistent. Cooperative agreement between Federal, State, and Tribal governments will continue to provide management to protect and enhance habitat for self-sustaining populations of brown and native trout with representation of juvenile, sub-adult and adult age categories. Management will provide good habitat conditions consisting of spawning and incubation conditions, cover, food supply, and protection through appropriate fishing regulations.

### **Vegetation Projects**

Ignition of prescribed fires will be coordinated with managers of surrounding land to avoid overloading local air masses.

## **Wildlife Projects**

Wildlife Populations are managed by Oregon Department of Fish and Wildlife (ODFW). Habitat on Forest Service lands is managed by the Forest Service. The Forest Service and ODFW will consult on proposed population levels and wildlife harvest regulations and habitat alterations. The United States Fish and Wildlife Service (USFWS) will be consulted on management proposed by the Forest Service that may affect populations or habitat of listed Endangered, Threatened, Proposed and Sensitive species.

## **LaPine State Recreation Area**

LaPine State Recreation Area will continue to be managed according to the Master Plan. Oregon Department of Parks and Recreation will coordinate with other affected agencies before making changes to that plan and as needed on specific projects.

## **Bureau of Land Management Lands**

Bureau of Land Management (BLM) lands and timber resources on lands leased to the State of Oregon in the LaPine State Recreation Area will continue to be managed according to the Brothers-LaPine Land Resource Management Plan. The BLM will coordinate with other affected agencies before making changes to that plan and as needed on specific projects.

## **River Signing**

Signing along the river is a cooperative effort between the Forest Service, Oregon State Marine Board, and the Deschutes County Sheriff Search and Rescue. The Marine Board supplies signs and helps identify possible placement. Deschutes County Sheriff Department helps identify possible locations and installs Marine Board signs. The Forest Service determines ground location and does necessary analysis to approve location. The Forest Service has primary responsibility in supplying and installing interpretive signing on National Forest lands in the corridor.

## **Enforcement**

Law enforcement within the river corridor is coordinated through the following primary enforcement agencies: USFS Law Enforcement, Oregon State Police, and Deschutes County Sheriff Department. Each agency has a different primary purpose, but all have a mutual overall goal. Law enforcement efforts will continue to be coordinated between these agencies with an emphasis on identifying mutual areas of concern, combining resources to benefit overall goals, and increase efficiency of work force.

## **Public Participation**

Broad-based community support and understanding of the goals of the river management plan are essential for successful implementation of this plan. Active partnerships<sup>1</sup> with various individuals, groups, and communities which focus on specific issues will be an integral part of plan implementation. Partnerships will be sought in the following key areas.

### **Implementation of the Adaptive Flow Management Strategy**

Various recreationists, water users, and conservation groups have identified an interest in developing innovative methods for helping to achieve the goals described in the adaptive flow management strategy. Obtaining funding for projects and raising the local, state, and national awareness of the goals of the river plan are key elements of this partnership.

### **Improvement of instream and streambank conditions**

As use and development of the Upper Deschutes has grown, more and more people are becoming aware of the importance and sensitivity of streambanks. Homeowners, recreationists, and conservation groups have demonstrated their interest and awareness by developing partnerships with plan cooperators to implement fish habitat and streambank enhancement projects. These partnerships will be expanded to include continued emphasis on display and education.

### **Reducing fuel loadings**

Residents and recreationists have major concerns about the fire hazard along much of the river corridor. Partnerships with homeowners associations, residents and recreationists to help achieve the fuel reduction goals of the river plan will be pursued.

### **Caring for the river ecosystem**

Volunteer programs will continue to assist with care of the river ecosystem. Areas which will continue to receive emphasis include, but are not limited to: monitoring and inventorying dispersed sites, monitoring use levels, maintaining trails, and providing interpretive programs.

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<sup>1</sup>References to individuals or groups in this section is not meant to be totally inclusive of all potential partners.

## **How This Plan Will Be Changed**

This plan was developed through the collaborative efforts of multiple agencies in order to provide a consistent approach to management of the Upper Deschutes River. As technologies, information, and conditions change, the plan must be able to change in order to be effective. Each of the cooperators has their own process for accommodating changes to their rules and regulations (See FEIS, Chapter 1). Most of these processes for change include an opportunity for the public to comment on proposed changes to rules or regulations.

If for any reason a change is needed to the plan, it will first be discussed with those members of the Coordination Group who have declared an interest in the issue. This will provide a forum for proposing change in a manner which is consistent with the original intent of the plan.

In this process, consensus will be sought but not mandated. If consensus is not reached, the lead agency (the agency which has jurisdiction over the action) will make a final decision within its lawful authority. Following comment on the proposed change by the coordination group, the proposed change will go forward using the lead agency's policy of public involvement in decisions.

## **Relationship of this Plan to Other Plans**

### **Forest Service Plans**

#### **Deschutes National Forest**

#### **Land and Resource Management Plan (Forest Plan) 1990**

The Wild and Scenic River Act specifies that Upper Deschutes River Wild and Scenic River corridor is to be managed to protect river values and that the management plan shall be coordinated with resource management planning for affected adjacent Federal lands. The National Forest Management Act of 1976 required the preparation of Forest Plans to direct management of each National Forest. The 1990 Deschutes Land and Resource Management Plan (Forest Plan), as amended by the Regional Forester's Forest Plan Amendment #2 and Inland Native Fish Strategy, has served as interim management direction for the Upper Deschutes River corridor until the completion of this plan. The FEIS and ROD for the Upper Deschutes River amends the Deschutes National Forest Land and Resource Management Plan to create the Upper Deschutes River Management Area. Direction for that Management Area is included in this Plan.

## **Upper Deschutes Wild and Scenic River Final Environmental Impact Statement and Record of Decision**

The direction in this Upper Deschutes River Plan results from the extensive analysis and considerations documented in the accompanying Final Environmental Impact Statement (FEIS). This plan is based on Alternative 6 described in the FEIS.

The new management area direction will continue all current management direction and forest-wide standards and guidelines except where specifically amended by the plan. Standards and guidelines of the new management area will replace all other management area direction except as follows. Standards and guidelines for Old Growth, Bald Eagle and Pringle Falls Experimental Forest Management Areas will continue to apply unless they conflict with the standards and guidelines for the Wild and Scenic River. In the case of a conflict a site-specific analysis will determine whether the standards and guidelines for the W&S River Management Area could be amended and still protect and enhance river values as required by the Wild and Scenic Rivers Act.

If the Upper Deschutes River Plan does not speak to a particular issue, the river corridor will be managed in accordance with the laws, rules, and regulations pertaining to the National Forest System and the Deschutes National Forest, the State of Oregon, Deschutes County, and the City of Bend **to the extent that** such laws and regulations are consistent with the Wild and Scenic River Act.

The Upper Deschutes River Plan Record of Decision (ROD) documents the Forest Supervisor's reasons for selecting this plan to govern management of Forest Service activities in Upper Deschutes River corridor and for identifying recommended guidelines for other jurisdictions to implement.

Site-specific analysis will be done for actions subject to federal authority proposed within the Upper Deschutes River Corridor. Site-specific analyses will be tiered to the FEIS for the Upper Deschutes River Plan.

All proposed projects must be tested for consistency with the Upper Deschutes River Plan during the site-specific analysis or permitting process. If a proposed project is found to be inconsistent, one of three choices must be made: change the project, drop the project, or amend the Upper Deschutes River Plan.

### **Newberry National Volcanic Monument Comprehensive Management Plan (1994)**

Newberry National Volcanic Monument is adjacent to the river corridor in Segment 4. The NNVM Comprehensive Management Plan establishes management direction for resources within the Monument boundary which is consistent with the intent of the Wild and Scenic Rivers Act within the river corridor. Actions taken which would be consistent with that plan would also be consistent with this plan.

## **Deschutes County Comprehensive Plans**

County comprehensive plans must address 19 goals established by the Land conservation and Development Commission (LCDC). The plan was compared to the LCDC-approved comprehensive plan for Deschutes County. The uses and activities proposed in the plan are consistent with county goals. Since the county plan has been found by LCDC to comply with the statewide goals, consistency with the statewide goals is assumed.

Some changes to land use regulations are anticipated to occur under this plan, including minor modifications to emphasize revegetation of streambanks over other methods of fill and changes to design review regulations.

The LCDC has left some provisions of the statewide planning goals to be administered by state agencies rather than local governments. These provisions are discussed below.

### **Other Plans**

#### **Air and Water Quality**

Oregon Department of Environmental Quality establishes standards which must be met to be consistent with the Clean Water and Clean Air Act.

Goals and standards and guidelines identified in this plan are consistent with the policies of the Oregon Department of Environmental Quality for protection of air and water quality.

#### **Plant/Fish/Wildlife Habitat**

No actions are proposed in the plan that would conflict with plant, fish, or wildlife habitat management plans of the U.S. Fish and Wildlife Service, Oregon Department of Fish and Wildlife (ODFW), the Oregon Natural Heritage Program, or the Deschutes National Forest Land and Resource Management Plan. Existing populations of all proposed, endangered, threatened and sensitive plant species will not be jeopardized in compliance with Forest Service policy (FSM 2670).

The plan meets Oregon Department of Fish & Wildlife goals by maintaining special habitats. Seasonal closures in the Tumalo deer winter range and standards for fishery improvement and key elk areas meet with ODFW. The "No Shooting Corridor" in Segment 3 is continued (see the Standards and Guidelines section). Hunting is permitted elsewhere in the river corridor in concurrence with ODFW objectives.

The plan meets U.S. Fish and Wildlife Service Bald Eagle recovery plan objectives of protecting important foraging and nesting areas. The plan emphasizes protection and enhancement of existing bald eagle habitat.

## **State Comprehensive Outdoor Recreation Plan (SCORP) & Recreational Needs Bulletin**

The State Comprehensive Outdoor Recreation Plan (SCORP) is prepared every six years by the Oregon Parks and Recreation Department. It includes a supplemental Recreational Need Bulletin. These documents report current and projected supply and demand information for a variety of outdoor recreation activities. These activities are classified according to the ROS system and profiled across the different regions of the state. SCORP is one of the most comprehensive and reliable sources of information dealing with future demand for recreation activities and settings in the river corridor. SCORP data was integrated into the planning process during alternative development.

### **LaPine State Recreation Area Plan**

Management of the LaPine State Recreation Area is under the Oregon Parks and Recreation Department as described by the LaPine State Recreation Area Plan. The Upper Deschutes River Plan does not directly affect the current LaPine State Recreation Area Plan. Future changes in that plan would be coordinated as stated earlier.



# **Management Plan**

# Boundary

## Upper Deschutes Wild and Scenic River

The final boundary of the Upper Deschutes Wild and Scenic River is shown on map 5. This boundary was identified to include those lands which were necessary to protect and enhance Outstandingly Remarkable Values. A detailed legal description of this boundary is being prepared and will be submitted to Congress as required by the Wild and Scenic Rivers Act.

The Wild and Scenic Rivers Act classified sections of the Upper Deschutes as **Scenic** or **Recreational**.

- The sections from Wickiup Dam to the northern boundary of Sunriver and the section from Lava Island to the Bend Urban Growth Boundary were classified as **Recreational**, which is defined as, "Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."
- The section from the north boundary of Sunriver to Lava Island Camp was classified as **Scenic**, which is defined as "Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads."
- The Upper Deschutes River has no sections classified as Wild.

Throughout this document the river is divided into segments and subsegments. This division of the river occurred first during the preparation of the Resource Assessment in order to assist in identification of Outstandingly Remarkable Values. During alternative development, the river was further divided into subsegments in order to emphasize the unique characteristics of short stretches of the river. Table 1 gives a description of the location of each subsegment. Subsegments are shown on Map 5.

## State Scenic Waterway

The sections of the Upper Deschutes designated a State Scenic Waterway have been classified to establish management objectives for portions of the river with different characteristics. The river between Wickiup Dam and the east boundary of Haner Park, the river where bounded by private land in the Pringle Falls area, the river between river mile 206.9 and General Patch Bridge, and the river from the north boundary of Deschutes National Forest to the Central Oregon Irrigation diversion are classified as Community River Areas in recognition of the private development adjacent to these portions of the river.

The section of the river between Harper Bridge and the north boundary of Deschutes National Forests is designated a Recreational River Area in recognition of the easy access to this area.

The section of the river from Wickiup Dam Stream gauge downstream to General Patch Bridge is designated scenic except for those areas previously described as Community River Areas. This classification recognizes the undeveloped nature of the land bordering the river.

Except for the section of the river from the north boundary of Deschutes National Forest to the Central Oregon Irrigation diversion, all sections of the Upper Deschutes Scenic Waterway are administered according to guidelines provided by the Upper Deschutes Scenic Waterway Land Management Plan. The excepted section is managed on an interim basis until the rule making process is complete.

Boundary of the State Scenic Waterway is  $\frac{1}{4}$  mile on either side of the river.

Table 1

## Subsegment Locations and Land Ownership

| Segment     | Location                                                                                         | Acres<br>(Approx.) | Acres by<br>Ownership                                                              |
|-------------|--------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------|
| 2A          | Wickiup Dam to east end of Pringle Falls Campground                                              | 4354               | National Forest: 4109<br>Private: 245                                              |
| 2B          | East end of Pringle Falls CG to south boundary of LaPine State Recreation Area                   | 1655               | National Forest: 1567<br>State: 87<br>Private: 1                                   |
| 3A          | South boundary of LaPine State Recreation Area to north boundary of LaPine State Recreation Area | 1691               | BLM: 78<br>State Rec. Area: 1144 <sup>1</sup><br>Private: 469                      |
| 3B          | North boundary of LaPine State Recreation Area to General Patch Bridge                           | 1685               | National Forest: 908<br>BLM: 1<br>State: 243<br>County: 11<br>Private: 522         |
| 3C          | General Patch Bridge to Harper Bridge                                                            | 1538               | National Forest: 76<br>Private: 1462                                               |
| 3D          | Harper Bridge to north boundary of Sunriver                                                      | 2063               | National Forest: 1246<br>Private: 817                                              |
| 4A          | North boundary of Sunriver to west end of Sunriver canoe takeout                                 | 752                | National Forest: 750<br>Private: 2                                                 |
| 4B          | West end of Sunriver canoe takeout to south end of Slough Camp                                   | 996                | National Forest: 996                                                               |
| 4C          | South end of Slough Camp to east end of Dillon Falls Campground                                  | 657                | National Forest: 657                                                               |
| 4D          | East end of Dillon Falls to west end of Aspen Day-use Area                                       | 332                | National Forest: 332                                                               |
| 4E          | West end of Aspen Day-use Area to north end of Lava Island Trailhead                             | 442                | National Forest: 442                                                               |
| 4F          | North end of Lava Island Trailhead to Bend Urban Growth Boundary                                 | 514                | National Forest: 379<br>Private: 135                                               |
| 4G          | Bend Urban Growth Boundary to COID Canal                                                         | 316                | Private: 316                                                                       |
| Total Acres |                                                                                                  | 16995              | National Forest: 11,462<br>BLM: 79<br>State: 1,474<br>County: 11<br>Private: 3,969 |

1. The BLM leases land to the State of Oregon for LaPine State Recreation Area.

# **Outstandingly Remarkable Values and Special Attributes**

In the Congressional Record, the reasons for designating the Deschutes River from Wickiup Reservoir to the confluence with the Columbia River were given in the river description:

**“Outstanding scenic, recreational, cultural, geologic, wilderness, fish and wildlife as well as historic and botanical values exist in this area.”**

Congress included the Deschutes River based on “Outstanding Values”. This is not the same term used in the Wild and Scenic Rivers Act, but is interpreted to be the intent of Congress. A resource assessment was completed in December 1994 to determine which values identified by Congress for the entire length of the Deschutes River would actually meet a reasonable standard for “Outstandingly Remarkable” on the Upper Deschutes (See Appendix C).

The Federal Wild and Scenic River and State Scenic Waterway Acts establishes an overriding goal to protect and enhance the Outstandingly Remarkable Values for which the river was designated. Because Outstandingly Remarkable Values and Special Attributes refer to the same values for which the river has received national and state recognition, they are considered synonymous in this document. Table 2 shows the Outstandingly Remarkable Values by segment.

## **Geologic Value**

The geologic resource is an Outstandingly Remarkable Value. It consists of two major features: the lava flows which have pushed the river west of earlier channels and created the stair step of falls and rapids, and the landforms created by the interaction of depositional and erosive actions. The river channel shape, size and rate of change are not an outstandingly remarkable value within themselves, primarily because the dynamics are so affected by human controlled flows.

## **Hydrologic Value**

The hydrologic resource is a significant element of several Outstandingly Remarkable Values associated with the Upper Deschutes River. Most Outstandingly Remarkable Values in and along the river are protected and enhanced by an abundant, stable flow of clear, clean water.

## **Fishery Value**

The brown trout fishery in segments 2 and 3 is an Outstandingly Remarkable Value. The determination of value of the native redband rainbow trout population in Segment 4 has been deferred until a genetic study has been completed. Until that time the population is to be treated as an Outstandingly Remarkable Value.

## **Vegetative Value**

Aquatic, riparian, and upland vegetation is a significant element of all other river values. The vegetative resource is an Outstandingly Remarkable Value in Segments 3 and 4 because of *Artemisia ludoviciana* ssp. *estesii* , a Federal Category 2 Candidate for protection under the Endangered Species Act.

## **Wildlife Value**

Wildlife populations in Segments 2 and 4 were determined to be Outstandingly Remarkable Values because of the populations of nesting bald eagles and ospreys in Segment 2 and the diversity of the bird population in Segment 4. Despite extensive private development in Segment 3, the wildlife habitat was considered to be significant because it provides important nesting habitat for birds and travel corridors for migrating game animals such as deer and elk.

## **Cultural Values**

The Upper Deschutes River Corridor contains more than 100 known prehistoric sites which are eligible for inclusion in the National Register of Historic Places, making the prehistoric resources an Outstandingly Remarkable Value. Until further research on historic and traditional uses of the corridor is complete, they will also be treated as Outstandingly Remarkable Values.

## **Scenic Value**

The mix of geologic, hydrologic, vegetative, and wildlife resources found along portions of Segments 2 and 4 of the Upper Deschutes make scenery an Outstandingly Remarkable Value. Although the level and proximity of private development intrudes on the scenic quality of Segment 3, the scenic value is still a significant element of the recreational value.

## Recreational Value

Recreation is an Outstandingly Remarkable Value on the Upper Deschutes River because of the range of activities, the variety of interpretive opportunities, and the attraction of the river for vacationers from outside of the region.

**Table 2**                      **Outstandingly Remarkable Values by Segment**

| River Value | Segment 2                | Segment 3                | Segment 4                |
|-------------|--------------------------|--------------------------|--------------------------|
| Geologic    | Outstandingly Remarkable | Outstandingly Remarkable | Outstandingly Remarkable |
| Hydrologic  | Significant              | Significant              | Significant              |
| Fishery     | Outstandingly Remarkable | Outstandingly Remarkable | Outstandingly Remarkable |
| Vegetation  | Significant              | Outstandingly Remarkable | Outstandingly Remarkable |
| Wildlife    | Outstandingly Remarkable | Significant              | Outstandingly Remarkable |
| Cultural    | Outstandingly Remarkable | Outstandingly Remarkable | Outstandingly Remarkable |
| Scenic      | Outstandingly Remarkable | Significant              | Outstandingly Remarkable |
| Recreation  | Outstandingly Remarkable | Outstandingly Remarkable | Outstandingly Remarkable |

# **Amendment #12 to the Deschutes National Forest Land and Resource Management Plan**

This section provides the management direction for National Forest lands and administrative authority granted under the Wild and Scenic Rivers Act to the Forest Service within the Upper Deschutes Wild and Scenic River boundary. It includes a description of overall and specific resource condition goals, and standards and guidelines by which activities may be carried out in order to meet those goals

The 1990 Deschutes Forest Plan provided Standards and Guidelines for the Upper Deschutes River Corridor as part Management Area 17. These Standards and Guidelines provided interim direction for the river corridor until completion of this Management Plan.

If the Upper Deschutes River Plan does not speak to a particular issue, the Forest Service lands within the river corridor will be managed in accordance with the laws, rules, and regulations pertaining to the National Forest System and the Deschutes National Forest, the State of Oregon, and Deschutes County **to the extent that** such laws and regulations are consistent with the Wild and Scenic River Act.

## **Management Area 17a - Upper Deschutes Wild and Scenic River**

### **Goal**

*Protect and enhance Outstandingly Remarkable Values, including resources which are significant elements of those values.*

### **Geology and Hydrology**

**Standard:** The Outstandingly Remarkable geologic features will be maintained free of obtrusive development and protected from accelerated erosive activity or other damage resulting from land-based development.

#### **Guidelines:**

- G-1** Development of facilities and instream structural additions may be permitted where Outstandingly Remarkable Values will not be adversely affected.
- G-2** Instream channel structure will be improved through the addition of rubble, cobbles, and boulders (See Fishery).

- G-3** Hardening of banks is not permitted if such activities would adversely affect free flow or other river values. Streambank protection techniques will emphasize use of native vegetation. Bioengineering techniques (utilization of native vegetation, woody debris, and other techniques which mimic natural stream dynamics) will be favored.
- G-4** Water quality, as it is affected by land-based activities or instream structure, will be protected by the use of project-specific Best Management Practices and by improvement of riparian conditions through modification of river access points (also see Vegetation section).
- G-5** Except where needed for access to developed or designated dispersed sites, obliterate or close local roads within 100 feet of the river.
- G-6** New flood control and hydroelectric developments are prohibited.
- G-7** New water diversions will be prohibited unless a substantial benefit to river values is demonstrated.
- G-8** Routine maintenance of existing developments will be permitted; these activities will be designed to minimize long-term effects on river values. Habitat improvement structures such as screening devices may be permitted if benefits are established.
- G-9** The location of claims under current mining laws will be continued (no locatable mineral are known to be present within the corridor); mineral leasing and the disposal of saleable minerals will only be allowed if such activities would protect and enhance Outstandingly Remarkable Values.

## **Fishery**

**Standard:** Cooperative agreement between Federal, State, and Tribal governments will continue to provide management to protect and enhance habitat for self-sustaining populations of brown and native trout with representation of juvenile, sub-adult and adult age categories. Management will provide good habitat conditions consisting of spawning and incubation conditions, cover, food supply, and protection through appropriate fishing regulations.

### **Guidelines:**

- F-1** Woody material, gravel (0.08-2.5 inches in diameter), cobbles (2.5-10 inches in diameter), and boulders (greater than 10 inches in diameter) may be added to the river to improve fish habitat. This material will be placed at locations and at levels which will mimic natural conditions and avoid creating life-threatening navigational hazards. This material may be anchored, where necessary to meet project objectives or avoid safety hazards, in a manner which would meet scenic quality standards and not adversely affect free flow or other river values. Target levels for placed large woody material will be 50-100 pieces/mile. Large wood must be a minimum of 12 inches in

diameter at the small end and a minimum of 35 feet long (Inland Native Fish Strategy). Site-specific analysis will determine the actual number of pieces in a specific reach of the river. The order of priority for habitat improvement activities is Segment 2, 3, then 4. Up to one percent of the streambed may be covered with suitable spawning gravel in each segment.

**F-2** The natural introduction and redistribution of wood in the river may result in log jams, which may inhibit navigability but provide excellent fish habitat. The presence of wood, including logjams, will be considered an important natural component of the river ecosystem and left without human disturbance wherever possible. However, some circumstances will require review and possible manipulation or removal of wood. These include, but are not limited to:

- 1) life-threatening navigational barriers,
- 2) situations creating adverse impacts on river values,
- 3) situations requiring portages which will have an adverse impact on river values or involve crossing private property,
- 4) situations causing an undue hazard to public safety, capital investments, or private property,
- 5) maintenance of continuous safe navigability for motor craft in segments where motorized boating is permitted. Where only non-motorized boating is permitted, naturally occurring logjams may frequently limit navigation and require portages.

Logjams will be manipulated the minimum necessary to eliminate hazards in these situations.

## **Vegetation**

### **Standards:**

Native riparian vegetation will be healthy and dominate the periodically inundated and saturated areas within the river corridor. Riparian areas will be managed to support riparian dependent species, act as effective filters of overland flows, provide a natural source of woody material to the river system, buffer effects of floods and currents to streambanks, provide a dominant element of the scenery as viewed from the river, and provide wildlife habitat.

Upland vegetation will continue to be dominated by ponderosa and lodgepole pine. The forest will be characterized by disturbances which mimic the effects of periodic occurrence of small, low intensity fires, to perpetuate a mosaic of stand structures and ages and reduce the risk of high intensity fires. This mosaic will provide wildlife with thermal and breeding cover, dispersal habitats, and connection to water sources.

**Guidelines:**

- V-1 The populations of *Artemisia ludoviciana estesii*, a species found in riparian habitat, will be maintained or improved through protection of riparian areas.
- V-2 Developed recreation sites within 300 feet of the river will be reviewed to determine if effects to river values could be reduced or eliminated. These sites will be designed to direct use of riparian areas to specific locations, using appropriate protection methods to minimize loss of vegetation, streambank degradation or soil compaction. Existing developed sites will be redesigned, to the extent possible, to minimize impact to riparian areas. When locating new facilities, placement in riparian areas will be avoided.
- V-3 Dispersed recreation sites within 300 feet of the river will be reviewed for impacts on water quality, riparian vegetation, and wildlife. Sites may be modified or closed if necessary to reduce those impacts. Dispersed sites will be permitted only where designated.
- V-4 To the extent possible, dispersed activities shall be managed to avoid adversely impacting riparian values.
- V-5 Standing dead and down trees within Riparian Habitat Conservation Areas (as defined by the Inland Native Fish Strategy) will be left to provide streambank structure, future fishery habitat, and wildlife habitat unless such trees are determined to be an unacceptable safety hazard. In developed sites, standing dead and down trees within 100 feet of streambanks will be left unless such trees are determined to be an unacceptable safety hazard. The Deschutes National Forest Hazard Tree Handbook will be used to determine if trees pose a safety hazard within developed sites or along system roadways. If felled hazard trees are not needed for wildlife or fish habitat, other uses may be considered.
- V-6 Meadow restoration will primarily be achieved using prescribed burning or hand tools to remove encroaching vegetation. Other methods which will achieve objectives may be permitted if they would have no adverse effects on Outstandingly Remarkable Values.
- V-7 Noxious weeds in riparian and upland vegetation types will be controlled using prevention, biological, mechanical, or chemical methods (consistent with Regional direction) where such activities will not adversely affect river values.
- V-8 Wildfire suppression activities will continue with prompt, appropriate action taken to reduce spread of wildfire and threat to resource values.

- V-9** Prescribed fire may be used at locations, scale, intensity, and frequency which will mimic pre-suppression historical averages for the watershed, where such fires would not have long-term adverse effects on other river values or cause undue risk to public health and safety or private property. Mechanical pre-treatment of fuels may be required to safely utilize underburning.
- V-10** All prescribed burning will be managed to comply with the Oregon State Smoke Management Plan, the Oregon State Implementation Plan, the Deschutes National Forest Land and Resource Management Plan, and the Final Environmental Impact Statement for Managing Competing and Unwanted Vegetation (USDA Forest Service 1988). Smoke production and dispersion from prescribed fires will be monitored. If adverse impacts occur or are predicted to occur, the firing operations will be suspended. Smoke to downwind communities (e.g. Bend, La Pine, or Sunriver) and to popular recreational areas (including nearby Class I (i.e., clean air) Wilderness Areas) will be controlled by burning only when unstable air conditions are carrying smoke away from these sensitive sites.
- V-11** All prescribed fires must have a written, site-specific burn plan approved in advance. The plan includes clearly defined resource objectives and measures to protect the site and the environment.
- V-12** Some fuel reduction activities (pre-treatments) may be permitted (if such activities would not adversely affect Outstandingly Remarkable Values) to assist in the safe use of prescribed fire and adjacent to private inholdings to reduce the threat of fire spreading to federal, state, or county lands and elsewhere.
- V-13** Standing dead trees will be maintained at levels sufficient to provide suitable habitat for blackbacked and three-toed woodpeckers and other management indicator species (See Forest Plan).
- V-14** Removal of dead vegetation following catastrophic events such as insect, disease, or fire may be permitted if a long-term benefit to Outstandingly Remarkable Values is demonstrated.

- V-15 Target levels for snags and down log habitat are shown in Table 3. Actual size and distribution of snags and down log habitat will be determined by fuel planners and biologists based on site-specific analysis.

**Table 3**  
**Snag and Down Log Habitat and Associated Fuel Loading**  
**by Plant Association Group (PAG)**

| PAG                  | feet <sup>3</sup> /acre | tons/acre |
|----------------------|-------------------------|-----------|
| ponderosa pine       | 900-1300                | 10-15     |
| mixed conifer (dry)  | 1100-2100               | 12-24     |
| lodgepole pine (dry) | 700-1000                | 8-12      |
| lodgepole pine (wet) | 1000-2150               | 12-24     |

- V-16 Ponderosa pine or other species suitable for eagle or osprey nesting will be managed to provide trees which are 20 inches or larger in diameter.
- V-17 Vegetation will appear natural and emphasize protection of riparian plant communities. Any silvicultural practices which provide long-term benefits to Outstandingly Remarkable Values may be allowed.
- V-18 Where regeneration is prescribed, openings may be created ranging in size from ¼ to 5 acres in ponderosa pine and 10-20 acres in lodgepole pine.
- V-19 Firewood gathering or cutting for camp use will be discouraged within 300 feet of the river.
- V-20 Firewood cutting for home use will not be permitted within the corridor, unless site-specific analysis demonstrates benefits to the Outstandingly Remarkable Values.
- V-21 Along river segments with a Visual Quality Standard of Retention, grazing utilization standards will not exceed 10 percent ( $\pm$  5 percent) of current year's production of shrub species and 5 percent ( $\pm$  5 percent) of current year's production of key grasses and grasslike species.  
Along river segments with a Visual Quality Standard of Partial Retention, grazing will not exceed 20 percent ( $\pm$  5 percent) of current year's production for shrub species and 20 percent ( $\pm$  5 percent) of current year's production for key grasses and grasslike species.

## Wildlife

**Standard:** Management activities will maintain Outstandingly Remarkable wildlife populations and diversity of species within the corridor. Songbirds will predominate in areas adjacent to the river. Eagle, osprey, and great blue heron continue to dwell along the river.

### Guidelines:

- W-1** Wildlife dispersal and travel will be facilitated by the arrangement and connectivity of suitable habitat.
- W-2** Road densities will be managed to improve habitat effectiveness.
- W-3** Special management standards for bald eagle and key elk habitat directed in the 1990 Forest Plan will continue. Seasonal closure of Tumalo deer winter area will continue.

## Scenery

**Standard:** The scenic integrity will be protected and enhanced by blending natural and cultural elements of the landscape to be consistent with the expected physical and social setting of the designated Recreational Opportunity Spectrum (ROS). Visitors typically expect to see more signs of human activities in Rural and Urban ROS classifications and less in Roaded Natural.

### Guidelines:

- S-1** Except for developed sites, segments with Scenic River classification will be managed to meet a Visual Quality Standard (VQS) of Retention, and segments with Recreational River classification will be managed to meet a VQS of Partial Retention. Except for developed sites, Segment 2B will be managed to meet a VQS of Retention. (See Table 4). Visual Quality Standards do not apply to private land.

**Table 4** Visual Quality Standards by Segment

| Segment | VQS               |
|---------|-------------------|
| 2A      | Partial Retention |
| 2B      | Retention         |
| 3A      | Partial Retention |
| 3B      | Partial Retention |
| 3C      | Partial Retention |
| 3D      | Partial Retention |
| 4A      | Retention         |

| Segment | VQS                         |
|---------|-----------------------------|
| 4B      | Retention                   |
| 4C      | Retention                   |
| 4D      | Retention                   |
| 4E      | Retention                   |
| 4F      | Partial Retention           |
| 4G      | State and local rules apply |

- S-3** Developed sites will be managed to meet a VQS of Modification or higher. River access will enhance the recreational experience while protecting scenic qualities. Site developments will blend with the landscape to the extent possible.
- S-4** Developed and dispersed recreation sites will be designed and managed to reduce visibility from the river.

## **Cultural Resources**

The Standards and Guidelines regarding Cultural Resources from the Deschutes National Forest Land and Resources Management Plan will apply.

As directed by the Forest Plan, the known prehistoric properties along the river will be managed under provisions provided in the National Historic Preservation Act, the Deschutes National Forest Land and Resources Management Plan, and the Programmatic Memorandum of Agreement between the Forest Service, ACHP, and SHPO. Native American Indian interests and treaty rights will continue to be protected under existing laws and regulations.

## **Recreation**

**Standard:** A variety of recreational activities will be provided within a predominantly natural setting without adversely affecting other river values.

## **Use Types and Levels**

- R-1** Total use will be managed according to designed annual capacities (See Table 5). These designed annual capacities will serve as the basis for site designation and development. The Recreational Opportunity Spectrum Standards and resource protection needs will determine the total number, location, and development levels of recreation sites (including day-use areas, trailheads, overnight camps, and boat ramps). Table 5 shows the estimated number of developed and dispersed sites in each segment. Table 6 shows the estimated number of individual sites at each developed site.

Table 5

## Recreation Use

| Segment | ROS Standard   | River Use                  | Designed Annual Capacity <sup>1</sup> |                        | Estimated # of Sites <sup>2</sup> |           |
|---------|----------------|----------------------------|---------------------------------------|------------------------|-----------------------------------|-----------|
|         |                |                            | non-commercial                        | outfitter <sup>3</sup> | developed                         | dispersed |
| 2A      | Rural          | Mixed                      | 20,000                                | 2,000                  | 71                                | 4         |
| 2B      | Roaded Natural | Non-Motorized              |                                       |                        | 20                                | 2         |
| 3A      | Urban          | Mixed <sup>4</sup>         | 68,000                                | 31,000                 | 236                               | 1         |
| 3B      | Rural          | Mixed                      |                                       |                        | 34                                | 1         |
| 3C      | Urban          | Mixed                      |                                       |                        | 0                                 | -         |
| 3D      | Rural          | Mixed                      |                                       |                        | 31                                | 4         |
| 4A      | Roaded Natural | Mixed                      | 44,000                                | 66,500                 | 22                                | 1         |
| 4B      | Rural          | Mixed                      |                                       |                        | 30                                | 2         |
| 4C      | Roaded Natural | Mixed                      |                                       |                        | 22                                | 1         |
| 4D      | Roaded Natural | Mixed                      |                                       |                        | -                                 | -         |
| 4E      | Rural          | Non-Motorized <sup>5</sup> |                                       |                        | 30                                | 2         |
| 4F      | Rural          | Non-Motorized              |                                       |                        | 12                                | 1         |
| 4G      | Urban          | Non-Motorized              |                                       |                        | -                                 | -         |

1. Use numbers are based on guided/outfitted use, recreation sites, and trail capacities. Trail or river users who cross segment boundaries are counted in each segment. Use numbers do not include use on private lands or non-commercial use originating from private lands.

2. Includes individual campsites and individual parking spaces at boatramps and trailheads.

3. Includes non-profit/educational use.

4. Only non-motorized use above LaPine State Recreation Area boatramp/bridge.

5. Mixed use above Aspen River Access

*River segments where motorized boating will be permitted are referred to as mixed use segments, because non-motorized boating will also be allowed and may be the primary use.*

Table 6

## Estimated Number of Recreation Sites by Location and Type

| Segment     | Developed Area                   | Sites by Type <sup>1</sup> |             |           |              |           | Total Sites |
|-------------|----------------------------------|----------------------------|-------------|-----------|--------------|-----------|-------------|
|             |                                  | Campground                 | Picnic Area | Boat Ramp | River Access | Trailhead |             |
| 2A          | Tenino                           |                            |             | 10        |              |           | 10          |
|             | Wampus                           | -                          |             |           |              |           | -           |
|             | Bull Bend                        | 14                         | 2           | 5         |              |           | 21          |
|             | Wyeth                            | 4                          |             | 5         |              |           | 9           |
|             | Pringle Falls                    | 13                         |             |           |              |           | 13          |
|             | <i>New Campground</i>            | 12                         |             |           |              |           | 12          |
|             | Trailheads                       |                            |             |           |              | 6         | 6           |
| 2B          | Tetherow                         |                            |             | 4         |              |           | 4           |
|             | Trailheads                       |                            |             |           |              | 15        | 15          |
| 3A          | LaPine State Recreation Area     | 145                        | 80          | 6         |              | 5         | 236         |
| 3B          | Big River                        | 28                         |             | 6         |              |           | 34          |
| 3D          | <i>Spring River Interpretive</i> |                            | 5           |           |              | 5         | 10          |
|             | Besson                           |                            | 7           | 4         |              |           | 11          |
|             | Trailheads                       |                            |             |           |              | 10        | 10          |
| 4A          | Benham Butte                     |                            | 12          |           | 5            | 5         | 22          |
| 4B          | Benham Falls                     |                            | 4           | 6         |              |           | 10          |
|             | Benham Falls Overlook            |                            | 6           |           |              |           | 6           |
|             | Trailheads                       |                            |             |           |              | 14        | 14          |
| 4C          | Slough                           |                            | 4           | 4         |              | 3         | 11          |
|             | Dillon Falls                     |                            | 4           | 4         |              | 3         | 11          |
| 4E          | Aspen                            |                            |             |           | 6            | 4         | 10          |
|             | Big Eddy                         |                            |             |           | 7            | 3         | 10          |
|             | Lava Island                      |                            |             |           | 7            | 3         | 10          |
| 4F          | Meadow                           |                            | 9           |           |              | 3         | 12          |
| Total Sites |                                  | 216                        | 133         | 54        | 25           | 79        | 507         |

## Notes:

1. For Boat Ramps, River Access Points, and Trailheads, parking spaces are counted as individual sites.
2. Areas in italics are new areas which would be developed as needed.

## **Developed and Dispersed Sites**

- R-2** Only day use is allowed in developed sites from Harper Bridge to the Bend Urban Growth Boundary.
- R-3** Development of the new facilities (identified in Table 6) will only occur if use levels indicate additional developed site capacity is needed. Expansion of existing facilities will be considered before development of new facilities. New developments will be designed to minimize disturbance of wildlife and move use away from sensitive riparian areas to the extent possible while still providing access to the river at designated locations. Barrier-free facilities will be provided in accordance with applicable federal, state, and local laws and regulations.
- R-4** All dispersed and developed sites within 300 feet of the river will be reviewed to determine effects on river values. Based on this review, the sites may be modified to reduce risk of resource damage, provide for public needs, improve sanitation and safety, and improve vegetation screening. Modifications may include revegetation, redesign with site protection measures, relocation, or closure as necessary to mitigate adverse effects on river values.
- R-5** Open road access will be maintained to all existing developed recreation sites, unless access is eliminated by river alterations (flooding, creation of new channels, etc.). In such case, site-specific analysis will determine if road access is reestablished.
- R-6** Unique habitats (large rock outcroppings, lava flows, wetlands, etc.) will be identified and avoided, where possible, when siting new recreation sites and trails.

## **Dispersed Use**

- R-7** Class I, II, and III all-terrain vehicles will be allowed on roads as provided by ORS 821.020; no off-road use will be allowed on public lands within the river corridor.
- R-8** Snowmobiles will be permitted on designated routes only. The primary intent of designated routes will be to provide access from private lands within the river corridor to public lands open to snowmobiling outside the corridor.
- R-9** Horses will be permitted only on designated trails.
- R-10** Bicycles will be permitted on trails unless otherwise designated; no off-road/off-trail use will be allowed on public lands within the river corridor.

- R-11** Trails and facilities will be designed to provide screening of raptor nesting and elk calving and deer fawning sites to avoid or reduce disturbance to wildlife in sensitive habitat areas.
- R-12** Use of the existing Deschutes River Trail by both hikers and bikers will be allowed until resource conditions or user conflicts are determined to be unacceptable.
- R-13** Trail construction may occur when a demonstrated need exists; existing use adversely affects Outstandingly Remarkable Values; or use conflicts indicate a need to separate different user types. Trails will be designed to minimize adverse effects on riparian vegetation, streambank stability, and soils.

### **Boating**

- R-14** State Marine Board Regulations apply. Intended boating use (mixed/non-motorized) is shown in Table 5.
- R-15** In Segment 2, roads between Wyeth boat ramp and Pringle Falls Campground will be kept open to maintain motorized access around private lands for portage of Pringle Falls.

### **Special Uses**

**Standard:** Special uses that are consistent with, complement, or support the goals of the river plan and would not adversely impact other river uses may be considered. They may be appropriate if they promote stewardship, protect resources, aid in controlling use, and respond to demonstrated needs.

### **Existing Uses**

- R-16** Existing guide/outfitters with use authorizations which do not allocate use levels by river segment must apply for specific user numbers for the river corridor. Existing authorizations which include but do not specify Upper Deschutes River segments will be reissued for Deschutes River segments based on the average of the past 3 years' actual reported use, if such use is found to be consistent with this management plan.

**R-17** No additional authorization for guided/outfitted use will be considered in Segments 3D or 4 (existing levels are shown in Table 7), except as noted in R-18 and R-19.

**Table 7 Existing Guided/Outfitted Use in Segments 3D and 4**

| Use Type                         | Segment | Guide/Outfitter         | Maximum Users/Year <sup>1</sup> |
|----------------------------------|---------|-------------------------|---------------------------------|
| Canoe and other flat water craft | 3D - 4A | Sunriver <sup>2</sup>   | 23,200                          |
|                                  | 4C      | Inn of the 7th Mountain | 1,600                           |
| Patio Boats                      | 4C      | Inn of the 7th Mountain | 600                             |
| Horseback Riding                 | 3D - 4A | Sunriver                | 1,600                           |
|                                  | 4E      | Inn of the 7th Mountain | 6,100                           |
| Whitewater Rafting               | 4E      | Inn of the 7th Mountain | 8,500                           |
|                                  |         | Sun Country             | 10,500                          |
|                                  |         | Hunter Expeditions      | 12,000                          |

**Notes:**

1. Users/year is the average of the actual use reported by the outfitters for the 3 seasons prior to plan implementation (1993-1995). Numbers were rounded up to the nearest 100.
2. Sunriver reported the number of flatwater craft rented each season rather than user numbers. To convert to users/year, Sunriver's estimates of 2.5 people per canoe, 3.5 people per raft, 1 person per 1 person kayak, and 2 people per 2 person kayak were used.

**New Uses**

**R-18** At Big Eddy (Segment 4E), new water-based, non-rafting outfitter uses may be considered for activities which are consistent with ROS class and do not increase shuttle impacts. A maximum of five people at one time (with a total of five persons per day) may be allowed. Between July 1 and Labor Day, this use will be limited to before 10 AM and after 3 PM.

**R-19** Below Meadow Picnic Area (Segment 4F), additional water-based, non-rafting outfitter uses may be considered for activities which are consistent with ROS class and do not increase shuttle impacts. A maximum of 10 people at one time (with a total of 1500 users per year) may be allowed.

**R-20** Guided/Outfitted use will not exceed 2,000 users/year in Segment 2 and 6,200 users/year total in Segments 3A-C.

**R-20** Educational programs which promote understanding of river ecosystems will be given preference when issuing new special use permits.

- R-21** Applicants for guide/outfitter special use authorization will provide the Forest Service with a needs assessment prior to application for special use authority.
- R-22** Special events (activities which are limited in frequency or non-reoccurring) may be permitted if they would not last more than three consecutive days, would be consistent with desired recreation experience and resource conditions of the segment, and would have no long term adverse effects on river values. The size of such events will not exceed 100 participants in Roaded Natural segments and 150 participants in Rural and Urban segments. The anticipated number of spectators and their potential impacts must be considered in the permitting process and may result in denial of use.
- R-23** Access to private land across National Forest land will continue to be allowed through the special use process according to existing laws and regulations.

### **Other Recreation**

- R-24** A "No Shooting Corridor" currently exists along approximately 12 river miles within Segment 3. This closure will be continued and updated when changed by Deschutes County and the Forest Service upon recommendation of the No Shooting Corridor Task Force. Figure 2 shows exact areas closed to shooting as of June 30, 1996.

### **Interpretation**

**Standard:** Interpretive programs will be designed to improve public awareness and understanding of the Outstandingly Remarkable Values. The size or type of program may vary with the recreational setting of each segment.

- I-1** Wildlife interpretation will focus on habitat protection, species that wildlife viewers will have a high likelihood of seeing, and educating the public in the importance of wetlands, meadows, snags, and other unique habitats.

# DESCHUTES RIVER NO SHOOTING CORRIDOR

Deschutes County law and a Deschutes National Forest order restrict use of firearms along segments of the Deschutes River marked on this map as a "No Shooting Area". Firing any kind of firearm is prohibited in no shooting areas except by a peace officer acting in the line of duty or by a person acting to defend life or property. Hunters may not shoot firearms while hunting within no shooting areas.

No shooting areas include the beds and banks of the Deschutes River, islands and lands within 150 yards of the ordinary high water mark of the river.

No shooting areas are posted with signs on both sides of the river. However, shooters are responsible for determining whether or not they are within a restricted area before they shoot. Public cooperation in maintaining posted signs is appreciated.

Lands within subdivisions west of the Deschutes River between Harper Bridge and General Patch Bridge are also closed to shooting.

Violation of no shooting restrictions is a Class A infraction, punishable by a fine of up to \$500.

 NO SHOOTING AREA

 BOAT RAMP

 DESCHUTES NATIONAL FOREST BOUNDARY

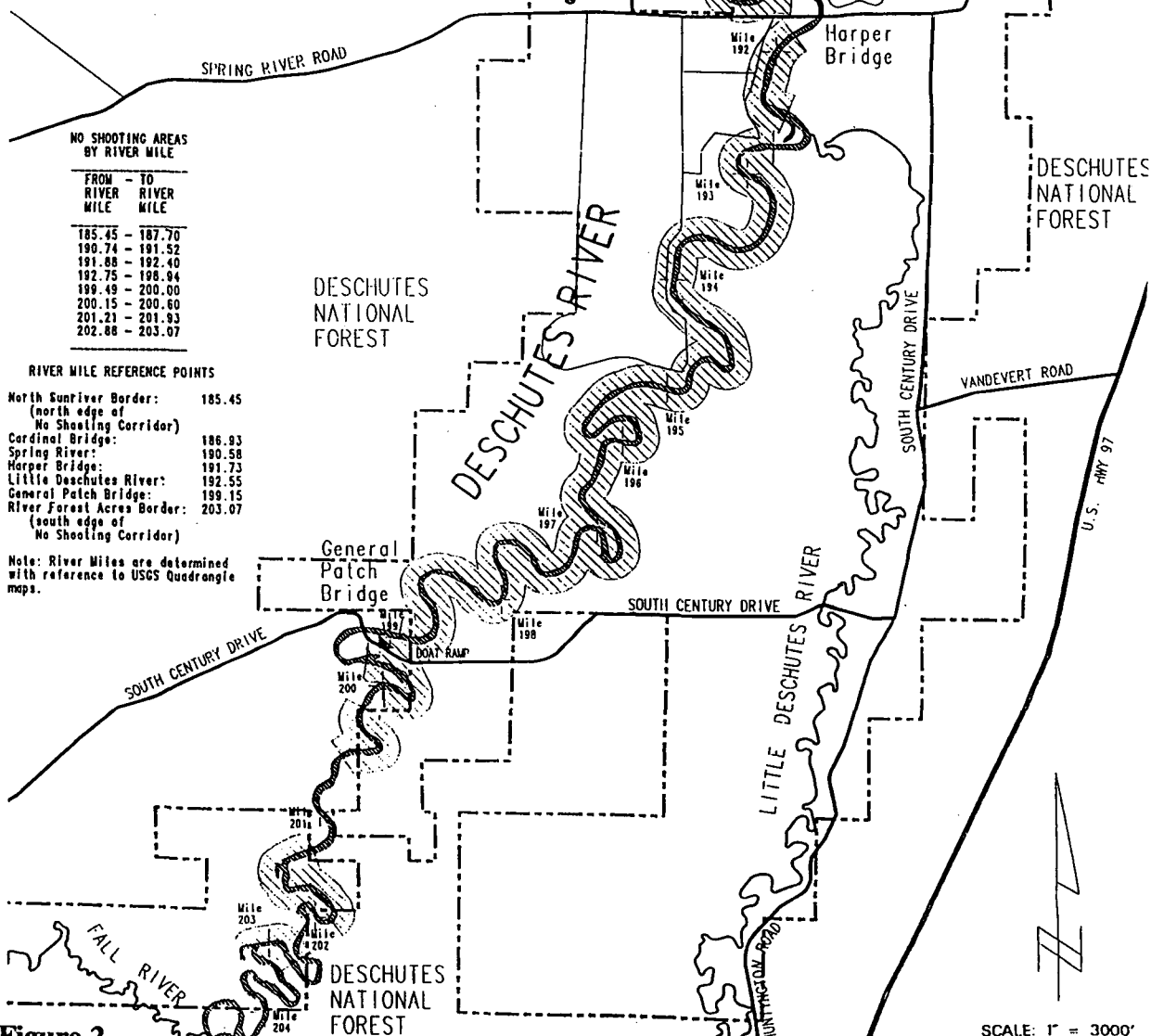


Figure 2

SCALE: 1" = 3000'

### Administrative

- A-1 New administrative sites may be permitted only if no suitable sites are available outside of the river corridor.
- A-2 Current management goals for special management areas (Pringle Falls Experimental Forest, Bald Eagle Management Area, and Old-Growth Area) will continue to the extent that accomplishment of such goals will not adversely effect Outstandingly Remarkable Values.
- A-3 Restrictions on motorized use (on or off river) do not apply to emergency or administrative use.
- A-4 Roads to be maintained for administrative and emergency use are shown in Table 8.

**Table 8 Roads Maintained for Administrative and Emergency Use**

| Road Number               | Location                                                                  |
|---------------------------|---------------------------------------------------------------------------|
| 4100-280                  | Between Cardinal Landing Bridge and the boundary of the river corridor    |
| 4120                      | Between Lava Island Falls and Big Eddy;<br>Between Aspen and Rd. 4120-200 |
| 4300-100                  | Between Pringle Falls RNA and Rd. 4370                                    |
| 4330-500 and 4330-530/900 | Between Road 4330 and junction with Rd. 4330-590                          |
| 4370                      | Between Wyeth Boat Ramp and Haner Park                                    |

- A-5 New bridges, transmission, gas or water lines will be discouraged. Where no reasonable alternative exists, adverse effects to scenic quality will be minimized by using existing rights-of-way and structures or burying lines.

# **Private Land Use**

## **Private Land Use**

Private land uses are governed by state and local land use regulations which were reviewed for preparation of this plan. Changes made by this plan are included in the section Changes Proposed for Adoption. Each agency will adopt these changes according to their own procedures. Some changes were considered but not proposed for adoption as part of this plan. These are listed in the section Changes Considered But Not Proposed For Adoption.

Unless otherwise noted, all current land use regulations administered by federal, state, and local authorities will continue.

All private lands within the river corridor are subject to the Deschutes County comprehensive plan and ordinances. The following chapters were reviewed:

- 18.48 Open Space and Conservation Zone (09/14/94)
- 18.60 Rural Residential Zone (06/08/94)
- 18.84 Landscape Management Combining Zone (10/93)
- 18.88 Wildlife Area Combining Zone (12/07/94)
- 18.96 Flood Plain Zone (04/05/95)
- 18.120 Exceptions (10/93)
- 18.128 Conditional Use (12/07/94)

The procedure to adopt the recommended changes will begin once this plan is signed.

Lands within the State Scenic Waterway boundary (see Map 1) are also subject to State Scenic Waterway Rules. Rule changes adopted by this plan are in progress as this document is being prepared and are expected to be adopted by the State before this plan is signed. See State Scenic Waterways Rules at the end of this section.

## **Changes Proposed for Adoption**

### **Design Review**

All river management agencies would encourage the protection and restoration of native riparian and upland vegetation. Existing tree and shrub cover on undeveloped lots within Landscape Management (LM) zones would be retained until landscape management review is completed. Native vegetation between the structure and the river would be retained except for fire hazard reduction or health and safety.

The Oregon Department of Parks and Recreation would provide for additional design review of fences and agricultural buildings within the State Scenic Waterway.

The Division of State Lands would review fill and removal projects between General Patch Bridge and Harper Bridge with the same bioengineering standards as the State Scenic Waterway segments.

The current exceptions process would be continued.

## **Fill and Removal**

Bioengineering would be the preferred first step in streambank stabilization proposals. Concrete walls or other hard technology would be permitted only if the applicant could demonstrate that use of natural systems would not be feasible and the hardened structure would not adversely affect free flow or other river values.

## **Land Acquisition**

Appropriate members of the Deschutes River Stewardship Team would develop criteria to identify and acquire, from willing sellers, lands or easements for conservation or access. Acquisition could be through purchase, trade or donation. Lands which are undeveloped within scenic areas, provide important riparian or fishery habitat, protect or enhance key wildlife habitat, or provide public access to the river would be considered.

# **Changes Considered But Not Proposed For Adoption**

## **Land Use Zones and Overlays**

Deschutes County land use zones and zone overlays were examined closely to determine whether they seemed to be sufficient to protect and enhance river values. Much of the land along the river was platted prior to the adoption of Deschutes County's current land use zones. This had resulted in numerous small parcels and the potential for dense development in some areas along the river. Current land use zones and overlays provide for maintaining the rural residential character of the area, minimum 10 acre parcels on newly platted properties, clustering of dwellings, and maintenance of open space. The RR10/Wildlife Combining Zone are designed to protect and enhance vegetative, scenic and wildlife values. Therefore, no additional zoning or overlay requirements were pursued in this plan.

## **Floodplain Development Requirements**

Deschutes County currently requires residences to be built out of the designated 100-year floodplain of the Upper Deschutes River unless the landowner is precluded from doing so by the approved placement of an on-site septic system or other "hardship" condition. If the landowner cannot avoid building within the floodplain, then special building requirements ensure the building would not adversely affect the ability of the river to fill its floodplain. These requirements were considered reasonable to protect the free flow character of the river while still allowing for reasonable development of private lands. Therefore, no other floodplain development requirements were considered.

## **Conservation Agreement**

Property owners must convey a conservation agreement to Deschutes County as a condition of approval of land use actions on properties adjacent to the Deschutes River. This agreement generally encompasses property within ten feet of the ordinary high water mark of the river. In the case of setback exceptions, this agreement will encompass all property between the structure and the river. In special circumstances, the conservation agreement can contain requirements for limited access. This program is a valuable way to protect and enhance scenic and vegetative values. Therefore, no additional conservation agreement requirements for land development were considered.

## **State Scenic Waterway Program**

### **A. Background**

The Oregon Scenic Waterway Act was established by a ballot initiative in 1970. The original Oregon Scenic Waterways system created by the Act included 496 free-flowing miles of six rivers.

Rivers can be added to the system through designation by the Governor or the legislature. Such actions have added significant mileage of five rivers, as well as Waldo Lake, to the Scenic Waterways system since passage of the original Act.

Rivers can also be added to the system by the citizens of Oregon. In 1988, Oregon voters passed the Oregon Rivers Initiative (Ballot Measure #7), which added 573 river miles to the system. These additions included the segments of the Upper Deschutes River from Little Lava Lake to Crane Prairie Reservoir, and from the Bend south urban growth boundary to the Central Oregon Irrigation District diversion. There are now one lake and segments of 19 rivers (1,148 miles), in the State Scenic Waterways system.

### **B. Program Goals**

The scenic waterway program promotes cooperative protection and wise use of rivers in the system by all agencies (federal, state and local), individual property owners and recreation users. Five general program goals include:

1. To protect the free-flowing character of designated rivers for fish, wildlife and recreation. No dams, reservoirs, or impoundments are allowed on scenic waterways.
2. To protect and enhance scenic, aesthetic, natural, recreation, scientific, fish and wildlife values along scenic waterways. New development or changes of existing uses proposed within a scenic waterway are reviewed before they may take place.
3. To protect private property rights. The Act discourages unsightly structures or inappropriate development that could be a nuisance to neighboring landowners and/or even depreciate property values. It prohibits pollution and the disturbance of adjacent surface lands by placer mining. It also prohibits public use of private property without explicit consent of the landowner.

4. To promote expansion of the scenic waterway system. The Act sets up a process for adding new rivers to the system and establishes criteria for candidate rivers.
5. To encourage other local, state and federal agencies to act consistently with the goals of the program. Oregon State Parks reviews plans and decisions made by other agencies to ensure consistency with the scenic waterways program.

### **C. Administration**

Scenic waterways are administered under the authority of the Oregon State Parks and Recreation Commission (ORS 390.805 to ORS 390.925). Administrative rules (OAR 736-40-005 to 736-40-040) have been adopted to govern the program (see Appendix \_). In addition to the general rules governing the program, specific rules are generated for management of each river segment in the system. These rules are created through the management planning process, and tailored to the actions necessary to maintain the existing character of the designated river corridor.

The Act and the Commission's rules require the evaluation of proposed land use changes within one-quarter mile from the ordinary high water line, on each side of the river, for their potential impacts on the special attributes of the river. Property owners wanting to build roads or houses, extract minerals and aggregate, harvest timber, or other similar projects, must provide written notification to the Oregon State Parks and Recreation Department. Parks evaluation of the project will be coordinated with other natural resource agencies (federal and state) having regulatory responsibility and with the local jurisdiction. Parks relies on its river classification and administrative rules for each segment of the scenic waterway to determine whether the proposed project is incompatible or inconsistent with the designated classification. State Parks will work with the landowner to reach a resolution of conflicts. Where such resolution cannot be reached, the Commission must decide within one year of the original notification whether to pay the property owner for the land or the development rights. If the Commission does not decide within one year to acquire the land or development rights, then the landowner may proceed in accordance with the original development proposal.

Oregon Parks and Recreation Department coordinates the program with local, state and federal agencies to assure their actions are compatible with scenic waterway Act, administrative rules and resource management plans.

### **D. The Management Planning Process**

The goal of the scenic waterway management planning process is to develop a comprehensive and workable management plan which will protect or enhance the special attributes of the designated river corridor. Primary emphasis is the protection of aesthetic, scenic, fish and wildlife, scientific, and recreational features.

The intent is to maintain the existing scenic condition of the area, without "turning back the clock" on existing land uses. The mechanisms for protection and enhancement include:

**River Classification** - Within the management plan, scenic waterways are classified into one or more of six possible classifications, according to the character of the landscape and the amount and type of development.

**Administrative Rules** - Once the classifications are set, specific guidelines for new development are established as land management rules.

**Other Management Recommendations** - These are suggestions for actions to protect corridor values. Implementation could be through the State Parks Department, other state agencies, federal agencies or local agencies, organizations or persons.

## **E. Scenic Waterway Classification**

Under Oregon law (ORS 390.845 - Functions of the department; use of adjacent lands), the scenic waterway program is administered by the State Parks and Recreation Commission, and staffed the Oregon State Parks and Recreation Department. The Parks Department is required to protect the aesthetic, scenic, fish and wildlife, scientific and recreation features based on special attributes of each river. The Parks Department strives to protect special attributes of the river while recognizing existing land uses and management practices on adjacent lands.

In order to define and achieve management goals, the river is classified into one or more of six possible classifications according to the present level of land development, committed land uses, or landscape alterations. Once the classifications are set, appropriate guidelines for new development or landscape alterations are established as rules. The major aim of the program is to maintain the existing scenic condition of the river.

The following are existing land use and land alteration conditions usually associated with each of the six river classifications; and how each kind of classification should be administered (managed) in scenic waterways:

1. **Natural River Areas** are generally inaccessible except by trail or river, with primitive or minimally developed shorelands. Preservation and enhancement of the primitive character of these areas is the goal of this and the next two classifications.
2. **Accessible Natural River Areas** are relatively primitive, undeveloped areas with access by railroad or lightly traveled road.
3. **Natural Scenic View Areas** are designated where one riverbank is inaccessible, undeveloped or primitive in character while the opposite bank is accessible and developed.

4. **Scenic River Areas** may be accessible by roads, but are largely undeveloped and primitive except for agriculture and grazing. River segments considered "Scenic" are managed to maintain or enhance their high scenic quality, recreation value, fishery and wildlife habitat. The intent is to preserve their largely undeveloped character while allowing continued agricultural land use.
5. **Recreational River Areas** are readily accessible by road or railroad, with some agricultural, commercial and/or residential development along the banks; the river may have undergone some impoundment or diversion in the past. River segments considered "Recreation" are managed to allow continuance of compatible river-oriented public outdoor recreation opportunities, to the extent that these do not substantially impair the natural beauty of the scenic waterway or diminish its aesthetic, fish and wildlife, scientific and recreational values.
6. **River Community Areas** are river segments where the density (residential tract or platted subdivision) of existing structures or other developments precludes application of a more restrictive classification. River segments considered "Community Areas" are managed to allow development that is compatible with county zoning and blends into the natural character of the surrounding landscape. This also means protecting riparian vegetation, and encouraging activities that enhance the landscape.

The rules established for each river classification generally allow some new construction and continued use of existing structures and improvements. Though some improvements require notification, review and approval, many others do not. For example, notification and approval is not generally needed for construction of new fences; maintenance of farm buildings, fences or outbuildings; laying of irrigation lines; crop rotation; removal of danger trees; construction of grain storage facilities under certain conditions; maintenance of existing residences and outbuildings; minor residential remodeling; construction of garage adjacent to existing homes; certain changes in homesite landscaping; maintenance of roads and bridges; and firewood cutting for personal use.

Mining, road building, construction of most new structures, placement of mobile homes, land clearing and timber harvest are examples of activities requiring approval. River classifications and the associated rules or guidelines determine how the natural and scenic beauty of the river will be maintained.

## **F. State Scenic Waterway Land Management Program for the Upper Deschutes River**

### **Classifications**

The Little Lava Lake to Crane Prairie segment is not included in this plan. The entire segment is in public ownership, is recognized as a State Scenic Waterway and has values which make it eligible for consideration as a Wild and Scenic river. A Management Plan will be developed for this segment once a federal study has concluded whether the segment is suitable for Wild and Scenic designation.

The Oregon State Parks and Recreation Department proposes to apply three classifications to given segments of the Upper Deschutes Scenic Waterway. Classification locations and explanations for why each is applied to river segments are provided below:

#### **1. River Community Areas**

A. Those related adjacent lands made up of the residential tract of homes, cabins, and similar dwellings along the river extending downstream of the Wickiup Dam stream gauge at about river mile 226.4 approximately two miles to about river mile 224.5, known as the Wickiup Community Area.

B. Those related adjacent lands made up of residential tracks along the river in approximately river mile 217.5 of Pringle Falls within the northeast quarter of Section 23, Township 21 South, Range 9 East, of the Willamette Meridian, extending downstream approximately seven-tenths of a mile (0.7) to about river mile 216.8, known as Pringle Falls Community Area.

C. Those related adjacent lands within platted residential tracks known as Oregon Water Wonderland Unit 1, River Forest Acres and Deschutes River Homesites, Unit 8 Part 1 and Unit 6 situated along the river extending downstream approximately five miles from about river mile 204 to about river mile 199 or the General Patch Bridge (Deschutes County Road - FAS 793), known as the General Patch Community Area.

**Explanation:** In 1985 the Oregon Legislature directed the then Department of Transportation, Parks and Recreation Division to study the Deschutes County portion of the Deschutes River for eligibility as a State Scenic Waterway. The study was completed and given to the 1987 Legislature for approval. These segments of river were found to meet the qualifications for designation as an Oregon Scenic Waterway, with the classification of "River Community", and the Legislature designated it as such.

D. The segment of the scenic waterway beginning at the south City of Bend Urban Growth Boundary at about river mile 172 downstream approximately one mile to the Central Oregon Irrigation diversion at about river mile 171, known as the South Bend Community Area.

**Explanation:** This segment of river was designated an Oregon Scenic Waterway by voters initiative in 1988. The current Wild and Scenic River Study concluded that due to the high amount of private property, subdivisions, development and current zoning, this segment meets the qualifications for "River Community".

**Management Goal:** Allow development that is compatible with Deschutes County and City of Bend land use planning and zoning ordinances and ensure that any new developments are unobtrusive.

## **2. Recreational River Area**

The segment of the scenic waterway beginning at Harper Bridge (Deschutes County Road - FAS 900) at approximately river mile 190.6 and extending downstream approximately five miles to the point at which the river intersects the Deschutes National Forest Boundary in Section 20, Township 19 South, Range 11 East, of the Willamette Meridian, at approximately river mile 184.8.

**Explanation:** In 1985 the Oregon Legislature directed the then Department of Transportation, Parks and Recreation Division to study the Deschutes County portion of the Deschutes River for eligibility as a State Scenic Waterway. The study was completed and given to the 1987 Legislature for approval. This segment of river were found to meet the qualifications for designation as an Oregon Scenic Waterway, with the classification of "Recreational", and the Legislature designated it as such.

**Management Goal:** Preserve the area's recreational quality and ensure that any new developments blend into the natural character of the surrounding landscape.

## **3. Scenic River Area**

A. The segment of the scenic waterway beginning at the Wickiup Dam stream gauge at about river mile 226.4 and extending downstream about 28 miles to the General Patch Bridge (Deschutes County Road -FAS 793) at about river mile 199 with the exception of the Wickiup Community Area (about river mile 226.4 to about river mile 224.5), Pringle Falls (about river mile 217.5 to about river mile 216.5) and General Patch (about river mile 204 to about river mile 199) as River Community Areas.

B. The segment of the scenic waterway extending from the Deschutes National Forest boundary in Section 20, Township 19 South, Range 11 East, of the Willamette Meridian, to the Bend Urban Growth Boundary at River Mile 172.

**Explanation:** In 1985 the Oregon Legislature directed the then Department of Transportation, Parks and Recreation Division to study the Deschutes County portion of the Deschutes River for eligibility as a State Scenic Waterway. The study was completed and given to the 1987 Legislature for approval. These segments of river were found to meet the qualifications for designation as an Oregon Scenic Waterway, with the classification of "Scenic", and the Legislature designated it as such.

**Management Goal:** Preserve the area's scenic quality and ensure that all new developments blend into the natural character of the surrounding landscape.

### **Land Management Rules**

#### **1. River Community Areas**

- A. The Wickiup Community Area
- B. The Pringle Falls Community Area
- C. The General Patch Community Area
- D. The South Bend Community Area;

**Rule:** Within these areas, all new structures, improvements and development shall be in compliance with the Land Management Rules as described in OAR 736-40-035 and OAR 736-40-040(1)(f), and be consistent with applicable City of Bend and Deschutes County land use and development regulations. Natural evergreen vegetation shall be maintained between the improvements and the river. Improvements needed for public recreation use or resource protection shall be designed to blend with the natural character of the landscape.

All structures shall be set back a minimum of 20 feet from rimrock, where this feature exists and 100 feet from the ordinary high water line of the Deschutes River.

New bridges will not be permitted. Maintenance, repair and replacement of existing bridges shall be consistent with OAR 736-40-035 (6) & (7), Deschutes County and City of Bend land use and development regulations, and Oregon Division of State Lands regulations.

New commercial public service facilities, including but not limited to resorts, hotels, motels, lodges, recreational vehicle parks, convenience stores, and gas stations, shall be screened from view from the river by topography and/or evergreen vegetation.

## 2. **Recreational River Areas**

The river from Harper Bridge downstream to the boundary of the Deschutes National Forest in Section 20, Township 19 South, Range 11 East;

**Rule:** Within these areas, all new structures, improvements and development shall comply with the Land Management Rules as described in OAR 736-40-035 and OAR 736-40-040(1)(c)(B), and be consistent with applicable Deschutes County land use and development regulations.

New structures and improvements shall be set back a minimum of 100 feet from the ordinary high water line of the river. A set back of 20 feet or more is required from the edge of the rim rock (where this feature exists). The exact distance for the above setbacks will be determined on a case by case basis and will be dependent on existing terrain, existing vegetation, height of proposed structure, and applicable county setback requirements.

New structures shall be finished in colors and tones that blend with the surrounding landscape. For the purposes of this rule, landscape includes indigenous vegetation, soils, and rock material. Natural evergreen vegetation shall be maintained between the structures and the river. The establishment of additional vegetative screening (preferably native vegetation) may be required to further mitigate the visual impact of the structure as seen from the river.

Roads, mines and similar forms of development shall be set back from the river consistent with county zoning and land development requirements and be screened from view from the river by topography, or by existing or established evergreen vegetation.

New bridges will not be permitted. Maintenance, repair and replacement of existing bridges shall be consistent with OAR 736-40-035 (6) & (7), Deschutes County land use and development regulations, Oregon Division of State Lands regulations, and USFS Wild & Scenic River regulations.

New commercial public service facilities, including but not limited to resorts, hotels, motels, lodges, recreational vehicle parks, convenience stores, and gas stations, shall be screened from view from the river by topography.

New utility facilities shall share land and air space with existing utilities, road rights-of-way and/or river crossings. Upgrades to existing utility facilities will be permitted. River crossings for new utility facilities will not be permitted.

Improvements needed for public recreation use or resource protection must be designed to blend with the natural character of the landscape.

### 3. Scenic River Area

The river from the Wickiup Dam Stream Gauge downstream to General Patch Bridge;

The river from the boundary of the Deschutes National Forest in Section 20, Township 19 South, Range 11 East to the Bend Urban Growth boundary at river mile 172;

**Rule:** Within these areas all new structures, improvements and development shall comply with the Land Management Rules as described in OAR 736-40-035 and OAR 736-40-040(1)(b)(B) and be consistent with applicable Deschutes County land use and development regulations.

New structures and improvements shall be set back a minimum of 100 feet from the ordinary high water line of the river. A set back of 20 feet or more is required from the edge of the rim rock (where this feature exists). The exact distance for the above setbacks will be determined on a case by case basis and will be dependent on existing terrain, existing vegetation, height of proposed structure, and applicable county setback requirements.

New structures shall be finished in colors and tones that blend with the surrounding landscape. For the purposes of this rule, landscape includes indigenous vegetation, soils, and rock material. Natural evergreen vegetation shall be maintained between the improvements and the river. The establishment of additional vegetative screening (preferably native vegetation) may be required to further mitigate the visual impact of the structure as seen from the river.

New bridges will not be permitted. Maintenance, repair and replacement of existing bridges shall be consistent with OAR 736-40-035 (6) & (7), Deschutes County land use and development regulations, Oregon Division of State Lands regulations, and USFS Wild & Scenic River regulations.

New commercial public service facilities, including but not limited to resorts, hotels, motels, lodges, recreational vehicle parks, convenience stores, and gas stations, shall be screened from view from the river by topography.

New utility facilities shall share land and air space with existing utilities, road rights-of-way and/or river crossings. Upgrades to existing utility facilities will be permitted. River crossings for new utility facilities will not be permitted.

Roads, mines and similar forms of development shall be screened from view from the river by topography.

Improvements needed for public recreation use or resource protection shall be designed to blend with the natural character of the landscape.

### **Other Management Recommendations**

1. Public agencies should develop and install small interpretive signs in key areas within the river corridor.
2. Public or private agencies shall not modify existing or construct new structures within the high water channel unless they enhance river related resources and comply with the free-flow standards.
3. Managing agencies should identify areas which are in need of riparian vegetation protection and restoration and assist landowners in finding ways to protect and restore these areas.
4. Public agencies should provide for and post standardized, well designed, boundary signs distinguishing private lands from public lands where trespass has been identified as a continual problem.
5. The Deschutes National Forest should provide the Oregon State Parks and Recreation Department draft plans, environmental assessments or environmental impact statements on activities that may affect the Upper Deschutes River Scenic Waterway.
6. The Oregon Parks and Recreation Department will seek the cooperation of all local, state, tribal, and federal agencies in meeting the objectives of this program and complying with the State Scenic Waterway Act and State Park Commission rules.

# Activity Priorities

## Probable Actions

This section describes the process for implementing the Probable Actions identified in the FEIS. These are actions which, at the time the plan was prepared, would most likely be needed to achieve the goals or Standards and Guidelines of the plan. Probable actions are called "probable" because their actual accomplishment is dependent upon budgets and national, regional, or local allocations of resources. Probable Actions were grouped according to the river value which the action was to protect and enhance.

*Before these actions are implemented, they may undergo additional decision processes according to the requirements of the appropriate agency.* Site-specific analysis, as required by the National Environmental Policy Act, will be done for all projects proposed within the Upper Deschutes River Corridor for which the federal government has approval responsibility. These analyses will be tiered to the FEIS for the Upper Deschutes River Plan. *No site-specific analysis is presented here.*

All proposed actions must be tested for consistency with the Upper Deschutes River Plan during the site-specific analysis. If a proposed action is found to be inconsistent, one of three choices must be made: modify the project, drop the project, or amend the Upper Deschutes River Plan. (Also see the section How This Plan is Changed.)

### Prioritized Actions

In the following section, the probable actions described in the FEIS have been categorized and, where possible, relative priorities of actions have been developed within those categories. Individual categories of action have been identified according to the river values and do not necessarily reflect a priority of action of one category over another, nor do they reflect a relative priority of one river value over another.

For example, the first two categories of action under Vegetation and Wildlife are both of high priority, and generally speaking, rehabilitation of damaged riparian areas would be of a higher priority for action than a project to ensure long term forest health. However, fund allocation may ultimately dictate the order in which the probable actions are undertaken.

Similarly, funds will affect the order in which certain groups of projects are undertaken. Fishery projects which may partner federal, state, and private money may be accomplished before review and designation of dispersed recreation sites, an activity which is funded solely with Forest Service recreation money. Given these premises, no attempt has been made to identify relative priorities of action between values. What this section does is to identify geographic priorities within that category of action.

It should also be noted that this list of probable actions may not be comprehensive, nor does it represent all possibilities of proposals which may occur.

The river corridor could be subject to changes such as flooding, earthquake, or wildfire. As conditions along the river change, new actions may need to be developed to protect and enhance Outstandingly Remarkable Values. Any new actions proposed would also be subject to site-specific analysis and consistency testing.

*The accomplishment of any of these projects is dependent upon budgets and national, regional, or local allocations of resources. Funding and staffing do not allow all actions to be implemented concurrently, and some projects must be completed before others can logically be implemented.*

Once additional decision processes and site-specific analysis are complete and funding is obtained, projects will be implemented by the appropriate agency or agencies as described in the section How This Plan is Implemented.

## **Geologic and Hydrologic Values**

Flow conditions which affect geologic and hydrologic values are discussed in the Adaptive Flow Management Strategy. Other priorities for actions which could affect these values are described here.

### **Categories of Action:**

1. Actions which will reduce or eliminate active sources of stream sedimentation.
2. Actions which will improve streambank stability consistent with the natural changes in the river system.
3. Actions which will alter instream dynamics of depositions and scouring to move closer to natural system dynamics.

### **Probable Actions**

| Category | Action                                                                                                                                                                                                                                                                                                                                                                                           | Areas in Order of Priority                                                     |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| 1        | <ul style="list-style-type: none"> <li>• Road closures within 100 feet of the river</li> </ul>                                                                                                                                                                                                                                                                                                   | Segment 2, 4, 3 (See map)                                                      |
| 2        | <ul style="list-style-type: none"> <li>• Review dispersed sites (See Vegetation)</li> <li>• Review developed sites (See Vegetation)</li> <li>• Redesign river access at Lava Island, Aspen, and Meadow Picnic Area to delineate access areas and move traffic back from the river.</li> <li>• Rehabilitate/revegetate streambanks</li> <li>• Improve instream structure (See Fishery)</li> </ul> | <p>Segment 2, 3, 4</p> <p>Segment 4, 2, 3</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> |

## Fishery Value

### Categories of Action:

1. Actions which will restore instream habitat conditions where that condition has been most altered from natural conditions.
2. Actions which target fishery habitat which is most affected by flow dynamics.
3. Actions which benefit multiple resource goals.

### Actions

| Category | Action                                                                                                                                                                                            | Areas in Order of Priority |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| 1        | <ul style="list-style-type: none"><li>• Large woody material and cobble and boulder substrate will be introduced for fish habitat. Gravels will be introduced to enhance fish spawning.</li></ul> | Segment 2, 3, 4            |

## Vegetation and Wildlife Values

### Categories of Actions:

1. Actions that restore damaged riparian areas.
2. Actions that protect wildlife, riparian habitats, habitat values and the public. Actions which reduce wildlife disturbance.
3. Long-term actions to prevent wildfire, insect epidemics, disease. Long-term actions to protect and enhance riparian habitat and dependent species and prevent negative impacts to PETS species.
4. Actions that inhibit or prevent non-native species from entering or expanding their range in the river corridor.

## Actions

| Category   | Action                                                                                                                                                                                                                                                                                                                                             | Areas in Order of Priority                                                                                                                                                                                                                 |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vegetation |                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                            |
| 1          | <ul style="list-style-type: none"> <li>Close Wampus Campground.</li> <li>Rehabilitate Big Eddy, Lava Island, Aspen, Dillon Falls, Meadow, and Slough developed sites</li> <li>Review developed sites (See Recreation).</li> <li>Review dispersed sites (See Recreation).</li> </ul>                                                                | <p>N/A</p> <p>N/A</p> <p>Seg. 4, 2, 3</p> <p>Seg. 2, 3, 4</p>                                                                                                                                                                              |
| 2          | <ul style="list-style-type: none"> <li>Reduce the amount and distribution of natural fuel loads.</li> <li>Fell hazard trees in developed sites and along roads.</li> <li>Remove invasive vegetation to protect or restore meadow integrity.</li> </ul>                                                                                             | <p>urban Interface areas, lodgepole pine dry PAG, ponderosa pine PAG, mixed conifer PAG, lodgepole pine wet PAG.</p> <p>As needed</p> <p>Abbot meadow in Seg. 3, Seg. 2, Seg. 4, other meadows in Seg. 3.</p>                              |
| 3          | <ul style="list-style-type: none"> <li>Manage vegetation to protect and enhance Outstandingly Remarkable Values.</li> <li>Reduce the lodgepole pine component within historic ponderosa pine forests.</li> <li>Remove vegetation to reduce competition to ponderosa pine.</li> <li>Regenerate or rejuvenate shrub and grass components.</li> </ul> | <p>ponderosa pine PAG, lodgepole pine dry PAG, mixed conifer PAG.</p> <p>Seg. 2, 3, 4.</p> <p>ponderosa pine PAG, mixed conifer PAG</p> <p>Slough Camp-south slough, Dillon meadow, decadent bitterbrush stands, moist to wet meadows,</p> |
| 4          | <ul style="list-style-type: none"> <li>Control noxious weeds.</li> </ul>                                                                                                                                                                                                                                                                           | <p>knapweed in Abbot meadow, other noxious weed locations.</p>                                                                                                                                                                             |
| Wildlife   |                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                            |
| 2          | <ul style="list-style-type: none"> <li>Close roads to sensitive habitat areas (See Map 5).</li> </ul>                                                                                                                                                                                                                                              | <p>Segment 4, 2, 3</p>                                                                                                                                                                                                                     |

## Scenic Value

### Categories of Action:

1. Actions which increase or restore vegetation along streambanks and in key viewpoints.
2. Actions which reduce visibility of human impacts.
3. Actions which perpetuate desired long-term scenic quality.

### Actions

| Category | Action                                                                                                                                                            | Areas in Order of Priority |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| 1        | <ul style="list-style-type: none"><li>• Current grazing uses will be redesigned to meet Visual Quality Standards.</li></ul>                                       | N/A                        |
| 2        | <ul style="list-style-type: none"><li>• Developed and dispersed sites will be modified to improve screening from river (See Recreation and Vegetation).</li></ul> | N/A                        |

## Cultural Resource Value

### Categories of Action:

1. Actions which ensure protection of cultural resources associated with other project activities.
2. Actions which will further scientific knowledge or public education of cultural resources (See Forest Plan).

### Actions

| Category | Action                                                                                                                  | Areas in Order of Priority         |
|----------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| 1        | <ul style="list-style-type: none"><li>• Inventory/data recovery will occur as part of site-specific projects.</li></ul> | concurrent with project activities |

## Recreation Value

### Categories of Action:

1. Actions which would protect public health and safety.
2. Actions which would improve existing sites or site access to respond to resource needs.
3. Actions which would change existing or provide new recreation opportunities.

### Probable Actions

| Category | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Areas in Order of Priority                                                                                                                |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | <ul style="list-style-type: none"> <li>Designate all individual developed and dispersed sites.</li> <li>Development of take out/portage trail around Tetherow logjam.</li> <li>Replacement of the undeveloped boatramp on private land at Harper Bridge with safer public access which would protect riparian and other values.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p>Seg. 2, 4, 3.</p> <p>N/A</p> <p>N/A</p>                                                                                                |
| 2        | <ul style="list-style-type: none"> <li>Reconstruction of roads to Bull Bend and Slough/Benham Falls.</li> <li>Within Segment 2B, all roads except Road 4360 and Road 4330-600 would be closed or obliterated. Motorized access would be maintained to Tetherow Boat Ramp via Road 4330-600.</li> <li>Review of dispersed sites using field IDT approach.</li> <li>Modification of the Big River complex to protect the riparian area and provide separate day-use, camping, and boatramp facilities.</li> <li>Conversion of Besson, Slough, and Dillon Falls to day-use areas.</li> <li>Modification of Big Eddy River Access (parking area improvement, restroom facilities construction, and trail reconstruction).</li> <li>Development of barrier-free fishing from the historic General Patch Bridge.</li> <li>Reconstruction or replacement of existing facilities with barrier-free facilities at developed sites with barrier-free access.</li> <li>Some existing trails would be obliterated, relocated or redesigned to respond to resource needs.</li> </ul> | <p>Segment 4, 2</p> <p>N/A</p> <p>Segment 2, 3, 4</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>Segment 3, 4, 2</p> <p>As needed</p> |

|   |                                                                                                                                                                                                               |                                                  |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| 3 | <ul style="list-style-type: none"> <li>• Designation of four to six dispersed sites on the bench above the river off Road 4100- 286 in Segment 3D.</li> </ul>                                                 | Concurrent with closure of other dispersed sites |
|   | <ul style="list-style-type: none"> <li>• Formalization of trailheads on new trail segments.</li> </ul>                                                                                                        | Concurrent with trail construction               |
|   | <ul style="list-style-type: none"> <li>• Extension of the Deschutes River Trail from near Benham Falls Overlook to the end of 4100-240 spur near Besson Camp.</li> </ul>                                      | N/A                                              |
|   | <ul style="list-style-type: none"> <li>• Construction of a surfaced, primary bike trail from Bend Urban Growth Boundary to Sunriver.</li> </ul>                                                               | N/A                                              |
|   | <ul style="list-style-type: none"> <li>• Construction of barrier-free trails at Benham Falls Overlook and Dillon Falls.</li> </ul>                                                                            | N/A                                              |
|   | <ul style="list-style-type: none"> <li>• Development of a day-use picnic area and trail (with trailhead parking) to interpret ecosystem interactions in the area between Spring River and Road 40.</li> </ul> | N/A                                              |
|   | <ul style="list-style-type: none"> <li>• Construction of a campground (Dev. level 3) in Segment 2A as needed.</li> </ul>                                                                                      | N/A                                              |
|   | <ul style="list-style-type: none"> <li>• Development of a 6 site picnic area west of the Benham Butte river access as needed.</li> </ul>                                                                      | N/A                                              |
|   | <ul style="list-style-type: none"> <li>• Signing of river segments to notify users of allowed boating use.</li> </ul>                                                                                         | Segments 2 and 4 concurrently                    |
|   | <ul style="list-style-type: none"> <li>• Designation of informal trailheads at all segments of road converted to trail.</li> </ul>                                                                            | Concurrent with road closures                    |

## Interpretation

### Categories of Action:

1. Actions which will increase public knowledge and awareness of Outstandingly Remarkable Values.

### Actions

| Category | Action                                                                                                                                                  | Areas in Order of Priority |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| 1        | <ul style="list-style-type: none"> <li>• Add interpretive signing at trails, day use areas, campgrounds, boat ramps and river access points.</li> </ul> | Segments 4, 3, 2           |
|          | <ul style="list-style-type: none"> <li>• Develop interpretive trail in Spring River area</li> </ul>                                                     | N/A                        |

## Private Land Use

Processes to change to rules and ordinances will be under way or begin when this plan is signed.

### Categories of Action:

1. Actions which protect or enhance scenic quality.
2. Actions which promote public access to the river.
3. Actions which promote public understanding of river ecosystems.

### Actions

| Category | Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Areas in Order of Priority                  |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| 1        | <ul style="list-style-type: none"> <li>Deschutes County ordinances will be developed to include design review before any vegetation removal activities on private land within the Federal Wild and Scenic River boundary and State Scenic Waterway boundary.</li> <li>State Scenic Waterway rules will be changed to include fences and agricultural buildings in design review.</li> <li>State Scenic Waterway rules will be changed to allow metal roofing and siding which meet design standards.</li> <li>To enforce rimrock setbacks in the non-intensively developed areas within the City and Urban Growth Boundary, rimrock within 300 feet of the river will be mapped as recommended by the Deschutes Basin Resource Committee.</li> </ul> | <p>N/A</p> <p>N/A</p> <p>N/A</p> <p>N/A</p> |
| 2        | <ul style="list-style-type: none"> <li>The undeveloped boatramp on private land at Harper Bridge will be replaced with safer public access which will protect riparian and other values.</li> <li>Priorities developed for land acquisitions from willing sellers</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>N/A</p> <p>Segments 3, 4, 2</p>          |

# **Adaptive Flow Management Strategy**

# Introduction

The overall goal of this adaptive flow management strategy is to support off-stream beneficial uses and improve instream beneficial uses of the waters of the Deschutes. This strategy will be used to achieve desired resource conditions. Other actions will be implemented to protect and enhance river values including, but not limited to: restoration and improvement of riparian habitat on public and private lands and improvement of fishery habitat and channel conditions through addition of instream structure. The Adaptive Flow Management Strategy is the result of the efforts of resource professionals and water managers to develop an integrated adaptive approach to improving instream conditions while continuing to refine and quantify the relationships between water quantity and river values. (Also see the section How This Plan Will Be Implemented.)

This Adaptive Flow Management Strategy focuses on five key processes.

1. Identification of a set of long-term resource condition goals which represent a healthy river ecosystem.
2. Identification of voluntary management practices which are reasonably expected to achieve those resource conditions.
3. Implementation of the practices as funding and conditions allow. Aggressively pursue implementing identified practices.
4. Monitoring of resource conditions at levels which will track long-term trends and the effectiveness of management practices that are put in place.
5. Adaptation of long-term goals and specific management practices as necessary based on results of monitoring, new information, or meaningful changes in conditions.

Long-term resource condition goals are a brief description of the conditions which, based on current knowledge, would protect and enhance river values. Specific management practices include identifying targeted instream flows; experimenting with the rate of change in flow, and identifying methods by which the targeted flows could be reached. Achieving this minimum flow will be difficult, because the existing uses of the river have state-issued water rights which must be respected. The Wild and Scenic Rivers Act does not preempt these rights. As provided by Section 13 of the Wild and Scenic Rivers Act, the Adaptive Flow Management Strategy is designed to improve water quality and Outstandingly Remarkable Values by making more water available for instream uses without adversely affecting existing water rights.

Providing the mechanisms for implementing these practices is identified in "How This Plan Is Implemented". Monitoring of the long-term trends of resource conditions and the effectiveness of the management practices in achieving those conditions is critical to determine the impacts of actions on both instream and offstream values. Detail on the kinds of monitoring needed to keep this plan on course are described in the "Monitoring Program".

## Resource Goals

The following resource goals are descriptions of conditions which are most directly affected by water. The long-term goal is to provide a quantity of instream water which will protect and enhance:

1. The geologic value by moving the erosion rates in the stream channel and streambanks closer to a natural range of variability;
2. Hydrologic value by improving clarity, dissolved oxygen, and other water quality parameters;
3. The fishery value by providing an improved quality and quantity of habitat year round;
4. The wildlife value by providing favorable streamflow year round to improve prey base for eagles and osprey, and improve waterfowl, songbird, and furbearer habitat.
5. The scenic value by changing the character of the winter scenery to reduce the impression that the tide has gone out;
6. The recreation value by providing an opportunity to navigate the river year round and maintain the thrill of rafting the Big Eddy reach (in segment 4) during the summer.
7. Aquatic and riparian vegetation to protect the river channel from erosion, and provide cover and food for fish, macroinvertebrates, and other types of animal life.
8. Aquatic resource conditions to perpetuate viable populations of aquatic organisms.

*The goal of enhancing instream flows will only occur to the extent the irrigation districts' ability to deliver irrigation water is maintained, if not enhanced. Water savings for instream uses as described in this plan will only occur through voluntary and consensual measures such as conservation practices and water transfers from willing sellers.*

## Water Quantity and Quality Management Strategies

Strategies for managing water quantity and quality are in two parts. The first part describes the targeted instream flows which are expected to accomplish resource condition goals. The second part addresses how to make water available to help achieve that goal.

Strategies for implementing a minimum flow will not reduce the availability of water for agriculture and other offstream and downstream uses. *This strategy was developed jointly by irrigation district managers, state and federal agencies, and tribal representatives and will be implemented cooperatively as water availability permits.*

Water quality management strategies are specific flow or other management practices which will be used to ensure protection of water quality from non-point sources of pollution. These strategies will be identified and monitored by the federal and state governments to determine their effectiveness. Water quality management strategies related to flows include minimum winter flows, maximum summer flows, and ramping rates. Streambank vegetation, instream habitat, and other instream structural improvements are also key components and are discussed under the Management Plan.

## **Targeted Instream Flows**

The long-term targeted instream flow goal for this plan is identified in Table 9. The targeted instream flow is expected to be achieved in increments. This long-term goal will be pursued using methods identified in the following section, and according to the overall precepts of the plan.

### **Making Water Available for Instream Flow**

The methods available to increase instream flows in the Upper Deschutes without affecting the amount of water available to users are limited. The goal of enhancing instream flows will not be achieved by taking water away from existing users. *Enhancing the instream flows will only occur to the extent the irrigation districts' ability to deliver irrigation water is maintained, if not enhanced.* Water savings that will provide for enhanced instream flows will be achieved as a result of voluntary and cooperative implementation of water conservation measures, downstream and/or offstream storage and voluntary sale or lease of water rights.

#### **Water Forecasting**

Storage season water releases will continue to be adjusted based on projected winter inflows. Accurate forecasting can contribute substantially to the availability of sustainable winter releases. A focused effort to improve forecasting technology will be pursued. There will be no substantial change in fishery and recreation conditions at Wickiup and Crane Prairie reservoirs, and no difference in summertime flows on the Middle Deschutes.

#### **Water Conservation Methods**

**Delivery System** - Currently, substantial leakage occurs from the irrigation delivery system. Canal lining or other methods to improve the efficiency of the system would, under current legislative guidelines, result in a portion of the saved water being assigned for instream flows.

**On Farm Conservation** - Many farms use gravity irrigation systems. It is estimated that use of sprinkler systems could increase on-farm efficiency by up to 10 percent.

#### **Water Leasing/Acquisition**

Water right leasing, purchase, and transfer (either the water rights only or land with water rights) have been used successfully by the Oregon Water Trust to increase instream flows. The amount of water available through leasing or acquisition is dependent on the willingness of existing water right holders to put their land out of production on a temporary or permanent basis and the availability of funds to lease or acquire those rights.

#### **Downstream/Offstream Storage**

Some additional water for wintertime instream releases below Wickiup could be provided by increasing the capacity of existing offstream storage (Haystack Reservoir) or developing new storage facilities.

## **Ramping Rates**

The ramping rate is the change in the rate at which water is released from storage into the river. For releases from Wickiup Dam, ramping rate is determined by the change in river level over a given time period at Wickiup gauge.

Because springtime turbidity levels and fish habitat conditions are believed to be tied to ramping rates, cooperators will experiment with ramping rates when adequate water is available. Unless carefully planned, ramping rates modifications have the potential to impact water users by releasing more water than can be used for irrigation and reducing the amount of water available for irrigation in the future.

The initial ramping rates (0.1 ft/4 hrs. rising and 0.2 ft/12 hrs. falling) are initial estimates of rates which could be expected to: 1) reduce turbidity levels in the spring, 2) reduce stranding of small fish and macroinvertebrates in the dewatered areas in the fall, 3) have a low potential for adverse impacts on irrigators. These rates will be used at flow levels below 800 cfs (measured at Wickiup gauge). Above 800 cfs, the ramping rate has less influence on turbidity.

These rates are estimates of changes that could be implemented during a good water year. Ramping rates based on these initial estimates may be modified as a result of monitoring turbidity levels and other resource conditions.

Table 9

Flow Targets<sup>1</sup>

|                                             | Current Practices       | Intermediate Flow Targets   |                                      |                                      | Long-Term Flow Target                |
|---------------------------------------------|-------------------------|-----------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Minimum                                     | 20 cfs                  | 50 cfs                      | 100 cfs for 90% of time <sup>2</sup> | 200 cfs for 90% of time <sup>2</sup> | 300 cfs for 90% of time <sup>2</sup> |
| Maximum                                     | no limitation           | 1650 cfs                    | 1600 cfs                             | 1500 cfs                             | 1400 cfs                             |
| Ramping Rate<br>Rising Rate<br>Falling Rate | .5 ft/ day <sup>3</sup> | 0.1 ft/4 hr<br>0.2 ft/12 hr |                                      |                                      |                                      |

**Notes:**

1. Flow as measured at Wickiup gauge.
2. 90% of the time means that on the average 9 out of 10 years the minimum flow would be maintained in the river in winter.
3. Existing standards for flow management allow a ramping rate of 1.0 ft/hour. In practice, the watermaster attempts to limit changes to .5 ft/day.



# **Monitoring Program**

## Introduction

The monitoring program has three purposes: to determine the extent to which the plan is being implemented; to help us understand how management of the river corridor is affecting the Outstandingly Remarkable Values of the Upper Deschutes River; and to help identify conditions needing corrective actions to protect and enhance river values. The River Values identified in the Resource Assessment (Appendix C) are the focus of this monitoring program.

This monitoring plan defines two scales of monitoring, monitoring of long-term trends and monitoring the effectiveness of specific activities. *The accomplishment of any monitoring project is dependent upon budgets and national, regional, or local allocations of resources.*

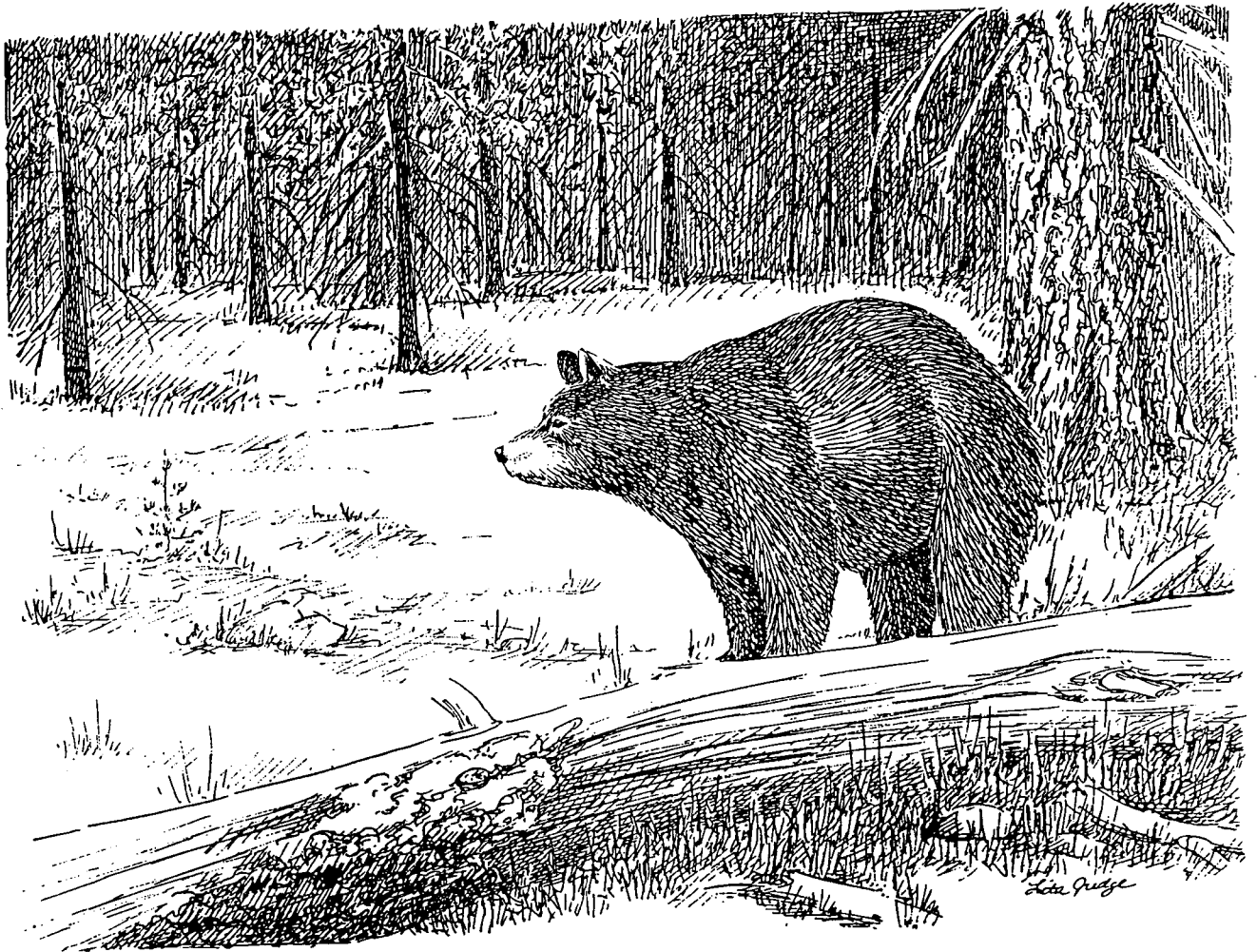
Long-term trend monitoring will focus on the river values which the plan is designed to protect and enhance. The purpose of this level of monitoring is to determine whether the resource conditions in the river corridor as a whole are improving, remaining the same, or declining over time.

The second scale focuses on project or activity level monitoring. At this scale data is gathered and collated on the effectiveness of particular activities in accomplishing more specific resource conditions.

## Monitoring Guidance for the River Values

The section for each River Value provides general direction for what to monitor for long-term trends and for specific activities by identifying the broad monitoring objectives. Suggestions are also made for specific monitoring methods and frequency. These lists are suggestions and are not comprehensive. Monitoring techniques change quickly, and newer methods may often be both more accurate and more economical. Any methods which will adequately answer the monitoring questions may be used; professional judgement will be used to determine monitoring frequency and methodology that is appropriate to the scope of the issues and environmental conditions.

In most cases this monitoring program incorporates data collection which is already in place or part of a continuing base program. These programs are noted in the tables which follow with a single asterisk (\*). New monitoring activities must be funded through project-specific sources or by adding to an existing program. New monitoring activities are noted with a double asterisk (\*\*). New monitoring activities will only be added if funding or other sources become available.



## Geologic and Hydrologic Values

| Monitoring Element                                                                                                   | Purpose                                                                                            | Suggested Methodology and Frequency                                                                                                                                                                                                                                                                                                                       | Responsible Agency or Agencies |
|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| <b>Long-term Trend Monitoring</b>                                                                                    |                                                                                                    |                                                                                                                                                                                                                                                                                                                                                           |                                |
| <b>* Critical water quality parameters</b><br>(dissolved oxygen, pH, turbidity, total suspended solids, temperature) | To determine trends resulting from management actions and other changes within the river corridor. | DEQ longitudinal surveys to establish baseline conditions done in 1995 - 1996 during summer/winter conditions. Baseline study is complete but data assessment not yet complete. DEQ's ambient monitoring network expanded in 1995 to include sampling above Harper Bridge in the Little Deschutes River and Deschutes below Wickiup Reservoir. Quarterly. | DEQ                            |
| <b>* Flow levels</b>                                                                                                 | To correlate with trends in resource condition.                                                    | Continuous flow data with the following locations being the minimum necessary: below reservoirs, Benham Falls, below Bend. Note: could put in long-term temperature monitoring at Benham Falls station.                                                                                                                                                   | OWRD                           |
| <b>** Channel morphology</b>                                                                                         | To determine long-term trends in resource conditions and instream flow levels.                     | Baseline data largely complete. Cross-sectional profiles, duplicating IFIM sites if possible. Two stations per segment at a minimum. Review aerial photos for large scale changes in channel width and sinuosity. For project specific monitoring refer to Fishery Value. Frequency every 5 years. Frequency may change with changes in flow regimes.     | ODFW, USFS                     |
| <b>Activity Level Monitoring</b>                                                                                     |                                                                                                    |                                                                                                                                                                                                                                                                                                                                                           |                                |
| <b>* Turbidity and fish stranding associated with ramping rates.</b>                                                 | To determine effect of experimental ramping rate changes.                                          | Take water quality samples to measure turbidity levels from when releases from Wickiup increase in the spring until flow reaches 1800 cfs. Fish stranding monitored by sampling techniques using electroshocking and counting when releases from Wickiup drop below 800 cfs in the fall. Continue annually until effectiveness is determined.             | OWR, USFS, ODFW, DEQ           |

\* Existing      \*\* New

## Fishery Value

| Monitoring Element                              | Purpose of Monitoring                                                                                             | Suggested Methodology and Frequency                                                                                                                                                                                                                                                                    | Responsible Agency or Agencies |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| <b>Long-term Trend Monitoring</b>               |                                                                                                                   |                                                                                                                                                                                                                                                                                                        |                                |
| <b>* Fish habitat conditions</b>                | To determine changes in fish habitat and hydrological features. (pool/riffle/glide, channel width/depth)          | Stream survey of entire Upper Deschutes River. Region 6 Level II protocol for Forest Service reaches. ODFW protocol for state and private land reaches. Protocols are similar. Every 10 years at a minimum, more frequent if major habitat changes occur. survey same reaches as previously completed. | USFS and ODFW                  |
|                                                 | To determine suitability of existing gravel as spawning habitat for fish and living space for macroinvertebrates. | Fine sediment sampling by using core sampler or Whitlock-Vibert boxes at three stations (Bull Bend, Besson, Meadow). Take intergravel dissolved oxygen readings. Every 2 years at a minimum.                                                                                                           | USFS and ODFW                  |
|                                                 | To determine spawning and incubation gravel quality                                                               | Measure dissolved oxygen within gravels at known spawning areas near Wickiup Dam. Initial testing will occur for one year. Results will dictate whether further testing is needed. Changes in winter flow minimums may dictate frequency of testing.                                                   | ODFW and USFS                  |
| <b>* Fish populations</b>                       | To determine fish population trends                                                                               | Spawner abundance by redd counts. Annually                                                                                                                                                                                                                                                             | ODFW                           |
| <b>** Macroinvertebrate community structure</b> | To determine short-term changes in water quality and long-term trends in fish food supply                         | Macroinvertebrate sampling with Hess Net or Surber Sampler. Every 2 years. Currently there are two stations (Bull Bend and Besson), one more will be added at Meadow.                                                                                                                                  | USFS.                          |

| <b>Project or Activity Level Monitoring</b>                    |                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                 |                                                             |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| <b>Changes in channel morphology and hydrologic conditions</b> | To determine the effectiveness of fish habitat projects (Large Woody Material and boulder placement)                                    | Cross-sectional profiles within project area, two stations per project as a minimum. Pre-project, then every five years. Stream survey specific to the project objectives, such as Large Woody Material count, streambank stability, distribution of habitat types, etc. Pre-project, post-project, then at 5 years.                                                            | Agency responsible for the project. Typically USFS and ODFW |
| <b>Fish populations</b>                                        | To determine the effectiveness of fish habitat projects (Large Woody Material and boulder placement)                                    | Redd counts, snorkeling, electroshocking. Pre-project, post-project 1 year later, then every 1-5 years. Actual frequency and duration will be project dependent.                                                                                                                                                                                                                | ODFW                                                        |
| <b>Spawning gravel condition and use</b>                       | To determine the effectiveness of artificially introducing gravel and the effects of management actions on artificially placed gravels. | Fine sediment sampling using core samplers or Whitlock-Vibert boxes. Take intergravel dissolved oxygen readings. Sampling will occur at each site that gravel is placed, estimated to be two initially. Redd counts. Annually for 3 years, every 2-5 years thereafter depending on findings in first 3 years (If gravels fill with fine sediment monitoring will not continue). | Agency responsible for the project. Typically USFS and ODFW |

\* Existing      \*\* New

## Vegetation and Wildlife Value

| Monitoring Element                | Purpose of Monitoring                                                                                          | Suggested Methodology and Frequency                                                                                                                                                                                  | Responsible Agency or Agencies            |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <b>Long-term Trend Monitoring</b> |                                                                                                                |                                                                                                                                                                                                                      |                                           |
| Vegetation condition              | **To determine changes in amount and condition of aquatic Vegetation                                           | Completed as part of fish habitat monitoring. Correlate also to flow levels.                                                                                                                                         | USFS                                      |
|                                   | **To determine changes in amount and condition of Riparian Vegetation                                          | Aerial photo comparisons; during channel morphology monitoring and fish habitat monitoring; photo points at developed and dispersed sites.                                                                           | USFS/ODFW                                 |
|                                   | *To determine changes in Upland Vegetation                                                                     | ongoing stand exam programs and insect and disease mapping; photo comparisons to determine stand structure and densities, insect and disease levels, relationship to natural range of variability; once per 10 years | USFS                                      |
|                                   | To correlate changes in Artemisia populations to changes in flows                                              | Annual surveys of known plant sites to determine if populations are increasing, decreasing, or remaining static.                                                                                                     | USFS                                      |
| Wildlife populations              | **To determine changes in songbird populations                                                                 | Inventory species and abundance noting all occurrences of brown-headed cowbird parasitism within the survey area.                                                                                                    | USFS                                      |
|                                   | **To determine changes in bald eagle, great blue heron, osprey population                                      | Survey known nest sites or rookeries to monitor reproductive rates using annual observation survey along river                                                                                                       | USFS/ODFW/USFWS/<br>Bald Eagle foundation |
|                                   | **To determine changes in populations of Management Indicator Species and primary and secondary cavity nesters | See Forest Plan.                                                                                                                                                                                                     | USFS                                      |

| Activity Level       |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                            |                         |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Vegetative condition | To determine effects of management and restoration activities on:                                                                                                                                                               |                                                                                                                                                                                                                                            |                         |
|                      | <ul style="list-style-type: none"> <li>•the amount and condition of riparian vegetation</li> </ul>                                                                                                                              | Survey samples of road closures, dispersed camp closures, developed sites, etc., utilize photo points to determine changes associated with project activities.                                                                             | USFS                    |
|                      | <ul style="list-style-type: none"> <li>•upland vegetation. (old growth ponderosa pine, snag and down logs, fuel loads, road closures)</li> </ul>                                                                                | Survey vegetation noting species present and condition (with special focus on ponderosa pine stands) and soil conditions. at project locations. Stand density, snag counts, size and decay class will be recorded.                         | USFS                    |
|                      | <ul style="list-style-type: none"> <li>•known populations of <i>Artemisia</i></li> <li>•populations of noxious weeds</li> </ul>                                                                                                 | <p>Survey pre/post project for projects in the vicinity of known <i>Artemisia</i> populations; actual frequency and duration is project dependent.</p> <p>Survey pre/post project; actual frequency and duration is project dependent.</p> | <p>USFS</p> <p>USFS</p> |
| Wildlife Populations | To determine whether management indicator species, primary and secondary cavity nesters, potentially threatened endangered or sensitive species are present within project area, and if project affects species use of the area | Survey according to established protocols. Preproject to identify actual species using area. Once post project to see if use changes. (See species list).                                                                                  | USFS                    |

## Scenic Value

| Monitoring Element              | Purpose of Monitoring                                           | Suggested Methodology and Frequency                                                                                         | Responsible Agency or Agencies |
|---------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Long-term Trends                |                                                                 |                                                                                                                             |                                |
| Scenic Integrity                | To determine long-term trends in scenic integrity               | Select sample of photo points from Upper Deschutes Landscape analysis and replicate photos every 10 years.                  | USFS, ODFW, Deschutes County   |
| Activity Level                  |                                                                 |                                                                                                                             |                                |
| Riparian Restoration activities | To determine the effects of management actions on Scenic Value. | Select samples of photos of activity areas visible from key viewpoints<br>Pre-project, second year, fifth year, tenth year. | USFS, ODFW, Deschutes County   |

\* Existing    \*\* New

## Cultural Resource Value

| Monitoring Element      | Purpose of Monitoring                                                                    | Suggested Methodology and Frequency | Responsible Agency or Agencies |
|-------------------------|------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------|
| Cultural Resource Sites | To determine the extent to which cultural resources are affected by management activity. | See Forest Plan.                    | USFS                           |

\* Existing    \*\* New

## Recreation Value

| Monitoring Element                          | Purpose of Monitoring                                                                          | Suggested Methodology and Frequency                                                                                                                                                                                                                                                                                                                                                     | Responsible Agency or Agencies |
|---------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| <b>**Quality of Recreational Experience</b> | To determine whether users are enjoying a quality recreational experience                      | User surveys and informal interviews conducted periodically. Most intensive in the first 3 years of plan implementation. Tie to projects to test user satisfaction where possible.                                                                                                                                                                                                      | USFS                           |
| <b>**Total Use Levels (Social Setting)</b>  | To determine whether use levels are in conformance with plan                                   | Gather recreation use data annually or as necessary in key areas. Methods could include such things as: car counts at developed sites; personal observation/counts; fee envelope counts, including vehicles, number of people, tent/RV, etc.; special use permit/operating plan data; infrared counters in strategic locations on trails, on site/on trail monitoring; road count data. | USFS, OPRD                     |
| <b>Physical Setting</b>                     | To determine rate of change of impacts to soil and vegetation at developed and dispersed sites | Use standard site inventory form and photo points every five years.                                                                                                                                                                                                                                                                                                                     | USFS                           |

\* Existing      \*\* New

## Activity Monitoring

Activity monitoring can be done at various intensities, but will generally involve four steps. The first is to collect relevant baseline data to determine what the condition is before undertaking activities. Much of this data may have already been collected. It provides the answer to the question, "What was the condition of the resource before any actions were taken?"

The second step is to verify that projects were carried out as planned. This second step is known as implementation monitoring. It should answer the question, "Were projects done in the manner intended?"

When we know baseline conditions, and have confirmed that projects took place as planned, we can then assess whether the results and effects were what we anticipated. This third step is effectiveness monitoring. It asks the questions, "What's happening as a result of our activities? Were the activities effective in accomplishing the activity objectives? (Long-term monitoring determines if projects are successful in meeting overall plan goals.) Are the activities as a whole effective?" Although some individual projects may need effectiveness monitoring, generally effectiveness monitoring will be performed on a sampling basis, rather than project by project.

If projects are not achieving anticipated results, the next step is to re-examine the assumptions and logic that went into planning, design, and implementation. This fourth step, called validation monitoring, allows us to identify whether there is a need for change in overall direction in planning, designing or carrying out activities. Validation monitoring asks the question, "Is there anything we should do differently in managing the river corridor?" The answer may be as specific as changing an implementation technique or standard, or as broad as changing an overall goal for the river corridor. Validation monitoring is also applied at a broader scale, and is used to periodically reexamine the broader goals and objectives of the Upper Deschutes River Plan to verify whether they are still relevant and appropriate.

To summarize, the general sequence when monitoring any activity, or set of activities, is:

- 1) collect relevant baseline data before the activity.
- 2) do implementation monitoring to verify activities were carried out as designed.
- 3) do effectiveness monitoring to assess results.
- 4) if results are different from what is desired, do validation monitoring to assess whether a change in management direction is needed. Also, periodically assess direction and assumptions in the Upper Deschutes River Plan to evaluate whether they need to be changed.

## Suggested Content of Activity Monitoring

The project or activity file for each activity may contain:

- 1) documentation showing the project's consistency with the intent and direction of the Upper Deschutes River Plan. (This is provided in the environmental, decision, or permit documents for the project).
- 2) an implementation checklist, to be completed by the time the project is done. The checklist will be based on standards and guidelines or other direction applicable to the project or activity.
- 3) a monitoring strategy for the project, including:
  - a) a list of elements of the project that are important to monitor in light of planning issues identified for the project. Include specific descriptions of what implementation and (if appropriate) effectiveness monitoring is needed and how it will be done. Monitoring may range from informal observations (like "walk throughs") to quantified, statistical sampling. For implementation monitoring, methods should answer the question, "Were the project plans and permit requirements followed?" For effectiveness monitoring, methods should answer the question, "Was the management activity effective in accomplishing the stated objectives?" **In the case of routine projects, effectiveness monitoring should be done on a sampling basis.**
  - B) a description of what additional baseline data (if any is needed) will be collected to accomplish this monitoring.
  - C) a schedule for completion of the monitoring activities. In many instances it may be possible to coordinate implementation and effectiveness monitoring activities.

When the project has been completed, monitoring should be done as directed in the project file and within the time frames specified. As a minimum, monitoring documentation should include a short narrative assessing to what extent implementation was completed as planned. If implementation was not as expected and/or the project was not effective in achieving the desired results (and changes are needed), follow-up measures are prescribed at this time.

# Appendix A

# The Wild and Scenic Rivers Act

## <sup>1</sup>An Act

To provide for a National Wild and Scenic Rivers System, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, (a) this Act may be cited as the "Wild and Scenic Rivers Act".*

### Congressional declaration of policy

(b) It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.

### Congressional declaration of purpose

(c) The purpose of this Act is to implement this policy by instituting a national wild and scenic rivers system, by designating the initial components of that system, and by prescribing the methods by which and standards according to which additional components may be added to the system from time to time.

### Composition of system; requirements for State administered components

SEC. 2. (a) The national wild and scenic rivers system shall comprise rivers

(i) that are authorized for inclusion therein by Act of Congress, or

(ii) that are designated as wild, scenic or recreational rivers by or pursuant to an act of the legislature of the State or States through which they flow, that are to be permanently administered as wild, scenic or recreational rivers by an agency or political subdivision of the State or States concerned, that are found by the Secretary of the Interior, upon application of the Governor of the State or the Governors of the States concerned, or a person or persons thereunto duly appointed by him or them, to meet the criteria established in this Act and such criteria supplementary thereto

<sup>1</sup>The Wild and Scenic Rivers Act (16 U.S.C. 1271-1287) as set forth herein consists of Public Law 90-542 (October 2, 1968) and amendments thereto. Additional footnotes can be found following the text of the Act.

as he may prescribe, and that are approved by him for inclusion in the system, including, upon application of the Governor of the State concerned, the Allagash Wilderness Waterway, Maine; that segment of the Wolf River, Wisconsin, which flows through Langlade County and that segment of the New River in North Carolina extending from its confluence with Dog Creek downstream approximately 26.5 miles to the Virginia State line.

Upon receipt of an application under clause (ii) of this subsection, the Secretary shall notify the Federal Energy Regulatory Commission and publish such application in the Federal Register. Each river designated under clause (ii) shall be administered by the State or political subdivision thereof without expense to the United States other than for administration and management of federally owned lands. For purposes of the preceding sentence, amounts made available to any State or political subdivision under the Land and Water Conservation [Fund] Act of 1965 or any other provision of law shall not be treated as an expense to the United States. Nothing in this subsection shall be construed to provide for the transfer to, or administration by, a State or local authority of any federally owned lands which are within the boundaries of any river included within the system under clause (ii).

#### Classification

(b) A wild, scenic or recreational river area eligible to be included in the system is a free-flowing stream and the related adjacent land area that possesses one or more of the values referred to in Section 1, subsection (b) of this Act. Every wild, scenic or recreational river in its free-flowing condition, or upon restoration to this condition, shall be considered eligible for inclusion in the national wild and scenic rivers system and, if included, shall be classified, designated, and administered as one of the following:

- (1) Wild river areas--Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- (2) Scenic river areas--Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- (3) Recreational river areas--Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

#### Congressionally designated components

**SEC. 3. (a)** The following rivers and the land adjacent thereto are hereby designated as components of the national wild and scenic rivers system:

- (1) **CLEARWATER, MIDDLE FORK, IDAHO.**--The Middle Fork from the town of Kooskia upstream to the town of Lowell; the Lochsa River from its junction with the Selway at Lowell forming the Middle Fork, upstream to the Powell Ranger Station; and the Selway River from Lowell upstream to its origin; to be administered by the Secretary of Agriculture.

also acquire scenic easements for purposes of this paragraph as provided in section 6 of this Act.

(D) There are hereby authorized to be appropriated such sums as may be necessary to carry out the purposes of this paragraph.

(68) **14BIG MARSH CREEK, OREGON.**--The 15-mile segment from the northeast quarter of section 15, township 26 south, range 6 east, to its confluence with Crescent Creek in the northeast quarter of section 20, township 24 south, range 7 east, as a recreational river; to be administered by the Secretary of Agriculture: *Provided*, That nothing in this Act shall prohibit the Secretary from undertaking construction activities to enhance and restore wetland resources associated with Big Marsh Creek.

(69) **CHETCO, OREGON.**--The 44.5-mile segment from its headwaters to the Siskiyou National Forest boundary; to be administered by the Secretary of Agriculture in the following classes:

(A) The 25.5-mile segment from its headwaters to Boulder Creek at the Kalmiopsis Wilderness boundary as a wild river;

(B) the 8-mile segment from Boulder Creek to Steel Bridge as a scenic river; and

(C) the 11-mile segment from Steel Bridge to the Siskiyou National Forest boundary, one mile below Wilson Creek, as a recreational river.

(70) **CLACKAMAS, OREGON.**--The 47-mile segment from Big Springs to Big Cliff; to be administered by the Secretary of Agriculture in the following classes:

(A) The 4-mile segment from Big Springs to the Forest Service Road 4690 bridge as a scenic river;

(B) the 3.5-mile segment from the Forest Service Road 4690 bridge to the junction with Oregon State Highway 224 as a recreational river;

(C) the 10.5-mile segment from Oregon State Highway 224 to the June Creek Bridge as a scenic river;

(D) the 9-mile segment from June Creek Bridge to Tar Creek as a recreational river;

(E) the 5.5-mile segment from Tar Creek to just south of Indian Henry Campground as a scenic river; and

(F) the 14.5-mile segment just south of Indian Henry Campground to Big Cliff as are creational river.

(71) **CRESCENT CREEK, OREGON.**--The 10-mile segment from the southwest quarter of section 11, township 24 south, range 6 east, to the west section line of section 13, township 24 south, range 7 east, as a recreational river, to be administered by the Secretary of Agriculture.

(72) **CROOKED, OREGON.**--The 15-mile segment from the National Grassland boundary to Dry Creek; to be administered by the Secretary of the Interior in the following classes:

(A) The 7-mile segment from the National Grassland boundary to River Mile 8 south of Opal Spring as a recreational river; and

(B) the 8-mile segment from Bowman Dam to Dry Creek as a recreational river.

(73) **DESCHUTES, OREGON.**--Those portions as follows:

(A) The 40.4-mile segment from Wickiup Dam to northern boundary of Sunriver at the southwest quarter of section 20, township 19 south, range 11 east as a recreational river; to be administered by the Secretary of Agriculture;

(B) the 11-mile segment from the northern boundary of Sunriver at the southwest quarter of section 20, township 19 south, range 11 east, to Lava Island Camp as a scenic river, to be administered by the Secretary of Agriculture;

(C) the 3-mile segment from Lava Island Camp to the Bend Urban Growth Boundary at the southwest corner of section 13, township 18 south, range 11 east, as a recreational river; to be administered by the Secretary of Agriculture;

(D) the 19-mile segment from Oden Falls to the Upper End of Lake Billy Chinook as a scenic river; to be administered by the Secretary of the Interior;

(E) the 100-mile segment from the Pelton Reregulating Dam to its confluence with the Columbia River as a recreational river; to be administered by the Secretary of the Interior through a cooperative management agreement between the Confederated Tribes of the Warm Springs Reservation, and the State of Oregon as provided in section 10(e) of this Act and section 105 of the Omnibus Oregon Wild and Scenic Rivers Act of 1988.

(74) **DONNER UND BLITZEN, OREGON.**--Those segments, including its major tributaries, as a wild river; to be administered by the Secretary of the Interior as follows:

(A) The 16.75-mile segment of the Donner und Blitzen from its confluence with the South Fork Blitzen and Little Blitzen;

(B) the 12.5-mile segment of the Little Blitzen from its headwaters to its confluence with the South Fork Blitzen;

(C) the 16.5-mile segment of the South Fork Blitzen from its headwaters to its confluence with the South Fork Blitzen;

(D) the 10-mile segment of Big Indian Creek from its headwaters to its confluence with the South Fork Blitzen;

(E) the 3.7-mile segment of Little Indian Creek from its headwaters to its confluence with Big Indian Creek; and

(F) the 13.25-mile segment of Fish Creek from its headwaters to its confluence with the Donner und Blitzen.

(75) **EAGLE CREEK, OREGON.**--The 27-mile segment from its headwaters below Eagle Lake to the Wallowa-Whitman National Forest boundary at Skull Creek; to be administered by the Secretary of Agriculture in the following classes:

(A) The 4-mile segment from its headwaters below Eagle Lake to the Eagle Cap Wilderness boundary at Hummingbird Mountain as a wild river;

(B) the 15.5-mile segment from the Eagle Cap Wilderness boundary at Hummingbird Mountain to Paddy Creek as a recreational river;

(C) the 6-mile segment from Paddy Creek to Little Eagle Creek as a scenic river; and

(D) the 1.5-mile segment from Little Eagle Creek to the Wallowa-Whitman National Forest boundary as a recreational river.

(76) **ELK, OREGON.**--The 19-mile segment to be administered by the Secretary of Agriculture in the following classes:

(A) The 17-mile segment from the confluence of the North and South Forks of the Elk to Anvil Creek as a recreational river, and

(B) the 2-mile segment of the North Fork Elk from the falls to its confluence with the South Fork as a wild river.

- (O) Gibson Creek, from its confluence with Great Egg Harbor River to First Avenue, approximately 5.6 miles, as a recreational river;
- (P) English Creek, from its confluence with Great Egg Harbor River to Zion Road, approximately 3.5 miles, as a recreational river;
- (Q) Lakes Creek, from its confluence with Great Egg Harbor River to the dam, approximately 2.2 miles, as a recreational river;
- (R) Middle River, from its confluence with Great Egg Harbor River to the levee, approximately 5.6 miles, as a scenic river;
- (S) Patcong Creek, from its confluence with Great Egg Harbor River to Garden State Parkway, approximately 2.8 miles, as a recreational river;
- (T) Tuckahoe River (lower segment) from its confluence with Great Egg Harbor River to the Route 50 bridge, approximately 9 miles, as a scenic river;
- (U) Tuckahoe River, from the Route 50 Bridge to Route 49 Bridge, approximately 7.3 miles, as a recreational river; and
- (V) Cedar Swamp Creek, from its confluence with Tuckahoe River to headwaters, approximately 6 miles, as a scenic river.

#### Establishment of boundaries; classification

(b) The agency charged with the administration of each component of the national wild and scenic rivers system designated by subsection (a) of this section shall, within one year from the date of designation of such component under subsection (a) (except where a different date if [is] provided in subsection (a)), establish detailed boundaries therefor (which boundaries shall include an average of not more than 320 acres of land per mile measured from the ordinary high water mark on both sides of the river); and determine which of the classes outlined in section 2, subsection (b), of this Act best fit the river or its various segments. Notice of the availability of the boundaries and classification, and of subsequent boundary amendments shall be published in the Federal Register and shall not become effective until ninety days after they have been forwarded to the President of the Senate and the Speaker of the House of Representatives.

#### Public availability of maps and descriptions

(c) Maps of all boundaries and descriptions of the classifications of designated river segments, and subsequent amendments to such boundaries, shall be available for public inspection in the offices of the administering agency in the District of Columbia and in locations convenient to the designated river.

#### Review requirements for early designations and management plans

(d)(1) For rivers designated on or after January 1, 1986, the Federal agency charged with the administration of each component of the National Wild and Scenic Rivers System shall prepare a comprehensive management plan for such river segment to provide for the protection of the river values. The plan shall address resource protection, development of

lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of this Act. The plan shall be coordinated with and may be incorporated into resource management planning for affected adjacent Federal lands. The plan shall be prepared, after consultation with State and local governments and the interested public within 3 full fiscal years after the date of designation. Notice of the completion and availability of such plans shall be published in the Federal Register.

(2) For rivers designated before January 1, 1986, all boundaries, classifications, and plans shall be reviewed for conformity within the requirements of this subsection within 10 years through regular agency planning processes.

#### Requirements for study reports

**SEC. 4. (a)** The Secretary of the Interior or, where national forest lands are involved, the Secretary of Agriculture or, in appropriate cases, the two Secretaries jointly shall study and submit to the President reports on the suitability or unsuitability for addition to the national wild and scenic rivers system of rivers which are designated herein or hereafter by the Congress as potential additions to such system. The President shall report to the Congress his recommendations and proposals with respect to the designation of each such river or section thereof under this Act. Such studies shall be completed and such reports shall be made to the Congress with respect to all rivers named in subparagraphs 5(a) (1) through (27) of this Act no later than October 2, 1978. In conducting these studies the Secretary of the Interior and the Secretary of Agriculture shall give priority to those rivers

(i) with respect to which there is the greatest likelihood of developments which, if undertaken, would render the rivers unsuitable for inclusion in the national wild and scenic rivers system, and

(ii) which possess the greatest proportion of private lands within their areas.

Every such study and plan shall be coordinated with any water resources planning involving the same river which is being conducted pursuant to the Water Resources Planning Act (79 Stat. 244; 42 U.S.C. 1962 et seq.). Each report, including maps and illustrations, shall show among other things the area included within the report; the characteristics which do or do not make the area a worthy addition to the system; the current status of land ownership and use in the area; the reasonably foreseeable potential uses of the land and water which would be enhanced, foreclosed, or curtailed if the area were included in the national wild and scenic rivers system; the Federal agency (which in the case of a river which is wholly or substantially within a national forest, shall be the Department of Agriculture) by which it is proposed the area, should it be added to the system, be administered; the extent to which it is proposed that such administration, including the costs thereof, be shared by State and local agencies; and the estimated cost to the United States of acquiring necessary lands and interests in land and of administering the area, should it be added to the system. Each such report shall be printed as a Senate or House document.

(b) Before submitting any such report to the President and the Congress, copies of the proposed report shall, unless it was prepared jointly by the Secretary of the Interior and the Secretary of Agriculture, be submitted by the Secretary of the Interior to the Secretary of Agriculture or by the Secretary of Agriculture to the Secretary of the Interior, as the case

may be, and to the Secretary of the Army, the Secretary of Energy, the head of any other affected Federal department or agency and, unless the lands proposed to be included in the area are already owned by the United States or have already been authorized for acquisition by Act of Congress, the Governor of the State or States in which they are located or an officer designated by the Governor to receive the same. Any recommendations or comments on the proposal which the said officials furnish the Secretary or Secretaries who prepared the report within ninety days of the date on which the report is submitted to them, together with the Secretary's or Secretaries' comments thereon, shall be included with the transmittal to the President and the Congress.

#### Review requirements for State components

(c) Before approving or disapproving for inclusion in the national wild and scenic rivers system any river designated as a wild, scenic or recreational river by or pursuant to an act of the State legislature, the Secretary of the Interior shall submit the proposal to the Secretary of Agriculture, the Secretary of the Army, the Secretary of Energy, and the head of any other affected Federal department or agency and shall evaluate and give due weight to any recommendations or comments which the said officials furnish him within ninety days of the date on which it is submitted to them. If he approves the proposed inclusion, he shall publish notice thereof in the Federal Register.

#### Study boundaries

(d) The boundaries of any river proposed in section 5(a) of this Act for potential addition to the National Wild and Scenic Rivers System shall generally comprise that area measured within one-quarter mile from the ordinary high water mark on each side of the river. In the case of any designated river, prior to publication of boundaries pursuant to section 3(b) of this Act, the boundaries also shall comprise the same area. This subsection shall not be construed to limit the possible scope of the study report to address areas which may lie more than one-quarter mile from the ordinary high water mark on each side of the river.

#### Study rivers

**SEC. 5 (a)** The following rivers are hereby designated for potential addition to the national wild and scenic rivers system:

- (1) Allegheny, Pennsylvania: The segment from its mouth to the town of East Brady, Pennsylvania.
- (2) Bruneau, Idaho: The entire main stem.
- (3) Buffalo, Tennessee: The entire river.
- (4) Chattooga, North Carolina, South Carolina, and Georgia: The entire river.
- (5) Clarion, Pennsylvania: The segment between Ridgway and its confluence with the Allegheny River.

States shall be evaluated in planning reports by all Federal agencies as potential alternative uses of the water and related land resources involved.

(2) The Congress finds that the Secretary of the Interior, in preparing the Nationwide Rivers Inventory as a specific study for possible additions to the national wild and scenic rivers system, identified the Upper Klamath River from below the John Boyle Dam to the Oregon-California State line. The Secretary, acting through the Bureau of Land Management, is authorized under this subsection to complete a study of the eligibility and suitability of such segment for potential addition to the national wild and scenic rivers system. Such study shall be completed, and a report containing the results of the study shall be submitted to Congress by April 1, 1990. Nothing in this paragraph shall affect the authority or responsibilities of any other Federal agency with respect to activities or action on this segment and its immediate environment.

#### Acquisition procedures and limitations

**SEC. 6. (a)(1)** The Secretary of the Interior and the Secretary of Agriculture are each authorized to acquire lands and interests in land within the authorized boundaries of any component of the national wild and scenic rivers system designated in section 3 of this Act, or hereafter designated for inclusion in the system by Act of Congress, which is administered by him, but he shall not acquire fee title to an average of more than 100 acres per mile on both sides of the river. Lands owned by a State may be acquired only by donation or by exchange in accordance with the subsection (d) of this section. Lands owned by an Indian tribe or a political subdivision of a State may not be acquired without the consent of the appropriate governing body thereof as long as the Indian tribe or political subdivision is following a plan for management and protection of the lands which the Secretary finds protects the land and assures its use for purposes consistent with this Act. Money appropriated for Federal purposes from the land and water conservation fund shall, without prejudice to the use of appropriations from other sources, be available to Federal departments and agencies for the acquisition of property for the purposes of this Act.

(2) When a tract of land lies partially within and partially outside the boundaries of a component of the national wild and scenic rivers system, the appropriate Secretary may, with the consent of the landowners for the portion outside the boundaries, acquire the entire tract. The land or interest therein so acquired outside the boundaries shall not be counted against the average one-hundred-acre-per-mile fee title limitation of subsection (a)(1). The lands or interests therein outside such boundaries, shall be disposed of, consistent with existing authorities of law, by sale, lease, or exchange.

(b) If 50 per centum or more of the entire acreage outside the ordinary high water mark on both sides of the river within a federally administered wild, scenic or recreational river area is owned in fee title by the United States, by the State or States within which it lies, or by political subdivisions of those States, neither Secretary shall acquire fee title to any lands by condemnation under authority of this Act. Nothing contained in this section, however, shall preclude the use of condemnation when necessary to clear title or to acquire scenic easements or such other easements as are reasonably necessary to give the public

access to the river and to permit its members to traverse the length of the area or of selected segments thereof.

(c) Neither the Secretary of the Interior nor the Secretary of Agriculture may acquire lands by condemnation, for the purpose of including such lands in any national wild, scenic or recreational river area, if such lands are located within any incorporated city, village or borough which has in force and applicable to such lands a duly adopted, valid zoning ordinance that conforms with the purposes of this Act. In order to carry out the provisions of this subsection the appropriate Secretary shall issue guidelines, specifying standards for local zoning ordinances, which are consistent with the purposes of this Act. The standards specified in such guidelines shall have the object of

(A) prohibiting new commercial or industrial uses other than commercial or industrial uses which are consistent with the purposes of this Act, and

(B) the protection of the bank lands by means of acreage, frontage, and setback requirements on development.

(d) The appropriate Secretary is authorized to accept title to non-Federal property within the authorized boundaries of any federally administered component of the national wild and scenic rivers system designated in section 3 of this Act or hereafter designated for inclusion in the system by Act of Congress and, in exchange therefor, convey to the grantor any federally owned property which is under his jurisdiction within the State in which the component lies and which he classifies as suitable for exchange or other disposal. The values of the properties so exchanged either shall be approximately equal or, if they are not approximately equal, shall be equalized by the payment of cash to the grantor or to the Secretary as the circumstances require.

(e) The head of any Federal department or agency having administrative jurisdiction over any lands or interests in land within the authorized boundaries of any federally administered component of the national wild and scenic rivers system designated in section 3 of this Act or hereafter designated for inclusion in the system by Act of Congress is authorized to transfer to the appropriate Secretary jurisdiction over such lands for administration in accordance with the provisions of this Act. Lands acquired by or transferred to the Secretary of Agriculture for the purposes of this Act within or adjacent to a national forest shall upon such acquisition or transfer become national forest lands.

(f) The appropriate Secretary is authorized to accept donations of lands and interests in land, funds, and other property for use in connection with his administration of the national wild and scenic rivers system.

(g)(1) Any owner or owners (hereinafter in this subsection referred to as "owner") of improved property on the date of its acquisition, may retain for themselves and their successors or assigns a right of use and occupancy of the improved property for noncommercial residential purposes for a definite term not to exceed twenty-five years, or in lieu thereof, for a term ending at the death of the owner, or the death of his spouse, or the death of either or both of them. The owner shall elect the term to be reserved. The appropriate Secretary shall pay to the owner the fair market value of the property on the date of such acquisition less the fair market value on such a date of the right retained by the owner.

(2) A right of use and occupancy retained pursuant to this subsection shall be subject to termination whenever the appropriate Secretary is given reasonable cause to find that such use and occupancy is being exercised in a manner which conflicts with the purposes of this Act. In the event of such a finding, the Secretary shall tender to the holder of that right an amount equal to the fair market value of that portion of the right which remains unexpired on the date of termination. Such right of use or occupancy shall terminate by operation of law upon tender of the fair market price.

(3) The term "improved property", as used in this Act, means a detached, one-family dwelling (hereinafter referred to as "dwelling"), the construction of which was begun before January 1, 1967, (except where a different date is specifically provided by law with respect to any particular river), together with so much of the land on which the dwelling is situated, the said land being in the same ownership as the dwelling, as the appropriate Secretary shall designate to be reasonably necessary for the enjoyment of the dwelling for the sole purpose of noncommercial residential use, together with any structures accessory to the dwelling which are situated on the land so designated.

#### Restrictions on hydro and water resource development projects on designated rivers

**SEC. 7. (a)** The Federal Power Commission [FERC] shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act (41 Stat. 1063), as amended (16 U.S.C. 791a et seq.), on or directly affecting any river which is designated in section 3 of this Act as a component of the national wild and scenic rivers system or which is hereafter designated for inclusion in that system, and no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration. Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above a wild, scenic or recreational river area or on any stream tributary thereto which will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of designation of a river as a component of the national wild and scenic rivers system. No department or agency of the United States shall recommend authorization of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration, or request appropriations to begin construction of any such project, whether heretofore or hereafter authorized, without advising the Secretary of the Interior or the Secretary of Agriculture, as the case may be, in writing of its intention so to do at least sixty days in advance, and without specifically reporting to the Congress in writing at the time it makes its recommendation or request in what respect construction of such project would be in conflict with the purposes of this Act and would affect the component and the values to be protected by it under this Act. Any license heretofore or hereafter issued by the Federal Power Commission [FERC] affecting the New River of North Carolina shall continue to be effective only for that portion of the river which is not included in the national wild and scenic rivers system pursuant to section 2 of this Act and

no project or undertaking so licensed shall be permitted to invade, inundate or otherwise adversely affect such river segment.

#### Restrictions on hydro and water resource development projects on study rivers

(b) The Federal Power Commission [FERC] shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act, as amended, on or directly affecting any river which is listed in section 5, subsection (a), of this Act, and no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river might be designated, as determined by the Secretary responsible for its study or approval--

(i) during the ten-year period following enactment of this Act [October 2, 1968] or for a three complete fiscal year period following any Act of Congress designating any river for potential addition to the national wild and scenic rivers system, whichever is later, unless, prior to the expiration of the relevant period, the Secretary of the Interior and where national forest lands are involved, the Secretary of Agriculture, on the basis of study, determine that such river should not be included in the national wild and scenic rivers system and notify the Committees on Interior and Insular Affairs of the United States Congress, in writing, including a copy of the study upon which the determination was made, at least one hundred and eighty days while Congress is in session prior to publishing notice to that effect in the Federal Register: *Provided*, That if any Act designating any river or rivers for potential addition to the national wild and scenic rivers system provides a period for the study or studies which exceeds such three complete fiscal year period the period provided for in such Act shall be substituted for the three complete fiscal year period in the provisions of this clause (i); and

(ii) during such interim period from the date a report is due and the time a report is actually submitted to the Congress; and

(iii) during such additional period thereafter as, in the case of any river the report for which is submitted to the President and the Congress for inclusion in the national wild and scenic rivers system, is necessary for congressional consideration thereof or, in the case of any river recommended to the Secretary of the Interior for inclusion in the national wild and scenic rivers system under section 2(a)(ii) of this Act, is necessary for the secretary's consideration thereof, which additional period, however, shall not exceed three years in the first case and one year in the second.

Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above a potential wild, scenic or recreational river area or on any stream tributary thereto which will not invade the area or diminish the scenic, recreational, and fish and wildlife values present in the potential wild, scenic or recreational river area on the date of designation of a river for study as provided in section 5 of this Act. No department or agency of the United States shall, during the periods hereinbefore specified, recommend authorization of any water resources project on any such river or request appropriations to begin construction of any such project, whether heretofore or

hereafter authorized, without advising the Secretary of the Interior and, where national forest lands are involved, the Secretary of Agriculture in writing of its intention so to do at least sixty days in advance of doing so and without specifically reporting to the Congress in writing at the time it makes its recommendation or request in what respect construction of such project would be in conflict with the purposes of this Act and would affect the component and the values to be protected by it under this Act.

(c) The Federal Power Commission [FERC] and all other Federal agencies shall, promptly upon enactment of this Act, inform the Secretary of the Interior and, where national forest lands are involved, the Secretary of Agriculture, of any proceedings, studies, or other activities within their jurisdiction which are now in progress and which affect or may affect any of the rivers specified in section 5, subsection (a), of this Act. They shall likewise inform him of any such proceedings, studies, or other activities which are hereafter commenced or resumed before they are commenced or resumed.

#### Grants under Land and Water Conservation Fund Act of 1965

(d) Nothing in this section with respect to the making of a loan or grant shall apply to grants made under the Land and Water Conservation Fund Act of 1965 (78 Stat. 897; 16 U.S.C. 4601-5 et seq.).

#### Limitations to entry on Public Lands

##### (a) Designated rivers

**SEC. 8. (a)** All public lands within the authorized boundaries of any component of the national wild and scenic rivers system which is designated in section 3 of this Act or which is hereafter designated for inclusion in that system are hereby withdrawn from entry, sale, or other disposition under the public land laws of the United States. This subsection shall not be construed to limit the authorities granted in section 6(d) or section 14A of this Act.

##### (b) Study rivers

**(b)** All public lands which constitute the bed or bank, or are within one-quarter mile of the bank, of any river which is listed in section 5, subsection (a), of this Act are hereby withdrawn from entry, sale, or other disposition under the public land laws of the United States for the periods specified in section 7, subsection (b), of this Act. Notwithstanding the foregoing provisions of this subsection or any other provision of this Act, subject only to valid existing rights, including valid Native selection rights under the Alaska Native Claims Settlement Act, all public lands which constitute the bed or bank, or are within an area extending two miles from the bank of the river channel on both sides of the river segments referred to in paragraphs (77) through (88) of section 5(a) are hereby withdrawn from entry, sale, State selection or other disposition under the public land laws of the United States for the periods specified in section 7(b) of this Act.

## Limitations on mineral entry and development on Public Lands; designated rivers

**SEC. 9. (a)** Nothing in this Act shall affect the applicability of the United States mining and mineral leasing laws within components of the national wild and scenic rivers system except that--

(i) all prospecting, mining operations, and other activities on mining claims which, in the case of a component of the system designated in section 3 of this Act, have not heretofore been perfected or which, in the case of a component hereafter designated pursuant to this Act or any other Act of Congress, are not perfected before its inclusion in the system and all mining operations and other activities under a mineral lease, license, or permit issued or renewed after inclusion of a component in the system shall be subject to such regulations as the Secretary of the Interior or, in the case of national forest lands, the Secretary of Agriculture may prescribe to effectuate the purposes of this Act;

(ii) subject to valid existing rights, the perfection of, or issuance of a patent to, any mining claim affecting lands within the system shall confer or convey a right or title only to the mineral deposits and such rights only to the use of the surface and the surface resources as are reasonably required to carrying on prospecting or mining operations and are consistent with such regulations as may be prescribed by the Secretary of the Interior, or in the case of national forest lands, by the Secretary of Agriculture; and

(iii) subject to valid existing rights, the minerals in Federal lands which are part of the system and constitute the bed or bank or are situated within one-quarter mile of the bank of any river designated a wild river under this Act or any subsequent Act are hereby withdrawn from all forms of appropriation under the mining laws and from operation of the mineral leasing laws including, in both cases, amendments thereto.

Regulations issued pursuant to paragraphs (i) and (ii) of this subsection shall, among other things, provide safeguards against pollution of the river involved and unnecessary impairment of the scenery within the component in question.

## Study rivers

(b) The minerals in any Federal lands which constitute the bed or bank or are situated within one-quarter mile of the bank of any river which is listed in section 5, subsection (a) of this Act are hereby withdrawn from all forms of appropriation under the mining laws during the periods specified in section 7, subsection (b) of this Act. Nothing contained in this subsection shall be construed to forbid prospecting or the issuance of leases, licenses, and permits under the mineral leasing laws subject to such conditions as the Secretary of the Interior and, in the case of national forest lands, the Secretary of Agriculture find appropriate to safeguard the area in the event it is subsequently included in the system. Notwithstanding the foregoing provisions of this subsection or any other provision of this Act, all public lands which constitute the bed or bank, or are within an area extending two miles from the bank of the river channel on both sides of the river segments referred to in paragraphs (77) through (88) of section 5(a), are hereby withdrawn, subject to valid existing

rights, from all forms of appropriation under the mining laws and from operation of the mineral leasing laws including, in both cases, amendments thereto, during the periods specified in section 7(b) of this Act.

#### Management direction

**SEC. 10. (a)** Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its esthetic, scenic, historic, archeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area.

**(b)** Any portion of a component of the national wild and scenic rivers system that is within the national wilderness preservation system, as established by or pursuant to the Act of September 3, 1964 (78 Stat. 890; 16 U.S.C., ch. 23),<sup>35</sup> shall be subject to the provisions of both the Wilderness Act and this Act with respect to preservation of such river and its immediate environment, and in case of conflict between the provisions of these Acts the more restrictive provisions shall apply.

**(c)** Any component of the national wild and scenic rivers system that is administered by the Secretary of the Interior through the National Park Service shall become a part of the national park system, and any such component that is administered by the Secretary through the Fish and Wildlife Service shall become a part of the national wildlife refuge system. The lands involved shall be subject to the provisions of this Act and the Acts under which the national park system or national wildlife refuge system, as the case may be, is administered, and in case of conflict between the provisions of these Acts, the more restrictive provisions shall apply. The Secretary of the Interior, in his administration of any component of the national wild and scenic rivers system, may utilize such general statutory authorities relating to areas of the national park system and such general statutory authorities otherwise available to him for recreation and preservation purposes and for the conservation and management of natural resources as he deems appropriate to carry out the purposes of this Act.

**(d)** The Secretary of Agriculture, in his administration of any component of the national wild and scenic rivers system area, may utilize the general statutory authorities relating to the national forests in such manner as he deems appropriate to carry out the purposes of this Act.

**(e)** The Federal agency charged with the administration of any component of the national wild and scenic rivers system may enter into written cooperative agreements with the Governor of a State, the head of any State agency, or the appropriate official of a political subdivision of a State for State or local governmental participation in the administration of the component. The States and their political subdivisions shall be encouraged to cooperate in the planning and administration of components of the system which include or adjoin State-or county-owned lands.

Federal assistance to others; cooperation; use of volunteers

**SEC. 11. (a)** The Secretary of the Interior shall encourage and assist the States to consider, in formulating and carrying out their comprehensive statewide outdoor recreation plans and proposals for financing assistance for State and local projects submitted pursuant to the Land and Water Conservation Fund Act of 1965 (78 Stat. 897), needs and opportunities for establishing State and local wild, scenic and recreational river areas.

**(b)(1)** The Secretary of the Interior, the Secretary of Agriculture, or the head of any other Federal agency, shall assist, advise, and cooperate with States or their political subdivisions, landowners, private organizations, or individuals to plan, protect, and manage river resources. Such assistance, advice and cooperation may be through written agreements or otherwise. This authority applies within or outside a federally administered area and applies to rivers which are components of the national wild and scenic rivers system and to other rivers. Any agreement under this subsection may include provisions for limited financial or other assistance to encourage participation in the acquisition, protection, and management of river resources.

**(2)** Wherever appropriate in furtherance of this Act, the Secretary of Agriculture and the Secretary of the Interior are authorized and encouraged to utilize the following:

**(A)** For activities on federally owned land, the Volunteers in the Parks Act of 1969 (16 U.S.C. 18g-j) and the Volunteers in the Forest Act of 1972 (16 U.S.C. 558a-558d).

**(B)** For activities on all other lands, section 6 of the Land and Water Conservation Fund Act of 1965 (relating to the development of statewide comprehensive outdoor recreation plans).

**(3)** For purposes of this subsection, the appropriate Secretary or the head of any Federal agency may utilize and make available Federal facilities, equipment, tools and technical assistance to volunteers and volunteer organizations, subject to such limitations and restrictions as the appropriate Secretary or the head of any Federal agency deems necessary or desirable.

**(4)** No permit or other authorization provided for under provision of any other Federal law shall be conditioned on the existence of any agreement provided for in this section.

Management policies

**SEC. 12. (a)** The Secretary of the Interior, the Secretary of Agriculture, and the head of any other Federal department or agency having jurisdiction over any lands which include, border upon, or are adjacent to, any river included within the National Wild and Scenic Rivers System or under consideration for such inclusion, in accordance with section 2(a)(ii), 3(a), or 5(a), shall take such action respecting management policies, regulations, contracts, plans, affecting such lands, following November 10, 1978, as may be necessary to protect such rivers in accordance with the purposes of this Act. Such Secretary or other department or agency head shall, where appropriate, enter into written cooperative agreements with the appropriate State or local official for the planning, administration, and management of

granted under section 2(a)(ii). Particular attention shall be given to scheduled timber harvesting, road construction, and similar activities which might be contrary to the purposes of this Act.

(b) Nothing in this section shall be construed to abrogate any existing rights, privileges, or contracts affecting Federal lands held by any private party without the consent of said party.

(c) The head of any agency administering a component of the national wild and scenic rivers system shall cooperate with the Administrator, Environmental Protection Agency and with the appropriate State water pollution control agencies for the purpose of eliminating or diminishing the pollution of waters of the river.

**Reservation of State and Federal jurisdiction and responsibilities;  
access to and across wild and scenic rivers**

**SEC. 13.** (a) Nothing in this Act shall affect the jurisdiction or responsibilities of the States with respect to fish and wildlife. Hunting and fishing shall be permitted on lands and waters administered as parts of the system under applicable State and Federal laws and regulations unless, in the case of hunting, those lands or waters are within a national park or monument. The administering Secretary may, however, designate zones where, and establish periods when, no hunting is permitted for reasons of public safety, administration, or public use and enjoyment and shall issue appropriate regulations after consultation with the wildlife agency of the State or States affected.

(b) The jurisdiction of the States and the United States over waters of any stream included in the national wild, scenic or recreational river area shall be determined by established principles of law. Under the provisions of this Act, any taking by the United States of a water right which is vested under either State or Federal law at the time such river is included in the national wild and scenic rivers system shall entitle the owner thereof to just compensation. Nothing in this Act shall constitute an express or implied claim or denial on the part of the Federal Government as to exemption from State water laws.

(c) Designation of any stream or portion thereof as a national wild, scenic or recreational river area shall not be construed as a reservation of the waters of such streams for purposes other than those specified in this Act, or in quantities greater than necessary to accomplish these purposes.

(d) The jurisdiction of the States over waters of any stream included in a national wild, scenic or recreational river area shall be unaffected by this Act to the extent that such jurisdiction may be exercised without impairing the purposes of this Act or its administration.

(e) Nothing contained in this Act shall be construed to alter, amend, repeal, interpret, modify, or be in conflict with any interstate compact made by any States which contain any portion of the national wild and scenic rivers system.

(f) Nothing in this Act shall affect existing rights of any State, including the right of access, with respect to the beds of navigable streams, tributaries, or rivers (or segments thereof) located in a national wild, scenic or recreational river area.

(g) The Secretary of the Interior or the Secretary of Agriculture, as the case may be, may grant easements and rights-of-way upon, over, under, across, or through any component of the national wild and scenic rivers system in accordance with the laws applicable to the national park system and the national forest system, respectively: *Provided*, That any conditions precedent to granting such easements and rights-of-way shall be related to the policy and purpose of this Act.

#### Land donations

**SEC. 14.** The claim and allowance of the value of an easement as a charitable contribution under section 170 of title 26, United States Code, or as a gift under section 2522 of said title shall constitute an agreement by the donor on behalf of himself, his heirs, and assigns that, if the terms of the instrument creating the easement are violated, the donee or the United States may acquire the servient estate at its fair market value as of the time the easement was donated minus the value of the easement claimed and allowed as a charitable contribution or gift.

#### Lease of Federal lands

**SEC. 14A. (a)** Where appropriate in the discretion of the Secretary, he may lease federally owned land (or any interest therein) which is within the boundaries of any component of the national wild and scenic rivers system and which has been acquired by the Secretary under this Act. Such lease shall be subject to such restrictive covenants as may be necessary to carry out the purposes of this Act.

**(b)** Any land to be leased by the Secretary under this section shall be offered first for such lease to the person who owned such land immediately before its acquisition by the United States.

#### Exceptions for Alaska

**SEC. 15.** Notwithstanding any other provision to the contrary in sections 3 and 9 of this Act, with respect to components of the national wild and scenic rivers system in Alaska designated by paragraphs (38) through (50) of section 3(a) of this Act--

(1) the boundary of each such river shall include an average of not more than six hundred and forty acres per mile on both sides of the river. Such boundary shall not include any lands owned by the State or a political subdivision of the State nor shall such boundary extend around any private lands adjoining the river in such manner as to surround or effectively surround such private lands; and

(2) the withdrawal made by paragraph (iii) of section 9(a) shall apply to the minerals in Federal lands which constitute the bed or bank or are situated within one-half mile of the bank of any river designated a wild river by the Alaska National Interest Lands Conservation Act.

## Definitions

**SEC. 16.** As used in this Act, the term--

(a) "River" means a flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes.

(b) "Free-flowing", as applied to any river or section of a river, means existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. The existence, however, of low dams, diversion works, and other minor structures at the time any river is proposed for inclusion in the national wild and scenic rivers system shall not automatically bar its consideration for such inclusion: *Provided*, That this shall not be construed to authorize, intend, or encourage future construction of such structures within components of the national wild and scenic rivers system.

(c) "Scenic easement" means the right to control the use of land (including the air space above such land) within the authorized boundaries of a component of the wild and scenic rivers system, for the purpose of protecting the natural qualities of a designated wild, scenic or recreational river area, but such control shall not affect, without the owner's consent, any regular use exercised prior to the acquisition of the easement. For any designated wild and scenic river, the appropriate Secretary shall treat the acquisition of fee title with the reservation of regular existing uses to the owner as a scenic easement for purposes of this Act. Such an acquisition shall not constitute fee title ownership for purposes of section 6(b).

## Authorization of appropriations for land acquisition

**SEC. 17.** There are hereby authorized to be appropriated, including such sums as have heretofore been appropriated, the following amounts for land acquisition for each of the rivers described in section 3(a) of this Act:

Clearwater, Middle Fork, Idaho, \$2,909,800;  
Eleven Point, Missouri, \$10,407,000;  
Feather, Middle Fork, California, \$3,935,700;  
Rio Grande, New Mexico, \$253,000;  
Rogue, Oregon, \$15,147,000  
St. Croix, Minnesota and Wisconsin, \$21,769,000;  
Salmon, Middle Fork Idaho, \$1,837,000; and  
Wolf Wisconsin, \$142,150.

## **Appendix B**

|           |         |         |
|-----------|---------|---------|
| Cu-7-629  | 146,181 | 990,926 |
| Cu-7-629A | 146,439 | 991,778 |
| Cu-7-629B | 145,626 | 992,092 |
| Cu-7-629C | 145,317 | 991,861 |
| Cu-7-630  | 145,288 | 991,314 |
| Cu-7-631  | 145,176 | 991,095 |
| Cu-7-632  | 144,723 | 991,295 |
| Cu-7-633  | 143,886 | 991,657 |
| Cu-7-634  | 143,339 | 991,832 |

**Description of Location of Point Number Cu-7-634:** A point near the Oregon-California boundary and near the line located between section 26 of township 41 south, range 13 west of the Willamette Meridian in Curry County, Oregon, and section 32 of township 19 north, range 1 west of the Humboldt Meridian in Del Norte County, California. [1969 c.601 §8]

**390.775** [1977 c.263 §1; repealed by 1983 c.338 §978]

**390.780** [1977 c.263 §2; 1981 c.239 §1; repealed by 1983 c.338 §978]

**390.785** [1977 c.263 §3; 1979 c.819 §1; repealed by 1983 c.338 §978]

**390.790** [1977 c.263 §4; 1979 c.819 §2; repealed by 1983 c.338 §978]

**390.792** [1979 c.819 §4; 1983 c.335 §1; repealed by 1983 c.338 §978]

**390.795** [1977 c.263 §5; 1983 c.335 §2; repealed by 1983 c.338 §978]

## SCENIC WATERWAYS

**390.805 Definitions for ORS 390.805 to 390.925.** As used in ORS 390.805 to 390.925, unless the context requires otherwise:

(1) "Department" means the State Parks and Recreation Department.

(2) "Scenic waterway" means Waldo Lake, or a river or segment of river that has been designated as such in accordance with ORS 390.805 to 390.925 or any subsequent Act, and includes related adjacent land.

(3) "Related adjacent land" means all land within one-fourth of one mile of the bank on the side of Waldo Lake, or a river or segment of river within a scenic waterway, except land that, in the department's judgment, does not affect the view from the waters within a scenic waterway.

(4) "Scenic easement" means the right to control the use of related adjacent land, including air space above such land, for the purpose of protecting the scenic view from waters within a scenic waterway; but such control does not affect, without the owner's consent, any regular use exercised prior to the acquisition of the easement, and the landowner retains the right to uses of the land not specifically restricted by the easement. [1971 c.1 §2; 1981 c.787 §55; 1983 c.334 §1; 1983 c.642 §10; 1989 c.904 §25; 1995 c.79 §203]

**390.815 Policy; establishment of system.** The people of Oregon find that many of the free-flowing rivers of Oregon and

Waldo Lake and lands adjacent to such lake and rivers possess outstanding scenic, fish, wildlife, geological, botanical, historic, archaeological, and outdoor recreation values of present and future benefit to the public. The people of Oregon also find that the policy of permitting construction of dams and other impoundment facilities at appropriate sections of the rivers of Oregon and Waldo Lake needs to be complemented by a policy that would preserve Waldo Lake and selected rivers or sections thereof in a free-flowing condition and would protect and preserve the natural setting and water quality of the lake and such rivers and fulfill other conservation purposes. It is therefore the policy of Oregon to preserve for the benefit of the public Waldo Lake and selected parts of the state's free-flowing rivers. For these purposes there is established an Oregon Scenic Waterways System to be composed of areas designated in accordance with ORS 390.805 to 390.925 and any subsequent Acts. [1971 c.1 §1; 1983 c.334 §2]

**390.825** [1971 c.1 §3; 1975 c.612 §1; 1977 c.671 §1; 1983 c.334 §3; 1985 c.781 §§1, 2; 1987 c.291 §1; repealed by 1989 c.2 §1 (390.826 enacted in lieu of 390.825)]

**390.826 Designated scenic waterways.** The following lakes and rivers, or segments of rivers, and related adjacent land are designated as scenic waterways:

(1) The Metolius Scenic Waterway which includes the Metolius River from Metolius Springs downstream to its confluence with Candle Creek.

(2) The Klamath Scenic Waterway which includes the Klamath River from the John Boyle Dam powerhouse downstream to the Oregon-California border.

(3) The Clackamas Scenic Waterway which includes:

(a) The segments of the Clackamas River from the boundary of the Olallie Lake Scenic Area, as constituted on December 8, 1988, downstream to the North Fork Reservoir, and from immediately below the River Mill Dam downstream to the bridge at Carver;

(b) The South Fork Clackamas River from its confluence with an unnamed tributary near the western boundary of Section 7, Township 5 South, Range 5 East, Willamette Meridian, downstream to the confluence of the South Fork Clackamas River with the Clackamas River; and

(c) The North Fork Clackamas River from its source downstream to the North Fork Reservoir.

(4) The McKenzie Scenic Waterway which includes:

(a) The segments of the McKenzie River from Clear Lake downstream to Carmen Reservoir, from Tamolitch Falls downstream

to Trail Bridge Reservoir and from Trail Bridge Dam downstream to Paradise Campground; and

(b) The segments of the South Fork McKenzie River from the boundary of the Three Sisters Wilderness, as constituted on December 8, 1988, downstream to Cougar Reservoir, and from immediately below Cougar Dam downstream to its confluence with the McKenzie River.

(5) The Deschutes Scenic Waterway which includes the segments of the Deschutes River from Little Lava Lake downstream to Crane Prairie Reservoir, from the gaging station immediately below Wickiup Dam downstream to General Patch Bridge, from Harper Bridge downstream to the Central Oregon Irrigation District's diversion structure (near river mile 171), from Robert Sawyer Park downstream to Tumalo State Park, from Deschutes Market Road Bridge downstream to Lake Billy Chinook Reservoir (excluding the Cline Falls hydro-electric facility near river mile 145), and from immediately below the existing Pelton reregulating dam downstream to the confluence of the Deschutes River with the Columbia River, excluding the City of Maupin as its boundaries are constituted on October 4, 1977.

(6) The Santiam Scenic Waterway which includes the Little North Fork of the Santiam River from the confluence of Battle Ax Creek and Opal Creek downstream to the boundary of the Willamette National Forest, as constituted on September 20, 1985.

(7) The John Day Scenic Waterway which includes:

(a) The John Day River from its confluence with Parrish Creek downstream to Tumwater Falls;

(b) The North Fork John Day River from the boundary of the North Fork John Day Wilderness (near river mile 76), as constituted on December 8, 1988, downstream to the northern boundary of the south one-half of Section 20, Township 8 South, Range 28 East, Willamette Meridian;

(c) The Middle Fork John Day River from its confluence with Crawford Creek (near river mile 71) downstream to the confluence of the Middle Fork John Day River with the North Fork John Day River; and

(d) The South Fork John Day River from the Post-Paulina road crossing (near river mile 35) downstream to the northern boundary of the Murderer's Creek Wildlife Area, as constituted on December 8, 1988 (near river mile 6).

(8) The Illinois Scenic Waterway which includes the Illinois River from its confluence

with Deer Creek downstream to its confluence with the Rogue River.

(9) The Rogue Scenic Waterway which includes the segments of the Rogue River from the boundary of Crater Lake National Park, as constituted on December 8, 1988, downstream to the boundary of the Rogue River National Forest, as constituted on December 8, 1988 (near river mile 173), and from the confluence of the Rogue River with the Applegate River downstream to Lobster Creek Bridge.

(10) The Umpqua Scenic Waterway which includes the segments of the North Umpqua River from the boundary of the Mt. Thielsen Wilderness, as constituted on December 8, 1988, downstream to Lemolo Reservoir, and from the Soda Springs Dam powerhouse downstream to its confluence with Rock Creek (near Idleyld Park).

(11) The Nestucca Scenic Waterway which includes:

(a) The Nestucca River from immediately below the McGuire Dam downstream to its confluence with East Creek (near Blaine); and

(b) Walker Creek from its source downstream to its confluence with the Nestucca River.

(12) The Wallowa-Grande Ronde Scenic Waterway which includes:

(a) The Grande Ronde River from its confluence with the Wallowa River downstream to the Oregon-Washington border; and

(b) The Wallowa River from its confluence with the Minam River downstream to the confluence of the Wallowa River with the Grande Ronde River.

(13) The Minam Scenic Waterway which includes the Minam River from Minam Lake downstream to its confluence with the Wallowa River.

(14) The Elk Scenic Waterway which includes:

(a) The Elk River from the confluence of the North Fork Elk River and South Fork Elk River downstream to the Elk River fish hatchery;

(b) The North Fork Elk River from its source downstream to its confluence with the South Fork Elk River; and

(c) The South Fork Elk River from its source downstream to its confluence with the North Fork Elk River.

(15) The Owyhee Scenic Waterway which includes:

(a) The South Fork Owyhee River from the Oregon-Idaho border downstream to Three Forks; and

(b) The Owyhee River from Crooked Creek (near river mile 118) downstream to the mouth of Birch Creek (near river mile 76).

(16) The North Fork of the Middle Fork Willamette Scenic Waterway which includes the North Fork of the Middle Fork Willamette River from Waldo Lake downstream to a point one mile upstream from the railroad bridge near the town of Westfir.

(17) The Waldo Lake Scenic Waterway which includes Waldo Lake in Lane County. [1989 c.2 §2 (enacted in lieu of 390.825)]

**390.827 Effect of ORS 390.826 on rights of Indian tribes.** Nothing in ORS 390.826 shall:

(1) Affect or modify any treaty or other rights of any Indian tribe; or

(2) Affect lands held in trust by the Secretary of the Interior for Indian tribes or individual members of Indian tribes or other lands acquired by the Army Corps of Engineers and administered by the Secretary of the Interior for the benefit of Indian tribes and individual members of Indian tribes. [1989 c.2 §3]

**Note:** 390.827 was enacted into law by the Legislative Assembly but was not added to or made a part of ORS chapter 390 or any series therein by legislative action. See Preface to Oregon Revised Statutes for further explanation.

**390.835 Highest and best use of waters within scenic waterways; authority of various agencies; water rights; conditions; placer mining.** (1) It is declared that the highest and best uses of the waters within scenic waterways are recreation, fish and wildlife uses. The free-flowing character of these waters shall be maintained in quantities necessary for recreation, fish and wildlife uses. No dam, or reservoir, or other water impoundment facility shall be constructed on waters within scenic waterways. No water diversion facility shall be constructed or used except by right previously established or as permitted by the Water Resources Commission, upon a finding that such diversion is necessary to uses designated in ORS 536.310 (12), and in a manner consistent with the policies set forth under ORS 390.805 to 390.925. The Water Resources Commission shall administer and enforce the provisions of this subsection.

(2) Filling of the beds or removal of material from or other alteration of the beds or banks of scenic waterways for purposes other than gold panning not requiring a permit shall be prohibited, except as permitted by the Director of the Division of State Lands upon a finding that such activity would be consistent with the policies set forth under ORS 390.805 to 390.925 for scenic waterways,

and approved by the State Land Board and in a manner consistent with the policies set forth under ORS 196.800 to 196.825 and 196.840 to 196.870 for removal of material from the beds and banks and filling of any waters of this state. The Director of the Division of State Lands shall administer and enforce the provisions of this subsection.

(3)(a) Upon a finding of emergency circumstances, the Director of the Division of State Lands may issue a temporary permit for the removal, filling or alteration of the beds or banks within a scenic waterway prior to approval by the State Land Board under subsection (2) of this section. The temporary permit shall include conditions developed after consultation with the State Department of Fish and Wildlife and the State Parks and Recreation Department. A temporary permit approved by the Director of the Division of State Lands shall be reviewed by the State Land Board at its next regularly scheduled meeting following the emergency approval. Upon its review, the State Land Board may approve, modify or revoke the permit.

(b) As used in this subsection, "emergency circumstances" exist if the activity is necessary to make repairs or to prevent irreparable harm, injury or damage to persons or property.

(4) Nothing in ORS 390.805 to 390.925 affects the authority of the State Fish and Wildlife Commission to construct facilities or make improvements to facilitate the passage or propagation of fish or to exercise other responsibilities in managing fish and wildlife resources. Nothing in ORS 390.805 to 390.925 affects the authority of the Water Resources Commission to construct and maintain stream gauge stations and other facilities related to the commission's duties in administration of the water laws.

(5) Upon a finding of necessity under subsection (1) of this section, the Water Resources Commission may issue a water right for human consumption not to exceed .005 cubic feet per second per household, or livestock consumption uses not to exceed one-tenth of one cubic foot per second per 1,000 head of livestock, as designated in ORS 536.310 (12) within or above a scenic waterway if the Water Resources Commission makes the following findings:

(a) That issuing the water right does not significantly impair the free-flowing character of these waters in quantities necessary for recreation, fish and wildlife.

(b) That issuing the water right is consistent with provisions pertaining to water appropriation and water rights under ORS chapters 536 and 537 and rules adopted thereunder.

(c) That construction, operation and maintenance of the diversion system will be carried out in a manner consistent with the purposes set forth in ORS 390.805 to 390.925.

(d) If the water right is for human consumption, an additional finding that:

(A) The applicant cannot reasonably obtain water from any other source;

(B) Denial of the water right would result in loss of reasonable expectations for use of the property; and

(C) The system installed to divert water shall include monitoring equipment to permit water use measurement and reporting.

(e) If the water right is for livestock consumption, an additional finding that:

(A) The right is necessary to prevent the livestock from watering in or along the stream bed;

(B) The applicant cannot reasonably obtain water from any other source; and

(C) The applicant has excluded livestock from the stream and its adjacent riparian zone.

(6) In making the findings required under subsection (5) of this section, the Water Resources Commission shall consider the existing or potential cumulative impacts of issuing the water right.

(7) The Water Resources Commission may not allow human consumption and livestock uses authorized under subsection (5) of this section in excess of a combined cumulative total of one percent of the average daily flow or one cubic foot per second, whichever is less, unless:

(a) The Water Resources Commission, the State Parks and Recreation Department, the State Department of Fish and Wildlife, the Department of Environmental Quality and the Division of State Lands unanimously agree to exceed that amount; and

(b) Exceeding that amount will not significantly impair the free-flowing character of these waters in quantities necessary for recreation, fish and wildlife.

(8)(a) The provisions of this section shall not apply to a water right application for the use of ground water as defined in ORS 537.515, except upon a finding by the Water Resources Director based on a preponderance of evidence that the use of ground water will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway in quantities necessary for recreation, fish and wildlife.

(b) The Water Resources Department shall review every application for the use of ground water to determine whether to make the finding specified in paragraph (a) of this

subsection. The finding shall be based upon the application of generally accepted hydrogeologic methods using relevant and available field information concerning the proposed use.

(c) In making the determination required by paragraph (a) of this subsection, the Water Resources Department shall consider the timing of projected impacts of the proposed use in relation to other factors, including but not limited to: Changing climate, recharge, incidental precipitation, out-of-stream appropriations and return flows.

(d) If the Water Resources Director makes the finding specified in paragraph (a) of this subsection, the Water Resources Director shall issue an order denying the application unless:

(A) Mitigation is provided in accordance with subsection (9) of this section; or

(B) The applicant submits evidence to overcome the finding under paragraph (a) of this subsection.

(e) Except as provided under subsection (12) of this section, if the Water Resources Director does not make the finding specified in paragraph (a) of this subsection, the Water Resources Director shall issue an order approving the application if the application otherwise meets the requirements of ORS 537.505 to 537.795.

(f) A protest of any order issued under this subsection may be filed in the same manner as a protest on any application for a right to appropriate ground water.

(g) Each water right permit and certificate for appropriation of ground water issued after July 19, 1995, for which a source of appropriation is within or above a scenic waterway shall be conditioned to allow the regulation of the use if analysis of data available after the permit or certificate is issued discloses that the appropriation will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway in quantities necessary for recreation, fish and wildlife in effect as of the priority date of the right or as those quantities may be subsequently reduced.

(h) Nothing in this subsection shall limit the use of ground water for a use exempted under ORS 537.545.

(9) The Water Resources Commission or Water Resources Director shall consider mitigation measures and may include mitigation measures as conditions in any water right permit or certificate to ensure the maintenance of the free-flowing character of the scenic waterway in quantities necessary for recreation, fish and wildlife.

(10) The Water Resources Commission and the Water Resources Director shall carry out their responsibilities under ORS 536.220 to 536.590 with respect to the waters within scenic waterways in conformity with the provisions of this section.

(11) As used in this section, "measurably reduce" means that the use authorized under subsection (8) of this section will individually or cumulatively reduce surface water flows within the scenic waterway in excess of a combined cumulative total of one percent of the average daily flow or one cubic foot per second, whichever is less, unless:

(a) The Water Resources Department, the State Parks and Recreation Department, the State Department of Fish and Wildlife, the Department of Environmental Quality and the Division of State Lands unanimously agree to exceed that amount; and

(b) Exceeding that amount will not significantly impair the free-flowing character of these waters in quantities necessary for recreation, fish and wildlife.

(12) Before authorizing an appropriation that will reduce streamflows within a scenic waterway in amounts up to but not exceeding the amounts described in subsection (11) of this section, the Water Resources Director shall find:

(a) That the appropriation will not significantly impair the free-flowing character of these waters in quantities necessary for recreation, fish and wildlife.

(b) That the appropriation is consistent with provisions pertaining to water appropriations and water rights under ORS chapters 536 and 537 and the rules adopted thereunder.

(c) That construction, operation and maintenance of the appropriation will be carried out in a manner consistent with the purposes set forth in ORS 390.805 to 390.925.

(13) No placer mining shall be permitted on waters within scenic waterways other than recreational placer mining.

(14) No permit shall be required for gold panning resulting in the fill, removal or other alteration of less than five cubic yards or the equivalent weight in tons of material within the bed of any single waterway of this state in a single year.

(15) No provision of this section shall be construed to exempt recreational placer mining on a scenic waterway, other than gold panning not requiring a permit, from compliance with the provisions of ORS 196.800 to 196.825 and 196.840 to 196.870 or rules adopted pursuant to ORS 196.800 to 196.825 and 196.840 to 196.870.

(16) Recreational placer mining, other than gold panning not requiring a permit, shall not:

(a) Dam or divert a waterway or obstruct fish passage;

(b) Include nozzling or sluicing outside the wet perimeter of the stream;

(c) Include movement of boulders, logs, woody debris jams or stumps other than movement by hand;

(d) Disturb rooted or embedded woody plants, including but not limited to, trees and shrubs;

(e) Excavate the streambank;

(f) Fail to level pits, piles, furrows or potholes at the prospecting location upon leaving the site;

(g) Include operation of a suction dredge without a suction dredge waste discharge permit from the Department of Environmental Quality including, but not limited to, a prohibition against dredging during periods when fish eggs could be in the dredging site gravel;

(h) Be conducted on federal lands except as allowed by agencies of the Federal Government;

(i) Impede boating;

(j) Include operation of a dredge between the hours of 6 p.m. and 8 a.m. within 500 feet of a designated campground or a residence; or

(k) Include operation of a dredge within the marked or posted swimming area of a designated campground or day use area.

(17) As used in this section:

(a) "Gold panning" means the washing of earth or crushed rock with a nonmotorized pan, by agitation with water, for the purpose of obtaining gold or other precious metals.

(b) "Recreational placer mining" includes, but is not limited to, gold panning and the use of a motorized surface dredge having an intake four inches or less in diameter, a motor no larger than 10 horsepower and a muffler meeting or exceeding factory-installed noise reduction standards.

(18) Notwithstanding any other provision of this section, no permit or temporary permit for dredging issued by the Division of State Lands for the purpose of recreational placer mining within a scenic waterway shall be in effect after December 31, 1997. [1971 c.1 §4; 1973 c.756 §1; 1977 c.671 §2; 1985 c.673 §177; 1989 c.320 §1; 1993 c.99 §1; 1995 c.223 §1; 1995 c.719 §1]

**Note:** Section 3, chapter 719, Oregon Laws 1995, provides:

**Sec. 3.** Any application for a permit to appropriate ground water that is pending on the effective date of this Act [July 19, 1995] shall be processed in accordance

with the provisions of ORS 390.835 as amended by section 1 of this Act, unless the applicant submits a request in writing to the Water Resources Department asking that the department process the application in accordance with the provisions of ORS 390.835 in effect on the date the application was filed with the department. [1995 c.719 §3]

**390.845 Functions of the department; use of adjacent lands.** (1) Except as provided in ORS 390.835, scenic waterways shall be administered by the department, each in such manner as to protect and enhance the values which caused such scenic waterway to be included in the system. In such administration primary emphasis shall be given to protecting the esthetic, scenic, fish and wildlife, scientific and recreation features, based on the special attributes of each area.

(2) After consultation with the State Board of Forestry, the State Department of Agriculture and the affected counties and with the concurrence of the Water Resources Commission, the department shall adopt rules governing the management of related adjacent land. Such rules shall be adopted in accordance with ORS 183.310 to 183.550. Such rules shall reflect management principles, standards and plans applicable to scenic waterways, their shore lines and related adjacent land and, if necessary, establish varying intensities of protection or development based on special attributes of each area. Such management principles, standards and plans shall protect or enhance the esthetic and scenic values of the scenic waterways and permit compatible agricultural, forestry and other land uses. Specifically, and not in limitation of the foregoing, such rules shall provide that:

(a) No roads, railroads or utilities shall be constructed within any scenic waterway except where necessary to serve the permissible uses, as defined in subsection (2) of this section and in the rules of the department, of the related adjacent land or unless department approval of such use is obtained as provided in subsection (4) or (5) of this section. The department wherever practicable shall require the sharing of land and air space by such roads, railroads and utilities. All permissible roads, railroads and utilities shall be located in such a manner as to minimize the disturbance of the natural beauty of a scenic waterway;

(b) Forest crops shall be harvested in such manner as to maintain as nearly as reasonably is practicable the natural beauty of the scenic waterway;

(c) Occupants of related adjacent land shall avoid pollution of waters within a scenic waterway;

(d) The surface of related adjacent land shall not be disturbed for prospecting or

mining unless the department's approval is obtained under subsection (4) or (5) of this section; and

(e) Unless department approval of the proposed use is obtained under subsection (4) or (5) of this section, no commercial, business or industrial structures or buildings other than structures or buildings erected in connection with an existing use shall be erected or placed on related adjacent land. All structures and buildings erected or placed on such land shall be in harmony with the natural beauty of the scenic waterway and shall be placed a sufficient distance from other structures or buildings so as not to impair substantially such natural beauty. No signs or other forms of outdoor advertising that are visible from waters within a scenic waterway shall be constructed or maintained.

(3) No person shall put related adjacent land to uses that violate ORS 390.805 to 390.925 or the rules of the department adopted under ORS 390.805 to 390.925 or to uses to which the land was not being put before December 3, 1970, or engage in the cutting of trees, or mining, or prospecting on such lands or construct roads, railroads, utilities, buildings or other structures on such lands, unless the owner of the land has given to the department written notice of such proposed use at least one year prior thereto and has submitted to the department with the notice a specific and detailed description of such proposed use or has entered into agreement for such use with the department under subsection (5) of this section. The owner may, however, act in emergencies without the notice required by ORS 390.805 to 390.925 when necessary in the interests of public safety.

(4) Upon receipt of the written notice provided in subsection (3) of this section, the department shall first determine whether in its judgment the proposed use would impair substantially the natural beauty of a scenic waterway. If the department determines that the proposal, if put into effect, would not impair substantially the natural beauty of the scenic waterway, the department shall notify in writing the owner of the related adjacent land that the owner may immediately proceed with the proposed use as described to the department. If the department determines that the proposal, if put into effect, would impair substantially the natural beauty of the scenic waterway, the department shall notify in writing the owner of the related adjacent land of such determination and no steps shall be taken to carry out such proposal until at least one year after the original notice to the department. During such period:

(a) The department and the owner of the land involved may agree upon modifications or alterations of the proposal so that implementation thereof would not in the judgment of the department impair substantially the natural beauty of the scenic waterway; or

(b) The department may acquire by purchase, gift or exchange, the land involved or interests therein, including scenic easements, for the purpose of preserving the natural beauty of the scenic waterway.

(5) The department, upon written request from an owner of related adjacent land, shall enter into negotiations and endeavor to reach agreement with such owner establishing for the use of such land a plan that would not impair substantially the natural beauty of the scenic waterway. At the time of such request for negotiations, the owner may submit a plan in writing setting forth in detail proposed uses. Three months after the owner makes such a request for negotiations with respect to use of land, either the department or the owner may give written notice that the negotiations are terminated without agreement. Nine months after the notice of termination of negotiations the owner may use land in conformity with any specific written plan submitted by the owner prior to or during negotiations. In the event the department and the owner reach agreement establishing a plan for land use, such agreement is terminable upon at least one year's written notice by either the department or the owner.

(6) With the concurrence of the Water Resources Commission, the department may institute condemnation proceedings and by condemnation acquire related adjacent land:

(a) At any time subsequent to nine months after the receipt of notice of a proposal for the use of such land that the department determines would, if carried out, impair substantially the natural beauty of a scenic waterway unless the department and the owner of such land have entered into an agreement as contemplated by subsection (4) or (5) of this section or the owner shall have notified the department of the abandonment of such proposal; or

(b) At any time related adjacent land is used in a manner violating ORS 390.805 to 390.925, the rules of the department or any agreement entered into by the department pursuant to subsection (4) or (5) of this section; or

(c) At any time related adjacent land is used in a manner which, in the judgment of the department, impairs substantially the natural beauty of a scenic waterway, if the department has not been given at least one year's advance written notice of such use

and if there is not in effect department approval of such use pursuant to subsection (4) or (5) of this section.

(7) In such condemnation the owner of the land shall not receive any award for the value of any structure, utility, road or other improvement constructed or erected upon the land after December 3, 1970, unless the department has received written notice of such proposed structure, utility, road or other improvement at least one year prior to commencement of construction or erection of such structure, utility, road or other improvement or unless the department has given approval for such improvement under subsection (4) or (5) of this section. If the person owned the land on December 3, 1970, and for a continuous period of not less than two years immediately prior thereto, the person shall receive no less for the land than its value on December 3, 1970. The department shall not acquire by condemnation a scenic easement in land. When the department acquires any related adjacent land that is located between a lake or river and other land that is owned by a person having the right to the beneficial use of waters in the river by virtue of ownership of the other land:

(a) The right to the beneficial use of such waters shall not be affected by such condemnation; and

(b) The owner of the other land shall retain a right of access to the lake or river necessary to use, store or divert such waters as the owner has a right to use, consistent with concurrent use of the land so condemned as a part of the Oregon Scenic Waterways System.

(8) Any owner of related adjacent land, upon written request to the department, shall be provided copies of rules then in effect or thereafter adopted by the department pursuant to ORS 390.805 to 390.925.

(9) The department shall furnish to any member of the public upon written request and at expense of the member a copy of any notice filed pursuant to subsection (3) of this section.

(10) If a scenic waterway contains lands or interests therein owned by or under the jurisdiction of an Indian tribe, the United States, another state agency or local governmental agency, the department may enter into agreement with the tribe or the federal, state or local agency for the administration of such lands or interests therein in furtherance of the purposes of ORS 390.805 to 390.925. [1971 c.1 §5; 1971 c.459 §1; 1973 c.756 §2; 1981 c.236 §3; 1983 c.334 §4]

**390.848 Passes for use of parts of Deschutes River; fee; exemption from fee;**

**disposition of moneys.** (1) The department shall establish, by rule, a system for issuing passes necessary to comply with the requirements under ORS 390.851. The department shall establish a reasonable fee for issuance of a pass under this section. The department may establish any form of proof of payment of the user fees that it deems appropriate.

(2) The system for issuance of passes established by the department under this section may include issuance of the passes by governmental entities or private persons who have entered into appropriate agreements with the department for issuance of the passes. Agreements under this subsection may include, but are not limited to, terms providing for locations for the collection of fees, methods the department determines appropriate to assure payment of moneys collected and provisions for the distribution of river-user information.

(3) The department shall issue, without charge, annual passes to comply with the requirements under ORS 390.851 to persons who own ranch, farm or residential property immediately abutting those portions of the Deschutes River designated as scenic waterways under ORS 390.826 and to members of the immediate family of such persons. This subsection does not authorize the issuance without charge of passes to persons holding less than a majority interest in a firm, corporation or cooperative organization which owns land immediately abutting the Deschutes River designated as scenic waterways under ORS 390.826.

(4) Moneys collected under this section shall be deposited in the separate fund established for the State Parks and Recreation Department under ORS 366.512 and, subject to the limitations under subsection (5) of this section, are continually appropriated to that department to be used:

(a) For operation of the pass system established under this section;

(b) For providing river-user oriented law enforcement services;

(c) For providing river recreation information and education;

(d) For developing and maintaining river oriented recreation facilities; and

(e) For any other purposes the department considers appropriate for the maintenance, enhancement or protection of the natural and scenic beauty of the scenic waterway consistent with ORS 390.805 to 390.925.

(5) The use of moneys for purposes described under subsection (4) of this section is limited to the performance of those purposes for areas of the Deschutes River desig-

nated as scenic waterways under ORS 390.826. (1981 c.798 §2; 1985 c.606 §4; 1987 c.291 §2; 1987 c.624 §15)

**390.851 Activities prohibited on parts of Deschutes River without pass; exceptions.** (1) Unless the person has an appropriate pass issued under ORS 390.848, no person shall launch, operate or ride in any boat or engage in any camping, fishing or other activity in connection with being transported by a boat on those portions of the Deschutes River designated as scenic waterways under ORS 390.826.

(2) This section does not apply to:

(a) Peace officers, members or employees of a governmental body or their agents while engaged in the discharge of official duties; or

(b) Any member of the Confederated Tribes of the Warm Springs Indian Reservation.

(3) A person who violates this section commits a Class B parks and recreation infraction. (1981 c.798 §3; 1987 c.291 §3)

**390.855 Designation of additional scenic waterways.** The department shall undertake a continuing study and submit periodic reports to the Governor, with the concurrence of the Water Resources Commission, recommending the designation of additional rivers or segments of rivers and related adjacent land by the Governor as scenic waterways subject to the provisions of ORS 390.805 to 390.925. Consistent with such recommendation, the Governor may designate any river or segment of a river and related adjacent land as a scenic waterway subject to the provisions of ORS 390.805 to 390.925. The department shall consult with the State Fish and Wildlife Commission, the State Department of Agriculture, the Environmental Quality Commission, the Division of State Lands, and such other persons or agencies as it considers appropriate. The State Parks and Recreation Department shall conduct hearings in the counties in which the proposed additional rivers or segments of rivers are located. The following criteria shall be considered in making such report:

(1) The river or segment of river is relatively free-flowing and the scene as viewed from the river and related adjacent land is pleasing, whether primitive or rural-pastoral, or these conditions are restorable.

(2) The river or segment of river and its setting possess natural and recreation values of outstanding quality.

(3) The river or segment of river and its setting are large enough to sustain substantial recreation use and to accommodate existing uses without undue impairment of the

natural values of the resource or quality of the recreation experience. [1971 c.1 §6]

**390.865 Authority of legislature over designation of additional scenic waterways.** The designation of a river or segment of a river and related adjacent land, pursuant to ORS 390.855, shall not become effective until the day following the adjournment sine die of the regular session of the Legislative Assembly next following the date of the designation or that was in session when the designation was made. The Legislative Assembly by joint resolution may disapprove any such designation or a part thereof, and in that event the designation, or part thereof so disapproved, shall not become effective. [1971 c.1 §7]

**390.875 Transfer of public lands in scenic waterways to department; administration of nontransferred lands.** Any public land within or adjacent to a scenic waterway, with the consent of the governing body having jurisdiction thereof, may be transferred to the jurisdiction of the department with or without compensation. Any land so transferred shall become state recreational land and shall be administered as a part of the scenic waterway. Any such land within a scenic waterway which is not transferred to the jurisdiction of the department, to the fullest extent consistent with the purposes for which the land is held, shall be administered by the body having jurisdiction thereof in accordance with the provisions of ORS 390.805 to 390.925. [1971 c.1 §8]

**390.885 Exchange of property within scenic waterway for property outside waterway.** In acquiring related adjacent land by exchange, the department may accept title to any property within a scenic waterway, and in exchange therefor, may convey to the grantor of such property any property under its jurisdiction that the department is not otherwise restricted from exchanging. In so far as practicable, the properties so exchanged shall be of approximately equal fair market value. If they are not of approximately equal fair market value, the department may accept cash or property from, or pay cash or grant property to, the grantor in order to equalize the values of the properties exchanged. [1971 c.1 §9]

**390.895 Use of federal funds.** In addition to State of Oregon funds available for the purposes of ORS 390.805 to 390.925, the department shall use such portion of moneys made available to it by the Bureau of Outdoor Recreation and other federal agencies, including matching funds, as the department determines are necessary and available to carry out the purposes of ORS 390.805 to 390.925. [1971 c.1 §10]

**390.905 Effect of ORS 390.805 to 390.925 on other state agencies.** Nothing in ORS 390.805 to 390.925 affects the jurisdiction or responsibility of other state agencies with respect to boating, fishing, hunting, water pollution, health or fire control; except that such state agencies shall endeavor to perform their responsibilities in a manner consistent with the purposes of ORS 390.805 to 390.925. [1971 c.1 §11]

**390.910 Intergovernmental cooperation; county representative on management advisory committee.** In carrying out the provisions of ORS 390.805 to 390.925, the department may enter into intergovernmental agreements to form committees to advise the various governmental agencies involved regarding management of the scenic waterways. Each such agreement must provide for membership on the committee of a representative of one of the governing bodies of the counties through which the scenic waterway flows. The county representative shall be chosen by the Governor from among those individuals recommended to the Governor by the county governing bodies. [1981 c.236 §2]

**390.915 Determination of value of scenic easement for tax purposes; easement exempt.** For ad valorem tax purposes, real property that is subject to a scenic easement shall be valued at its real market value, less any reduction in value caused by the scenic easement, and assessed in accordance with ORS 308.232. The easement shall be exempt from assessment and taxation the same as any other property owned by the state. [1971 c.1 §12; 1981 c.804 §99; 1991 c.459 §394]

**390.925 Enforcement.** In addition to any other penalties provided by law for violation of ORS 390.805 to 390.925 or rules adopted thereunder, the department is vested with power to obtain injunctions and other appropriate relief against violations of any provisions of ORS 390.805 to 390.925 and any rules adopted under ORS 390.805 to 390.925 and agreements made under ORS 390.805 to 390.925. [1971 c.1 §13; 1981 c.798 §6]

## DESCHUTES RIVER SCENIC WATERWAY RECREATION AREA

**390.930 Definitions for ORS 390.930 to 390.940.** As used in ORS 390.930 to 390.940:

- (1) "Department" means the State Parks and Recreation Department.
- (2) "Managing agencies" includes:
  - (a) State Parks and Recreation Department;
  - (b) State Department of Fish and Wildlife;

- (c) Confederated Tribes of the Warm Springs Indian Reservation;
- (d) State Marine Board;
- (e) Sherman, Wasco and Jefferson Counties;
- (f) Oregon State Police;
- (g) United States Bureau of Land Management;
- (h) United States Bureau of Indian Affairs; and
- (i) The City of Maupin.

(3) "Recreation area" means the Deschutes River Scenic Waterway Recreation Area created under ORS 390.932. [1987 c.624 §§1,18; 1989 c.904 §26]

**390.932 Creation of Deschutes River Scenic Waterway Recreation Area.** There is created the Deschutes River Scenic Waterway Recreation Area consisting of the segment of the Deschutes River scenic waterway under ORS 390.825 that is designated as the segment from immediately below the existing Pelton reregulating dam downstream approximately 100 miles to its confluence with the Columbia River, excluding the City of Maupin as its boundaries are constituted on October 4, 1977. [1987 c.624 §17]

**390.934 Management of Deschutes River Scenic Waterway Recreation Area; plan; budget.** (1) The State Parks and Recreation Department shall have primary management responsibility for the State of Oregon to manage the Deschutes River Scenic Waterway Recreation Area. In managing the recreation area, the department shall cooperate with other managing agencies having jurisdiction to manage all or part of the recreational area.

(2) The department shall adopt a management plan by rule. The department shall implement the plan and shall prepare a budget for implementation taking into consideration the provisions of the management plan. [1987 c.624 §§3,19]

**390.936 Rules.** In accordance with applicable provisions of ORS 183.310 to 183.550, the department shall adopt rules necessary to carry out those provisions of ORS 390.930 to 390.940 that the department is charged with administering. [1987 c.624 §§12,22]

**390.938 Guidelines for management and development.** The Deschutes River Scenic Waterway Recreation Area shall be managed and developed in accordance with the following guidelines:

(1) To the extent allowed under ORS 390.805 to 390.925, the recreational area shall be administered to allow continuance of compatible existing uses, while allowing a wide range of compatible river-oriented pub-

lic outdoor recreation opportunities, to the extent that these do not impair substantially the natural beauty of the scenic waterway or diminish its esthetic, fish and wildlife, scientific and recreational values.

(2) The management plan shall stress a segment by segment design and shall include provisions for the development of appropriate facilities and services in the recreation area to meet resource needs for protection and preservation and user needs. This development may include but need not be limited to:

- (a) River and car camp development;
- (b) Sanitation stations for human waste and garbage;
- (c) Parking and access road improvement;
- (d) Signs indicating land ownership;
- (e) Tree and riparian zone protection and restoration;
- (f) Educational programs; and
- (g) Initiation of additional volunteer programs.

(3) Before restricting access through the use of a permit system, all other management options shall be considered.

(4) Special emphasis shall be placed on protecting the recreation area and all adjacent property from recreationist-caused wildfires. This goal shall be equal in priority to the other primary goals set forth in this section. This protection shall include but not be limited to:

- (a) Permanent adoption of a fire rule that provides the same protection as the fire rule in force during the 1986 fire season.
- (b) Requiring boater passes to include the name of the group leader, date and section of river used.
- (c) The establishment of information centers near major points of entry into the recreation area to provide users with information and education regarding the fire rules and general rules of the river.

(d) Conducting cadet patrols at the levels considered necessary to facilitate reasonable compliance with recreation area rules. [1987 c.624 §§4,20]

**390.940 Relationship to other laws.** The department and state and local managing agencies shall manage the recreation area according to the provisions of ORS 390.805 to 390.925 and 390.930 to 390.940 and rules adopted under ORS 390.805 to 390.925 and 390.930 to 390.940. Federal and tribal managing agencies with jurisdiction over their respective lands and waters shall be encouraged to manage their lands and waters in a manner consistent with the provisions of ORS 390.805 to 390.925 and 390.930 to 390.940. [1987 c.624 §§5,21]

## **Appendix C**

# **UPPER DESCHUTES RIVER RESOURCE ASSESSMENT**

**December 1994**

## **I. INTRODUCTION**

In 1987, the state legislature designated the stretch of river from Wickiup Dam to General Patch Bridge, and from Harper Bridge to the north boundary of the Deschutes National Forest as a State Scenic Waterway. In 1988, a citizen's initiative ballot was passed to include the section from the north boundary of the Forest to the Central Oregon Irrigation District diversion structure.

At the same time, an amendment to the Federal Wild and Scenic Rivers Act, known as the Omnibus Oregon Wild and Scenic River Act of 1988, included the Upper Deschutes River between Wickiup Dam and the Bend Urban Growth Boundary in that system.

The federal act mandates that the administering agency "protect and enhance" the Outstandingly Remarkable Values for which the river was designated. The State Scenic Waterways Act mandates the State Parks and Recreation Department to protect or enhance the Special Attributes of the River.

Because Outstandingly Remarkable Values and Special Attributes refer to the same values for which the river has received state and national recognition they are considered synonymous in this assessment.

The Upper Deschutes River was included in the Wild and Scenic River system by an Act of Congress, without a preceding suitability study. Congress included most of the river from Wickiup to the mouth based on what were described as "Outstanding Values." This is not the same term used in the Wild and Scenic Rivers Act, but is interpreted to be intent of Congress.

This assessment was done in order to determine which "Outstanding Values" identified by Congress for the entire length of the Deschutes River, would actually meet a reasonable standard for "Outstandingly Remarkable" on the Upper Deschutes. This assessment documents the interagency evaluation of those resource conditions and river values at the time the river was designated.

This revised Resource Assessment responds to comments received from citizen groups concerning the initial Resource Assessment (July 1990) and Resource Assessment Supplement (June 1992). When adopted it will supersede these two documents.

## **Relationship of Resources and Values**

A river value is an expression of the significance of resource and social conditions. It is necessary to evaluate resource and social conditions to determine which are Outstandingly Remarkable Values.

It should be noted that an individual resource can have value in its own right while it may also be a component of another value. For example, vegetation, the quality and quantity of water, and the presence of significant geologic features each have value and may or may not constitute Outstandingly Remarkable Values. Each of these resources also contributes to the condition of the Scenic Resource. Though individually these resources may or may not of deserve recognition at a regional or national scale, collectively they could contribute to the determination that the Scenic Resource constitutes an Outstandingly Remarkable Value.

For the purposes of this assessment, those river values which are not Outstandingly Remarkable, but which make a significant contribution to the determination of another Outstandingly Remarkable Value will be termed significant. This label will help to identify which resource conditions should be considered when deciding how to protect and enhance Outstandingly Remarkable Values.

## **Organization of Assessment**

This Resource Assessment examines each resource to determine its value by following a prescribed format. First, it states the criteria for Outstandingly Remarkable River Value for a particular resource. Most of these criteria were developed by an Interagency Wild and Scenic Rivers Team, a four person coordinating body composed of Forest Service, Bureau of Land Management, and Oregon State Parks and Recreation staff and were not created uniquely for this particular Assessment. This interagency team did not, however, establish criteria for hydrologic, vegetation, and wilderness values. As a result the Upper Deschutes River Wild and Scenic River Interdisciplinary Team (IDT), which is responsible for this assessment, established the criteria used to determine these values. The purpose of the criteria is to provide a standard by which a resource or combination of resources may be held to be of regional or national importance.

Following the criteria will be a narrative description of the resource and social conditions which affect that value. This is the heart of the assessment. It is this description of the resource conditions and the interactions of the resources which will help to guide resource managers in the future.

The final part of the examination is a brief analysis of the narrative descriptions with respect to the criteria to determine whether that resource or combination of resources is Outstandingly Remarkable, significant, or is not a river value.

When Congress designated the Upper Deschutes under the Wild and Scenic Rivers Act, it identified segments of the river according to their classification under the act. The portions of the river that this assessment covers was classified as follows:

"(A) The 40.4-mile segment from Wickiup Dam to northern boundary of Sunriver ... as a recreational river ...

"(B) the 11-mile segment from the northern boundary of Sunriver ... to Lava Island Camp as a scenic river ...

"(C) the 3-mile segment from Lava Island Camp to the Bend Urban Growth Boundary ... as a recreational river to be administered by the Secretary of Agriculture; ...."

For the purposes of this assessment, however, the Upper Deschutes was divided differently. These segments were identified by the interdisciplinary team on the basis of specific physical, biological, social, or land ownership conditions.

These segments are:

Segment 2: Wickiup Dam to the South Boundary of La Pine State Recreation Area

Segment 3: South Boundary of La Pine State Recreation Area to the North Boundary of Sunriver

Segment 4: North Boundary of Sunriver to the Central Oregon Irrigation District (COID) diversion

It should be noted that state and federal classification systems are different and that some of the area within the three segments is not part of the State Scenic Waterway and another area is not within the Wild and Scenic River. These portions of the river will be included to facilitate the preparation of a joint management plan and rule making which will follow this assessment. Map 1 illustrates the Federal and State designations and classifications. Exact definitions of the classifications are included in Appendix A.

The segment of the river from the headwaters at Little Lava Lake to Crane Prairie Reservoir (Segment 1) is not included in this assessment. This segment is part of the State Scenic Waterway System and is eligible for Wild and Scenic status. A separate suitability study will be undertaken to determine the Outstandingly Remarkable Values of this portion of the Deschutes.

This Revised Resource Assessment evaluates the following values which were identified as "Outstanding" by Congress in the 1988 Omnibus Oregon Wild and Scenic Rivers Act:

- Geologic
- Hydrologic
- Fisheries
- Vegetation
- Wildlife
- Cultural
- Scenic
- Recreation
- Wilderness

In addition, there is an overall description of land-use patterns in the river corridor (considered for the purposes of this assessment generally to be within 1/4 mile of either side of the river)

## **Overview of Land and Water Use in the Upper Deschutes River Corridor**

### **History of Land and Water Uses**

Situated between the snowcapped, moisture collecting Cascades and the high desert the Upper Deschutes River basin has been a home to humans as well as diverse plant and animal life since prehistoric times. Evidence from nearby Newberry Crater indicates that humans inhabited the region at least 10,000 years ago as did Mastodons, camels and other now extinct species. The myriad of volcanoes, cinder cones, and lava flows document the sometimes violent natural events the earliest people experienced.

The geologic evolution of the region has been constant and rapid. Periods of mountain building and river moving volcanic activity have been interspersed with periods of erosion and sedimentation associated with glaciation and stream runoff. The combination of volcanic and glacial activity and the sedimentary deposits from both has created the largely spring fed drainage of the Upper Deschutes. The crystalline hues of Blue Lagoon in the headwaters, consistent water temperatures, the bluffs and extensive riparian areas between Wickiup and Sunriver, and the rugged Benham and Dillon Falls are features today that are the products of natural processes of the past. A natural feature no longer evident due to the storage of water for irrigation is a remarkably limited seasonal fluctuation of river flows.

The combination of hydrologic and geologic conditions established a diverse riverine habitat. Cold, clean water with limited fluctuation promoted a riparian habitat of rich streamside

vegetation. This provided food and shelter for insects, fish, and small mammals and birds. Larger mammals and birds also relied on the abundant food supply found in the river environment.

The lack of definitive archaeological findings and descriptions of Native American Indian land-use practices in the early historic period make it difficult to determine what effects their activities may have had. However, recent findings strongly suggest that American Indian populations were much higher prehistorically than has been commonly held. Certainly, the arrival of the first immigrant American explorers heralded the beginning of an era in which the resources of the region were utilized differently - first by trappers then, in turn, by livestock ranchers, timber interests, farmers and homeowners utilizing irrigation water, and today for recreation purposes. The changes in utilization of the river and adjacent resources have been so great that the character of the river basin has significantly changed during the last 80 years.

The federal portion of the western half of the upper Deschutes River corridor was included in an administrative withdrawal from the public domain enacted in 1893 and called the Cascade Range Forest Reserve. The withdrawal was made under authority of the Forest Reserve Act which was passed that same year. The balance of the corridor was withdrawn under the same act by president Theodore Roosevelt in 1903. The Deschutes National Forest proper was established in 1908.

## **Water Allocation**

The earliest water rights were acquired by individual settlers who claimed land under the Homestead Act and water under the common law. Realizing that large-scale settlement of arid lands such as those found in central Oregon would not occur without development of large and complex canal systems, Congress adopted the Carey Act in 1893. This act provided for the separation from the public domain of large tracts of land in central Oregon which were reserved for development by irrigation companies.

Further development of the Deschutes basin was undertaken by the State of Oregon and the U.S. Reclamation Service in 1913. At the request of the Reclamation Service, the State Engineer withdrew from further appropriation all of the unallocated waters of the Upper Deschutes for use in the Deschutes Project. Almost all of the irrigated lands in central Oregon came under irrigation and passed into private ownership via the Carey Act or the Deschutes Project.

Crane Prairie Reservoir and Wickiup Reservoir were constructed or reconstructed by the Reclamation Service (later the Bureau of Reclamation) and received their water rights from the water withdrawn by the State Engineer in 1913. These reservoirs, plus Crescent Lake Reservoir, influence and partially control the flow of the river downstream to Bend, where the

majority of the water is diverted by six irrigation districts for use in Deschutes, Crook, and Jefferson Counties. These districts irrigate about 115,000 acres of farm and residential land, which produced about \$60 million of agricultural goods plus other economic benefits in 1991. About 1000 acres of farm land receives irrigation water from the Little Deschutes River in the vicinity of LaPine.

### **On River and Adjacent Land Uses**

The once dominant timber and agricultural uses have given way to play and those who seek the ambiance of a riverine environment for their residence. Virtually all private land, roughly one-third of the land within the proposed combined areas of the Wild and Scenic River and State Scenic Waterway, adjacent to the river is subject to development, either as a destination resort or for residential purposes. Most forest land remains undeveloped but evidence of past timber harvest remains evident. Development on public lands is largely limited to recreational development such as campgrounds, picnic areas, boat ramps, and trails that serve the needs of anglers, campers, canoeists, rafters, kayakers, trail bikers, horseback riders, and upland, waterfowl, and big game hunters, among others.

## **II. VALUE ASSESSMENT**

### **Geologic Value**

#### **Criteria for Outstandingly Remarkable**

The river or the area within the river corridor contains an example(s) of a geologic feature, process, or phenomena that is rare, unusual, one-of-a-kind, or unique to the geographic region. The feature(s) may be in an unusually active stage of development, represent a "textbook" example, and/or represent a unique or rare combination of geologic features (erosional, volcanic, glacial and other geologic structures).

### **Geologic Description**

The Upper Deschutes River has a long history shaped by volcanism, glaciation, and tectonism. Newberry Volcano and the Cascade Range have flooded the area repeatedly with lava and other volcanic deposits, and great Ice Age glaciers have discharged large volumes of water,

sand, and gravel into the river. Like human cultures adapting to new landscapes, the Deschutes River has adapted to a rapidly changing volcanic and glacial landscape. Since the construction of Crane Prairie Dam in 1922 and the later construction of Wickiup Dam the river has adjusted and is continuing to adjust to significant interaction with humans.

The Upper Deschutes River as we know it was shaped mostly by four events: the growth of Newberry Volcano, widespread sinking in the La Pine Basin, glacial and post glacial deposition of sediments, and the growth of the Mt. Bachelor chain of volcanoes. Early in the half-million year history of Newberry Volcano, the Deschutes River was located several miles east of Benham Butte and Bend. But as Newberry Volcano grew, lava pushed the river to the west to its present location. At the same time, hundreds of square miles slowly sank about a half mile in the general area of La Pine, Crescent, Wickiup Reservoir, and Mt. Bachelor. Simultaneously during the Ice Ages lake and river sediments filled the sinking area.

During this period the Deschutes River was significantly different. First, it flowed in shallow meanders across the sediments fed by numerous meandering tributaries. Second, the seasonal range of flow rates was much greater than today even with the present-day flow control by dams. Water from glaciers carried considerable silt, sand, and gravel especially during spring and summer. The present river channel above Sunriver either did not exist or was completely buried under broad sheets of sand and gravel. The abrasive action of sand and gravel carried by the river in the waning years of the last Ice Age are seen in remarkable rock sculptures wherever lava forms the river bed. The smooth shapes, arches, and deep rounded pits at Pringle Falls are good examples.

About 15,000 years ago volcanoes erupted for two millennia and formed a 20 mile long, north-south chain of volcanoes with Mt. Bachelor at its north end. Lava from this chain buried 100 square miles of the sediments, and replaced a gentle landscape of lakes and lazy rivers with mountains. Today, the Deschutes River must first flow south around this volcanic chain before heading north towards its rendezvous with the Columbia River.

Since the conclusion of the Ice Ages and the Mt. Bachelor volcanic period, the river has eroded and deepened a meandering channel through the layered sediments of the La Pine Basin. The sediments hold keys to the geologic history of central Oregon. These sediments of mostly silt, sand, and diatoms make up the channel banks of the Deschutes River from Wickiup Dam to Benham Falls. Dozens of layers of volcanic ash within the sediments record nearby eruptions and promise to provide a major source of information and geologic understanding.

The sediments have also recorded changes in the earth's magnetic field during the time the sediments slowly accumulated. A group from the University of Hawaii has been studying paleomagnetism recorded in the riverbank sediments below Pringle Falls while the United States Geological Survey has been studying volcanic ash in the same area. The research can only be accomplished near Pringle Falls because the depth of the Deschutes River channel in

this location exposes the greatest depth of La Pine basin sediments. This basic research is expected to add to knowledge about explosive volcanism in the Cascade Range and in the western United States. The research is also intended to expand knowledge of how the earth's magnetic field changes with time.

The springs that provide most of the water for the Deschutes River, including the sources of Spring and Fall Rivers, are the results of past volcanic lava flows and the sedimentation from explosive volcanic events and glacial activity. The generally high permeability of volcanic rocks allows rain and melting snow to easily sink into the ground and trickle downward to the water table. The sediments of the La Pine Basin play a primary role in the occurrence of springs because they have very low permeability. Ground water flowing through adjacent permeable volcanic rocks rises to the surface behind the dam of sediments and spills out as numerous, scattered springs.

The most recent fundamental change to the Upper Deschutes River came 6,200 years ago from the eruption of the Lava Butte Lava Flow from Newberry Volcano. The lava built a high dam against Benham Butte and denied the river its old channel east of the butte. Water backed up behind the lava dam nearly to Pringle Falls until the new lake topped and flowed through a low saddle at Benham Butte. Thus began Benham Falls and a new channel of the Deschutes River. Below Benham Falls, the new channel followed the west edge of the lava to Lava Island Falls. Above Benham Falls, the old channel, 60 feet deeper than the present channel, slowly filled with sediment.

Human interaction with the Upper Deschutes River has changed since construction of Crane Prairie and Wickiup Dams. Primary interactions are (1) dramatic change of flow regime below Wickiup Dam, (2) alteration of vegetation along the channel and banks from Wickiup to Benham Falls, and (3) major increase in recreation use.

Specific long-term (centuries) effects of the present, controlled flow regime and greatly increased recreation use are largely unknown, but it is clear that many natural processes will operate at an accelerated pace.

Events in geologic history and currently active processes have created the existing landforms between Wickiup and Bend. In Segments 2 and 3, the Deschutes River is an outstanding example of a river adjusting to its Ice Age and volcanic past. A diversity of outstanding river-made landforms record these great adjustments. At the present time the artificial flood stages resulting from irrigation releases have accelerated lateral erosion on the outside banks of bends in the river and increased deposition on the inside of river bends. Because these flows remain within the river channel or spill into undeveloped sloughs there are no dramatic or catastrophic events commonly associated with flood events.

As a result of past and ongoing processes outstanding examples of the following landforms are dispersed throughout Segments 2 and 3:

- Meander valleys
- Active meander channels with meander scarps, point bars, and terraces
- Cutoff and abandoned meanders with oxbow lakes and meander scars
- Erosional and depositional terraces
- Terrace developed from eruption of Lava Butte lava flow, e.g. the Great Meadow at Sunriver
- Valley and channel slopes in a variety of materials and stages of development

The landforms in Segment 4 of the Deschutes River are mostly the result of the Lava Butte lava flow. Benham Falls and the downstream falls and rapids were created when the river found a new channel through a saddle in Benham Butte. Below Benham Falls the major features include:

- Wetlands and meadows that formed behind lava dams, e.g. Ryan Ranch Meadow
- Slack water sections that formed behind lava dams, e.g. Aspen Camp section
- Whitewater rapids and falls flowing over lava dams, e.g. Lava Island Falls and Big Eddy Rapids
- Dillon Falls where the river flows over an ancient fault scarp.

Below Aspen Camp, the channel walls of the Deschutes River display layers of pumice, ash, and tuff that record violent eruptions in the Broken Top area which long ago affected the character of the Deschutes River. Ancient river channels join with the Deschutes and record the flow of melt water from vanished Cascade glaciers.

## **Assessment**

The land forms associated with the Upper Deschutes provide a dramatic window into the geologic past. The river provides a textbook example of the effects of the interaction of volcanism, climate changes, and the power of water in shaping the landscape. Ongoing research is of international significance. The opportunities for further research and interpretation are virtually limitless due to the accessibility of the river to both professional researchers and recreationists. On the basis of the resource conditions the Geologic Value of the Upper Deschutes River is considered Outstandingly Remarkable.

# Hydrologic Value

## Criteria for Outstandingly Remarkable

1. Flow characteristics are substantially unmodified when compared with natural conditions, i.e. flow fluctuations are of the same magnitude, duration, and timing as would occur prior to the intervention of humans.
2. Water quality is excellent, showing no sign of degradation from human activities, and approaching distilled water conditions in the upper segment.
3. A unique or rare natural hydrologic condition of regional or national significance is evident. For example, an unusually even flow or high flows that occur at an unusual time of the year.
4. The river presents itself as a benchmark in which other aquatic and hydrologic systems can be measured. The river offers scientifically creditable high standards for these values.

## Hydrologic Description

### Flow Character: Natural Flow

The most significant natural determinant of the hydrological characteristics of the Upper Deschutes is the dominance of groundwater inflow on streamflows. As discussed in the review of the geological value recent lava flows, pumice, and ash, along with the glacial activity, allow subsurface flows to travel in large quantities and at relatively rapid rates. As a consequence of this condition the Upper Deschutes has relatively few tributaries. The headwaters of the Deschutes, Fall River, and Spring River all originate from large springs which are relatively rare hydrological resources. These large springs offer clear, cold, high quality waters which moderate winter temperatures in the Deschutes and offer important spawning areas for brown trout.

Because the Upper Deschutes Basin drainage is largely spring fed it has a very stable natural hydrologic regime in which daily, monthly, and even annual fluctuations in water flows are minimal compared to rivers dominated by surface runoff. In a 1914 U.S. Reclamation Service report describing the water resources of the Deschutes River, the authors reported:

"The flow of the Deschutes River is one of the most uniform of all streams in the United States, not only from month to month, but also from year to year. The normal

minimum flow during the irrigation season is between 1,500 and 1,600 cubic feet per second (cfs) at Bend. The extreme minimum is usually in midwinter when it occasionally drops, for a few days only, from 1,100 to 1,200 cfs."

### **Flow Character: Regulated Flow**

As a result of water storage and diversion for irrigation the stable natural flows of the Upper Deschutes have been replaced by lower flows during the winter storage months and higher flows during the summer irrigation season. This difference is most significant between Wickiup Dam and Fall River and is moderated as tributaries and springs augment the flow of the main stem between Fall River and the North Boundary of Sunriver. These differences can be illustrated by comparing regulated and lightly regulated flows at Wickiup Dam and at Benham Falls in Figures 1 and 2 and noting the influences of tributaries and springs between these two locations (The river was regulated by Crane Prairie reservoir as early as 1922, its capacity is 55,000 acre feet of water. Wickiup began influencing the river in 1945 and it has the capacity of 200,000 acre feet. The mean flow from Crane Prairie is approximately 210 cfs while the mean flow at the outlet of Wickiup is approximately 750 cfs.).

Flows released out of Wickiup are increased by Fall River which adds 90 to 160 cfs (usually from 140 to 160), by the Little Deschutes which adds 5 to 3,500 cfs (usually from 140 to 350 cfs) and by Spring River and associated springs adding from 180 to 210 cfs. Differences in flows between Wickiup Dam and Benham Falls are the product of these inputs.

The most significant effects of flow regulation are that regulated flows contribute to accelerated erosion, decrease in wildlife habitat, decrease in scenic quality during the winter, and degradation of fish habitat and corresponding decrease in fish populations. These effects are due to the wide variation in seasonal flows. The minimum and mean storage season flows are, respectively, less than 5 percent and less than 20 percent of the unregulated flows between Wickiup Dam and Fall River. Differences during the irrigation season though statistically less dramatic are nonetheless significant. Between Wickiup Dam and Fall River normal high regulated flows exceed normal high unregulated flows by 50 percent while mean regulated flows exceed unregulated flows by 60 percent. The difference between regulated and unregulated flows also occurs downstream, though to a lesser degree. The single exception is that peak flow events, which are largely the product of conditions in the Little Deschutes drainage, have been reduced in magnitude. The reduction results from the ability to decrease discharge out of Wickiup Dam when the Little Deschutes is at flood stage.

Despite significant changes in flow the regulated Upper Deschutes still provides water necessary to support aquatic and riparian life, to support seasonally pleasing scenic conditions, to support and in some cases enhance recreational activities, and is the most significant factor influencing the condition of all flow related values.

# COMPARISON OF REGULATED AND UNREGULATED FLOWS AT WICKIUP DAM by Comparing pre 1942 flows with post 1942 flows.

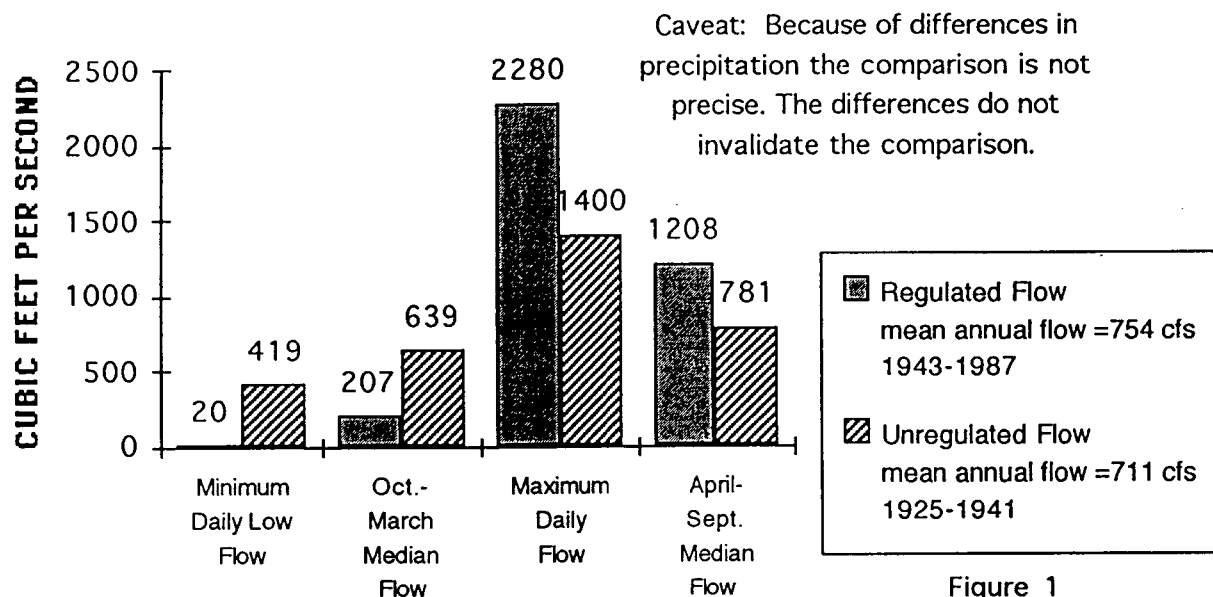


Figure 1

# COMPARISON OF REGULATED AND UNREGULATED FLOWS AT BENHAM FALLS by comparing pre 1942 flows with post 1942 flows.

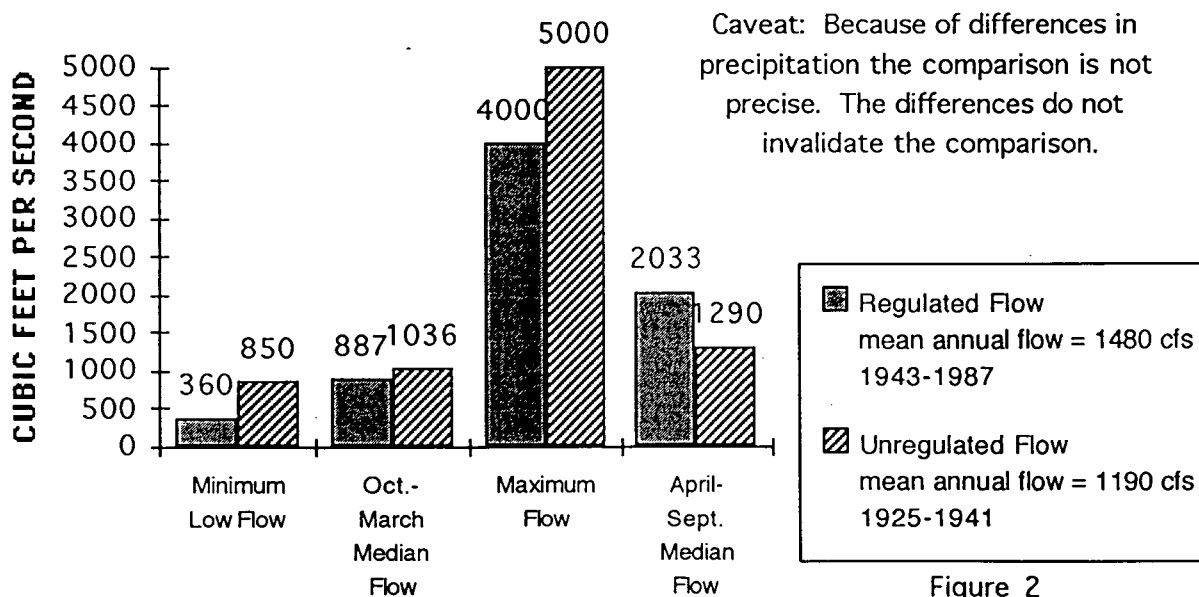


Figure 2

## Water Quality

Water quality is now most affected by the regulation of flows and the creation of reservoirs upstream from the Upper Deschutes. From spring until midsummer water quality is very good as it leaves Wickiup Reservoir, but deteriorates rapidly in the first few miles below the dam. Turbidity level, a measure of water clarity, is increased as much as 30 fold when irrigation water is released in early spring (Forest Service Turbidity Monitoring Study, 1991, 1992, 1993 data). As the summer progresses, the turbidity decreases, but remains elevated to nearly twice the background level until late July. From this point until November releases from Wickiup have elevated turbidity levels. The elevated turbidity from the initial irrigation release until midsummer is largely a product of the following process. During the storage season little water is released from upstream reservoirs in order to augment river flows for the irrigation season. The water released is insufficient to cover all of the channel. This condition promotes frost action in the exposed channel and banks which loosens the channel material. Flows increased in the spring transport the bed and bank materials loosened by the frost action.

While reservoirs can decrease turbidity by trapping sediment, the Upper Deschutes River reservoirs contribute to mid- and late-season turbidity by enhancing primary productivity. As a result of the sunlight that reaches the unshaded waters of the reservoirs and warming of the still waters primary productivity (the growth of microorganisms) flourishes. The millions of organisms cloud the water in what is frequently called "algae blooms." In mid-summer these clouds of organisms begin to get washed down the river and become the dominant determinant of turbidity in the river.

As a result of erosion and primary productivity turbidity levels do not meet the state water quality standard which defines a water quality violation for turbidity as an increase in excess of 10% over background.

As the discussion of the geological resource noted the absence of large woody material contributes to the erosion rate. Since turbidity is partly a consequence of erosion the limited amount of large woody material present in the river contributes to the reduction in water quality.

There is a concern that existing and future development on the platted lots near the river may eventually lead to pollution problems in the river. Due to the high water table, this potential for contamination of waters by septic systems is high. Low levels of dissolved oxygen in the river during the summer suggests bacteria from septic systems may now impact the river.

## **Assessment**

The river environment has been significantly altered over the last 100 years. Manipulation of flow patterns for irrigation has affected both water quality and quantity. The existing water quality and quantity in the Upper Deschutes River still supports a remarkably diverse ecosystem. However, the river now lacks many of the hydrologic qualities for which it was once famous. The former clarity and uniformity of flow are no longer present. Flow fluctuations, along with significant changes in the timing of water flows, have contributed to increased streambank erosion and decreased water quality, particularly in Segment 2. Because the regulation of the flow has resulted in decreased water quality, decreased quality of fish habitat, destabilized streambanks, and adverse impacts on the riparian resources along those eroding streambanks, the hydrologic resource of the Upper Deschutes cannot meet the standard for Outstandingly Remarkable. Nonetheless the water quality and quantity are essential elements of Outstandingly Remarkable values such as fisheries, wildlife, scenic resources, and recreation. Consequently hydrology is determined to be a Significant Value which should be protected and enhanced in order to protect and enhance these Outstandingly Remarkable Values.

## **Fishery Value**

### **Criteria for Outstandingly Remarkable**

Fish values may be judged on the relative merits of either fish populations or habitat or Native American Indian cultural use - or a combination of these river-related conditions.

**Habitat** - The river provides or has the potential based on natural conditions to provide exceptionally high quality habitat for fish species indigenous to the region. Of particular significance is habitat for wild stocks and/or federal or state listed or candidate threatened, endangered and sensitive species. Diversity of habitats is an important consideration and could, in itself, lead to a determination of Outstandingly Remarkable.

**Populations** - The river is internationally, nationally or regionally an important producer of resident and/or anadromous fish species. Of particular significance is the presence of wild stocks, genetically pure indigenous stocks, and/or federal or state listed threatened, endangered and sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of Outstandingly Remarkable.

**Cultural** - The fishery is known and utilized, or had been used in the past by Native Americans as an important fish resource for a supply of food and/or fish for ceremonial purposes. The resource may be venerated by Native American Indians.

## **Fishery Description**

### **Historical Condition**

In the early 20th century the Deschutes River was recognized as an outstanding trout stream with outstanding habitat. For example, in 1916, an article appearing in the **Oregon Sportsman** written by Warden W.O. Hadley praised "The Best Trout Stream in Oregon":

The Deschutes River, I think is the best trout stream in Oregon. I will go further in my claims for this wonderful stream and its tributaries and say that if it is not already, it soon will be the best trout stream in the United States. This stream has a steady flow of good cold water and only varies a few feet from extreme high to low water."

### **Habitat**

The stable flows and excellent water quality combined with access to spawning gravel (in the area now inundated by Wickiup and upstream) produced high quality fish habitat for the indigenous cold-water species found in all river segments. Streamflows maintained an average pool depth of >7 feet, 0.9 feet of water over 98% of the spawning gravel area, 95% of the streambed covered with water to maintain aquatic insect production, and abundant large woody material existed in the water to provide fish and aquatic insect habitat.

### **Populations**

Though historical information is limited it is believed that the original fish were rainbow trout, bull trout, mountain whitefish, and sculpins while anadromous fish runs were stopped at Big Falls, about 33 miles below Bend. This barrier also prevented immigration of other species such as squawfish and suckers. Information on relative composition and density of the various populations is limited, but given the high quality habitat and anecdotal references, it is thought that populations were high. For example, in 1907 it was reported that anglers caught 3,000 trout from the Deschutes for a community fish fry.

### **Present Conditions**

Today it is unlikely that the above feat could be replicated. The composition of the trout population is different and numbers appear to be significantly reduced if creel census is any indicator. The number of fish harvested in the past, the construction of Crane Prairie and Wickiup Dams and subsequent regulation of flow, introduction of exotic species, large woody

material removal, and other human caused developments have had a significant impact on the fish population and habitat in the Upper Deschutes. Impacts have been greatest in Segment 2 immediately below Wickiup Dam, with lesser impacts as one moves downstream.

The bull trout is no longer present due to changes in habitat conditions. It has been replaced by the introduced and more tolerant brown trout. According to ODFW personnel the brown trout population in Segments 2 and 3 represents the best riverine population in Oregon in terms of numbers of large resident fish. It is one of the better riverine populations in the Pacific Northwest.

Fishery habitat on the Upper Deschutes is now different for several reasons. Water quantity fluctuates to a much greater extent than before. Low flows in the river during the storage season increases competition among trout, concentrates trout (making them more susceptible to predators and environmental accidents), and limits useable spawning and cover opportunities. The construction of Wickiup Dam cut off access to the primary spawning gravel utilized by trout inhabiting the river above Pringle Falls. Though always believed to be limited, spawning gravels below Wickiup Dam became even more restricted when the construction of the dam limited the recruitment of gravel from upstream sources. Gravel recruited from the stream banks below Wickiup Dam is limited, of poor quality (small size), becomes highly embedded with fines, and is usually pushed toward the margins during high flows. Consequently there isn't much gravel, the gravel present is of poor quality, and most of it is unavailable to fall spawning brown trout.

Not all changes have occurred because of changes in the river flow regime. The removal of large woody material to facilitate transportation of saw logs in the past and to enhance navigation in the present has eliminated cover for trout and critical habitat for macroinvertebrates. In portions of the river naturally lacking rock outcroppings or rubble substrates large woody material is likely to be the only source of cover for aquatic life ranging from tiny insects to 30 inch long brown trout. Private and recreation development have eliminated some riparian habitat, while recreation activity has resulted in boat wakes accelerating erosion on the streambanks and the trampling causing gradual destruction of riparian habitat critical to trout fry and the organisms upon which they feed.

It is likely that areas used for the procurement of fish by Native American Indians occur along the river. However, no specific sites where this activity occurred have been identified to date.

## **Habitat and Population by River Segment**

### **Segment 2 - Wickiup Dam to South Boundary of La Pine State Park**

#### **Habitat**

The flow dependent effects described above are magnified in Segment 2 because Wickiup Dam regulates at least 98% of the water that would naturally flow through the segment. Additional effects include low winter flows which result in extremely cold water temperatures with the river frequently freezing over completely. The freezing eliminates habitat for fish and aquatic invertebrates. It also may cut off flow through redds. These low winter flows maintain 0.9 (the minimum for optimal brown trout spawning) feet of water over only 10% of the spawning gravel area and much of the spawning gravel is dry. Consequently when it is time for the brown trout to spawn there is no water over most of the remaining spawning gravels. In the few locations where the gravel is submerged, the low flow, combined with the flat gradient and high sedimentation, does not allow sufficient intergravel flow for the buried eggs to survive (ODFW unpublished data). It is also suspected that ice scouring may destroy redds.

In this segment storage flows concentrate fish in a few, generally coverless, pools where they are vulnerable to predation. Trout prefer to overwinter in the interspaces of bottom substrate or near woody material concentrations. However rock substrate is naturally limited in this segment and high flows, whether natural or regulated, aggravate the lack of cover by pushing much of the remaining large woody material into stream margins. During high flow this large woody material can provide cover for fish. However during the storage season when releases from Wickiup Dam are decreased the large woody material in the margins becomes dry. Consequently many aquatic organisms must semiannually redistribute themselves, and find themselves in winter pools which lack adequate cover.

Shutting down flows in early October also strands small fish and aquatic invertebrates, such as insects, crayfish, freshwater shrimp and snails in shallow pools, side channels, and on dewatered woody material where they soon perish. This yearly dieoff probably accounts for the low macroinvertebrate density and diversity compared to other rivers and streams on the Deschutes National Forest (Aquatic Biology Associates, 1991. Benthic Invertebrate Biomonitoring, Deschutes National Forest). Low flows also reduce velocity and consequently reduce insect drift, lowering the availability of food for fish. Regardless of the cause, the growth and survival rates of fry and juvenile trout are likely to be reduced because of the dependence of trout on macroinvertebrates for food.

The drawdown area of exposed channel is also uninhabitable by aquatic vegetation that provides cover for both invertebrates and fish. Ultimately the drawdown of the river forces all aquatic organisms to exist in a habitat only a fraction its original size.

The drawdown area affects even the river that remains inundated all year because it is the source of most of the turbidity that accompanies irrigation releases in the spring and summer. High concentrations of suspended sediments are detrimental to macroinvertebrates and make it difficult for trout to find and consume this important food source. The sediments released from the drawdown area also become trapped in the small amount of spawning gravel that remains covered by water during the spawning and incubation periods and consequently the survival rate of eggs is less than in more favorable circumstances.

### Fish Populations

Species present include rainbow trout, mountain whitefish, brown trout, kokanee salmon, coho salmon, sculpin, tui chub and three-spined stickleback. Only rainbow trout, whitefish, and sculpins are indigenous. Given the few resident rainbow present in this segment and the frequent planting of catchable hatchery rainbow trout it is unclear whether a remnant population of the native "redband" rainbow trout remains.

Approximately 15,000 legal rainbow are stocked into this segment every summer. It appears that the hatchery fish are caught, migrate downstream, or eventually die from the disease *Ceratomyxa shasta* (indigenous species, coho, and kokanee are more resistant to this disease). Consequently there is almost no carry-over from one year to the next.

The native whitefish is very abundant. ODFW have not inventoried whitefish during their surveys, but estimate whitefish make up at least 90 percent of the fish biomass.

The brown trout was introduced in the 1920's or 1930's and is now the dominant trout species. A partial ODFW inventory indicated a good population of older, large browns with fish captured up to 12 pounds. A partial inventory recorded 9 fish greater than 12 inches and 2 greater than 20 inches per mile surveyed.

The kokanee and coho salmon are transient outmigrants from Wickiup Reservoir. ODFW surveys noted both juvenile and mature adult kokanee but only immature coho. Thousands of these species emigrate out of Wickiup Reservoir each summer as the pool recedes. This emigration is exaggerated during years with extensive reservoir drawdown. By spring these species are absent from the river indicating they moved out of the river or failed to survive. The small juvenile salmon no doubt provide considerable forage for the larger brown trout. The chub and stickleback are illegal introductions that play a minor role in the river's ecology.

The native bull trout disappeared sometime in the 1950 to 1960 period. After construction of Wickiup Dam bull trout were cutoff from their major spawning and rearing areas in Davis and Brown's Creeks and the Sheep Springs area of the Deschutes river . The bull trout were also overfished, exposed to severe competition from the introduced brown trout, and subjected to changes in habitat conditions resulting from the regulation of flow out of Wickiup Dam.

### **Segment 3 - South Boundary of La Pine State Park to North Boundary of Sunriver.**

#### **Habitat**

Despite flows augmented by Fall River, the Little Deschutes, and Spring River the irrigation driven flows increase variation in water flow volume when compared with preregulation flows. The results appear to be more turbidity, flow fluctuations, and icing which combine to seriously degrade the fish habitat relative to unregulated flows. There are limited overhanging banks and overhanging vegetation in this segment.

There are some differences in habitat conditions when compared with Segment 2. The addition of tributary flows moderates some of the low winter flow impacts. Spawning gravels are limited in quantity and quality, but higher flows do facilitate better oxygen supply to buried eggs. Fall River and Spring River provide about one mile of high quality spawning habitat as a result of the addition of spawning gravels. Large woody material has been placed to restore habitat in the lower mile of Fall River.

Pools are more abundant and deeper and provide improved low flow sanctuaries for larger adult fish than in Segment 2. There is more large woody material inundated and providing fish cover, even at the lowest flows. In several locations, this material has been deliberately placed in the stream for bank protection. In the lower half of this segment, lava flows provide rubble, cobble and boulder substrate that are important juvenile rearing and overwintering areas.

Several reaches of this segment are heavily developed for homesites. Some bank protection measures, such as concrete and plank bulkheads have greatly reduced shoreline fish and aquatic invertebrate habitat. In other cases, loosely placed large, rock riprap has improved juvenile fish habitat.

#### **Fish Populations**

The species composition is identical to that of Segment 2 with the addition of a few brook trout that drop out of Fall River and Spring River. The bull trout has disappeared for much the same reason as described for Segment 2. However, Fall River and Spring River still could provide a suitable bull trout spawning and juvenile rearing habitat.

As in Segment 2, the brown trout is the dominant trout species. However, corresponding to the improved habitat the population exceeds that found in Segment 2. The ODFW survey recorded ten fish/mile greater than 12 inches and three fish/mile that exceeded 20 inches. The lack of holding areas during the low flow periods and possibly being preyed upon by larger fish may account for younger-age classes being poorly represented in the population. An extended drought cycle resulting in an increased range in flow extremes may also contribute to poor survival rates in the younger age classes over the past several years.

Like Segment 2, this reach has a very low gradient and is not preferred rainbow trout habitat. The rainbow trout population is low and most fish are small. This section is stocked with about 10,000 legal-sized rainbow each year. As in Segment 2, the stocked fish are either caught, emigrate downstream, or die of *Ceratomyxa shasta*.

In recent years, volunteer conservation groups released approximately 50,000 to 100,000 rainbow fry in Segment 3 at River Mile 190 and River Mile 205. The survival and contribution of these fish is unknown.

Populations of other fish species is similar to that for Segment 2.

#### **Segment 4 - North Boundary of Sunriver to COID Diversion**

##### **Habitat**

From a fisheries perspective, there is an improvement in habitat condition in this segment. The higher low flow as a result of the Spring River input reduces icing problems. Lava flows, boulders, and rubble armor a considerable portion of the streambed and banks from the high flows of the irrigation season.

The base minimum flows of 500 to 700 C.F.S. are adequate to provide good fish habitat. The prevalent lava flow geology has created a high gradient system with abundant cover found in the boulder and cobble substrate. This same substrate is also good habitat for aquatic invertebrates. The higher flows provide deeper pools and considerable turbulence, both of which provide fish cover. The base flows also provide a large, permanent living space for all aquatic organisms.

Although the augmented winter flows dampen the flow fluctuations, the magnitude of the variation still creates serious effects on the aquatic ecosystem. Gravel and woody material are pushed into stream margins by the high flows, then dewatered by the irrigation flow cutoff. Aquatic organisms, including fish, are trapped inside channels and backwaters as the flows rapidly recede.

Spawning gravel is very limited and generally found only in small pockets. It is likely that

this segment has always been deficient in gravel due to the "Benham Falls Dam" created by early lava flows. The gravel deficiency and the impacts associated with the fluctuating flows are most likely the factors limiting fish production.

### Fish Populations

The same fish species inhabit this segment as in Segment 2. A major difference between species is that the brown trout has gradually been displaced by the rainbow in the reach below Benham Falls. The causes of this transition are not clear. Generally, brown trout will prevail in a stream where both species occur. There is little spawning gravel in this segment and even less for a fall spawning species such as brown trout. Other than spawning gravel, the habitat appears suitable to sustain a brown trout population.

The high gradient habitat found in much of this segment is preferred by rainbow trout. The population density appears to be high but with the great majority fish less than 12 inches in length and a few fish up to 18 inches. There is a possibility that the rainbow trout population is a remnant population of the native "redband" rainbow trout. The Oregon Department of Fish and Wildlife will be conducting a genetic study to determine the origins of the existing rainbow trout population during fiscal year 1994.

The Segment 2 discussion of other fish species is appropriate for this segment. The Central Oregon Irrigation District diversion trap counts provide documentation of the tremendous number of kokanee that move through the river after leaving Wickiup Reservoir. In 1990, an estimated 28,000 moved through the bypass trap and into the canal (Campbell and Craven, 1991). Because some kokanee were diverted into the river and others never entered the canal the number moving through this segment could be several times the number counted in the diversion trap.

### **Assessment**

Despite habitat conditions significantly less hospitable than occurred naturally the brown trout population in Segments 2 and 3 constitute an Outstandingly Remarkable River value. This is due to the abundance of large fish and its ranking in relationship to other brown trout populations in the state.

Because the genetic background of the rainbow trout population is unknown at this time the assessment of the population value will be deferred until a genetic study scheduled for 1994 by the ODFW is completed. Until completion of the study the rainbow trout population in Segment 4 will be managed as an Outstandingly Remarkable Value.

The presence of dams, the existing regulation of flows, and other conditions prevent the habitat from being Outstandingly Remarkable in any segment. Even Segment 4 habitat is less hospitable to trout than the habitat that existed prior to regulation of flows and the removal of large woody material from the channel.

The aquatic habitat is a significant value because it contributes significantly to the health and strength (populations and diversity) of the fishery resource.

Though Native American Indians certainly harvested fish from the Upper Deschutes, the fishery is not considered an Outstandingly Remarkable value on the basis of cultural use criteria.

## **Vegetative Value**

### **Criteria for Outstandingly Remarkable**

The river or area within the river corridor contains nationally or regionally important populations of indigenous plant species. The presence of species considered to be unique or populations of federal or state listed or candidate threatened, endangered, or sensitive species will result in a determination of Outstandingly Remarkable Value for any river segment in which the species is found.

The river or area within the river corridor contains nationally or regionally important plant communities. Communities are exceptionally high quality, or are unusual, or are critical communities.

UNIQUE plant communities or species present have important cultural value or occur in traditional use areas.

## **Vegetation Description**

Vegetation along the Upper Deschutes includes old-growth mixed-conifer stands dominated by mature ponderosa pine, lodgepole thickets, lush wet marshes in the summer, aquatic vegetation that thrives under the surface of the water, expansive dry meadows, and even domestic lawns and gardens.

Much of the natural vegetation immediately adjacent to the river has been subjected to the effects of flow fluctuation, recreational use, residential development, timber management, and grazing. Timber harvest has occurred in each segment. Most of the mature ponderosa pine

has been harvested. Much of the older, dead, and dying lodgepole pine infested by the mountain pine beetle has been harvested as well. Some of the areas that were harvested have been planted. Other areas have been precommercially and commercially thinned.

### **Aquatic Vegetation**

Aquatic vegetation provides food and/or cover for lifeforms ranging from tiny macroinvertebrates to fish, amphibians, birds, and mammals. While the historic distribution of aquatic vegetation has not been determined the abundance of Andean watermilfoil (*Myriophyllum elatinoides*) and other introduced species suggests that aquatic vegetation is significantly different than conditions present before the arrival of immigrant Americans.

### **Riparian Vegetation**

There are 1,129 acres of riparian and wetland habitat along the Deschutes River above Bend. The wetlands/riparian areas are associated with a combination of the following: stands of lodgepole pine and ponderosa pine as an overstory; a shrub understory of spiraea, snowberry, alder, or willow; and a herbaceous layer of forbs and sedges. There are several large willow/sedge meadows scattered within the reaches.

Trampling and the elimination of vegetation in riparian areas has resulted from people hiking along the river or by driving vehicles into these areas. Several campgrounds have been built along the river, and roads parallel the river on both sides throughout most of Segment 2, resulting in heavy recreational use and the destruction of wetland/riparian resources. Some livestock grazing along the river at Tetherow Meadow, around Sunriver, and in Ryan Ranch Meadow has resulted in trampling of grasses and overpruning of willows. Regulation of the water from Wickiup has resulted in the reduction of riparian vegetation at the outside bends of the river and an increase in the width of the point bars and associated vegetation on the inside of the bends. The existing flow fluctuation has also created a wetland band barren of vegetation because the habitat is no longer suitable for either aquatic or riparian vegetation. In Segment 3, there has been some development within the wetlands/riparian areas associated with the private lands. Several slough areas have been dredged to provide boat access to the river, and numerous docks have been built.

### **Upland Vegetation**

Upland vegetation consists of a variety of grasses, shrubs, and trees that are not dependent upon the presence of free water in the surrounding soil for survival.

Two old-growth areas, designated by the Deschutes Land and Resource Management Plan, are located within 1/4 mile of the river. One, predominately ponderosa pine, is located northeast of Pringle Falls on the west side of the River. The other, also ponderosa pine, is located north of Benham Falls within Newberry National Volcanic Monument.

## **Overview of Vegetation by Segment**

### **Segment 2**

From Wickiup Reservoir to a little beyond Pringle Falls, the vegetation corridor is defined by dense stands of lodgepole pine and occasional ponderosa pine which is in the climax state in the pumice/ash deposits. Some lodgepole pine has been harvested or thinned. Wet meadows occupy the inside of oxbows while numerous areas devoid of vegetation are common where cutbanks occur.

Vegetation below Pringle Falls to the south boundary of La Pine State Recreation Area the vegetation is similar to that found upstream except that it is characterized by a multilayered forest. This forest consists of mature ponderosa interspersed with mature and adolescent lodgepole and an occasional fir on the slopes with riparian vegetation bordering the river. Vegetative disturbance is evident in Tetherow Meadow and is the result of grazing and recreational use in riparian areas and motor vehicle travel across dry meadows.

### **Segment 3**

Private land bounds both sides of significant portions of this segment of the river. The lodgepole pine dominated vegetation community has been heavily modified by the nearly continuous construction of golf courses, houses, roads, power lines, boat docks, lawns, fences, and the other amenities of subdivisions.

In this segment the native vegetation patterns vary and are in accordance with the changing landforms. On the upper elevations and slopes, ponderosa pine; on the wetter areas and cold sinks, lodgepole pine; and in the marsh and river's edge, willows and marsh grasses. Between the Foster Ranch Bridge and north of the confluence of Fall River, a distance of about 2 air miles but 4 river miles, most development is located on the bluff above the meander valley. Within the meander valley is an expanse of relatively undisturbed riparian habitat about 1/4 mile wide divided by the meanders of the Upper Deschutes. From below Fall River to the confluence of the Little Deschutes the riparian habitat is a more narrow strip before widening out to the broad expanse of Sunriver Meadow. Most native vegetation is mature and, when left undisturbed, in dense stands of mixed conifer with lodgepole pine dominant.

## **Segment 4**

In this segment the vegetation consists of riparian shrubs and marsh grasses associated with the wetlands and lodgepole pine in the wetter areas of the terraces and sinks. Ponderosa pine is dominant on the slopes and in the higher elevations with alder and quaking aspen growing adjacent to the river.

On the east side of the river, a portion of the river corridor is located in the Newberry National Monument. From Benham Falls to Lava Island Falls the Lava Butte lava flow reaches the river and dominates the opportunities for vegetative growth. Here, too, ponderosa pine dominates the vegetation with alder and quaking aspen growing adjacent to the river. Because of the maturity, consistency in distribution, and lack of obvious management vegetation appears natural and relatively undisturbed.

The west side of this segment receives intense day and overnight use with both riparian and upland species suffering from trampling and soil compaction where access to the river is easy. A user trail system has developed on the west bank of the river which has damaged or destroyed some vegetation.

Within this segment is a concentration of sloughs on both sides of the river. Based on comparison of photographs taken in 1943 and 1991 it is evident that riparian vegetation has decreased within some of these sloughs. Apparently this is due to the greater fluctuation that now occurs in the river. Some sloughs, that in the past contained at least a few inches of water year around, now range from having no water for 6 months to having over 2 feet of water for a period of 6 months. Under these conditions it is difficult for some native riparian species to survive. The effects of flow on sloughs may have been modified by the construction of levees between some sloughs and the river.

A 1915 map of the region (Deschutes County Historical Society) labels what is now called Ryan Ranch Meadow "The Tules." What once was a slough, inundated most if not all of the year has been drained by ditches and cutoff from high flows by the construction of a levee. These past actions plus the grazing of cattle are likely to have affected species composition in Ryan Ranch Meadow.

## **Sensitive, Threatened, and Endangered Plants**

In the summer of 1993 an extensive biological survey was conducted along the Upper Deschutes River. One sensitive plant species was found during this survey:

Estes mugwort, *Artemisia ludoviciana* subspecies *estesii* Chambers. This plant is a Federal Category 2 Candidate (additional information is needed in order to propose as Threatened or Endangered under the Endangered Species Act), and also appears on the

Regional Forester's Sensitive Plant List of June 10, 1991. "Estes mugwort was found in very small numbers at three spots along this portion of the Deschutes. Its habitat in these areas in the upper margin of the marshy zone of the river shore. Associates include *Salix geyeriana*, *Juncus balticus* (Baltic rush), *Poa palustris*, *Potentilla anserina* (silverweed cinquefoil), and *Scirpus microcarpus*." Estes mugwort is a Central Oregon endemic. Previously, it was known only from further downstream on the Deschutes River, between Cline Falls and Lake Billy Chinook. "The new localities extend the range of this subspecies approximately 20 air miles upstream from Cline Falls."

## **Plant Resources of Possible Importance to Native American Indians**

No unique plant communities of cultural value to Native American Indians are known to occur along the Upper Deschutes. It is likely that areas where plants such as pinenuts, tule reeds, and various berries were gathered or processed do, however, exist within the river corridor.

### **Assessment**

There are several distinctive vegetative elements in the Upper Deschutes corridor which were compared to the criteria for an Outstandingly Remarkable Value. These include aquatic vegetation, riparian communities, upland communities (specifically old-growth ponderosa pine communities), individual plant populations which may be of regional importance, and plant species or communities which were known to have been used by prehistoric people.

Aquatic vegetation is not known to include nationally or regionally significant species. The dominance of exotic species eliminates the potential presence of nationally or regionally important plant communities. Aquatic vegetation is, however, a Significant Value because of the role it plays in providing food and/or cover for fish and wildlife species that do constitute Outstandingly Remarkable Values.

The riparian communities also do not meet the criteria for Outstandingly Remarkable because of the effects of flow fluctuation and the extensive incursions of private and public development into riparian areas. However, these communities are significant contributors to the wildlife, scenic, geologic, hydrologic, and fishery values. These plant communities are especially significant in those portions of Segment 3 where they offer islands of riparian communities among private land development.

Old-growth ponderosa pine is dispersed throughout the corridor, often mixed with lodgepole pine. These plant communities do not represent regionally or nationally important examples

of these plant communities; nor do the plant communities offer examples of exceptionally high quality, unusual, or critical communities at a regional or national scale. There are other stands, less affected by human actions, in the region. However, the mature ponderosa pine with massive trunks cloaked in rich cinnamon bark is a contributor to the scenic, wildlife, and recreational values of the river.

The presence of Estes Mugwort, a species on the Oregon List 1 Endangered and Federal Category 2 Candidate species does constitute an Outstandingly Remarkable Value in Segments 3 and 4.

There are many plant species within the river corridor which were of use to prehistoric people. None of the species occurring within the Upper Deschutes corridor are unique to the region, nor do they have a unique cultural value to any prehistoric people, and do not constitute an Outstandingly Remarkable Value.

As a result of the above considerations vegetation is a Significant Value in Segment 2 and an Outstandingly Remarkable Value in Segments 3 and 4.

## **Wildlife Value**

### **Criteria For Outstandingly Remarkable**

Wildlife values shall be judged on the relative merits of either wildlife populations or habitat or Native American Indian cultural use - or a combination of these conditions.

**Populations** - The river or area within the river corridor contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique or populations of federal or state listed or candidate threatened, endangered and sensitive species. Diversity of species is an important consideration and could in itself lead to a determination of Outstandingly Remarkable.

**Habitat** - The river or area within the river corridor provides exceptionally high quality habitat for wildlife of national or regional significance, or may provide unique habitat or a critical link in habitat conditions for federal or state listed or candidate threatened, endangered and sensitive species. Contiguous habitat conditions are such that the biological needs of the species are met. Diversity of habitat is an important consideration and could, in itself, lead to a determination of Outstandingly Remarkable.

Cultural - Unique wildlife populations or species are known and utilized or have been used in the past by Native American Indians. The resource may be venerated by Native American Indians.

## **Wildlife Description**

### **Populations**

Many species of wildlife can be found along the Upper Deschutes. These include almost all of the Forest Plan Management Indicator Species (MIS): Peregrine falcon, northern bald eagle, northern goshawk, three-toed woodpecker, American marten, osprey, woodpeckers, elk, and mule deer. The river is outside of the historic range of the northern spotted owl the only MIS not found within the river corridor. Management Indicator Species are important because their populations are believed to be influenced by forest management activities and may serve as population and habitat trend indicators for many other wildlife species that utilize the same habitat types.

Sensitive species that may be found along the river are greater sandhill cranes, long-billed curlew, Pacific western big-eared bat, and Prebles shrew. The greater sandhill crane was a regular visitor to Ryan Ranch Meadow until the habitat was altered by draining the meadow and constructing a levee to keep high flows from flooding the meadow.

A multitude of birds reside all year or seasonally along the river corridor. These include about ten species of woodpeckers; ruffed grouse; twenty-nine species of waterfowl, including ducks, coots, geese, and swans; and 72 species of other birds. In addition four pairs of bald eagles and fifteen pairs of osprey nest near the Deschutes River.

Over 68 species of small mammals, including shrews, chipmunks, beaver, bats and mink, inhabit the river corridor while big game such as bear, elk, and deer reside near the river during the summer and some even remain along the Deschutes above Bend during the winter.

### **Habitat**

Wildlife habitat on the Upper Deschutes is largely the product of the condition and interaction of geologic, hydrologic, and vegetative resources. As a consequence of these conditions and interactions wet marshes, dry meadows, willow clumps, aspen clumps, alder, lodgepole pine and ponderosa pines exist as a mosaic of different habitats along the river. Many species of wildlife require more than one of the habitat types found along the river. For many species the river corridor contains only a portion of their habitat needs.

## **Riparian Habitat**

The riparian areas on the forest represent less than one percent of forest habitats but yet contains 128 different species identified within the forest. Riparian habitat on the Upper Deschutes consists of wet and dry land near and affected by the river. Vegetation in riparian areas consists of water dependant and tolerant species such as sedges, rushes, cattails, and willows. These species of vegetation, in turn, provide food and cover for many small mammals, songbirds, waterfowl, amphibians, and reptiles.

Riparian habitat exists in each segment of the river. Fluctuation of river level, however, places limits on the productivity of wet riparian habitat because the dewatering of this vegetation community eliminates an essential element for many riparian inhabiting species and results in the death of many individual animals from microorganisms to amphibians. Dens of bank dwellers become accessible to predators thus increasing the mortality rate of such species as beaver and muskrat. Even the abundant flows of spring creates problems when increasing flows flood waterfowl nests and beaver and muskrat dens. Predators may also be adversely affected if flooding of nests and dens reduce the amount of prey.

Flow related problems in riparian habitat are most significant in Segment 2 where the flow fluctuation is most pronounced. Flow related problems are reduced in Segments 3 and 4 because of accretion from Fall River, the Little Deschutes, and Spring River. However, the seasonal dewatering of much of the riparian habitat limits the productivity in these segments as well. Within Segment 4 dry areas are being inundated with water during the summer season. Conversion of plant species may be occurring.

The productivity of riparian habitat is affected by the presence of recreational users and user trails. The presence of people can adversely affect the behavior of wildlife by interrupting normal feeding, resting, and breeding patterns. People can also destroy of habitat by trampling vegetation and breaking down riverbanks.

The productivity of riparian vegetation is also limited by the direct competition of domestic livestock with wildlife species for forage. This competition has occurred in the past at Tetherow Meadow and is presently occurring near Sunriver on both private and Forest Service land and at Ryan Ranch Meadow.

Finally, the construction of a dike to prevent the flooding of Ryan Ranch Meadow plus the earlier digging of ditches to drain the meadow has affected the species composition and character of the meadow.

Dry, subirrigated meadows (such as the upland portions of Tetherow Meadow) differ from wet marshy meadows because free water is seldom associated with them. Vegetation includes bluegrass and hair grass. Animals which depend upon dry meadows for food and cover

include shrew, mice, and some songbirds. Predators utilizing dry meadows as a dinner table include hawks, owls, coyote, and fox and their diet consists of rodents, reptiles, and amphibians.

## **Forest Habitat**

Some forest habitat is associated with both wet and dry riparian vegetation. When this occurs additional cover is available for ruffed grouse and raccoons. Nesting habitat is also available for species such as wood ducks, heron, and bald eagles which feed in riparian areas but require trees for nesting.

Forest habitat on the Deschutes is characterized by a few stands of predominately ponderosa pine with old-growth characteristics interspersed with dense lodgepole thickets with both old-growth and new-growth characteristics and young ponderosa and lodgepole pine stands which have been thinned by mechanical means.

Old-growth stands provide food and shelter for marten, wood ducks, white-headed woodpecker, and ash-throated flycatchers. The thickets are important sources of shelter and thermal cover for songbirds and big game. Thinned stands provide forage for towhee, kingbird, robins, and chipping sparrows.

These forest habitats are distributed throughout each of the segments except where interrupted by subdivisions. The interruption is most significant in Segment 3 where more than half of the river corridor is privately owned. Development on private property has fragmented and eliminated much of the forested habitat along this segment. This area has historically been a major migration corridor for deer. The development has forced the deer into using other segments of the river or trying to work their way through the developments.

In Segment 4 from the Benham Falls Bridge to Lava Island Falls the river corridor on the east side of the Deschutes is encompassed by the Newberry National Volcanic Monument. Habitat in this area is dominated by the Lava Butte lava flow. It is characterized by occasional trees and openings and provides a unique habitat for such species as pika and marmot.

## **Aquatic Habitat**

Fish constitute an important food source for river otters, mink and birds such as bald eagles, osprey, and kingfishers. Vegetarian species such as plovers, sandpipers, killdeer feed on aquatic vegetation while waterfowl depend largely on aquatic vegetation but may also feed on aquatic wildlife when the opportunity arises. The existing flow regime limits productivity as described in the discussion in hydrology and fisheries. The existing flow regime also restricts the ability of species dependent upon fish to spot their prey because of the restricted visibility resulting from the turbidity of the water during the early irrigation season.

## **Key Elk Habitat**

The Deschutes Land and Forest Management Plan recognizes two Key Elk Habitats adjacent to the river. The Fall River Elk Area lies between Fall River and Pringle Falls on both sides of the river. Ryan Ranch Elk Habitat spans from Sunriver to the Inn of the Seventh Mountain. Though the river corridor consists of only a portion of the habitat utilized by elk, it is an important element because of the reliable water supply, important food sources available in wet and dry meadows, and secure calving areas in thickets and on vegetated islands surrounded by lava flows on the east side of the river in Segment 4.

## **Cultural**

Wildlife of cultural value to Native American Indians may occur along the Upper Deschutes, although no traditional use areas where wildlife was hunted or processed have been identified.

## **Assessment**

Despite the diverse habitats found in each segment the existing flow regime prevents these habitats from being Outstandingly Remarkable. The extent of developed land in Segment 3 limits travel corridors and cover while increasing the probability of harassment of wildlife by domestic pets. Despite these problems existing habitat remains Significant as travel corridors for migrating game animals such as deer and elk.

Because of the number of nesting bald eagles and osprey the wildlife population in Segment 2 is considered to be of regional significance and consequently is an Outstandingly Remarkable Value. Wildlife in Segment 4 is an Outstandingly Remarkable Value due to the great diversity of bird species found within that segment.

Although wildlife species that are known to have been used by prehistoric native American Indians are found in the Upper Deschutes corridor, they are not unique. As a result these specific populations are not Outstandingly Remarkable.

# **CULTURAL RESOURCE VALUE**

## **Criteria for Outstandingly Remarkable**

**Prehistoric** - The river or area within the river corridor contains a site where there is evidence of occupation or use by Native Americans. Sites must have unusual characteristics or exceptional human interest value. Sites may have national or regional importance for interpreting prehistory; may be rare and represent where a culture or cultural period was first identified and described; or may have been used concurrently by two or more cultural groups; or may have been used by cultural groups for rare or sacred purposes. Of particular significance are sites or features listed in, or eligible for inclusion in, the National Register of Historic Places.

**Historic** - The river or area within the river corridor contains a site or feature associated with a significant event, an important person, or a cultural activity of the past that was rare, unusual or one-of-a-kind in the region. A historic site and/or feature in most cases is 50-years old or older. Of particular importance are sites or features listed in, or are eligible for inclusion in, the National Register of Historic Places.

**Traditional Use** - The river or area within the river corridor contains regionally unique locations(s) of importance to Indian tribes (religious activities, fishing, hunting, and gathering). Locations may have unusual characteristics or exceptional cultural value being integral to continued pursuit of such activities. Locations may have been associated with treaty rights on ceded lands or activities unprotected by treaty on ceded lands or in traditional territories outside ceded lands.

## **Cultural Resource Description**

### **Prehistoric Sites**

The Upper Deschutes River corridor was a focal point of activity during the prehistoric period. Evidence from test excavations and information noted in site records clearly shows that people have used the river area intensively for at least 6,000 years. Data from nearby areas has confirmed that human occupation of Central Oregon began as early as 13,000 years ago. There are more than one hundred known prehistoric sites near the river that are eligible for inclusion on the National Register of Historic Places. These open-air lithic scatters, characterized by the presence of obsidian or other stone waste flakes left from the manufacture and maintenance of projectile points, knives, scrapers, etc., are the most common archaeological site along the Upper Deschutes River. These flakes, along with other artifacts which may be present, offer material which can be used to assess technology, trade patterns, chronology, and site functions. In the past these sites were most often described as "seasonal

hunting camps" with little attention paid to other possible functions. Recent testing along the river has shown that many of these sites are much more complex than previously thought. Consequently, their research potential has increased considerably.

In addition to the open-air lithic scatters, a rockshelter site exists near the river. This site was of particular importance because its shelter preserved materials that would have been lost in an open site. In 1981 excavations at Lava Island Rockshelter uncovered a bark-lined storage pit with remnant pine seed remains and fragile bone fragments. In addition, more than 8,000 stone tools and debitage were recovered. Analysis of these materials suggest the shelter was used for at least 2,000 years. A complete recovery of all cultural material was conducted at the site because of vandalism concerns, but the site has provided an excellent interpretation opportunity. It is one of only a handful of interpreted cultural resource sites on the Deschutes National Forest, and the only one within the Upper Deschutes River corridor.

In the most recent pre-immigrant American era the river was inhabited by a number of different groups; however, there is uncertainty as to the cultural boundaries of the peoples who inhabited the area. Ethnographic accounts indicate that gathering and hunting peoples belonging to as many as four language groups may have utilized the area in prehistoric times. These include the Molalla, Sehaptin, Northern Paiute, and the Klamath. These groups moved with the seasons in order take advantages of different food sources available at specific times in specific locations. The Sehaptin and Klamath speakers were semi-nomadic gatherers and hunters who lived in larger bands and typically occupied permanent winter villages. It's generally believed that their seasonal rounds pattern led them from their winter villages located at lower elevations along permanent streams, to the outer regions of their territory during warmer months in search of those resources not available nearer home. The Molalla and Northern Paiute were more nomadic peoples who would typically congregate at particular times of year in variant locations; for much of the year however, they dispersed into smaller, more mobile and resource efficient units.

However, recent studies indicate that the ethnographically recorded activities and populations of Native American Indians may not accurately reflect pre-Columbian conditions. National and regional studies suggest that fully prehistoric populations may have been some twenty times higher than previously believed. These populations may have practiced a much more sedentary lifestyle than that recorded ethnographically. Prehistoric Native American Indian cultures present on the upper Deschutes may have been much more active in the management of natural resources than their historic activities suggest. Populations on the order of several million on the Columbia Plateau would require high levels of organized resource procurement. The population crash precipitated by the Columbian Exchange effectively destroyed these cultures. The societies recorded by early immigrant Americans in the 19th Century were probably very different from those that existed only 200 years earlier.

The archaeological sites on the river offer an exceptional opportunity to study these fully prehistoric settlement/subsistence patterns in Central Oregon, including the use of riverine vs.

non-riverine environments. They also provide an opportunity to study the effects of volcanic activity on settlement and subsistence. Two major volcanic events affected those people occupying the Deschutes corridor. The first of these was the eruption of Mount Mazama about 6,900 years ago. This eruption was catastrophic and may have forced adaptational changes on the local populations. The pumice soils left from the Mazama eruption are significantly different from the underlying paleosol and this provides an identifiable "demarcation" line for separating occupation periods into pre- and post-Mazama chronologies. In addition, the eruption of Lava Butte, about 6,200 years ago, had a major impact on the location of the river and on the environment surrounding it. One example of this is the meadow which exists today at Ryan Ranch. Prior to the Lava Butte eruption, the river occupied a channel well away from this future meadow. After the eruption and during the period in which the river was forging a new channel, a lake formed here. The lake existed for many years before filling with sediments; these sediments eventually left a marsh which existed until the historic period when ditches were dug to drain the marsh and a dike was built to prevent water from leaving the channel. This and other lakeshore environments created specific resource areas that are not in existence today. An understanding of the human reaction to these environmental changes is critical to understanding the prehistoric record. In addition, careful examination of the old versus new river channels in relation to site location will provide excellent clues to the locations of sites which predate the Mount Mazama eruption; these sites then will offer opportunity to find evidence of use along the river well beyond the known 6,000 years.

The Deschutes River corridor was used by Native American Indians until immigrant American settlement disrupted the pattern of use. John C. Fremont notes in his 1845 journal that his group encountered bands of both Nez Perce and Paiute camped around what is known today as the Great Meadow at Sunriver. This meadow was also a lake created during the Lava Butte eruption. Although this area is private property, a Forest Service archaeologist, in cooperation with the Nature Center at Sunriver, was able to do partial surveys of the area in the early 1980's. This survey confirmed that heritage properties do exist in that area.

The river offered many resources favored by humans and the attraction to its banks is clearly evident. Although evidence suggests that anadromous fish species could not migrate to the Upper Deschutes, resident populations of fish would have been available to aboriginal peoples. Elk, bighorn sheep, and antelope would also have been available. In addition to large and small animals, resources invaluable to gathering peoples such as, edible roots and bulbs, and a variety of material for baskets, mats, and clothing should have been abundant.

## **Historic**

The known historic properties within the river corridor reflect a variety of activities which include trapping, irrigation, homesteading, and logging. Most of this activity has left little material remains; that which is most evident is associated with the Shevlin Hixon/Brooks Scanlon railroad logging era (approximately 1915 - 1950's).

The early fur trapping era has left little material evidence but we do know from the journals of Nathaniel Wyeth that he traveled the Upper Deschutes in the winter of 1834-35 in search of fur bearers. His journals are specific enough that we can trace his progress and can pinpoint locations where he camped on his trek. His journals also offer excellent views of the environment through which he was passing and are an exceptional opportunity for interpretation of this early EuroAmerican history.

Other than Wyeth's journals, information on the earliest use of the river by EuroAmericans is scant. Once settlement began the indications are that the river did not have the same focus for early settlers as it did for the prehistoric peoples. Water however, was critical to settlement in Central Oregon and irrigation canals diverted water throughout the area for farming and development. Later use (mid-1910's) seems to have focused on grazing in areas such as Ryan Ranch, and, on logging.

Railroad logging has left both large and small trash scatters associated with camps and railroad grades used for shipping logs to the mill. These sites are the second most numerous site types (after lithic scatters) on the river. The system of grades and associated trash scatters have not been fully recorded and an evaluation of their Register status has not been completed.

In addition, we have limited structural remains of a World War II army training base which stretched along a portion of the river. Known physical remains of Camp Abbot are scant. The one known intact structure is the Officer Quarters, a building located on private property within the Sunriver complex. The building, known today as the Great Hall at Sunriver, is used for many private and public functions. Several bunkers are also known to exist. More extensive survey is needed to fully record the remains of this camp before a formal evaluation of significance can be made.

## **Traditional Use**

It is evident that the Upper Deschutes River has been used by Native American Indians for many thousands of years. Gathering was the primary economic activity for the groups who are known to have used the area and the river, lakes, and marshes that offered abundant plant resources for the people. Resources such as bulbs, berries, grasses, nuts, and tules, were vital to their subsistence. Large and small land animals, fish, and waterfowl would have rounded

out their subsistence needs. In a 1991 visit to portions of the river, Verbena Green, an Elder from the Warm Springs Reservation, identified a number of plant and animal resources which are still available today.

## **Assessment**

As noted earlier, there are more than one hundred known prehistoric sites near the river which are eligible for inclusion in the National Register of Historic Places. The Upper Deschutes River Corridor provides a unique opportunity to investigate prehistoric land use patterns, cultural chronology, and responses to environmental changes such as volcanism. Indications are that the area has been used by more than one group of native peoples; for some it was an area of primary resource exploitation, for others, a travel and/or trade corridor. The remains of these activities have a great potential to add to a regional data base that will allow a more comprehensive view of the past. When viewed as a source of knowledge about human activity the archaeological sites located in the Upper Deschutes River corridor clearly fit the criteria for an "Outstandingly Remarkable Value."

At this time little research has been done on the historic values along the river. This makes it difficult to assess them in terms of the "outstandingly remarkable" criteria. Intensive field survey is needed to identify and record historic properties and, extensive archival research is needed to augment the field data. Until the known properties can be formally evaluated they must be treated as an Outstandingly Remarkable Value and are also protected under guidelines established in the National Historic Preservation Act and the Deschutes National Forest Land and Resource Management Plan.

Similarly our knowledge of traditional uses remains incomplete. Until knowledge of traditional uses is fully developed traditional use should be treated as an Outstandingly Remarkable Value.

# **Scenic Value**

## **Criteria for Outstandingly Remarkable**

The landscape elements of landform, vegetation, water, color and related factors result in notable or exemplary visual features and/or attractions. When analyzing scenic values, additional factors such as seasonal variations in vegetation, scale of cultural modifications, and length of time negative intrusions are viewed may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment.

## **Scenic Resource Description**

An imaginary trip down the Deschutes from Wickiup to Bend is necessary to fully appreciate the Scenic Resource. We will travel in a vessel capable of negotiating virtually impassable falls so that we will not have to portage as would a real voyager. Throughout this 50 mile adventure you will see lodgepole and ponderosa forests; lush wetland and riparian areas; steep, raw cut banks; campgrounds; boat ramps; whitewater; and smooth, flat sections of river. You will also travel through eleven subdivisions that have been developed to various standards. Yet the development of the river corridor is not complete. The level of development you see today will greatly differ from what will be seen in the future.

## **Segment 2**

After carrying our vessel down to the river for our mid summer trip we notice the river is full to the top of the banks and clear and fast as it roars out of Wickiup Dam. As we float down the river the 70 foot high cut banks topped by cinnamon barked ponderosa pines loom above us on one side of the river while lush marsh grass populated with red-winged blackbirds grow on the other side. We surprise mallard ducks and Canada geese as we round hairpin turns. Low lying areas are populated by lodgepole thickets that provide cover for large and small mammals that are often visible early and late in the day near the river. Occasionally we hear and see automobiles and trucks on the roads paralleling the river but because we are lower the roads themselves are seldom visible.

Soon we enter a stretch of the river bounded by private property with houses, stairways down the banks providing access to docks, and even a powerline crossing over the river. Below this stretch of the river the meanders become more pronounced, we pass larger marshes, note nests containing young osprey in the broken tops of large ponderosas and see their parents resting in a nearby tree. We are fortunate to observe a kingfisher dive and emerge with a 6-inch whitefish.

The river makes almost a complete circle around the perimeter of Bull Bend Campground. The raw banks just upstream of the campground suggest that the narrow isthmus connecting the campground to the main bank has a relatively short life expectancy. As we make that observation we note also that the water is now a murky green as the high flow has mined and then transported sediments from the eroding banks.

Passing the white and green buildings of the Pringle Falls Experimental Station the river quickens its pace and we are sucked into the whitewater of Pringle Falls, a half mile of rapids flowing over an outcropping of lava in a landscape created by the river cutting through sedimentary deposits. Public access to these rapids is limited to a view downstream from the Road 43 bridge which crosses the river near the upper end of the rapids. Private land bounds both sides of the rapids with houses on both banks from the bridge to the lower end of the rapids. A small private footbridge crosses the river about halfway down the rapids.

Floating past Pringle Falls campground we enter what appears to be an almost pristine section of the river. In reality there are roads leading to bluffs adjacent to the river. At Tetherow Meadow we disembark to stretch our legs and are intrigued with the unique combination of wet marsh, dry meadow, and mature ponderosa. Tracks of elk and coyote give testimony to the popularity of the Meadow for these species. A pile of cans and broken bottles left in the fire ring, constructed in what is now crushed and pulverized grass only a few feet from the riverbank, give unwanted testimony to the use of this area by people. The track of the road providing access to this site cuts a scar across the middle of the dry portion of the meadow.

The remainder of the trip to La Pine State Recreation Area repeats many of the same experiences we've had except evidence of human activity is present only at Tetherow boat ramp and a couple of user roads which have erased some vegetation from the upper margins of the river bank. The sight of a lunker brown trout rolling on the surface for an unseen tidbit reminds us that we forgot our fishing rod.

### Segment 3

Soon, passing under a powerline heralds our entrance to La Pine State Recreation Area and its 190 camp and picnic sites. Past the developed portion of the recreation area we pass Dead Slough, an old oxbow of the river that the main flow now shortcuts. Soon we enter an area of extensive marshland created by the deposition of sediments into what was once a lake created by the damming of the river by lava which poured out of Lava Butte about 6,000 years ago. Though much of the foreground is natural, houses on the bluffs remind us that much of the next 20 miles of the river is bordered by private property. This area provides one of the few distant viewsheds found along the river. The remaining snow on Mt. Bachelor and other Cascade peaks contrast with the blue sky and green vegetation. We continue to hear songbirds and flush waterfowl on our journey downstream. But we also hear the barking of dogs and the starting of cars. Where the riparian band bordering the river narrows houses are built

closer to the river and docks and decks and lawns replace native vegetation. At one point a house is actually constructed over the river on pilings. The remainder of Segment 3 continues the pattern of intermingling of lush riparian habitat with subdivisions and private lands.

Big River Campground and boat ramp intrudes somewhat into riparian areas. Development is nearly continuous downstream from Big River. Wetland areas occasionally interrupt the vision of houses, docks, and retaining walls. Downstream from Harper Bridge we encounter the first significant blocks of undeveloped land in several miles. On the east side of the river is Sunriver and on the west side is the Deschutes National Forest. On the Sunriver side a steady stream of bicyclists peddle near the river on an asphalt bike. We can also see an airport frequented by aircraft ranging from small private planes to corporate jets. On the forest side, Besson Camp is filled with tents and recreation vehicles. Several anglers are trying their luck. Downstream, development is limited to the Sunriver side. Soon we pass under Cardinal Bridge which provides foot, bike, and horse access to public lands. Expansive houses and condominiums are visible until we reach the north boundary of Sunriver.

## **Segment 4**

Except for two small parcels we leave private property behind as we cross the north boundary of Sunriver and begin our journey through Segment 4 of the river. Though the meanders continue there are no more oxbows. Now the river seems to nudge against the hillsides to the west. The river flows east for a couple of miles to circumvent Benham Butte. Then on the east bank and into the river we note old pilings, the remains of a dock used to take logs out of the river so they could be loaded onto trains for the last part of their journey to the mill. We know that this site is also confirmation that the land to our right is part of Newberry National Volcanic Monument. Soon the Benham Falls picnic area and bridge come into sight. The bridge is a large wooden footbridge constructed where the logging trains used to cross the river. Now a trail begins at the footbridge. It is possible to take the trail that utilizes the old railroad grade to spectacular Benham Falls and, by following user and developed trails, walk all the way to Meadow Camp near the lower end of the Wild and Scenic River Corridor.

Passing the bridge and logjam immediately above it we can hear the rumble of a passing train on the tracks hidden in the lava flow not far away. We note several people walking on the trail/railroad grade. Wet marshy areas again become prevalent but now on the west the hillside rises over 200 feet above the river and to the east raw lava rock interlaced with veins of vegetation dominate midrange views. Cattails dominate the riparian vegetation and the diverse landscape is home to more species of songbirds, waterfowl, and raptors than we can name. A half mile north of the bridge the riparian area narrows between the hillside on the left bank and the lava on the right bank. An ominous roar reaches our ears just as our eyes perceive a dead end in the river. Then we realize that river is making a right turn into a maelstrom of white water. Given the protection of our magical vessel we have the luxury to be able note that the north slope combined with the spray of the falls has created a

microclimate which includes firs and ferns as well as large ponderosa pines spared by loggers of past decades. We also note the rock wall and wood rail overlook from which people using more mundane means of transport can view Benham Falls.

Below Benham Falls the river stairsteps between flatwater and rapids created when lava flows temporarily dammed the river or squeezed the river into the smaller hills and plains to the north of Benham Butte and west of the river. The landscape continues to be dominated by the dramatic contrast of lava flows interspersed with sparse vegetation (which also includes some large old-growth ponderosa) on the east side of the river with the gentle rolling terrain covered with mostly second-growth blackbark ponderosa pine on the west bank. At one point a huge osprey nest is visible in the top of an isolated old ponderosa snag in the middle of the lava flow to the east of the river.

The dominance of the natural landscape is periodically interrupted by dust and pulverized vegetation, restrooms, picnic tables, and campers found at the Slough Camp, Dillon Falls, Aspen Camp, and Lava Island Falls developed recreation sites.

From Lava Island Falls downstream to the Bend Urban Growth Boundary the pattern of flat water alternating with whitewater rapids continues with the rapids becoming the more dominant feature. At Lava Island Falls the presence of human activity becomes progressively more prevalent. The first feature is the Arnold Irrigation District Flume which carries water withdrawn from the river above Lava Island Falls. Just downstream from the beginning of the flume the rimrock on the east side of the river becomes blanketed with residences all the way to the Bend Urban Growth Boundary. Across the river from Meadow Camp and above the rimrock, residences are partially screened by lodgepole and ponderosa pine trees. Below the rimrock, several homes are clearly visible. Several more are under construction or are under permit for construction.

On the west rimrock the first development that comes into view is the Inn of the Seventh Mountain and then the simultaneous presence of the Inn golf course development and Meadow Camp Picnic Area. East of the picnic area the Awbrey Hall Fire burned down to and jumped across the river in 1990. The blackened trunks and barren limbs of the trees within the fire are visible reminders of a fire that destroyed over 30 homes.

The downstream edge of the fire roughly marks the beginning of private land on the left bank of the river. The private land boundary is also the Bend Urban Growth Boundary which marks the boundary of the Federally Designated Wild and Scenic River. The last mile of the river flows within the State Scenic Waterway. This reach is characterized by white water rapids interspersed with pools. Even from the river houses on the rimrock are visible with one house sited between the rimrock and the river.

Despite the apparent ease of our imaginary voyage the vast majority of river users would be required to make several significant portages. Even an expert would require several days to complete this fifty mile trip.

It is important to note that it is often easier to walk down the river from Wickiup Dam to Fall River than to paddle when flows are reduced during the storage season. During this period the scenic quality of the river is vastly different. Though the water is usually clear there simply is not much of it. The reduced water level exposes as much as 3 vertical feet of raw streambanks.

Though the scenic quality of the corridor from the perspective of the river user is of primary importance perhaps as many people view the river from bridges and other motor vehicle accessible access points. Bridges, parallel roads, and roads accessing developed and dispersed recreation sites provide a multitude of viewing opportunities to visitors in the upper portion of the river. In much of Segment 3 road access is limited to bridges as private property limits access for the general public. Downstream of Sunriver public access points are limited by the number of roads provided across public land and in the lower sections by private property. Virtually all of the falls on the river can be viewed after a short walk from a parking area. Many riparian areas can be viewed from automobiles while other require a trip across the river in a canoe, raft or small boat to be viewed closely.

## Assessment

The scenic value of the Deschutes River is primarily within the foreground landscape as viewed from the river, trails along the river, and access roads to the river. The elements of the foreground making the Deschutes River unique are diverse changes as it flows through a variety of landforms and geographical features, many flowering and other riparian plant species, rugged lava flows and rimrock, and abundant wildlife such as eagle and osprey as well as furbearers and larger mammals. Mature stands of ponderosa pine visible from the river and access roads create an important element of the viewing experience on the river.

The river flows through areas that are natural in appearance yet evidence of urban life and development are visible throughout most of the private lands that have been subdivided. Reduction of stream flows during winter has diminished scenic values even more by exposing and undercutting streambanks.

Other features surrounding the river are snow capped peaks, ridges, and volcanic features which have been featured in regional and national publications, numerous commercials, films, and television series have showcased the scenes found along this river. The diverse environmental setting and unusual features attract visitors regionally.

Except for Segment 3 where the level and proximity of private development intrudes on the

scenic quality the mix of geologic, hydrologic, vegetative, and wildlife resources equates to an Outstandingly Remarkable Scenic resource. The scenic value of Segment 3 is Significant because the scenic quality is an important element of the Outstandingly Remarkable Recreational value within this segment.

## **Recreation Value**

### **Criteria for Outstandingly Remarkable**

Recreational opportunities are, or have the potential to be, unique enough to attract visitors from outside the geographical region. Visitors would be willing to travel long distances to use the river resources for recreational purposes. River-related opportunities could include, but are not limited to, sightseeing, wildlife observation, photography, hiking, fishing, hunting, rafting, and boating.

Interpretive opportunities may be exceptional and attract or have the potential to attract visitors from outside the geographical area.

The river may provide or have the potential to provide settings for national or regional usage or competitive events.

## **Recreation Description**

Vacationers and residents alike fish, hike, whitewater raft, canoe, bike, camp, picnic, hunt, photograph scenery, watch wildlife, and ride horses along the Upper Deschutes. These activities are widely publicized and promoted throughout the region and beyond by local businesses and other organizations.

Many visitors are attracted to the accommodations and activities provided by Sunriver and The Inn of the Seventh Mountain. These resorts provide opportunities for their guests to engage in most of the above described activities while also providing first-class accommodations near the Deschutes River. On the other end of the scale is the more primitive and isolated recreation experience available on the east side of the river in the Newberry National Volcanic Monument.

A significant portion of the use of the river from Sunriver downstream results from public use of licensed outfitter guides. The following table compares the number of people utilizing outfitter guides in 1991 and 1993 for the most popular activities.

## People Using Outfitter Guides

|                      | 1989   | 1991   | 1993   |
|----------------------|--------|--------|--------|
|                      |        |        |        |
| <b>Rafting</b>       | 27,179 | 31,450 | 28,249 |
| <b>Canoeing</b>      | 10,478 | 20,780 | 24,566 |
| <b>Other Boating</b> | 1,616  | 1,429  | 1,213  |
| <b>Stables</b>       | 9,271  | 10,362 | 7,179  |

From 1985, the first year for which white water rafting records are complete, through 1989 the amount of commercial use increased from 21,355 to 27,179 with each successive year showing an increase.

## Recreation Use by Segment

### Segment 2 (Wickiup Dam to La Pine State Park)

Several recreational activities are popular within this segment of the river.

Flow-related activities include camping, picnicking, and sightseeing with camping and day use being the predominant activities. Flow-dependent recreation includes fishing and smoothwater boating that usually occur April through October. Angling use has been estimated to be 1,555 angler days on this segment of the river. Power boating is frequently associated with angling. Total boating (powered, non-powered canoes, kayaks and rafts) use is estimated at 933 boater days per year. Four boat ramps provide access for boaters along this segment of the river. Camping opportunities include 2 campgrounds equipped with firepits, picnic tables, and vault toilets. Parallel and spur roads provide access to numerous dispersed sites along the river.

The river below Wickiup Dam is a popular canoeing area. The entire segment can be run in open canoes except for the portage at Pringle Falls (class 4 whitewater). Experienced canoeists may run the short rapids at Tetherow log jam (class 2-3 whitewater, depending on flow level) while novices are likely to portage. The undeveloped portage can be difficult depending on flow conditions. Below Tetherow, the river is smooth flowing.

Most of Segment 2 is closely paralleled by roads or is accessed by spur roads. At the same time except for two subdivisions and a pair of bridges the segment appears relatively unaffected by human impacts. On many weekdays throughout late spring, summer, and early

autumn a float or canoe trip from Pringle Falls campground to La Pine State Recreation Area, can result in the illusion of remoteness and solitude. On weekends other river users and bank-based recreationists can be expected.

Boating activity is largely limited to the irrigation season due to the low flow. Use in this segment is also limited by snow conditions in the winter.

Analysis of data collected in 1990 compares the types of activities occurring in this segment: camping - 50%, sightseeing - 7%, boating - 9%, fishing - 15%, hunting - 2%, and horseback riding - 1%. An estimated 10,368 people utilized the recreation sites surveyed.

### **Segment 3 (La Pine State Park to North Boundary of Sunriver)**

This segment of the river provides a rural setting for recreation experiences. There are many residential developments as well as bridges, powerlines, and roads visible from the river. Access to the river is from Road 200, Big River campground and boat ramp, Harper Bridge, and Besson campground and boat ramp. Numerous hiking, biking, and horse trails across from Sunriver have impacted sensitive meadow and riparian vegetation areas. Canoeing, fishing, and wildlife viewing are popular recreation activities with public access provided at several boat ramps on public lands.

Private land recreation use includes use of boating docks and activities by Sunriver residents and others. A bicycle path follows the river in the Sunriver area with picnic spots and river access points available. Data from a 1992 use study conducted by Sunriver indicates as many as 158,000 bicycle user trips occur along this stretch of the river.

Predominant flow related activities are day use and camping which occur May through October. Year-round use is dependent upon the amount of snow which limits access from nearby destination resorts, Bend, and Highway 97.

Flow-dependent activities are boating and angling. Both motorized and non-motorized boating are popular. Most of the motorized boating is in small, light craft on smooth flowing stretches of the river. Bank and boat angling are also popular. An estimate of 1,790 angler days in the Segment 3 is low because observations were limited to Forest Service land adjacent to the river. Canoeing and other flatwater craft make up a large percentage of boating use. In 1992, the Sunriver marina canoe rentals accounted for over 18,665 visits.

Commercial canoeing from Sunriver occurs during the spring and summer months. All commercial guide permits are restricted to current levels. Non-commercial water activities include canoeing, rafting, and motor boating. The majority of the boating originates at La Pine State Recreation Area, Sunriver, and residential areas along the river. Access is also available at the Big River and Besson Camp campgrounds and boat ramps and Harper Bridge.

In Segment 3 the river user is seldom out of sight and sound of other people, residences, or other forms of development. A sense of solitude is unlikely to develop for more than a few minutes during the late spring, summer, and early autumn period. Where development is limited to bluffs above the river some stretches of undeveloped riparian habitat adjacent to the river provide "islands" of refuge for both the recreationist and wildlife.

Analysis of data collected in 1990 plus commercial-use statistics and data from the 1992 bicycle study indicate the following proportions of recreational activity in this segment: sightseeing - 1 %, boating (all types of watercraft including commercial canoe) - 8.6%, camping - 25%, fishing - 1 %, hiking/biking - 63%, picnic - 1 %, commercial horseback riding - 1 %, and hunting - unknown. The combined use from all sources indicates an estimated 251,000 people per year utilizing this segment of the river though the duration of a visit for over 60% of this total (primarily Sunriver cyclists) may be 1/2 hour or less.

#### **Segment 4 (North Boundary of Sunriver to COID Diversion)**

Below Sunriver the river is fringed with a mixture of volcanic rock and lush riparian vegetation. Because of limited access bank anglers are limited to the few access points between the North Boundary of Sunriver and Benham Falls picnic area. As many as 18,000 people a year travel much of this reach in canoes from the Sunriver Marina. These people depart the river about 2 miles above the Benham Falls picnic area to catch a shuttle bus back to the marina.

From Benham Falls to the Bend Urban Growth Boundary the river becomes punctuated with falls and rapids created by the Lava Butte Lava flow. Kayaks are the most popular watercraft for the more challenging sections of the river between Benham Falls and Lava Island Falls. At Benham Falls the river changes abruptly from class 1 canoe water to a maelstrom of white water as it plunges through a series of lava formations.

The most popular stretch of whitewater is the quarter mile long Big Eddy rapids which is a class 3 whitewater run between Aspen Camp and Lava Island Rapids. This two-mile stretch between put in and take out is run by over 30,000 adventure seeking vacationers and residents utilizing one of 3 commercial rafting services with permits for this segment of the river. Whitewater rafting on this segment is dependent upon irrigation driven flows to provide the thrills these users seek. Natural flows would provide the desired experience only a few days a year.

Most flatwater boating in this section occurs from Slough Camp to the landing at Dillon Falls camp. An easy canoe trip with large sloughs for side trips is available in this stretch of water. The landing at Dillon Falls has a boat ramp and signs warning the danger of Dillon Falls which is a class 5 drop followed by a class 4 series of cascades for about half a mile. The Inn of the Seventh Mountain also operates a pontoon boat from the Dillon Falls boatramp to the base of the rapids below Benham Falls and back.

At Meadow Camp, a popular day-use recreation area, the river becomes calm, with a short class 1 canoeing stretch. Below this area, a demanding kayak run is used by local residents.

In addition to the use of watercraft on the river popular uses on this segment include fishing, camping, hiking, biking, horseback riding, picnicking, and sightseeing. For bikers, hikers, horseback riders, and anglers user trails exist along the entire length of the west side of the river. Conflicts and congestion occur between the bikers, horesback riders, rafting traffic, anglers, and vehicles throughout the area.

From the North Boundary of Sunriver to Lava Island Falls the river corridor is dominated by the natural landscape. Exceptions include power lines crossing the river, two private residences, development related to monitoring flow, recreational development, dispersed recreation sites, spur roads, abandoned railroad grades and other remains of past logging activity. These developments and the presence of other visitors make it is impossible to sustain a sense of remoteness and solitude.

Analysis of data collected in 1990 and more recent commercial-use data indicates the following proportions of use in this segment: commercial rafting - 45%, commercial pontoon boat - 2%, noncommercial boating and rafting 3%, commercial horseback riding - 11%, camping - 6%, picnic - 7%, sightseeing -11%, hiking/horseback riding - 4%, biking - 3%. It is probable that in the interim between the collection of the data and the present that the proportion of use by mountain bikers has increased within Segment 4. An estimated 68,870 visits occur within this segment each year.

The dramatic backdrop of Lava Butte Lava Flow; falls and rapids; abundant wildlife; the heritage resources of Lava Island Rockshelter, railroad grades, and other evidence of past logging activity provide outstanding opportunities for interpretation of cultural and natural history.

## Assessment

From fishing to biking and hiking and whitewater rafting the Upper Deschutes provides the opportunity for vacationers and residents to engage in a wide range of outdoor activities. Because of the range of activities, the variety of interpretive opportunities, and the attraction of the river for vacationers from outside of the region the recreational value of the Upper Deschutes is determined to be an Outstandingly Remarkable.

## Wilderness Value

### Criteria for Outstandingly Remarkable

The Wilderness Act of 1964 established relevant criteria.

*An area of wilderness ... (retains) its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.*

Because of the unique characteristics of river corridors criterion 3 need not be applied.

## Resource Description

From Wickiup to Bend there is no segment of the river corridor that is without persistent signs of human activity. All segments have roads and many have abandoned railroad grades. Many segments have powerlines crossing or paralleling the river. Several segments have large bridges crossing the river. Most segments contain forest stands that have been harvested, thinned, or replanted after fire. The only portions of the river corridor where one cannot hear either automobiles, trucks, or trains is where the crashing of rapids drowns out these sounds of civilization. In addition the river corridor is so narrow that there are few locations that require as much as an hour to walk to from an arterial road. Finally the only stretch of the river where a motor powered boat cannot be legally operated has a significant amount of private development.

## Assessment

The above description of conditions and experiences found on the river is not consistent with the criteria for Wilderness. Consequently Wilderness is not an Outstandingly Remarkable River Value. Because the determination of Wilderness has no necessary relationship to other river values Wilderness is not a Significant River value on the Deschutes River between Wickiup Dam and Bend.

### **III. IDENTIFICATION OF CONGRESSIONAL VALUES**

The Senate Congressional Record is inserted below. The record identified the scenic, recreational, cultural, geologic, wilderness, fish and wildlife as well as historic and botanical values as outstanding within the area of the Deschutes River. The record does not list any outstandingly remarkable values as it did for most other streams. A comparison of the values identified in the congressional record and those identified in this assessment are shown on the following page.

#### **Congressional Record--Senate Deschutes River, Oregon**

*Outstanding scenic, recreational, cultural, geologic, wilderness, fish, and wildlife as well as historic and botanical values exist in this area. The Deschutes flows through a rugged, highly scenic, steep-walled basalt canyon that increases in depth as it proceeds northward. The canyon contains outstanding scenery. Three waterfalls and a wide variety of riparian vegetation also enhance the qualities of the area. Excellent fishing opportunities exist for rainbow, German brown, Dolly Varden and Kokonee. Access is limited in the corridor due to its rugged character. No developed trails exist in the area. A portion of this river segment is located in the Steelhead Falls Wilderness Study Area. This segment contains significant cultural values which include prehistoric rock art sites, rock shelters, and a historic river crossing. Unusual botanical values such as the estes wormwood which is not known to occur anywhere else in the world is located in the area.*

*The lower 100 miles of the Deschutes provides excellent whitewater boating opportunities, and has 12 major rapids. Fishing for wild trout, steelhead and Salmon is considered to be some of the best in the nation*

## VALUE COMPARISON

| RIVER VALUE | CONGRESSIONAL | SEGMENT 2                                | SEGMENT 3                   | SEGMENT 4                      |
|-------------|---------------|------------------------------------------|-----------------------------|--------------------------------|
| GEOLOGIC    | OUTSTANDING   | OUTSTANDINGLY<br>REMARKABLE              | OUTSTANDINGLY<br>REMARKABLE | OUTSTANDINGLY<br>REMARKABLE    |
| HYDROLOGIC  | OUTSTANDING   | SIGNIFICANT                              | SIGNIFICANT                 | SIGNIFICANT                    |
| FISHERY     | OUTSTANDING   | OUTSTANDINGLY<br>REMARKABLE              | OUTSTANDINGLY<br>REMARKABLE | VALUE PENDING<br>FURTHER STUDY |
| VEGETATION  | OUTSTANDING   | SIGNIFICANT                              | OUTSTANDINGLY<br>REMARKABLE | OUTSTANDINGLY<br>REMARKABLE    |
| WILDLIFE    | OUTSTANDING   | OUTSTANDINGLY<br>REMARKABLE              | SIGNIFICANT                 | OUTSTANDINGLY<br>REMARKABLE    |
| Cultural    | OUTSTANDING   | OUTSTANDINGLY<br>REMARKABLE              | OUTSTANDINGLY<br>REMARKABLE | OUTSTANDINGLY<br>REMARKABLE    |
| SCENIC      | OUTSTANDING   | OUTSTANDINGLY<br>REMARKABLE              | SIGNIFICANT                 | OUTSTANDINGLY<br>REMARKABLE    |
| RECREATION  | OUTSTANDING   | OUTSTANDINGLY<br>REMARKABLE              | OUTSTANDINGLY<br>REMARKABLE | OUTSTANDINGLY<br>REMARKABLE    |
| WILDERNESS  | OUTSTANDING   | NOT A VALUE ON THIS PORTION OF THE RIVER |                             |                                |

# APPENDIX A

## Federal Classifications

### **Wild River Areas**

Those areas or sections of rivers that are free of impoundment and generally inaccessible except by trail with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

### **Scenic River Areas**

Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

### **Recreational River Areas**

Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

## State Classifications

Each scenic waterway is classified into one or more of six possible classifications, according to its present level of land development or landscape alterations. The six classifications reflect a range of land uses and development conditions along the river. The standards for acceptable development vary among the six classifications; the goal is to maintain the existing scenic condition of the river. Once the classifications are established for a scenic waterway, proposals for new developments or landscape alterations are evaluated by the standards of acceptable development for that classification.

The six classifications are defined below. The classifications used for the Upper Deschutes River Scenic Waterway are marked with an asterisk (\*).

### **Natural River Area**

Area is accessible only by trail or boat, with primitive, undeveloped riverbanks. Area is managed to preserve and enhance its natural, primitive character.

**Accessible Natural  
River Area**

Area is accessible, but only by unsurfaced roads during dry seasons or railroad; other wise, area is similar to Natural River Area in undeveloped character. Area is managed to protect its undeveloped character.

**Natural Scenic View  
Area**

One riverbank is largely undeveloped, inaccessible, or primitive in character, while the opposite bank is accessible and developed. Because of the difference between the two riverbanks, each riverbank may be classified separately.

**Scenic River Area\***

Area may be accessible by roads, but is largely undeveloped with a natural appearance, except for agriculture and grazing. Area is managed to maintain or enhance it high scenic quality, recreational value, fishery and wildlife habitat; area is largely undeveloped, character is preserved, but agricultural uses are allowed to continue.

**Recreational River  
Area\***

Area is readily accessible by road or railroad, with some agricultural, commercial, and/or residential development along the banks; river may have undergone some impoundment or diversion in the past. Area is managed to allow river-oriented public recreation to continue, to the extent that it does not substantially impair the natural beauty of the scenic waterway or diminish its aesthetic, scientific, recreational, and fish and wildlife values.

**River Community  
Area\***

Area is densely developed, with residential housing or a subdivision. Area is managed to allow development compatible with county zoning and that blends into the surrounding natural landscape. Area is also managed to protect riparian vegetation, and encourage activities that enhance the landscape.

## **APPENDIX B**

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| Don Doyle       | United States Department of Agriculture, Forest Service    |
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| Bob Warren      | State of Oregon, Governor's Forest Planning Commission     |
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| Glenn McDonald  | State of Oregon, State Police                              |
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| Ron Nelson        | Central Oregon Irrigation District                         |
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| Nancy Schlangen   | Deschutes County Commission                                |
| Tom Throup        | Deschutes County Commission                                |
| Brad Chalfant     | Deschutes County                                           |
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| Bruce Ronning     | Bend Metro Parks and Recreation District                   |
| Terry Blackwell   | Former Mayor of Bend                                       |
| Tom DeWolf        | Bend City Commission                                       |
| Suzanne Johannsen | Bend City Commission                                       |
| Steve Stenkamp    | Bend City Commission                                       |
| Katherine Wenick  | Bend City Commission                                       |
| John Wujack       | Mayor of Bend                                              |
| Bob Woodward      | Bend City Commission                                       |
| Anita Powell      | City of Bend                                               |

**Upper Deschutes Wild and Scenic River Citizens Task Force (members not listed above)**

|                |                                               |
|----------------|-----------------------------------------------|
| Eric Schulz    | Water Watch/Oregon Natural Desert Association |
| Chuck Burley   | Northwest Forestry Association                |
| Jim Bussard    | Deschutes Basin Resource Committee            |
| Craig Lacy     | Oregon Trout/Central Oregon Flyfishers        |
| Shirley Walton | Deschutes River Recreational Homesites        |
| Scott Stuemke  | Confederated Tribes of Warm Springs           |
| Tim Koger      | Trail Users                                   |
| Tim Lillebo    | Oregon Natural Resources Council              |
| Susan Prince   | Central Oregon Forest Issues Committee        |

# Appendix D

# PROCEDURE TO EVALUATE WATER RESOURCES PROJECTS

## INTRODUCTION

This paper documents a procedure which can be uniformly and consistently applied by the Forest Service to determine whether proposed water resources projects present a direct and adverse affect to designated wild and scenic river values, and thus would be prohibited under Section 7 of the Wild and Scenic Rivers Act (the "Act"), or whether the projects should be allowed to proceed because they do not meet that threshold.

The procedure also applies to congressionally identified study rivers (Section "5a" rivers), which are afforded interim protection from projects which would affect "free-flow" characteristics in Section 7(b) of the Act. Although not protected from such projects in the Act, rivers identified for study through the land management planning process (Section "5d" rivers) are also afforded protection via agency policy (Forest Service Planning Handbook (1909.12, Chapter 8.12).

The procedure may also be applied to evaluate activities proposed outside a designated or study river corridor to determine if they result in indirect effects that "invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of designation," as referenced in Section 7 (a).

This procedure paper presumes a strict interpretation of what activities would qualify as water resources projects. Water resources projects have been defined in 36 CFR Part 297 as:

"...any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act, or other construction of developments which would affect the free-flowing characteristics of a Wild and Scenic River or study river."

Section 16 (b) of the Act provides a definition of "free-flow" that assists in identification of water resources projects. It states:

"Free-flowing, as applied to any river or section of a river, means existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway."

Therefore, if a proposed activity would affect a river's free-flow, or meet other criteria outlined in 36 CFR 297, it qualifies as a water resources project and the Section 7 procedure defined in this paper can be applied.

## ISSUE

The key issue, assuming that the proposed activity is identified as a water resources project, is whether the project presents a direct and adverse effect on the values for which the river was designated or is being studied (or if a proposed activity is above or below the area, does it unreasonably diminish the scenic, recreational, or fish and wildlife values)?

Lack of a standardized procedure to analyze effects has contributed to the difficulty of making an adequate analysis of water resource projects as required by Section 7, manual direction (FSM 2354), and the Forest Service Handbook (FSH 1909.12, Chapter 8). The balance of this paper describes a standardized analysis procedure that incorporates the following principles:

- a. Effects will be judged in the context of the legislation designating the affected wild and scenic river and the management objectives for the river as defined in the comprehensive river management plan. (In the case of study rivers, effects are judged in the context of relevant Forest Plan standards and guidelines and the potential effect of the activity on the river's eligibility.)
- b. Water resource projects are permissible if the net effect protects or enhances values for which the river was designated or is being studied. Water resource projects are not permitted if they have a direct and adverse effect on such river values. (In the case of study rivers management activities may be carried out provided they would not result in a reduced classification recommendation, and are consistent with other relevant Forest Plan standards and guidelines.)
- c. Permissible water resources projects will, to the extent practicable, maintain or enhance the free flowing characteristics of the river.
- d. Water resources projects may be permitted even though they may have an effect on free flowing characteristics if:
  - (1) the specific purpose of the project is to protect or enhance the values for which the river was designated, restore the natural characteristics of the river, and/or improve the water quality of the river;
  - (2) associated impacts on free flowing characteristics of the river are minimized to the extent practicable; and,
  - (3) the proponent and manager of the project is a federal, state, or local governmental entity.

## PROCEDURE

**Background:** In developing this procedure we recognize that:

- It is necessary to provide a temporal and spatial context for evaluating river related proposals. The wild and scenic river management planning process should result in a clear statement of long term management goals and objectives for free-flow, water quality, riparian areas and floodplains, and the outstandingly remarkable and other significant resource values designated by statute.
- Section 7 and promulgating rules (36 CFR 297) require an analysis of effects associated with a proposed water resources project. The analysis of activities deemed acceptable must clearly demonstrate consistency with management goals and objectives.
- Management of river ecosystems should be designed to achieve management goals and objectives through natural processes and use of techniques that mimic those processes. To insure that long term goals and objectives are met, careful analysis and evaluation of these processes, time scales, and public perceptions is necessary.
- State fish and wildlife agencies share responsibility with the Forest Service for fish and wildlife resources on wild and scenic river's. Identification and evaluation of water resource projects should be coordinated with the States, recognizing and supporting attainment of state fish and wildlife management objectives to the extent they are consistent with the outstanding values for which the river was designated or is being studied.

**Step-by-Step Procedure:** The following procedure is designed to evaluate proposed activities within a wild and scenic river ecosystem. This procedure is not simply one of disclosure. Rather, it is a framework to identify changes in free-flow conditions and evaluate the effects associated with project proposals.

**1) Establish Need and Evaluate Consistency with Management Goals and Objectives.** The first step is to define the need for the proposed activity and make a *preliminary* determination whether the proposed activity is consistent with the management goals and objectives for the river. Management goals provide the standard for evaluation of effects 1/. If the activity does not evidence a compelling need or is inconsistent with the management goals and objectives or other applicable laws (e.g. Wilderness Act, Endangered Species Act, etc.), the project may not be considered further.

---

1/ If management goals and objectives have not been formalized through a river planning process, utilize Forest Plan standards and guidelines and any applicable state fish and wildlife, water quality, or other state agency management plans or policies consistent with identified values, to develop objectives for each of the outstanding river values.

For projects that appear needed to help attain the management goals and objectives, proceed with the following steps. The scope of analysis should be commensurate with the magnitude and complexity of the project proposal. The procedure should be accomplished via an interdisciplinary team with adequate skills for the analysis. Note that each step requires some professional judgement.

**2) Define the Proposed Activity.** Provide an objective description of the proposed activity. The level of detail should be proportional to the scope of the proposed project and should indicate whether the project is isolated or part of a more complex or comprehensive proposal.

- a. project proponent(s)
- b. purpose (clearly describe the need for the project)
- c. location
- d. duration of proposed activities
- e. magnitude/extent of proposed activities
- f. relationship to past and future management

**3) Describe How the Proposed Activity Will Directly Alter Within-Channel Conditions.** Address the magnitude and spatial extent of the effects the proposed activity will have on in-channel attributes. Special attention should be given to changes in features which would affect the outstandingly remarkable and other significant resource values.

- a. What is the position of the proposed activity relative to the stream bed and banks?
- b. Does the proposed activity result in changes in:
  1. active channel location?
  2. channel geometry (i.e. cross-sectional shape or width/depth characteristics)?
  3. channel slope (rate or nature of vertical drop)?
  4. channel form (e.g. straight, meandering, or braided)?
  5. relevant water quality parameters (e.g. turbidity, temperature, nutrient availability)?

**4) Describe How the Proposed Activity Will Directly Alter Riparian and/or Floodplain Conditions.** Address the magnitude and spatial extent of the effects the proposed activity will have on riparian/floodplain attributes. Special attention should be given to changes in features that would affect the outstandingly remarkable and other significant resource values.

- a. What is the position of the proposed activity relative to the riparian area and floodplain?

- b. Does the proposed activity result in changes in:
  - 1. vegetation composition, age structure, quantity, vigor, etc.?
  - 2. relevant soil properties such as compaction, percent bare ground, etc.?
  - 3. relevant floodplain properties such as width, roughness, bank stability or susceptibility to erosion, etc.?

**5) Describe How the Proposed Activity Will Directly Alter Upland Conditions.**

Address the magnitude and spatial extent of the effects the proposed activity will have on associated upland attributes. Special attention should be given to changes in features that would affect the outstandingly remarkable and other significant resource values.

- a. What is the position of the proposed activity relative to the uplands?
- b. Does the proposed activity result in changes in:
  - 1. vegetation composition, age structure, quantity, vigor, etc.?
  - 2. relevant soil properties such as compaction, percent bare ground, etc.?
  - 3. relevant hydrologic properties such as drainage patterns, the character of surface and subsurface flows, etc.?
- c. Will changes in upland conditions influence archeological, cultural, or other identified significant resource values.

**6) Evaluate and Describe How Changes in On-Site Conditions Can/Will Alter Existing Hydrologic or Biologic Processes.** Evaluate potential changes in river and biological processes by quantifying, qualifying and modeling as appropriate.

- a. Does the proposed activity affect:
  - 1. ability of the channel to change course, re-occupy former segments, or inundate its floodplain?
  - 2. streambank erosion potential, sediment routing and deposition, or debris loading?
  - 3. the amount or timing of flow in the channel?
  - 4. existing flow patterns?
  - 5. surface and subsurface flows?
  - 6. flood storage (detention storage)?
  - 7. aggradation/degradation of the channel?
- b. Does the proposed activity affect biological processes such as:
  - 1. reproduction, vigor, growth and/or succession of streamside vegetation?

2. nutrient cycling?
3. fish spawning and/or rearing success?
4. riparian dependent avian species needs?
5. amphibian/mollusk needs?

**7) Estimate the Magnitude and Spatial Extent of Potential Off-Site Changes.** Address potential off-site, or indirect effects of the proposed activity, acknowledging any uncertainties (i.e., a risk analysis).

- a. Consider and document:
  1. changes that influence other parts of the river system.
  2. the range of circumstances under which off-site changes might occur (e.g., as may be related to flow frequency).
  3. the probability or likelihood that predicted changes will be realized.
- b. Specify processes involved, such as water, sediment, movement of nutrients, etc.

**8) Define the Time Scale Over Which Steps 3 - 7 are Likely to Occur.**

- a. Review steps 3 - 7 looking independently at the element of time.
- b. Consider whether conditions, processes and effects are temporary or persistent. That is, attempt to define and document the time scale over which effects will occur.

**9) Compare Project Analyses to Management Goals and Objectives.** Based on the analysis of steps 3-8, identify project effects on achievement, or timing of achievement, of management goals and objectives relative to free-flow, water quality, riparian area and floodplain conditions, and the outstandingly remarkable and other significant resource values.

**10) Section 7 Determination.** Based on the analysis of steps 3-9 document:

- a. effects of the proposed activity on conditions of free-flow, including identification of the measures taken to minimize those effects.
- b. any direct and adverse effects on the outstandingly remarkable and other significant resource values for which the river was designated or is being studied.
- c. any unreasonable diminishing of scenic, recreational, or fish and wildlife values associated with projects above or below the area.

The determination should permit those water resource projects that are consistent with the legislation designating the affected wild and scenic river and the management objectives for the river as defined in the comprehensive river management plan, or in the case of study rivers, the proposed activities would not result in a reduced classification recommendation and is consistent with Forest Plan standards and guidelines. Permissible water resources projects will, to the extent practicable, maintain or en-

hance the free flowing characteristics of the river. Water resource projects that have a direct and adverse effect on designated river values or management objectives are not to be permitted.

It is important to note that water resources projects may be permitted even though they may have an effect on free flowing characteristics if:

- a. the specific purpose of the project is to protect or enhance the values for which the river was designated, restore the natural characteristics of the river, and/or improve the water quality of the river;
- b. the associated impacts on free flowing characteristics of the river are minimized to the extent practicable; and,
- c. the proponent and manager of the project is a federal, state, or local governmental entity.

Include the Section 7 determination as part of the broader NEPA analysis of the proposed activity. See the following section for additional information on the relationship of Section 7 determinations and the NEPA process.

## INCORPORATION OF SECTION 7 DETERMINATIONS IN THE NEPA PROCESS

The Code of Federal Regulations states:

"The determination of the effects of a proposed water resources project shall be made in compliance with NEPA."

The following discussion offers more specific information regarding incorporation of the Section 7 procedure into the NEPA process. It also includes information relating to the decision document and the responsible official.

A proposed water resources project may be an independent project such as watershed or fish habitat restoration or construction of a boat ramp or fishing pier, or part of a larger program that serves a variety of purposes. In either situation, the Section 7 procedure is to be completed as a separate analysis by an interdisciplinary team. For designated rivers (Section 3a) and congressionally identified study rivers (Section 5a), the Section 7 procedure would be explicitly documented in, or appended to the NEPA document, with appropriate reference in the NEPA analysis. Similarly, for rivers identified for study via the land management planning process (Section 5d), an analysis as to the potential effect of a proposed project on free-flow and the outstandingly remarkable values should be incorporated, appended, or available in the analysis file.

The decision document will describe the Section 7 determination for the preferred alternative for a designated or congressionally identified study river. This determination should state whether the proposed project will affect free-flow characteristics, whether it will or will not have a "direct and adverse effect on the values for which the river was designated" (or might be added to the System), or whether proposed projects above or below the area will "unreasonably diminish" those resource values. The Section 7 evaluation may result in identification of water-resources projects which protect, restore or enhance the values for which the river was designated or identified for study. In approval of such projects, the decision notice should clearly indicate that determination.

For study rivers identified via the land management planning process (i.e. Section 5d rivers), utilize the Section 7 procedure with the decision document referencing that an analysis was conducted to evaluate the potential effect of the proposed project on free-flow and the outstandingly remarkable values. Note, that Section 7 is not required for 5d rivers, but agency policy (FSH 1909.12 8.12) provides direction to protect the free-flowing condition and outstandingly remarkable values.

The responsible official differs with the status of the river and whether or not another federal agency is involved. For proposed water resources projects on a 3a or 5a river, in which there is another federal agency "assisting by loan, grant, license or otherwise....," the Regional Forester is the responsible official (reference FSM 2354.04e). If there is no other federal agency "assistance" for a project on a 3a or 5a river, the appropriate line officer signs the decision document. Decision documents for water resources projects on a 5d river are signed by the appropriate line officer.

## **REGIONAL OVERSIGHT**

The Regional Offices are to provide for review of the Section 7 analysis completed for proposed water resources projects. This review process should be coordinated by the Recreation staff group and involve other appropriate staff areas such as fisheries, watershed, engineering, etc. The intent of this oversight is to ensure a consistent approach to the evaluation of proposed water resources projects in wild and scenic rivers. The review is not intended to make the final decision.

## **SUMMARY**

These procedures were developed to analyze projects that have the potential to affect the free-flowing condition and/or outstandingly remarkable values of designated and study wild and scenic river's and determine which projects are consistent with the Act by protecting, restoring, and enhancing those river values. The scope of the analysis will vary with the magnitude and complexity of the proposed activity. The procedure requires interdisciplinary analysis and application of professional judgement within the requirements of the Act.

Examples of projects that would likely be subject to Section 7 analysis include, but are not limited to:

1. Log removal for recreation user safety;
2. Fisheries habitat and watershed restoration and enhancement projects;
3. Bridge and other roadway construction/reconstruction projects;
4. Bank stabilization projects;
5. Recreation facilities such as boat ramps and fishing piers;
6. Activities that require 404 permits from the Corps of Engineers.

# Appendix E

## **Appendix E**

### **Recreational Opportunity Spectrum**

#### **Standards**

##### **ROS-1 Road Access**

- 1a. If, within a segment, the mileage of roads open to motor vehicle travel which parallel the river within the Wild and Scenic Boundary is less than the river miles within that segment the segment may be classified Roaded Natural.
- 1b. If, within a segment, the mileage of roads parallel to the river and open to motor vehicle travel exceed the number of river miles the segment must be classified either Rural or Urban. Roads within a segment classified Urban may be built to a higher standard than those in segments classified Rural.
- 1c. Segments that meet all standards for Roaded Natural may be classified Roaded Natural (Non-Motorized) if motorized travel is not permitted except for specifically approved administrative use. This classification allows for an experience which approximates that which could be found in primitive and semi-primitive settings without the nearly pristine conditions those settings require.

##### **ROS-2 Recreational Sites**

- 2a. If a segment contains not more than 6 developed (camping, picnic, trailhead, and boatramp parking) and dispersed sites per river mile it may be classified Roaded Natural.
- 2b. If a segment contains between 7 and 15 developed (camping, picnic, trailhead, and boatramp parking) and dispersed sites per river mile it may be classified Rural.
- 2c. If a segment contains over 15 developed (camping, picnic, trailhead, and boatramp parking) and dispersed sites per river mile that segment must be classified Urban.
- 2d. Recreation sites may be increased or decreased in order to meet the standards of ROS classifications for a river segment.

##### **ROS-3A Private Property**

- 3a. To be classified as Roaded Natural, a river segment will contain less than 25% private land.
- 3b. To be classified as Rural, a river segment will contain less than 60% private land.
- 3c. If a segment contains in excess of 60% private land the segment must be classified Urban.

Table E-1

### Indicators of ROS Classification for the Upper Deschutes

| Indicator                                        | Roaded Natural<br>Non-Motorized                                                                                                                                                           | Roaded Natural                                                                                                             | Rural                                                                               | Urban         |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------|
| Individual<br>Recreation Sites<br>per river mile | 3-6                                                                                                                                                                                       | 3-6                                                                                                                        | 6-15                                                                                | > 15          |
| Access                                           | No motorized access<br>except for approved<br>administrative uses or<br>designated access<br>points. Roads may be<br>obliterated or closed.<br>Motorized travel not<br>permitted on river | Miles of parallel<br>roads less than river<br>miles in the same<br>segment. Motorized<br>travel permitted on<br>the river. | Miles of parallel<br>roads not restricted.<br>Existing bridges<br>across the river. | Same as Rural |
| Private Land                                     | 5-25 %                                                                                                                                                                                    | 5-25 %                                                                                                                     | 25-60%                                                                              | > 60 %        |

## **Appendix F**

| Species                     | Meadow | Lodgepole<br>Dry | Lodgepole<br>Wet | Ponderosa<br>Pine | Mixed<br>Conifer | Riparian<br>Habitats | Special<br>Habitats |
|-----------------------------|--------|------------------|------------------|-------------------|------------------|----------------------|---------------------|
| American coot               |        |                  |                  |                   |                  | X                    |                     |
| American crow               |        |                  |                  | X                 | X                | X                    |                     |
| American dipper             |        |                  |                  |                   |                  | X                    | X                   |
| American kestrel            |        |                  |                  | X                 | X                | X                    | X                   |
| American pipit (Water)      |        |                  |                  |                   |                  | X                    |                     |
| American robin              |        | X                | X                |                   | X                | X                    | X                   |
| American white pelican      |        |                  |                  |                   |                  | X                    |                     |
| American wigeon             |        |                  |                  |                   |                  | X                    |                     |
| Anna's hummingbird          |        | X                | X                |                   | X                | X                    | X                   |
| Arctic loon (Pacific)       |        |                  |                  |                   |                  | X                    |                     |
| Ash-throated flycatcher     |        |                  |                  | X                 |                  |                      |                     |
| Badger                      | X      | X                | X                | X                 | X                | X                    | X                   |
| Bald eagle                  |        |                  |                  | X                 | X                | X                    | X                   |
| Bank swallow                |        |                  |                  |                   |                  | X                    | X                   |
| Barn owl                    |        |                  |                  | X                 | X                | X                    | X                   |
| Barn swallow                |        |                  |                  |                   |                  | X                    | X                   |
| Barred owl                  |        |                  |                  |                   |                  | X                    | X                   |
| Barrow's goldeneye          |        |                  |                  |                   |                  | X                    | X                   |
| Beaver                      |        |                  |                  |                   |                  | X                    | X                   |
| Belding's ground squirrel   | X      |                  |                  |                   |                  |                      |                     |
| Belted kingfisher           |        |                  |                  |                   |                  | X                    | X                   |
| Big brown bat               |        | X                | X                | X                 | X                | X                    | X                   |
| Black bear                  |        | X                | X                | X                 | X                | X                    | X                   |
| Black rosy finch            |        |                  |                  |                   |                  |                      | X                   |
| Black tern                  | X      |                  |                  |                   |                  | X                    |                     |
| Black-backed woodpecker     |        | X                | X                |                   | X                |                      | X                   |
| Black-chinned hummingbird   |        |                  |                  |                   | X                | X                    | X                   |
| Black-crowned night-heron   |        |                  |                  |                   |                  | X                    |                     |
| Black-headed grosbeak       |        | X                | X                | X                 | X                | X                    | X                   |
| Black-necked stilt          |        |                  |                  |                   |                  | X                    |                     |
| Black-throated gray warbler |        |                  |                  |                   | X                | X                    | X                   |

| Species                    | Meadow | Lodgepole<br>Dry | Lodgepole<br>Wet | Ponderosa<br>Pine | Mixed<br>Conifer | Riparian<br>Habitats | Special<br>Habitats |
|----------------------------|--------|------------------|------------------|-------------------|------------------|----------------------|---------------------|
| Blue grouse                |        | X                | X                | X                 | X                |                      | X                   |
| Blue-winged teal           | X      |                  |                  |                   |                  | X                    |                     |
| Bobcat                     |        | X                | X                | X                 | X                | X                    | X                   |
| Bonaparte's gull           |        |                  |                  |                   |                  | X                    |                     |
| Boreal owl                 |        |                  |                  |                   |                  |                      | X                   |
| Brewer's blackbird         |        |                  |                  | X                 | X                | X                    |                     |
| Broad-footed mole          | X      | X                | X                | X                 | X                |                      |                     |
| Brown creeper              |        |                  |                  | X                 | X                | X                    |                     |
| Brown-headed cowbird       |        |                  |                  | X                 | X                | X                    |                     |
| Bufflehead                 |        |                  |                  |                   |                  | X                    | X                   |
| Bushtit                    |        |                  |                  | X                 |                  | X                    |                     |
| Bushy-tailed woodrat       | X      | X                | X                | X                 | X                | X                    | X                   |
| California ground squirrel | X      |                  |                  |                   |                  |                      |                     |
| California gull            |        |                  |                  |                   |                  | X                    |                     |
| California myotis          |        | X                | X                | X                 | X                | X                    | X                   |
| Calliope hummingbird       |        |                  |                  | X                 | X                |                      | X                   |
| Canada goose               |        |                  |                  |                   |                  | X                    |                     |
| Canvasback                 |        |                  |                  |                   |                  | X                    |                     |
| Cascades frog              |        |                  |                  |                   |                  | X                    | X                   |
| Caspian tern               |        |                  |                  |                   |                  | X                    |                     |
| Cassin's finch             |        | X                | X                | X                 | X                | X                    |                     |
| Chipping sparrow           |        |                  |                  | X                 | X                | X                    | X                   |
| Cinnamon teal              |        |                  |                  |                   |                  | X                    |                     |
| Clark's nutcracker         |        | X                | X                |                   | X                | X                    | X                   |
| Coast mole                 | X      | X                | X                | X                 | X                |                      | X                   |
| Common garter snake        |        |                  |                  |                   |                  | X                    | X                   |
| Common goldeneye           |        |                  |                  |                   |                  | X                    | X                   |
| Common loon                |        |                  |                  |                   |                  | X                    |                     |
| Common merganser           |        |                  |                  |                   |                  | X                    | X                   |
| Common nighthawk           | X      | X                | X                | X                 | X                | X                    | X                   |
| Common poorwill            |        |                  |                  |                   | X                |                      | X                   |
| Common raven               | X      | X                | X                | X                 | X                | X                    | X                   |

| Species                        | Meadow | Lodgepole<br>Dry | Lodgepole<br>Wet | Ponderosa<br>Pine | Mixed<br>Conifer | Riparian<br>Habitats | Special<br>Habitats |
|--------------------------------|--------|------------------|------------------|-------------------|------------------|----------------------|---------------------|
| Common snipe                   |        |                  |                  |                   |                  | X                    |                     |
| Common yellowthroat            | X      |                  |                  |                   |                  | X                    |                     |
| Cooper's hawk                  |        | X                | X                | X                 | X                | X                    | X                   |
| Coyote                         |        | X                | X                | X                 | X                | X                    |                     |
| Creeping vole                  | X      |                  |                  |                   |                  |                      |                     |
| Dark-eyed junco                |        | X                | X                | X                 | X                | X                    | X                   |
| Deer mouse                     | X      | X                | X                | X                 | X                |                      | X                   |
| Double-crested cormorant       |        |                  |                  |                   |                  | X                    |                     |
| Douglas' squirrel              |        | X                | X                | X                 | X                |                      |                     |
| Downy woodpecker               |        |                  |                  |                   |                  | X                    | X                   |
| Dunlin                         |        |                  |                  |                   |                  | X                    |                     |
| Dusky flycatcher               |        |                  |                  | X                 | X                | X                    |                     |
| Eared grebe                    |        |                  |                  |                   |                  | X                    |                     |
| Elk                            | X      | X                | X                | X                 | X                | X                    |                     |
| Ermine                         |        | X                | X                |                   | X                | X                    |                     |
| Eurasian widgeon               |        |                  |                  |                   |                  | X                    | X                   |
| European starling              |        |                  |                  |                   |                  | X                    |                     |
| Evening grosbeak               |        | X                | X                | X                 | X                | X                    | X                   |
| Ferruginous hawk               | X      | X                | X                | X                 | X                | X                    | X                   |
| Fisher                         |        | X                | X                |                   | X                | X                    |                     |
| Flammulated owl                |        |                  |                  | X                 | X                |                      |                     |
| Forster's tern                 |        |                  |                  |                   |                  | X                    | X                   |
| Fox sparrow                    |        |                  |                  |                   |                  | X                    |                     |
| Franklin's gull                |        |                  |                  |                   |                  | X                    |                     |
| Gadwall                        |        |                  |                  |                   |                  | X                    |                     |
| Golden eagle                   |        |                  |                  | X                 | X                |                      | X                   |
| Golden-crowned kinglet         |        | X                | X                | X                 | X                |                      | X                   |
| Golden-crowned sparrow         |        | X                |                  | X                 | X                |                      |                     |
| Golden-mantled ground squirrel |        | X                | X                | X                 | X                | X                    | X                   |
| Gopher snake                   | X      |                  |                  |                   |                  |                      |                     |
| Gray jay                       |        | X                | X                |                   | X                |                      |                     |
| Great blue heron               | X      |                  |                  | X                 |                  | X                    | X                   |

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Deschutes River Corridor Wildlife Species  
Known or Suspected

Page 4

| Species                     | Meadow | Lodgepole<br>Dry | Lodgepole<br>Wet | Ponderosa<br>Pine | Mixed<br>Conifer | Riparian<br>Habitats | Special<br>Habitats |
|-----------------------------|--------|------------------|------------------|-------------------|------------------|----------------------|---------------------|
| Great egret                 |        |                  |                  |                   |                  | X                    |                     |
| Great gray owl              |        | X                | X                |                   |                  |                      | X                   |
| Great horned owl            |        | X                | X                | X                 | X                |                      |                     |
| Greater scaup               |        |                  |                  |                   |                  | X                    |                     |
| Greater white-fronted goose |        |                  |                  |                   |                  | X                    |                     |
| Greater yellowlegs          |        |                  |                  |                   |                  | X                    |                     |
| Green-backed heron          |        |                  |                  |                   |                  |                      | X                   |
| Green-winged teal           |        |                  |                  |                   |                  | X                    |                     |
| Hairy woodpecker            |        | X                | X                | X                 | X                |                      | X                   |
| Hammond's flycatcher        |        | X                | X                | X                 | X                |                      |                     |
| Harlequin duck              |        |                  |                  |                   |                  | X                    |                     |
| Heather vole                |        |                  |                  |                   |                  | X                    |                     |
| Hermit thrush               |        | X                |                  | X                 | X                |                      |                     |
| Hermit warbler              |        | X                | X                |                   | X                |                      |                     |
| Herring gull                |        |                  |                  |                   |                  | X                    |                     |
| Hoary bat                   |        | X                | X                | X                 | X                | X                    | X                   |
| Hooded merganser            |        |                  |                  |                   |                  | X                    |                     |
| Horned grebe                |        |                  |                  |                   |                  | X                    |                     |
| Horned lark                 | X      |                  |                  |                   |                  |                      |                     |
| House finch                 |        |                  |                  | X                 | X                | X                    |                     |
| House mouse                 | X      |                  |                  |                   |                  | X                    |                     |
| House sparrow               |        |                  |                  |                   |                  | X                    | X                   |
| House wren                  |        |                  |                  | X                 | X                | X                    | X                   |
| Killdeer                    |        |                  |                  |                   |                  | X                    |                     |
| Lapland longspur            |        | X                | X                |                   |                  |                      |                     |
| Lark sparrow                | X      |                  |                  |                   |                  |                      |                     |
| Least bittern               |        |                  |                  |                   |                  | X                    |                     |
| Least sandpiper             |        |                  |                  |                   |                  | X                    |                     |
| Lesser scaup                |        |                  |                  |                   |                  | X                    |                     |
| Lewis' woodpecker           |        |                  |                  | X                 | X                |                      | X                   |
| Little brown myotis         |        | X                | X                | X                 | X                | X                    | X                   |
| Long-billed curlew          |        |                  |                  |                   |                  | X                    |                     |

| Species                   | Meadow | Lodgepole<br>Dry | Lodgepole<br>Wet | Ponderosa<br>Pine | Mixed<br>Conifer | Riparian<br>Habitats | Special<br>Habitats |
|---------------------------|--------|------------------|------------------|-------------------|------------------|----------------------|---------------------|
| Long-billed dowitcher     |        |                  |                  |                   |                  | X                    |                     |
| Long-eared myotis         |        | X                | X                | X                 | X                |                      | X                   |
| Long-eared owl            |        | X                | X                |                   | X                |                      | X                   |
| Long-legged myotis        |        | X                | X                | X                 | X                | X                    | X                   |
| Long-tailed vole          | X      |                  |                  | X                 | X                | X                    | X                   |
| Long-tailed weasel        | X      | X                | X                | X                 | X                | X                    | X                   |
| Long-toed salamander      |        |                  |                  | X                 | X                | X                    | X                   |
| MacGillivray's warbler    |        |                  |                  |                   |                  | X                    | X                   |
| Mallard                   |        |                  |                  |                   |                  | X                    |                     |
| Marbled godwit            | X      |                  |                  |                   |                  | X                    |                     |
| Marsh wren                |        |                  |                  |                   |                  | X                    |                     |
| Marten                    |        | X                | X                |                   | X                | X                    | X                   |
| Merlin                    |        | X                | X                | X                 | X                | X                    | X                   |
| Mink                      |        |                  |                  |                   |                  | X                    |                     |
| Montane vole              | X      |                  |                  |                   |                  | X                    |                     |
| Mountain bluebird         |        |                  |                  | X                 | X                | X                    | X                   |
| Mountain chickadee        |        | X                | X                | X                 | X                |                      | X                   |
| Mountain lion             |        |                  |                  | X                 | X                | X                    | X                   |
| Mountain quail            |        |                  |                  | X                 |                  | X                    |                     |
| Mourning dove             |        |                  |                  | X                 |                  | X                    | X                   |
| Mule deer                 |        | X                | X                | X                 | X                | X                    |                     |
| Muskrat                   |        |                  |                  |                   |                  | X                    |                     |
| Mute swan                 |        |                  |                  |                   |                  | X                    |                     |
| Nashville warbler         |        |                  |                  |                   | X                |                      | X                   |
| Night snake               |        |                  |                  |                   |                  |                      | X                   |
| Northern alligator lizard |        |                  |                  | X                 | X                | X                    | X                   |
| Northern flicker          |        |                  |                  | X                 |                  | X                    | X                   |
| Northern flying squirrel  |        |                  |                  | X                 |                  |                      | X                   |
| Northern goshawk          |        | X                | X                | X                 | X                | X                    | X                   |
| Northern harrier          | X      |                  |                  |                   |                  | X                    |                     |
| Northern oriole           |        |                  |                  |                   |                  | X                    | X                   |
| Northern pintail          |        |                  |                  |                   |                  | X                    |                     |

| Species                   | Meadow | Lodgepole<br>Dry | Lodgepole<br>Wet | Ponderosa<br>Pine | Mixed<br>Conifer | Riparian<br>Habitats | Special<br>Habitats |
|---------------------------|--------|------------------|------------------|-------------------|------------------|----------------------|---------------------|
| Northern pocket gopher    | X      | X                | X                | X                 | X                | X                    |                     |
| Northern pygmy-owl        |        |                  |                  | X                 | X                | X                    | X                   |
| Northern saw-whet owl     |        | X                | X                | X                 | X                | X                    | X                   |
| Northern shoveler         |        |                  |                  |                   |                  | X                    |                     |
| Northwestern salamander   |        | X                | X                | X                 | X                | X                    | X                   |
| Norway rat                |        |                  |                  |                   |                  |                      | X                   |
| Olive-sided flycatcher    |        | X                | X                | X                 | X                | X                    | X                   |
| Osprey                    |        | X                | X                | X                 |                  | X                    | X                   |
| Pacific treefrog (Chorus) |        | X                | X                | X                 | X                | X                    |                     |
| Peregrine falcon          |        | X                | X                | X                 | X                | X                    | X                   |
| Pied-billed grebe         |        |                  |                  |                   |                  | X                    |                     |
| Pika                      |        |                  |                  |                   |                  | X                    | X                   |
| Pileated woodpecker       |        |                  |                  | X                 | X                |                      | X                   |
| Pine siskin               |        | X                | X                | X                 | X                | X                    |                     |
| Porcupine                 |        | X                | X                | X                 | X                | X                    | X                   |
| Prairie falcon            |        |                  |                  |                   |                  | X                    | X                   |
| Preble's shrew            |        |                  |                  |                   |                  | X                    |                     |
| Purple finch              |        | X                | X                | X                 | X                | X                    |                     |
| Purple martin             | X      |                  |                  | X                 |                  | X                    | X                   |
| Pygmy nuthatch            |        |                  |                  | X                 | X                |                      | X                   |
| Raccoon                   |        |                  |                  |                   |                  | X                    | X                   |
| Racer                     | X      |                  |                  |                   |                  |                      |                     |
| Red crossbill             |        | X                | X                | X                 | X                |                      |                     |
| Red fox                   | X      | X                | X                | X                 | X                | X                    | X                   |
| Red-breasted merganser    |        |                  |                  |                   |                  | X                    |                     |
| Red-breasted nuthatch     |        | X                | X                |                   | X                |                      | X                   |
| Red-breasted sapsucker    |        |                  |                  | X                 | X                | X                    | X                   |
| Red-eyed vireo            |        |                  |                  |                   |                  | X                    | X                   |
| Red-necked grebe          |        |                  |                  |                   |                  | X                    |                     |
| Red-necked phalarope      |        |                  |                  |                   |                  | X                    |                     |
| Red-tailed hawk           |        |                  |                  | X                 | X                | X                    | X                   |
| Red-winged blackbird      | X      |                  |                  |                   |                  | X                    |                     |

| Species                | Meadow | Lodgepole<br>Dry | Lodgepole<br>Wet | Ponderosa<br>Pine | Mixed<br>Conifer | Riparian<br>Habitats | Special<br>Habitats |
|------------------------|--------|------------------|------------------|-------------------|------------------|----------------------|---------------------|
| Redhead                |        |                  |                  |                   |                  | X                    |                     |
| Ring-billed gull       |        |                  |                  |                   |                  | X                    |                     |
| Ring-necked duck       |        |                  |                  |                   |                  | X                    |                     |
| River otter            |        |                  |                  |                   |                  | X                    | X                   |
| Rock wren              | X      |                  |                  | X                 | X                |                      | X                   |
| Ross' goose            |        |                  |                  |                   |                  | X                    |                     |
| Rough-legged hawk      |        |                  |                  | X                 | X                | X                    | X                   |
| Rough-skinned newt     |        | X                | X                | X                 | X                | X                    |                     |
| Rubber boa             | X      |                  |                  | X                 | X                | X                    |                     |
| Ruby-crowned kinglet   |        | X                | X                | X                 | X                |                      | X                   |
| Ruddy duck             |        |                  |                  |                   |                  | X                    |                     |
| Ruffed grouse          |        | X                | X                | X                 | X                | X                    | X                   |
| Rufous hummingbird     |        | X                | X                |                   | X                | X                    | X                   |
| Rufous-sided towhee    |        |                  |                  |                   | X                |                      | X                   |
| Sandhill crane         |        | X                | X                | X                 | X                | X                    |                     |
| Semipalmated plover    |        |                  |                  |                   |                  | X                    |                     |
| Sharp-shinned hawk     |        | X                | X                | X                 | X                | X                    | X                   |
| Shrew-mole             |        |                  |                  | X                 |                  |                      | X                   |
| Silver-haired bat      |        |                  |                  | X                 | X                |                      | X                   |
| Snow goose             |        |                  |                  |                   |                  | X                    |                     |
| Snowshoe hare          |        | X                | X                |                   | X                | X                    | X                   |
| Snowy egret            |        |                  |                  |                   |                  | X                    |                     |
| Solitary vireo         |        | X                | X                | X                 | X                | X                    | X                   |
| Song sparrow           |        |                  |                  |                   | X                | X                    |                     |
| Sora                   |        |                  |                  |                   |                  | X                    |                     |
| Spotted frog           |        |                  |                  | X                 | X                | X                    | X                   |
| Spotted owl (Northern) |        |                  |                  |                   | X                |                      |                     |
| Spotted sandpiper      |        |                  |                  |                   |                  | X                    |                     |
| Steller's jay          |        |                  |                  | X                 | X                | X                    |                     |
| Swainson's hawk        |        |                  |                  | X                 | X                | X                    |                     |
| Swainson's thrush      |        |                  |                  |                   | X                | X                    |                     |
| Tailed frog            |        |                  |                  |                   |                  | X                    |                     |

| Species                            | Meadow | Lodgepole<br>Dry | Lodgepole<br>Wet | Ponderosa<br>Pine | Mixed<br>Conifer | Riparian<br>Habitats | Special<br>Habitats |
|------------------------------------|--------|------------------|------------------|-------------------|------------------|----------------------|---------------------|
| Three-toed woodpecker (Northern)   |        | X                | X                |                   | X                |                      | X                   |
| Townsend's big-eared bat           | X      |                  |                  | X                 |                  |                      | X                   |
| Townsend's chipmunk                |        |                  |                  | X                 |                  | X                    | X                   |
| Townsend's warbler                 |        | X                | X                | X                 | X                |                      |                     |
| Tree swallow                       |        |                  |                  | X                 | X                | X                    | X                   |
| Trowbridge's shrew                 | X      |                  |                  | X                 | X                |                      | X                   |
| Trumpeter swan                     |        |                  |                  |                   |                  | X                    |                     |
| Tundra swan (Whistling)            |        |                  |                  |                   |                  | X                    |                     |
| Turkey vulture                     | X      | X                | X                | X                 | X                | X                    | X                   |
| Vagrant shrew                      | X      |                  |                  |                   |                  |                      | X                   |
| Varied thrush                      |        |                  | X                |                   | X                |                      |                     |
| Vaux's swift                       |        |                  |                  |                   | X                | X                    |                     |
| Virginia rail                      |        |                  |                  |                   |                  | X                    |                     |
| Warbling vireo                     |        |                  |                  |                   |                  | X                    | X                   |
| Water shrew                        |        |                  |                  |                   |                  | X                    |                     |
| Western flycatcher (Pacific-slope) |        |                  |                  |                   | X                |                      |                     |
| Western gray squirrel              |        |                  |                  | X                 | X                |                      | X                   |
| Western grebe                      |        |                  |                  |                   |                  | X                    |                     |
| Western jumping mouse              | X      | X                | X                | X                 | X                | X                    | X                   |
| Western pocket gopher              | X      | X                | X                |                   |                  |                      |                     |
| Western red-backed vole            |        | X                | X                |                   | X                | X                    |                     |
| Western sandpiper                  |        |                  |                  |                   |                  | X                    |                     |
| Western spotted skunk              |        |                  |                  | X                 | X                |                      |                     |
| Western tanager                    |        | X                | X                | X                 | X                |                      | X                   |
| Western terrestrial garter snake   | X      |                  |                  |                   |                  |                      |                     |
| Western toad                       | X      | X                | X                | X                 | X                | X                    | X                   |
| Western wood-pewee                 |        | X                | X                | X                 | X                |                      |                     |
| White-breasted nuthatch            |        |                  |                  | X                 | X                |                      | X                   |
| White-crowned sparrow              |        | X                | X                | X                 |                  | X                    | X                   |
| White-faced ibis                   |        |                  |                  |                   |                  | X                    |                     |
| White-headed woodpecker            |        |                  |                  | X                 | X                |                      | X                   |
| White-throated swift               |        |                  |                  | X                 |                  | X                    | X                   |

| Species                 | Meadow | Lodgepole<br>Dry | Lodgepole<br>Wet | Ponderosa<br>Pine | Mixed<br>Conifer | Riparian<br>Habitats | Special<br>Habitats |
|-------------------------|--------|------------------|------------------|-------------------|------------------|----------------------|---------------------|
| White-winged crossbill  |        | X                | X                |                   | X                |                      |                     |
| Willet                  |        |                  |                  |                   |                  | X                    |                     |
| Williamson's sapsucker  |        |                  |                  | X                 | X                |                      | X                   |
| Willow flycatcher       |        | X                | X                |                   | X                | X                    |                     |
| Wilson's phalarope      | X      |                  |                  |                   |                  | X                    |                     |
| Wilson's warbler        |        |                  |                  |                   |                  | X                    | X                   |
| Winter wren             |        | X                | X                | X                 | X                | X                    |                     |
| Wolverine               |        | X                | X                | X                 | X                | X                    | X                   |
| Wood duck               |        |                  |                  |                   |                  | X                    | X                   |
| Yellow warbler          |        |                  |                  |                   |                  | X                    | X                   |
| Yellow-bellied marmot   | X      |                  |                  |                   |                  | X                    | X                   |
| Yellow-breasted chat    |        |                  |                  |                   | X                | X                    | X                   |
| Yellow-headed blackbird |        |                  |                  |                   |                  | X                    |                     |
| Yellow-pine chipmunk    |        | X                | X                | X                 | X                | X                    | X                   |
| Yellow-rumped warbler   |        | X                | X                | X                 | X                | X                    | X                   |
| Yuma myotis             |        |                  |                  |                   |                  | X                    | X                   |

**Table 1. Summary list of prominent vascular plant species**  
**Deschutes River from Pringle Falls downstream to Bend irrigation diversion**  
 J. Mastrogiuseppe (Surveyed August-September 1993)

**Aceraceae:**

Acer negundo

**Alismataceae:**

Sagittaria cuneata

**Apiaceae (Umbelliferae):**

Cicuta douglasii

Heracleum lanatum

Osmorhiza purpurea

Sium suave

**Apocynaceae:**

Apocynum androsemfolium

**Asteraceae (Compositae):**

Achillea millefolium

Agoseris glauca

Agoseris heterophylla

Antennaria geyeri

Antennaria rosea

Arnica chamissonis

Arnica mollis

Artemisia ludoviciana cf. var. estesii

Artemisia ludoviciana var. candicans

Artemisia tridentata

Aster campestris var. campestris

Aster eatonii

Aster modestus

Aster occidentalis var. intermedius

Aster occidentalis var. occidentalis

Bidens cernua

Centaurea maculosa

Chrysothamnus nauseosus

Chrysothamnus viscidiflorus

Cirsium arvense

Cirsium vulgare

Erigeron philadelphicus

Gnaphalium microcephalum

Gnaphalium palustre

Haplopappus bloomeri

Helianthus annuus

Hieracium albiflorum

Lactuca serriola

**Asteraceae (cont.):**

Machaeranthera shastensis

Senecio hydrophilus

Senecio triangularis

Senecio vulgaris

Solidago canadensis var. salebrosa

Taraxacum officinale

Tragopogon dubius

**Berberidaceae:**

Berberis pumila

**Betulaceae:**

Alnus incana

Betula glandulosa var. glandulosa

**Boraginaceae:**

Cryptantha affinis

Cryptantha torreyana

Myosotis laxa

Plagiobothrys hispidus

**Brassicaceae (Cruciferae):**

Arabis cf. glabra

Arabis holboellii var. retrofracta

Arabis suffrutescens var. suffrutescens

Barbarea sp.

Lepidium perfoliatum

Rorippa curvisiliqua var. lyrata

**Callitrichaceae:**

Callitriche anceps

Callitriche heterophylla var. bolanderi

Callitriche verna

**Caprifoliaceae:**

Lonicera conjugialis

Lonicera involucrata

Sambucus cerulea

Symphoricarpos albus

**Caryophyllaceae:**

Cerastium vulgatum

Dianthus deltoides

Silene douglasii

Silene menziesii

Stellaria longipes var. altocaulis

**Ceratophyllaceae:**

Ceratophyllum demersum

**Clusiaceae (Hypericaceae):**

Hypericum formosum var. scouleri

**Cornaceae:**

Cornus stolonifera

**Cyperaceae:**

Carex angustata (=C. eurycarpa)

Carex aquatilis var. aquatilis

Carex aquatilis var. dives (=C. sitchensis)

Carex athrostachya

Carex aurea

Carex cusickii

Carex densa

Carex inops ssp. inops (=C. pensylvanica  
var. vespertina)

Carex lanuginosa

Carex nebrascensis

Carex pachystachya

Carex rossii

Carex subfusca

Carex utriculata

Eleocharis acicularis

Eleocharis palustris

Eleocharis pauciflora

Scirpus microcarpus

**Equisetaceae:**

Equisetum arvense

Equisetum fluviatile

Equisetum laevigatum

**Ericaceae:**

Arctostaphylos patula

Arctostaphylos uva-ursi

Chimaphila umbellata

Pterospora andromedea

Pyrola asarifolia var. purpurea

Pyrola dentata

Pyrola secunda

Vaccinium cespitosum

Vaccinium occidentale

**Fabaceae:**

Lathyrus lanszwertzii

Lupinus argenteus var. argenteus

Lupinus argenteus var. heteranthus (=L.  
caudatus)

**Fabaceae (cont.):**

Lupinus lepidus var. aridus

Lupinus polyphyllus

Melilotus alba

Melilotus officinalis

Trifolium arvense

Trifolium longipes

Trifolium pratense

Trifolium wornskioldii

Vicia americana var. truncata

**Fumariaceae:**

Corydalis aurea

**Geraniaceae:**

Erodium cicutarium

**Grossulariaceae:**

Ribes cereum var. cereum

Ribes lacustre

**Haloragaceae:**

Myriophyllum quitense (= M. elatinoides)

**Hydrocharitaceae:**

Elodea canadensis

Elodea nuttallii

**Hydrophyllaceae:**

Phacelia hastata

Phacelia linearis

**Iridaceae:**

Iris missouriensis

**Juncaceae:**

Juncus balticus var. balticus

Juncus ensifolius var. ensifolius

Juncus ensifolius var. montanus

**Lamiaceae (Labiatae):**

Mentha arvensis

Prunella vulgaris

Scutellaria galericulata

Stachys rigida var. rigida

**Lemnaceae:**

Lemna minor

**Liliaceae:**

Lilium washingtonianum

Smilacina racemosa

Smilacina stellata

Veratrum californicum

**Linaceae:**

Linum perenne

**Malvaceae:**

Sidalcea oregana var. spicata

**Onagraceae:**

Epilobium angustifolium

Epilobium glaberrimum var. glaberrimum

Epilobium glandulosum var. glandulosum

Gayophytum diffusum

**Ophioglossaceae:**

Botrychium multifidum

**Orchidaceae:**

Habenaria dilatata var. leucostachys

**Pinaceae:**

Picea engelmannii

Pinus contorta

Pinus ponderosa

**Plantaginaceae:**

Plantago lanceolata

Plantago major

**Poaceae (Gramineae):**

Agropyron caninum ssp. majus

Agrostis exarata ssp. exarata

Agrostis scabra

Alopecurus aequalis

Bromus inermis

Bromus tectorum

Calamagrostis canadensis

Calamagrostis neglecta (= C. inexpansa)

Danthonia intermedia

Deschampsia cespitosa

Elymus glaucus var. glaucus

Festuca occidentalis

Glyceria borealis

Glyceria grandis

Holcus lanatus

Hordeum brachyantherum

Muhlenbergia filiformis

Phalaris arundinacea

Phleum pratense

Poa annua

Poa palustris

Poa pratensis

Sitanion hystrix

**Polemoniaceae:**

Collomia linearis

Ipomopsis aggregata (=Gilia aggregata)

Polemonium occidentale

**Polygonaceae:**

Eriogonum umbellatum var. umbellatum

Polygonum amphibium

Rumex acetosella

Rumex crispus

Rumex occidentalis var. procerus

Rumex salicifolius var. tranguivalvis

**Polypodiaceae:**

Pteridium aquilinum

**Portulacaceae:**

Claytonia perfoliata (=Montia perfoliata)

**Potamogetonaceae:**

Potamogeton epihydrus

Potamogeton gramineus

Potamogeton natans

Potamogeton pusillus

Potamogeton richardsonii

**Ranunculaceae:**

Aquilegia formosa

Ranunculus aquatilis var. capillaceus

Ranunculus repens

**Rhamnaceae:**

Ceanothus velutinus

**Rosaceae:**

Amelanchier alnifolia

Fragaria virginiana

Geum macrophyllum

Horkelia fusca

Potentilla anserina

Potentilla arguta

Potentilla glandulosa

Potentilla gracilis

Potentilla palustris

Potentilla rivalis

Prunus emarginata

Prunus virginiana var. melanocarpa

Purshia tridentata

Rosa gymnocarpa

Rosa woodsii

Spiraea douglasii var. menziesii

**Rubiaceae:**

Galium boreale

Galium trifidum var. pacificum

Kelloggia galioides

**Salicaceae:**

Populus tremuloides

Salix cf. eastwoodiae

Salix geyeriana var. geyeriana

**Saxifragaceae:**

Heuchera chlorantha

Saxifraga oregana

**Scrophulariaceae:**

Castilleja liniariaefolia

Castilleja miniata var. miniata

Mimulus cusickii

Mimulus guttatus

Mimulus nanus

Penstemon cinicola

Penstemon euglaucus

Scrophularia lanceolata

Verbascum thapsus

Veronica americana

Veronica peregrina var. xalapensis

**Typhaceae:**

Typha latifolia

**Valerianaceae:**

Valeriana occidentalis

# Glossary

# Glossary

**Acre-foot** - The volume of water that would cover one acre to the depth of one foot.

**Baseline** - The starting point for analysis of environmental consequences. This may be the conditions at a point in time (e.g., when inventory data are collected) or may be the average of a set of data collected over a specified period of years.

**Boulder** - For fish habitat, a rock over 10 inches in diameter.

**Cavity nesters** - Wildlife species, most frequently birds, that require cavities (holes) in trees for nesting and reproduction.

**cfs** - Cubic feet per second, a measure of the volume of water that flows past a given location.

**Cobble** - For fish habitat, a rock 2.5 to 10 inches in diameter.

**Cover** - Vegetation used by wildlife for protection from predators, or to ameliorate conditions of weather, or in which to reproduce. May also refer to the protection of the soil and the shading provided to herbs and forbs by vegetation.

**Cultural Resources** - The remains of sites, structures, or objects used by people in the past; this can be historic or prehistoric.

**dbh** - diameter at breast height; the diameter of a tree measured 4.5 feet above the ground on the uphill side.

**Dead and down woody material** - All woody material, from whatever source, that is dead and lying on the forest floor.

**Developed site** - An area with facilities specifically constructed for public recreation purposes.

**Developed recreation** - Recreation that requires facilities (buildings, parking, picnic tables, etc.) which, in turn, results in concentrated use of the area.

**Development Level** - A measure of site modification and facility development within a recreation site.

**Development level 3** indicates moderate site modification. Roads may be hard surfaced and trails formalized. Traffic controls are usually inconspicuous. Development density is about three family units per acre.

**Development level 4** indicates a heavily modified site. Some facilities are designed strictly for the comfort of the user. Roads and trails have artificial surfacing. Traffic controls are present and obvious. Development density is three to five family units per acre. Primary access to the site is usually over paved roads.

**Dispersal** - The movement, usually one way and on any time scale, of plants or animals from their point of origin to another location where they subsequently produce offspring.

**Dispersed recreation** - Recreation that does not occur in a developed site.

**Dispersed site** - A user-created recreation site with no facilities.

**Diversity** - The variety, distribution, and abundance of different plant and animal communities and species within an area.

**Ecosystem** - A unit comprising interacting organisms considered together with their environment (e.g., marsh, watershed, and lake ecosystems).

**Endangered species** - A plant or animal that is in danger of extinction throughout all or a significant portion of its range. Endangered species are identified by the Secretary of the Interior in accordance with the Endangered Species Act of 1973.

**Fuels** - Plants and woody vegetation, both living and dead, that are capable of burning.

**Gravel** - For fish habitat, rock 0.08 to 2.5 inches in diameter.

**Guided/outfitted recreation** - Recreation opportunities, typically requiring special skills, knowledge, or equipment, provided to the public for a fee and operated under a special use permit from the Forest Service. Examples: guided whitewater rafting, canoe rentals, etc.

**Habitat** - The place where a plant or animal naturally or normally lives and grows.

**Hazard tree** - A tree which poses a threat to life or property due to its condition or attitude.

**Large Woody Material** - Whole or portions of trees, usually with branches and the root wad attached to the bole, which are at least partially submerged and which provide fish habitat.

**Long-term** - Here, 50-100 years and sometimes beyond.

**Mitigation measures** - Modifications of actions that: 1) avoid impacts by not taking a certain action or parts of an action; 2) minimize impacts by limiting the degree or magnitude of the action and its implementation; 3) rectify impacts by repairing, rehabilitating, or restoring the affected environment; 4) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action; or 5) compensate for impacts by replacing or providing substitute resources or environments.

**Model** - An idealized representation of reality developed to describe, analyze, or understand the behavior of some aspect of it; a mathematical representation of the relationships under study. The term model is applicable to a broad class of representations, ranging from a relatively simple qualitative description of a system or organization to a highly abstract set of mathematical equations.

**Mosaic** - The intermingling of plant communities and their successional stages in such a manner as to give the impression of an interwoven design. or a landscape pattern composed of variably sized and shaped patches of different plant species, ages or stand structures. Mosaics are created and changed by natural disturbances (fire, wind, insects, etc.) or vegetation management.

**"No Wake" Speed** - A boat speed of less than five miles per hour relative to the current.

**Non-commercial recreation** - Recreational activities on Forest Service land which do not involve guides or outfitters.

**Noxious weed** - A plant specified by law as being especially undesirable, troublesome, and difficult to control.

**ATV** - Off-highway vehicle; Any Class I (three wheelers, four wheelers), Class II (4X4s, jeeps), Class III (motorcycles) All-Terrain Vehicle as defined by the State of Oregon.

**Outstandingly Remarkable Values (ORV)** - Attributes of the river and its immediate environment, considered unique and rare on a regional and national level, which qualify the river for protection under the Wild and Scenic Rivers Act. These attributes include scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values.

**Prescribed fire** - The burning of forest or range fuels on a specific area under predetermined conditions so that the fire is confined to that area and fulfills management objectives.

**Recreation Opportunity Spectrum (ROS)** - The land classification system that categorizes land by its setting and the probable recreation experiences and activities it affords, based on access, remoteness, naturalness, facilities,

social encounters, visitor impacts, and visitor management.

**Recreational carrying capacity** - The type and level of visitor use that can be accommodated without substantially diminishing the quality of the recreation experience or the physical environment.

**Rimrock** - (from Deschutes County Zoning Ordinances) Any ledge, outcropping or top or overlying stratum of rock, which forms a face in excess of 45 degrees, and which creates or is within the canyon of the following rivers and streams: 1) Deschutes River; 2) Crooked River; 3) Fall River; 4) Little Deschutes River; 5) Spring River; 6) Paulina Creek; 7) Squaw Creek; and 8) Tumalo Creek. For the purpose of this title, the edge of the rimrock is the uppermost rock ledge or outcrop of rimrock.

**Riparian area** - A geographic area containing an aquatic ecosystem and adjacent upland areas that directly affect it. This includes floodplain, woodlands, and all areas within a horizontal distance of approximately 100 feet from the normal line of high water of a stream channel or from the shoreline of a standing body of water.

**Sensitive habitats** - Include meadows, wetlands, big game winter range areas, big game calving and fawning areas, important ruffed grouse areas, important songbird and waterfowl nesting and foraging areas, and TES wildlife and plant habitats.

**Short-term** - For this report, usually 10 years.

**Snag** - Any standing dead, partially dead, or defective (cull) tree at least 10 inches in diameter at breast height and at least 15 feet tall.

**Snowmobile** - A self-propelled vehicle capable of traveling over ice or snow which uses an endless belt, tread or cleats, or a combination of tread and cleats as its means of propulsion; is steered wholly or in part by skis or sled type runners; and is not registered as any other type of vehicle.

**Spawning gravel** - Pea-size to baseball-size rocks usually located in riffle or tail-outs of pools. Water must flow over and through the gravel to allow for the exchange of oxygen for in incubation of the young fish to be successful.

**Special habitat** - Large trees, snags, down logs, lava, talus, cliffs, duff litter, etc.

**Species** - (1)A group of individuals that have their major characteristics in common and are potentially interfertile. (2)The Endangered Species Act defines species as including any species or subspecies of plant or animal. Distinct populations of vertebrates also are considered to be species under the act.

**Stand** - An aggregation of trees occupying a specific area and sufficiently uniform in composition, age, arrangement, and condition so that it is distinguishable from the forest in adjoining areas.

**Suppression** - All actions undertaken to extinguish or limit fire growth beginning with its discovery.

**Travel corridor** - A route followed by animals along a belt or band of suitable cover or habitat.

**Utilization** - (Grazing) Determined by key forage species which are based on preference by cattle, one to two key forage species are selected to represent the area and each species at the site is compared to the Standards and Guidelines. For grasses and grasslike species utilization is based on percent removed by weight. For shrubs utilization is based on incidence of use (if 50 leaders out of 100 are browsed, utilization is 50%)

**Visual Quality Standards** - Categories of acceptable landscape alteration measured on degrees of deviation from the natural-appearing landscape.

**Wetlands** - Areas that are inundated by surface water or ground water with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that require saturated or seasonally saturated soil conditions for growth and reproduction (Executive Order 11990). Wetlands generally include, but are not limited to, swamps, marshes, bogs, and similar areas.

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## Acronyms

|       |                                                               |
|-------|---------------------------------------------------------------|
| ACHP  | Advisory Council on Historic Preservation                     |
| ARPA  | Archaeological Resources Protection Act                       |
| ATV   | All-terrain vehicle                                           |
| BEMA  | Bald Eagle Management Area                                    |
| BLM   | Bureau of Land Management                                     |
| BMP   | Best management practice                                      |
| BP    | Before present                                                |
| CEQ   | Council on Environmental Quality                              |
| CFS   | Cubic feet per second                                         |
| COID  | Central Oregon Irrigation District                            |
| CTWS  | Confederated Tribes of the Warm Springs Reservation of Oregon |
| DBH   | Diameter at breast height                                     |
| DEIS  | Draft environmental impact statement                          |
| DEQ   | Department of Environmental Quality                           |
| DFC   | Desired future condition                                      |
| DNF   | Deschutes National Forest                                     |
| DSL   | Division of State Lands                                       |
| EIS   | Environmental impact statement                                |
| FEIS  | Final environmental impact statement                          |
| FSM   | Forest service manual                                         |
| HRV   | Historic range of variability                                 |
| IDT   | Interdisciplinary team                                        |
| LWM   | Large woody material                                          |
| MOA   | Memorandum of agreement                                       |
| NEPA  | National Environmental Policy Act of 1969                     |
| NFMA  | National Forest Management Act                                |
| NHPA  | National Historic Preservation Act                            |
| NTU   | Nephelometric Turbidity Unit                                  |
| ODFW  | Oregon Department of Fish and Wildlife                        |
| OHV   | Off-highway Vehicle                                           |
| OPRD  | Oregon Parks and Recreation Department                        |
| ORV   | Outstandingly Remarkable Value                                |
| PETS  | Proposed, endangered, threatened and sensitive species        |
| PMOA  | Programmatic memorandum of agreement                          |
| R     | Rural (ROS category)                                          |
| RN    | Roaded Natural (ROS category)                                 |
| RNA   | Research Natural Area                                         |
| RNNM  | Roaded Natural Nonmotorized (ROS category)                    |
| ROS   | Recreation opportunity spectrum                               |
| S&G   | Standards and guidelines                                      |
| SHPO  | State Historic Preservation Officer                           |
| T&E   | Threatened and endangered                                     |
| TES   | Threatened, endangered, or sensitive species                  |
| TPA   | Trees per acre                                                |
| USFWS | United States Fish and Wildlife Service                       |
| USFS  | United States Dept. of Agriculture - Forest Service           |
| VQS   | Visual quality standard                                       |
| W&S   | Wild and scenic                                               |

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