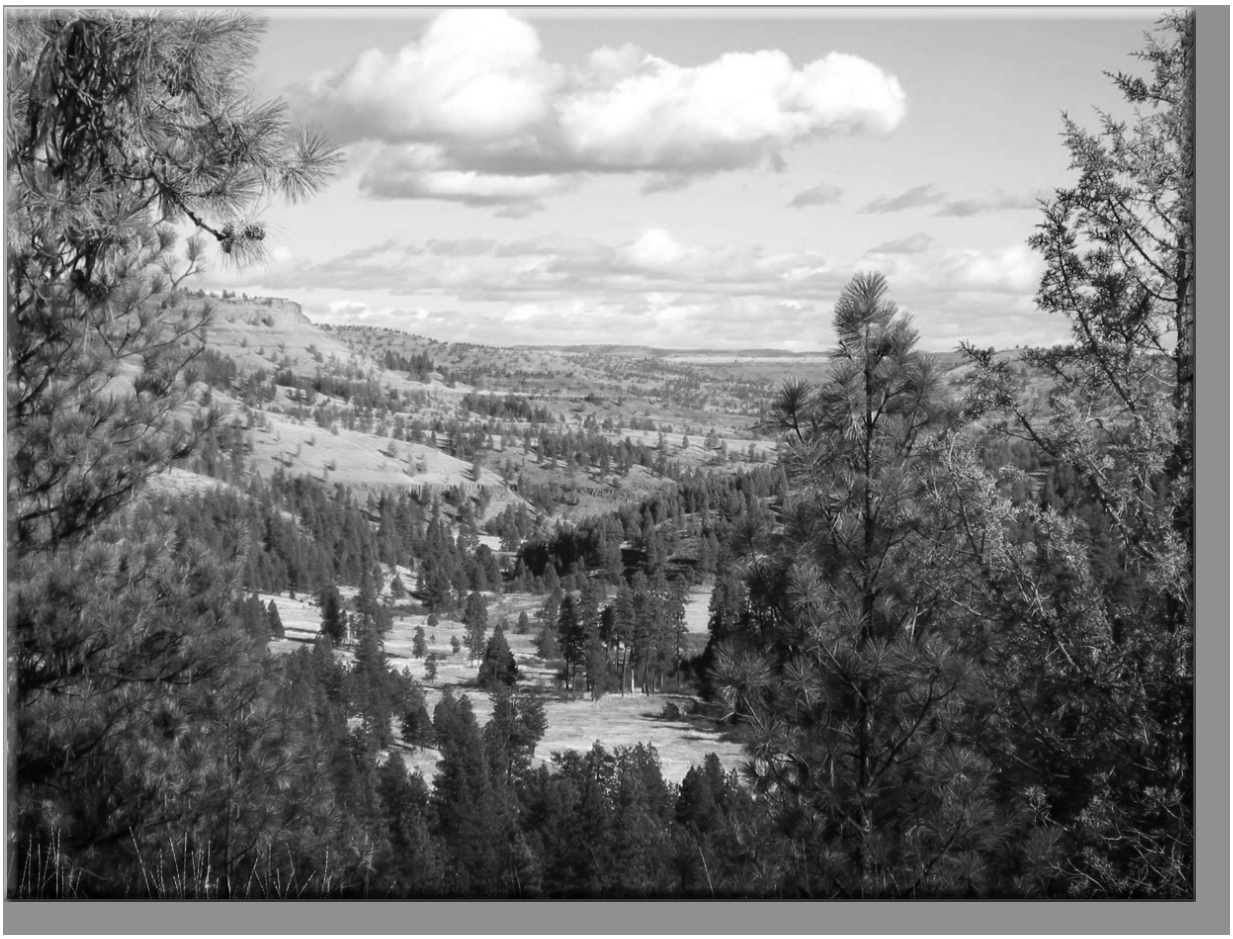
Draft
John Day Basin Resource Management Plan and Environmental Impact Statement
Volume II: Appendices



BLM
Prineville District Office
2008

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

U.S. Bureau of Land Management
John Day Basin RMP
3050 NE 3rd Street
Prineville, Oregon 97754
541-416-6700
Email: John_Day_Basin_RMP@blm.gov
Website: http://www.blm.gov/or/districts/prineville

Privacy

Comments, including names and street addresses of respondents, will be retained on file in the Prineville District Office as part of the public record for this planning effort. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public inspection, or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Appendices

Table of Contents

Appendix A: Planning and Implementation Authorities. A-1
Appendix B: Best Management Practices B-1
Appendix C: Noxious Weed Control Mitigations/Stipulations C-1
Appendix D: Special Status Plants Documented or Suspected on BLM Lands in the John Day Basin Planning Area. D-1
Appendix E: Biophysical Setting Summary E-1
Appendix F: Comparison of Current Vegetation Conditions to the Acceptable Range of Variability F-1
Appendix G: Desired Conditions for Stream Channel Restoration G-1
Appendix H: Special Status Wildlife. H-1
Appendix I-1: Wild and Scenic River Eligibility Inventory I-1-1
Appendix I-2: Documentation of Wild and ScenicRiver Eligibility for the North Fork John Day River I-2-1
Appendix I-3: Wild and Scenic River Draft Suitability Study for North Fork John Day River I-3-1
Appendix J: Grazing J-1
Appendix K: Recreation Management Areas K-1
Appendix L: Existing Rights-of-Way. L-1
Appendix M: Withdrawn Lands M-1
Appendix N: Implementation and Monitoring. N-1
Appendix O: Priority Species Assessment O-1
Appendix P: Common and Scientific Names. P-1
Appendix Q: Wildlife and Vegetation Species associated with Riparian Areas. Q-1
Appendix R: Social and Economic Analysis Methodology R-1
Appendix S: Snags and Salvage. S-1

Appendix A: Planning and Implementation Authorities

This section briefly describes the legal authorities and planning guidance that provide direction for the BLM land use planning process. These, when combined with the purpose and need for action, establish the scope of the land use plan and set the framework for the decisions to be made in the John Day Basin Environmental Impact Statement and Resource Management Plan. This direction may come from several sources, including Congress, the President, or the Legislature. Guidance and information on how to implement these directives and laws are developed by resource management agencies such as the BLM, and the departments that oversee them, such as the Department of the Interior.

The following is a list of the primary legal authorities relevant to the John Day Basin RMP:

1. The *Federal Land Policy and Management Act of 1976* (FLPMA), as amended, 43 U.S.C. 1701 et seq, provides the authority and basic guidance for BLM land use planning. The act mandates that public lands be managed for multiple uses in a manner that protects ecological values, maintains their natural condition and provides food and habitat for wildlife.
2. The *National Environmental Policy Act (NEPA)*, as amended, 42 U.S.C. 4321 et seq., requires the consideration and public availability of information regarding the environmental impacts of major Federal actions significantly affecting the quality of the human environment. This includes the consideration of alternatives and mitigation of impacts.
3. The *Clean Air Act,* as amended, 42 U.S.C. 7418, requires Federal agencies to comply with all Federal, State and local requirements regarding the control and abatement of air pollution. This includes abiding by the requirements of State Implementation Plans.
4. The *Clean Water Act,* as amended, 33 U.S.C. 1251, establishes objectives to restore and maintain the chemical, physical, and biological integrity of the Nation's water. BLM is recognized as a Designated Management Agency responsible for compliance with the Clean Water Act on BLM-administered lands and in so doing must comply with the State of Oregon anti-degradation policy (OAR 340-41-0004). The anti-degradation policy prohibits BLM from degrading water quality in waters of the state.
5. The *Federal Water Pollution Control Act*, 33 U.S.C. 1323, requires the Federal land manager to comply with all Federal, State, and local requirements regarding the control and abatement of water pollution in the same manner and to the same extent as any non-governmental entity.
6. The S*afe Drinking Water Act*, 42 U.S.C. 201, is designed to make the Nation's waters "drinkable" as well as "swimable." Amendments establish a direct connection between safe drinking water, watershed protection, and management.
7. The *Public Water Reserve No. 107* was signed by President Calvin Coolidge on April 17, 1926. The order withdrew certain lands from settlement, location , sale, or entry, and reserved them for public use. The lands withdrawn are those in public ownership at the time of the act, and those with vacant, unappropriated land containing a spring or waterhole, and all land within one quarter of a mile of every spring or waterhole.
8. The *Endangered Species Act* (ESA) of 1973 (16 U.S.C. 1531 et seq., as amended, directs BLM to 1) conserve Threatened and Endangered Species and the ecosystems upon which they depend, and 2) not contribute to the need to list a species.
9. *BLM Manual 6840, Special Status Species Management* provides guidance for meeting the requirements of the Endangered Species Act. This guidance directs the BLM to take actions to progress towards the conditions indicating attainment of the Fundamentals of Rangeland Health (described in 43 CFR 4180.1) and associated Standards (43 CFR 4180.2).
10. The *Sikes Act* of 1974, as amended (16 U.S.C. 670 et seq.), provides for the conservation, restoration, and management of species and their habitats in cooperation with State wildlife agencies.

11. *Bald Eagle Protection Act* 16 U.S.C. §§ 668-668d, June 8, 1940, as amended 1959, 1962, 1972, and 1978: Prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions.
12. The *Pacific States Bald Eagle Recovery Plan* (USFWS 1986) covers the states of Washington, Oregon, Idaho, Montana, Wyoming, California and Nevada. The Plan established recovery population goals, habitat management goals, and 47 management (recovery) zones. The High Cascades and Blue Mountain Zones (zone 11 and 9 respectively) includes the John Day Resource Management Planning Area. The Pacific States Bald Eagle Recovery Plan described specific criteria for the Pacific Recovery Area (PRA) as necessary for delisting.
13. The *Wild and Scenic Rivers Act*, as amended, 16 U.S.C. 1271 et seq., requires the Federal land management agencies to identify river systems and then study them for potential designation as wild, scenic, or recreational rivers.
14. The *Wilderness Act*, as amended, 16 U.S.C. 1131 et seq., authorizes the President to make recommendations to the Congress for Federal lands to be set aside for preservation as wilderness.
15. The *Antiquities Act of 1906*, 16 U.S.C. 431-433, provides guidance for protecting cultural resources on Federal lands and authorizes the President to designate National Monuments on Federal lands.
16. The *National Historic Preservation Act* (NHPA) of 1966, as amended, 16 U.S.C. 470, expands protection of historic and archaeological properties to include those of national, State, and local significance and also traditional cultural properties, and directs Federal agencies to consider the effects of proposed actions on properties eligible for or included in the National Register of Historic Places.
17. The *Archaeological Resources Protection Act of 1979* (ARPA) 16 USC 470, as amended, defines and provides for the protection of archaeological resources on Federal lands, irrespective of eligibility for the National Register of Historic Places, establishes a permit system for resources over 100 years old, and requires agencies to provide for public education and continuing inventory of Federal lands.
18. *Executive Order 11593 of 1971*, directs Federal agencies to inventory public lands and to nominate eligible properties to the National Register of Historic Places.
19. *Executive Order 13287 of 2003* (Preserve America), directs Federal agencies to provide leadership in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of historic properties managed by the Federal Government, and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties, and establishing agency accountability for inventory and stewardship.
20. *Native American Graves Protection and Repatriation Act of 1990*, 25 U.S.C. 3001, establishes rights to Indian tribes and Native Hawaiians to claim ownership and repatriate human remains, and also funerary, sacred, and other objects, controlled by federal agencies and museums. Agency discoveries of such "cultural items" during land use activities require consultation with appropriate tribes to determine ownership and disposition.
21. The *Treaty with the Tribes of Middle Oregon signed June 25, 1855*, ratified March 8, 1859 (14 STAT. 751), reserved rights for the Confederated Tribes of Warm Springs to fish, off-reservation, at usual and accustomed stations and to hunt, gather resources, and pasture animals on public lands in common with other citizens of the United States.
22. The *Treaty with the Walla Walla, Cayuse, Etc., signed June 9, 1855*, ratified March 8, 1859 (12 STAT. 945), reserved rights for the Confederated Tribes of the Umatilla Indian Reservation to fish, off-reservation, at usual and accustomed stations and to hunt, gather resources, and pasture animals on public lands in common with other citizens of the United States.
23. The *American Indian Religious Freedom Act of 1978*, 42 U.S.C. 1996, establishes a national policy to protect and preserve the right of American Indians to exercise traditional Indian religious beliefs or practices including but not limited to access to religious sites. Agencies are to avoid unnecessary interference with traditional tribal spiritual practices. Also, compliance requires consultation with tribes when land uses might conflict with Indian religious beliefs or practices.
24. The *Recreation and Public Purposes Act*, as amended, 43 U.S.C. 869 et seq., authorizes the Secretary of the Interior to lease or convey BLM managed lands for recreational and public purposes under specified conditions.

25. The *Onshore Oil and Gas Leasing Reform Act*, 30 U.S.C. 181 et seq., provides:
    a. Potential oil and gas resources be adequately addressed in planning documents;
    b. The social, economic, and environmental consequences of exploration and development of oil and gas resources be determined; and
    c. Any stipulations to be applied to oil and gas leases be clearly identified.
26. The *General Mining Law*, as amended, 30 U.S.C. 21 et seq., allows the location, use, and patenting of mining claims on sites on public domain lands of the United States. Amendments established a policy of fostering development of economically stable mining and minerals industries, their orderly and economic development, and studying methods for disposal of waste and reclamation.
27. *Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations)*, (49 FR 7629), requires that each Federal agency consider the impacts of its programs on minority populations and low income populations.
28. *Executive Order 13007 of 1996* (Indian Sacred Sites), (61FR104), explicitly does not create any new right for Indian tribes, but does requires Federal agencies to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions to:
    a. Accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners;
    b. Avoid adversely affecting the physical integrity of such sacred sites; and
    c. Maintain the confidentiality of sacred sites.
29. *Executive Order 13175 of 2000 (Consultation and Coordination with Indian Tribal Governments)* provides, in part, that each Federal agency shall establish regular and meaningful consultation and collaboration with Indian tribal governments in the development of regulatory practices on Federal matters that significantly or uniquely affect their communities.
30. *Executive Order 13112 (Invasive Species)* provides that no Federal agency shall authorize, fund or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk or harm will be taken in conjunction with the actions.
31. *Secretarial Order 3206 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act)* requires DOI agencies to consult with Indian Tribes when agency actions to protect a listed species, as a result of compliance with ESA, affect or may affect Indian lands, tribal trust resources, or the exercise of American Indian tribal rights.
32. The *Federal Cave Resources Protection Act of 1988*, 16 USC 4301, requires federal agencies to identify, protect and maintain significant caves. The locations of such caves may be kept confidential. Protection is afforded not only to the geologic structure, but also the associated decorations, inhabitants (including animals and plants, artifacts, and water resources.
33. The *BLM's Interim Cave Management Policy* (Instruction Memorandum No. OR-95-021) provides for the following: Where known or potential adverse impacts from human use to threatened, endangered, and/or sensitive plants or animals … are present … the responsible authorized officer shall act to protect these resources.
34. *Resource Conservation and Recovery Act* (RCRA, Pub. L. 94-580), as amended. In 1976 RCRA established a system for managing non-hazardous and hazardous solid wastes in an environmentally sound manner. Specifically, it provides for the management of hazardous wastes from the point of origin to the point of final disposal (i.e., "cradle to grave"). RCRA also promotes resource recovery and waste minimization.
35. *Executive Order 13212*. "It is the policy of this Administration that executive departments and agencies (agencies) shall take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or conservation of energy."
36. The *Public Rangelands Improvement Act*, 43 U.S.C. 1901, provides that the public rangelands be managed so that they become as productive as feasible in accordance with management objectives and the land use planning process established pursuant to 43 U.S.C. 1712.
37. *Taylor Grazing Act*, 43 USC 315 was passed in 1934 to stop injury to the public grazing lands by preventing overgrazing and soil deterioration, to provide for their orderly use, improvement, and development,

to stabilize the livestock industry dependant upon the public range, and for other purposes. The Act authorizes the Secretary of the Interior to establish or add to grazing districts in vacant unappropriated and unreserved lands from any part of the public domain which are chiefly valuable for grazing and raising forage crops.

38. *Executive Order # 13443 "Facilitation of Hunting Heritage and Wildlife Conservation"* (8/17/07) directs Federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.
39. The Bureau of Land Management, *National Sage-Grouse Habitat Conservation Strategy* (2004) sets broad goals and specific actions to meet the goals for protecting sage-grouse and sage-grouse habitat.
40. The 1995 *Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California* (USDA-FS and USDI-BLM 1995), commonly referred to as PACFISH, provides guidance for managing and monitoring grazing lands adjacent to streams where anadromous fish are present or potentially present.
41. *Oregon Washington Special Status Species Policy*, IM No. OR-91-57, issued 11/5/90, as amended by IM No. OR-91-57 change 1, issued 8/5/91, provides protection for plants which are not federally listed, proposed or candidates, and assigns these species to one of three lists: Bureau Sensitive, Assessment, and Tracking. The policy relies in part on the State of Oregon rules, which includes the Oregon Endangered Species Act, and lists prepared by the Oregon Natural Heritage Data Base.
42. The *Migratory Bird Conservation Act of 1929*, as amended (16 U.S.C. 715) and pertinent treaties, direct BLM to provide for habitat protection and enhancement of protected migratory birds. Subsequent science has documented the reliance of wildlife on riparian vegetation and aquatic habitat that will be used as indicators in the John Day Basin to determine whether desired conditions for wildlife are being met.
43. *Executive Order 13352 of 2004 (Facilitation of Cooperative Conservation)*, directs Federal agencies to implement laws relating to the environment and natural resources in a manner that promotes cooperative conservation, with an emphasis on appropriate inclusion of local participation in Federal decision-making, in accordance with their respective agency missions, policies, and regulations.
44. *Instruction Memorandum No. 2006-114 (BLM participation and support of development of State Comprehensive Wildlife Strategy development)*, directs the Bureau of Land Management (BLM) State Directors, District and Field Managers to consider State Wildlife Action Plans (also known as Comprehensive Wildlife Conservation Strategies) in land use and conservation planning on BLM-administered lands.
45. *Wild Horse and Burro Act of 1971*, as amended, gave responsibility for the management and protection of these animals to the U.S. Department of the Interior to be administered by the BLM and to the Department of Agriculture to be administered by the Forest Service.
46. *Executive Order 11644* (37 FR 2877), on February 8, 1972, provided that OHV use will be controlled and managed to protect resource values, promote public safety and minimize conflicts with uses of public lands. This executive order directed federal agencies to designate specific areas and trails on public lands where OHV use may be permitted and areas where OHV use may not be permitted.
47. On May 24, 1977, President Carter amended this order with *Executive Order 11989*. This executive order further defined OHV, administrative use exemptions, and directed agencies to immediately close areas and trails whenever the agency determines that the use of OHV will cause or is causing considerable adverse effects on the soil, wildlife, and wildlife habitat, cultural or historic resources (42 USC 4321).
48. The Bureau of Land Management's *National Management Strategy for Motorized Off-Highway Vehicle Use on Public Lands* (2001) provides agency guidance and offers recommendations for future actions to improve motorized vehicle management.
49. The *Federal Noxious Weed Act of 1974*, as amended (7 U.S.C. 2814) provides for the designation of a lead office and a person trained in the management of undesirable plants; establishment and funding of an undesirable plant management program; completion and implementation of cooperative agreements with State agencies; and establishment of integrated management systems to control undesirable plant species.
50. The *Carlson-Foley Act* (PL 90-583 codified in 43 USC 1241) establishes legal guidance and responsibility for the management of weeds on federal lands. This law authorizes federal agencies to allow states to take weed control measures on federal lands.

51. *Oregon Land Exchange Act of 2000*, as described in Chapter 1, requires that "lands acquired…within the North Fork of the John Day subwatershed be managed primarily for the protection of native fish and wildlife habitat, and for public recreation but that other authorized uses may be allowed if, through a land use planning process, it is determined that such uses are consistent with, and do not diminish the primary management purposes."
52. *BLM planning regulations* (43 CFR 1610.4-3 and 1610.4-6) require that resource management plans consider social, economic, and institutional information.
53. *Federal Wildland Fire Management Policy 2001* provides strategic direction for a broad range of fire management related activities.
54. *43 CFR 4100* Regulations provide uniform guidance for administration of grazing on the public lands exclusive of Alaska.
55. The *BLM Handbook 4100, Grazing Administration, Oregon/Washington Supplement Release 4-107*; provides guidance for adjusting livestock grazing during periods of drought conditions.
56. *Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the Bureau of Land Management in the States of Oregon and Washington* (USDI-BLM, 1997) provides direction to promote healthy sustainable rangeland ecosystems, restore and improve public rangelands and to provide sustainable resources to support the livestock industry.
57. *Executive Order No. 13186* directs the BLM to protect, restore, enhance and manage habitat of migratory birds and prevent the loss or degradation of remaining habitats on BLM managed lands.
58. The *Soil and Water Resources Conservation Act of 1977* (16 U.S.C. 2001) provides for conservation, protection and enhancement of soil, water, and related resources.
59. The *Floodplains and Wetlands Executive Orders 11990 and 11988* require BLM to avoid adverse impacts to floodplains and wetlands.
60. The *Migratory Bird Treaty Act* (16 U.S.C. §§ 703-712, July 3, 1918, as last amended in 1989) directs federal agencies to substantially address source habitats and species of focus.
61. *Instruction Memorandum No. 2008-050* provides interim guidance to enhance coordination and communication toward meeting the Bureau of Land Management's (BLM) responsibilities under the Migratory Bird Treaty Act (MBTA) and the Executive Order (EO) 13186. This interim management guidance establishes a consistent approach for addressing migratory bird populations and habitats when adopting, revising, or amending land use plans and when making project level implementation decisions until a national Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service (FWS) is established.
62. *BLM manual sections 8270 and 8270-1* provide direction for management of paleontological resources.
63. The *BLM OR/WA strategy document for managing vertebrate fossil resources* (Martin 1995).
64. *Agreement No. IA9325-8-0001*, as amended, for co-management of fossil resources with the National Park Service (NPS), between John Day Fossil Beds National Monument and Bureau of Land Management Prineville District, Burns District, Vale District, Lakeview District).
65. *BLM Manual Series 8100, Cultural Resource Management*.
66. *Memorandums of Understanding (MOU)* between the Oregon/Washington BLM and a) the Confederated Tribes of the Umatilla Indian Reservation, b) the Confederated Tribes of the Warm Springs Reservation of Oregon, and c) the Burns Paiute Tribe address the appropriate level and timing for consultation, as well as other coordination issues between these tribes and the BLM.
67. *ORS 390.835(2)* sets rules for dredging in State Scenic Waterways. This law requires a permit for any dredging, regardless of the amount, from the Oregon Division of State Lands (ODSL). In other waters, a permit is required only for movement of more than 50 cubic yards. Also, suction dredging in SSWs may not: (a) divert a waterway or obstruct fish passage; (b) include nozzling outside the wet perimeter; (c) move boulders or logs from the wet perimeter, except by hand; (d) disturb any woody plants; (e) excavate from the streambank; (f) fail to level pits and furrows outside the main channel; (g) occur without a ODEQ discharge permit; (h) occur on federal lands without permission; (i) impede boating; (j) operate within 500 feet of a home or campground between 6 pm and 8 am; or, (k) operate within posted swimming areas.

68. *43 CFR 3809* regulates mineral exploration and development on public land is to prevent unnecessary and undue land degradation.
69. BLM management is largely guided by the DOI Strategic Plan (2007 to 2012). Mission Goal Number One is to "Protect the nation's natural, cultural, and heritage resources to "improve health of watersheds, landscapes, and marine resources that are DOI managed or influenced, consistent with obligations and state law regarding the allocation and use of water." The first performance goal to measure success toward achieving this outcome is "to achieve desired conditions on 90% of DOI managed stream/shoreline miles where condition is known and as specified in management plans by 2012." This is measured annually by accounting for a the miles of stream/shoreline achieving PFC.
70. Those waters and substrates necessary for salmonid fish spawning, breeding, feeding, or growth comprise Essential Fish Habitat (EFH). All streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to salmonids in the plan area are designated EFH for affected salmonid stocks with management plans. The exceptions are habitats above Izee Falls and headwater areas where flow limits salmonid distribution (Magnuson-Stevens Act amended, 1996).
71. 43 CFR 8340 regulates Off-Road Vehicles. Subpart 8340 (Off-Road Vehicles) defines OHV and Open, Limited and Closed areas and defines spark arrestor. Subpart 8341 (Conditions of Use) defines regulations governing use of OHVs on public lands and lists special rules restricting OHV use and its effects on resource values. Subpart 8342 (Designation of Areas and Trails) lists area and trail designation criteria, procedures, and changes. Subpart 8343 (Vehicle Operations) lists vehicle operation standards, including noise restrictions, and permit requirements for certain types of OHV use.

Appendix B: Best Management Practices

Introduction B-1
General BMPs B-2
Fire and Fuels B-9
Vegetation Management B-12
Recreation B-34
Roads, Trails, and Landings B-35
Mining B-41
Lands and Realty B-43
Monitoring and Other Activities B-44

Introduction

Best management practices (BMP) are those land and resource management techniques designed to maximize beneficial results and minimize negative impacts of management actions. The BMPs described in this appendix are designed to assist in achieving the objectives outlined in Chapter 2 Alternatives. Some of the BMPs listed below come from laws or regulations, and are thus mandatory. Others are policies or guidelines based on current technology and science, and will therefore change as we find new ways to accomplish actions, and learn new information about effects of actions.

Interdisciplinary site-specific analysis may be necessary to determine which management practices would be necessary to meet specific objectives. Modifications of BMPs may be necessary, on a site-specific basis, to minimize the potential for negative impacts, and to reflect changes in BLM regulations, policy, direction, or new scientific information. In order to meet resource objectives, an interdisciplinary team may add new BMPs or modify existing BMPs when evaluating site specific management actions

The BMPs below are sorted by activity type (roads, timber). There is some repetition of BMPs between sections. This appendix does not provide an exhaustive list of BMPs; for example, we have not re-printed guidance from ICBEMP. The BMPs listed below may be updated through annual plan maintenance as new information becomes available. These guidelines apply, where appropriate, to all use authorizations, including BLM-initiated projects.

General BMPs

Any project or soil disturbing activity

S1, S3, AQ9, AQ3, AQ7, L1, AQ6	Retain or promote infiltration, permeability, and soil moisture storage.
S1, S3, AQ5, AQ3, AQ6, L1	Minimize soil loss and sediment delivery that is in excess of natural disturbance processes.
S1, S3, L1, W4, V1	Maintain or restore nutrient cycling and energy flow.
V2	Conduct botanical inventory for the presence/absence of special status plants prior to all project implementation. Inventory would be conducted during the season(s) appropriate for species identification, allowing for occupied plant habitat to be identified, flagged and protected as needed.
V2	Surface-disturbing activities (i.e. control lines, access routes, helipads, etc.) would be located outside special status plant habitat.
V2	Monitor special status plants and their habitat as needed, based on: threats to site; whether site is within special management area or other designation; the legal status of species; and potential effects of a management action.
V2	As time allows, conduct purposeful inventory (i.e., not related to project clearance) for special status plants in likely habitat that has not been previously surveyed.
V1, V4, AQ7, A10, S3	All contractors and land-use operators moving surface-disturbing equipment in or out of weed infested areas should clean their equipment before and after use on public land.
V1, V4, AQ7, A10, L1, S3	Control weeds annually in areas frequently disturbed such as gravel pits, recreation sites, road sides, livestock concentration areas.
V1, V4, AQ7, A10, L1, S3	Consider livestock quarantine, removal, or timing limitations in weed infested areas.
V1, V4, AQ7, A10, AG1, S3	All seed, hay, straw, mulch, or other vegetation material transported and used on public land weed-free zones for site stability, rehabilitation or project facilitation should be certified-by a qualified Federal, State, or county officer as free of noxious weeds and noxious weed-seed. All baled feed, pelletized feed and grain transported into weed-free zones and used to-feed livestock should also be certified as free of noxious weed seed.
V1, V4, AQ7, A10, S3, W8	It is recommended that all vehicles, including off-road and all-terrain, traveling in or out of weed infested areas should clean their equipment before and after use on public land.
V1, V4, AQ7, A10, W2, WN1	In crucial wildlife habitats major construction and maintenance work will be scheduled to avoid or minimize disturbance to wildlife. Areas disturbed during project construction will be reseeded with a mixture of grasses, forbs and shrubs to meet site specific needs or habitat requirements.
W1, FU2	Vegetation manipulation and revegetation projects in crucial wildlife areas will be designed to create a vegetation mosaic.
AQ13, AQ9, AQ6, W7, W8	Maintain adequate untreated peripheral zones around important moist-sites (i.e., wet sedge meadows, springs, riparian zones).

General BMPS - any project or soil disturbing activity (cont.)

W5	Maintain adequate thermal and security cover on deer and elk habitat, particularly within timber stands adjacent to primary winter foraging areas.
VR1, WSR1, AC7, AC8, AC9, AC13	Consider the effects on visual values (complete VRM contrast rating) from all new surface disturbing activities.
AQ9, AQ5, V5, AQ6, S3, W8	Locate ground disturbing activities and facilities away from hydric soils and wetlands. Ground altering activities should not degrade conditions beyond which 5 or more years are necessary to recover soil compaction and restore the local native vegetation and sediment regime. Five years is the interval in which TMDLs are updated.
AQ9, AQ5, V5, AQ6, S3, W5	Prohibit actions (except to the minimum extent determined by ID team) that compact hydric or wetland soils, reduce site potential vegetation and thermal cover, and alter hydrology (e.g., infiltration). Use plantings and manage for obligate, facultative, or wetland species around degraded riparian/wetland sites.
W5	In areas of important big game habitat, consultation with the wildlife biologist will be necessary to reduce impacts on wildlife, particularly in areas such as ridgelines, saddles, and upper drainage heads.
W5, W4	Consult with ODFW prior to undertaking major construction, and/or surface disturbing activities in high value wildlife habitats.
VR1, W1, FU1	Design sagebrush control projects using irregular patterns and untreated patches to provide for optimum edge effect for visual and wildlife considerations. Coordinate layout and designs are coordinated with the Oregon Department of Fish and Wildlife.
W4, W5, W8, AQ3	Avoid major activities in ridges, saddles, and upper drainage heads.
AQ3, AQ13, AQ9, AQ10, W4, W8, S3	Retain vegetation on cut slopes unless it poses a safety hazard or restrict maintenance activities. Roadside brushing of vegetation should be done in a way that prevents disturbance to root systems and visual intrusions (such as avoid using excavators for brushing).
S3, W4, W5, AQ6	Abandon and rehabilitate roads no longer needed
S3, W4, W5, AQ7	Disturbance from rights-of-way and/or disturbance in utility corridors use areas adjoining or adjacent to previously disturbed areas, rather than traverse undisturbed communities.
AC1, WSR1, S1, S3, VR1	Cutting areas would be shaped and designed to blend as closely as possible with natural terrain and landscape minimizing the effect on total forest vistas. Consideration will be given to future harvesting, impacts of road construction and other relevant factors.
W4, V1	In forest and woodland management activities, retain a minimum of 10% of live trees per acre including dominants in regeneration harvest units, unless this conflicts with other wildlife or resource management objectives. The density, composition, condition, size classes and spatial distribution of the retained trees varies according to management objectives, stand and site conditions, and other constraints. These trees are not to be counted toward future snag recruitment.
S3, AQ1, AQ3, AQ5, AQ6, T4-6	Install waterbars and seed all constructed fire lines with native or adapted nonnative species as appropriate.
W1, L1, L3	Range developments will be designed to achieve both wildlife and livestock grazing management objectives.
AQ8, W8, WSR1	As springs are developed, fence to protect water source and areas where significant overflow from troughs occurs to protect riparian vegetation.

General BMPS - any project or soil disturbing activity (cont.)

W1, W4, W7, VR1, VR3	Sagebrush control projects are designed using irregular patterns and untreated patches to provide for optimum edge effect for visual and wildlife considerations.
AQ11, W8	Locate fences so that they do not confine or concentrate livestock near the riparian zone.
W4, W5, W7, W8	Do not approve human disturbance in excess of base levels that were occurring in 2001 (e.g. snowmobile, prescribed burning, automobile traffic, camping, hunting, firearm use, low level aircraft operation below 2,500 feet, recreational events) within ¼ mile non line-of-sight or ½ mile line-of-sight (1.0 mile for blasting) of known bald eagle nests between January 1 and August 31. This condition may be waived in a particular year if nesting or reproductive success surveys reveal that bald eagles are non-nesting or that no young are present that year. Waivers are valid only until January 1 of the following year.
W4, W5, W7, W8	Project activities that have potential to disturb bald eagle winter roosts, shall be restricted within 400 m of the roosting area from November 1 to April 30.
W4, W5, W7, W8	Where bald eagle nests are blown from trees during storms or are otherwise destroyed by the elements, continue to protect the site in the absence of the nest for up to three (3) complete breeding seasons.
W4, W5, W7, W8	In bald eagle habitat, a biological evaluation will be conducted or reviewed by a journey-level biologist to determine if the use of the area by eagles is incidental or essential.
W4, W5, W7, W8	If it is determined to be essential bald eagle habitat, protect it from adverse modification through curtailment of conflicting activities, modification of activities, seasonal restriction of activities, or avoidance of the area.
W4, W5, W7, W8	In bald eagle habitat, Predator and rodent control using baited traps and/or poisons should not take place within 1 mile of an active bald eagle nest or ¼ mile of a known roost.
W4, W5, W7, W8	In bald eagle management areas and essential habitat, fuel wood cutting and gathering will not be permitted, unless a site specific review determines that it is necessary to promote desired future habitat conditions for bald eagle and other desired wildlife species. If fuel wood cutting is deemed necessary to promote habitat conditions, then the following protective measures will be implemented: a) sign cut unit boundary prior to the fuel wood cutting season; b) down or standing fuel wood will not be cut and gathered within ¼ mile of the nest between January 1 and August 31 if a bald eagle nest is active; down woody material may be gathered outside of the nesting season; c) no standing dead tree greater than 16 inches dbh shall be cut or removed within 500 meters (i.e., 0.31 mile) of the nest at any time of the year; and d) no standing dead trees greater than 16 inches dbh shall be cut, unless it meets the long-term management objectives.
W4, W5, W7, W8	In bald eagle management areas and essential habitat, prescribed fire managers need to use smoke management forecasts in order to minimize smoke entering into suitable habitat and to ensure that dissipation would be adequate.
W4, W5, W7, W8	In bald eagle management areas and essential habitat, predator and rodent control using baited traps and/or poisons will not take place.
W4, W5, W7, W8	In bald eagle management areas and essential habitat, all vegetation manipulations need to promote the development of large trees capable of supporting future bald eagle nesting, perching, and roosting regardless of other land allocations. While some timber harvest is allowable, it is only for the purpose of initiating long-term stand management to achieve bald eagle habitat objectives. Precommercial thinning is allowable to promote the development of large trees.
W4, W5, W7, W8	In bald eagle management areas and essential habitat, all snags that are eagle perches within 500 meters (1650 feet) of nests or roosts should be preserved. In addition, all snags utilized for roosting or foraging within nesting territories or communal roosts should be protected.

General BMPS - any project or soil disturbing activity (cont.)

W4, W5, W7, W8	In bald eagle management areas and essential habitat, development of new recreation facilities or expansion of existing facilities that will increase the amount, type, or area of use, such as campgrounds and resorts, is not compatible in these areas and will not be authorized.
W4, W5, W7, W8	In bald eagle management areas and essential habitat, protect all existing nesting, roosting, and perch trees. Generally, these are any live trees (Douglas-fir, ponderosa pine, etc.) or snags over 21" in diameter at breast height.
W4, W5, W7, W8	In the 0.25 to 0.75 mile circle around active peregrine nests, seasonal restriction on human entry and activities are strictly followed.
W4, W5, W7, W8	In the 0.25 to 0.75 air mile circle around active peregrine nests, human activity (foot, vehicle, or aerial entry) is prohibited during the nest season, except for peregrine falcon monitoring and related activities, law enforcement, or to preserve human life in emergencies.
W4, W5, W7, W8	In the 0.25 to 0.75 air mile circle around active peregrine nests, no new human habitat alteration activity is planned (e.g. road or trail building, harvest, construction, recreation, …)
W4, W5, W7, W8	In the 0.5 to 2 air mile circle around active peregrine nests, most recreation related activities are permitted during the nesting season. Exceptions may include hand gliding, trail blasting, large group gatherings.
W4, W5, W7, W8	In the 0.5 to 2 air mile circle around active peregrine nests, harvest activity and habitat manipulation are to be designed to retain structure and function of the ecosystem in the immediate area of the nest cliff and surrounding habitat to augment production of prey for peregrine falcons. Silvicultural practices will use the best available information for protection and augmentation of avian prey populations, and will consider and create action alternative which will benefit and support local biological diversity.
W4, W5, W7, W8	In the circle of 3 air miles from active peregrine nests, proposed human-generated activities are scrutinized to determine potential effects to peregrines.
W4, W5, W7, W8	In the circle of 3 air miles from active peregrine nests, fire suppression activities will closely follow draft or final site specific management plans.
W4, W5, W7, W8	Aircraft (special use permit or Agency contacted/owned) are permitted outside of 15,00 feet AGL (above ground level) "bubble" in the 1 – 2 mile zone from the peregrine nest except during the restricted period. Further, most aerial activity is permitted outside of 2 mile zone during the restriction period.
W4, W5, W7, W8	Retention of large woody material, and protection/ creation of the snag component (all conditions) is a standard practice to enhance and retain peregrine prey populations. The levels of protection/retention within units are generally for the maximum amount achievable, per site condition for large woody material and snags.
W4, W5, W7, W8	In peregrine zones, retain hardwood components in clumps to aid avian productivity.
W4, W5, W7, W8	Gate or otherwise close excess roads within 2 miles of the peregrine nest.
W4, W5, W7, W8, AQ9, AQ10	Do not fragment or convert wetland habitat to upland habitat through management activities including, but not limited to, water diversions, road construction, maintenance, or recreational facilities expansion. Where possible restore wetlands for Columbia spotted frog
W4, W5, W7, W8, AQ9, AQ10	Do not degrade wetland habitat or water quality for Columbia spotted frog.
W4, W5, W7, W8, AQ9, AQ10	In channel, lake, or shoreline digging would be for restoration only, and protect Columbia spotted frog.

General BMPS - any project or soil disturbing activity (cont.)

W4, W5, W7, W8, AQ9, AQ10	Do not allow ground-based machinery use within Riparian Management Areas or within a water body that increases soil compaction or removes vegetation that exposes soil to additional erosion processes. Within designated campgrounds (within Riparian Management Areas), machinery will not leave designated roads or parking areas and will protect Columbia spotted frog.
W4, W5, W7, W8, AQ9, AQ10	Do not locate landings within Riparian Management Areas with Columbia spotted frog habitat
W4, W5, W7, W8, AQ9, AQ10	Do not construct fire lines within Riparian Management Areas with Columbia spotted frog habitat.
W4, W5, W7, W8, AQ9, AQ10	New temporary roads will be located outside of zones delivering sediment to Columbia spotted frog habitat (as determined by soil type, ground vegetation, and slope), will provide relief drainage, and will be hydrologically closed.
W4, W5, W7, W8, AQ9, AQ10	Commercial road use, including hauling/blading, will not contribute to siltation off the road into Columbia spotted frog habitat.
W4, W5, W7, W8, AQ9, AQ10	Snow plowing will allow water/runoff to drain off road with filtration (vegetation buffer) before reaching creeks with Columbia spotted frog.
W4, W5, W7, W8, AQ9, AQ10	In Riparian Management Areas with Columbia spotted frogs, culvert replacements will decrease stream sediment input both during and after construction activities (e.g., adequate road ditch relief, cross drains, wing wall rip-rapping).
W4, W5, W7, W8, AQ9, AQ10	Do not allow in-channel, in lake, or shoreline digging where removal of substrate occurs or significant disruption where Columbia spotted frog spawning or rearing habitat occurs (e.g., in-stream gravel mining or dredging).
W4, W5, W7, W8, AQ9, AQ10	Do not allow permitted activities to artificially raise or lower natural water levels for systems with Columbia spotted frog habitat.
W4, W5, W7, W8, AQ9, AQ10	Activities will not reduce the amount of vegetative cover to the point of creating streambank instability. For Columbia spotted frogs, the minimum threshold is 90% stable streambanks.
W4, W5, W7, W8, AQ9, AQ10	Changes in hydrology of a stream, spring, lake, or wetland should be for restoration purposes only.
W4, W5, W7, W8, AQ9, AQ10	In reservoirs which can provide Columbia spotted frog habitat, allow maintenance or development of shallow water habitat with emergent vegetation through July to provide egg laying and development.
W4, W5, W7, W8, AQ9, AQ10	When removing or modifying stream barriers to allow for fish passage, do not risk the introduction of non-native species.
W4, W5, W7, W8, AQ9, AQ10	Limit activities within the Riparian Management Areas to those that have either a neutral or beneficial effect on aquatic objectives. Timing of those activities will be outside Columbia spotted frog egg laying/hatching for that area. If not known, restrict activities from March 1 to May 31.
W4, W5, W7, W8, AQ9, AQ10	Habitat connectivity will be maintained through properly functioning streams, marsh, in stream, and floodplain vegetation. Restore native sedges, rushes, and willows and protect Columbia Spotted Frog.
W4, W5, W7, W8, AQ9, AQ10	Use of pesticides, herbicides, and similar potential contaminants are prohibited in and immediately adjacent to wetland habitat. Applications of these chemicals should be conservative when estimating drift to avoid any contamination and protect Columbia spotted frog.

General BMPS - any project or soil disturbing activity (cont.)

W4, W5, W7, W8, AQ9, AQ10	Survey for the presence of nesting goshawks in suitable goshawk habitat for all major management actions (e.g., timber sales) prior to the implementation of management activities. Implementation is the date a Record of Decision is signed. Two years of surveys are recommended for all new timber sales.
W4, W5, W7, W8	For goshawk, ensure that the most recent version of the E-4 Special Provision issued May 10, 1996, in Instruction Memorandum No. OR-96-78 is included in all new sale contracts.
W4, W5, W7, W8	Active and historically used (i.e., alternate nest sites used in the past five years) nest sites and the surrounding 400-acre post-fledgling family area (PFFA) shall be afforded the following management recommendations:
W4, W5, W7, W8	At a minimum, 30 acres of the most suitable goshawk nesting habitat surrounding the nest site shall be deferred from harvest. The 30 acres should include known alternate nest sites and plucking posts and should be blocky or circular in shape. Biologists should use the best available professional knowledge of the birds' habitat use and of the available habitat. If operating under an existing management plan that specifies greater protection, then the more stringent management prescriptions shall prevail.
W4, W5, W7, W8	A 400-acre PFFA shall be designated around each active goshawk nest site and be comprised of the best available habitat. While harvesting activities can occur, a minimum of sixty percent (if it currently exists) of the PFFA shall be managed as mature and old growth/old forest seral stages (approximately 80 years of age and older and hereafter referred to as late successional). Harvest of late-successional tree/stands may occur if based upon a risk assessment and a determination of imminent threat to the viability of the habitat. An example would be the creation of a fire break.
W4, W5, W7, W8	Within the goshawk PFFA, forest health projects and timber sale activities should be designed to promote retention of late-successional stands where they exist. This may include the thinning of over-dense late seral stage stands (approximately 40-80 years) which may or may not have a late-successional component. In early and late seral stands, activities will be designed to promote forest health and the creation of late-successional conditions.
AQ3, AQ5, AQ14	Include Pollution and Erosion Control Plans (PECPP) and Spill Prevention Control and Containment Plans (SPCCP) in contracts, agreements and project plans when activity proposed to occur within stream channels or RMAs or may result in: mobilization of fine sediment, pesticide/herbicide use, short-term riparian disturbance, or harassment of ESA-listed aquatic species. PECPs will include provisions for minimizing site preparation impacts, minimize heavy equipment impacts, and site restoration.
AQ5, AQ10, AQ12, AQ13	PECPs will include provisions for minimizing site preparation impacts, minimize heavy equipment impacts, and site restoration.
AQ5, AQ10, AQ12, AQ13	"SPCCP will: describe provisions to prevent or reduce impacts from potential spills (fuel, hydraulic fluid, etc), describe the hazardous materials that will be used, including inventory, storage, handling procedures; a description of quick response containment supplies that will be available on the site (e.g., a silt fence, straw bales, and an oil-absorbing, floating boom whenever surface water is present)."
AQ6, W4, W8, AQ3, AQ13	Establish staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, hazardous material storage, etc.) beyond the 100-year floodplain in a location and manner that will preclude erosion into or contamination of the stream or floodplain and preferably outside of RMAs.
AQ6, W4, W8, AQ3, AQ13	Materials used for implementation of aquatic restoration categories (e.g., large wood, boulders, fencing material, etc.) may be staged within the 100-year floodplain for short durations.

General BMPS - any project or soil disturbing activity (cont.)

AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Prior to construction or use of heavy equipment in and around Riparian Management Areas, flag critical riparian vegetation areas, wetlands, and other sensitive sites to prevent ground disturbance in these areas.
AQ5, AQ6	Place sediment barriers prior to construction around sites where significant levels of erosion may enter the stream directly or through road ditches. Maintain barriers throughout construction.
AQ6. AQ11	Fell hazard trees within riparian areas when they pose a safety risk. If possible, fell trees towards the stream. Keep felled trees on site when needed to meet coarse woody debris objectives.
AQ1, W1, T1, S3	The size and capability of heavy equipment will be commensurate with the project.
AQ5, AQ6, AQ12, AQ14	All equipment used instream shall be cleaned and leaks repaired prior to entering the project area. Remove external oil and grease, along with dirt and mud prior to construction. Thereafter, inspect equipment daily for leaks or accumulations of grease, and fix any identified problems before entering streams or areas that drain directly to streams or wetlands. During instream heavy equipment work, consider deploying an oil-absorbing floating boom downstream. Equipment used for instream or riparian work shall be fueled and serviced in an established staging area outside of riparian zone. When not in use, vehicles shall be stored in the staging area.
AQ6, AQ12, AQ13	Stream crossings shall not increase risks of channel re-routing at low and high water
AQ6, AQ12, AQ13, AQ3, W8, W4	Avoid placing temporary and permanent road crossings at potential listed fish spawning areas when possible.
AQ6, W5	Utilize existing roadways or travel paths and limit the number of new access paths.
AQ6, AQ14, WSR1	Instream operations must cease under high flow conditions that inundate the project area, except for efforts to avoid or minimize resource damage and for eminent safety concerns.
AQ5, AQ10, AQ12, AQ13	Minimize time in which heavy equipment is in stream channels, riparian areas, and wetlands. Operate heavy equipment in streams only when ID teams believe that such actions are the only reasonable alternative for implementation, or would result in less sediment in the stream channel or damage (short- or long-term) to the overall aquatic and riparian ecosystem relative to other alternatives.
AQ1, W1, T1, S3	Upon project completion, remove project related waste.
AQ10, V1, V5, W4, AC10, N1, W7, W8	During restoration of disturbed sites, use the guidance from BLM Instruction Memorandum No. OR-2001-014, Policy on the Use of Native Species Plant Material.
S3, AQ6, AQ7, V4, L1, W7	Plan rehabilitation of all disturbed riparian areas in a manner that results in similar or better than pre-work conditions through spreading of stockpiled materials, seeding, and/or planting. In riparian areas, planting shall be completed no later than spring planting season of the year following end of disturbance. Short-term stabilization measures will be maintained until permanent erosion control measures are effective. Stabilization measures will be instigated within three days of construction completion or disturbance.
W4, W5, W7, W8, AQ9, AQ10, S3	When necessary, loosen compacted areas, such as access roads, stream crossings, landings staging, and stockpile areas at project completion.
S3	Retain vegetation on cut slopes unless it poses a safety hazard or restrict maintenance activities.
AQ4, AQ6, AQ12	Projects will not significantly restrict the channel migration zone and ability of the channel to form and maintain habitat.
R1, W1	In areas open to cross country vehicle travel, allow no net increase in miles of fence.

Fire and Fuels

Wildfire use and prescribed burning

V1, W4, W5, W6, W7	Maintain connectivity of sagebrush habitat.
V1, V4, S3	Use mechanical means, rather than fire, where the risk of exacerbating fire cycles associated with invasive species (such as cheatgrass) is high.
W4, V1	Create small-scale patch patterns (i.e. burrowing animals) and larger scale patches (>1,000 acres).
W4, V1	In forest and juniper woodland Bio-physical Settings, management activities must retain a minimum of 10% of live trees per acre including dominants. These trees are not to be counted toward future snag recruitment.
V4, W4, S3, WSR1	Provide mitigation, by reducing, restoring or compensating for important special habitats that are altered by management actions.
W8, W4	Maintain old growth characteristics wherever they are present.
WSR1, V4	Reseed areas disturbed during project activities with a mix of grasses, forbs, and shrubs to meet site-specific needs or habitat requirements (see Chapter 2 Vegetation section for more details).
AQ1, AQ3, S3	Choose between suppression and burning by balancing effects of suppression activities with the effects of burning on achievement of objectives.
All	Limit operation of mechanized equipment to times when soils are less susceptible to detrimental disturbance, unless soils are frozen or covered with 18 inches or more of snow.
AQ3	Do not use heavy equipment (such as ground based harvest) on slopes greater than 35%.
S3, S1, AQ1, AQ3, AQ6	Ensure that removal of vegetation or ground disturbing activities do not exacerbate headcutting. Avoid activities that would remove more than 50% of the watershed cover and exacerbate headcutting by increasing runoff. If more than 50% of the watershed cover is removed, apply watershed mitigations to attenuate peak flows associated with increased runoff. Mitigation measures such as buffers, hydro-seeding, and wattles must be applied prior to fall precipitation (usually in October).
AQ6, AQ12, AQ13, V4	Prohibit activities that would degrade the sediment regime of perennial, perennial interrupted or intermittent stream channels. Activities may be allowed if the long term intent of an activity is to restore stream physical function (e.g. juniper removal, thinning conifer encroachment, etc). The combination of BLM actions to restore upland watershed conditions and other landowner activities shall not risk (1% or 100 year event) degrading sediment and flow regimes longer than 3 years. Limit treatment of riparian areas within each sixth field sub watershed, to less than 10% of the total riparian vegetation within any one year period. As an exception, low intensity burns backing into riparian areas may not exceed 50% of riparian area in 6th field watershed.
AQ6, AQ12, AQ13, V5, VR1, WSR1, F3	Prohibit ignition within riparian management areas, and locate ignition lines away from large open meadows, unless prescribed to meet aquatic objectives.

Fire and Fuels - wildfire use and prescribed burning (cont.)

AQ6, AQ3, WSR1, S3	Over the course of two years, forest cover restoration shall not exceed an 80% change in areas of less than 18"-15" annual precipitation. This 80% change applies to cumulative activities across all ownerships of a watershed (HUC 5). Phased treatments are preferred. Achieve landscape appropriate peak flows during juniper watershed treatments by lopping and scattering of limbs or similar material
S3, V4, W8	Prescribed fire must achieve down wood volumes referenced in Down Wood Table of Vegetation Section.
AQ6, AQ7	Keep high intensity wildfire, concentration burns and broadcast burns at least 100 feet away from riparian management areas unless prescribed to meet aquatic objectives.
AQ11, W8	Avoid ignition of large woody material that is touching the high water mark of a waterbody or that may be affected by high flows.
AQ3, AQ13, AQ9, AQ6, W8	Prohibit delivery of foam or additives to waterbodies, floodplains, or wetlands.
AQ3, AQ13, AQ9, AQ7	Store and dispose of ignition devices/materials (e.g., flares, plastic spheres, etc.) outside riparian management areas.
AQ3, AQ13, AQ9, AQ8	Maintain and refuel equipment (e.g., drip torches, chainsaws, and portable pumps) a minimum of 100 feet from waterbodies, floodplains, and wetlands.
AQ3, AQ13, AQ9, AQ9, W8	Exclude ground-based equipment within riparian management areas.
AQ3, AQ13, AQ9, AQ10, W8	Limit hand constructed fire lines inside riparian management areas and prohibit machine constructed fire lines in riparian management areas. Where hand constructed fire lines are necessary in riparian management areas, angle the approach rather than have it perpendicular to the riparian management area.
AQ9, AQ13, W4, W8	Retain 20% of the upland perimeter of lentic areas in vegetative species and structure needed for hiding cover, life cycle completion, and corridors of site riparian-dependent biotic community. This may translate into leaving areas untreated for fuels or other activities. The final delineation will be made by an ID team.
AQ3, AQ13, AQ9, AQ10, W4, W8	Avoid brushing along stream channels and floodplains. Brushing may be unavoidable if it is necessary for human safety or to avoid threats to structural stability where modifying structure design would not eliminate the need for brushing. Do not brush beyond 4 feet of the road as measured by the edge of the drivable road surface (not measured from turnouts or road shoulder). Maintain riparian overstory to provide stream shade. Maintaining a minimum height of riparian vegetation by brushing once every 3 years instead of once every 5 years. Prune riparian vegetation rather than completely removing it. Preserve as much ground vegetation as possible, and brush only where necessary for human safety rather than for convenience.
AQ3, S3	Construct fire lines and ditches by hand on all slopes greater than 35 percent.
S3, AQ1, AQ3, AQ5, AQ6	Use erosion control techniques such as tilling, waterbaring, or debris placement on fire lines. Construct waterbars on tractor and hand fire lines.
AQ6, AQ3, AQ1, W8	Avoid placement of any fire line where water would be directed into waterbodies, floodplains, wetlands, headwalls, or areas of instability.
AQ6, AQ12, AQ13, AQ3, W8, W4	Use temporary stream crossings to temporarily cross riparian management areas with any equipment or vehicles (including ATVs). Follow BMPs under Stream Crossings.

Fire and Fuels - wildfire use and prescribed burning (cont.)

AQ6, W4, W8, AQ3, AQ13	Do not locate incident bases, camps (including spike/remote camps), helibases, staging areas, constructed helispots, and other centers for incident activities in riparian management areas or within 200 feet of any waterbody, floodplain, or wetland.
AQ14, AQ3	Do not allow the introduction of volatile organic compounds into domestic waters supplies.
V2, A	Any associated surface-disturbing activities (i.e. control lines, access routes, helipads, etc.) must be located outside special status plant habitat.
V2	Treatments shall be designed to minimize travel through special status plant habitat.
V2	Treatments shall occur during periods of special status plant dormancy.
V2	Mechanical treatments shall not result in residual debris on special status plant sites.
V2, AQ1, AQ6	Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RMAs. If the only suitable location for such activities is within the RMA, an exemption may be granted following a review and recommendation by a resource advisor. The advisor will prescribe the location, use conditions, and rehabilitation requirements, with attainment of aquatic objectives as a primary goal. Use an interdisciplinary team, including a fishery biologist, to predetermine incident base and helibase locations during presuppression planning, with attainment of aquatic objectives.
AQ1, AQ12, AQ14	Avoid delivery of chemical retardant, foam, or additives to surface waters, source water protection areas, or water of domestic use. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following a review and recommendation by a resource advisor and a fishery biologist, when the action agency determines an escape fire would cause more long term damage to aquatic habitats than chemical delivery to surface waters.
S3, V4, W8, W4	Down wood shall be left in place across treatment areas to meet down wood objectives (see Down wood table in Vegetation Section) rather than piled and burned.
W8, AQ10, AQ5, WSR1	Prohibit mechanical piling within riparian management areas and prohibit mechanical fuel reduction equipment within 75 feet of streams and other waterbodies.
AQ6, AQ9, W8	Prohibit tractor piling in areas that could deliver sediment to waterbodies, floodplains, and wetlands.
T1, T2, AQ6	Use temporary stream crossings if necessary for equipment to access the opposite side. Follow Temporary Stream Crossing practices under Roads section.
FU3, S3, AQ3, AQ11, AQ6, W8	Locate hand piles outside of or above the first slope break of fish-bearing streams, perennial streams, intermittent streams and lentic areas. The greater of these areas applies.
S3, AQ1, AQ3, AQ5, AQ6, T4-6	Install waterbars and seed all constructed firelines with native or adapted nonnative species as appropriate.
VR1, WSR1, AC1	Consider effects on visual quality when making fire suppression and rehabilitation decisions.

Vegetation Management

General

V2	Vegetation management projects could occur within special status plant habitat depending on treatment timing, extent and practice.
V2	Prescribed fire would be the preferred method of vegetation treatment in special status plant habitat.
V2	Vegetation treatments would be designed to minimize travel through special status plan habitat.
V2	Vegetation treatments would occur during periods of special status plant dormancy.
V2	Mechanical vegetation treatments would not result in residual debris on special status plant sites.
AQ10, V1, V5, W4, AC10, N1, W7, W8	There are instances where the use of desirable non-natives would be considered and used following the BLM Manual 1745. Examples of when non-natives would be considered include but are not limited to the following. 1. When natives are not currently available and seeding must proceed. Example: a. Fire rehabilitation situations where liability or excessive resource damage may force the BLM to act quickly. b. Road cuts and fills where soil loss is excessive. 2. When the substrate has been so degraded that native species will not do well for a considerable length of time. Natives often do not do well when over half the A horizon in the soil has been removed. Examples: a. Road cuts where top soil is gone (natives able to prevent soil loss no longer adapted). b. Other areas where excessive soil erosion has occurred. 3. When natives will not meet the objectives for the site. Example: a. Weed prevention is important and natives won't compete well enough to make a project effective. Seeding can be effective at reducing weed infestations. 4. When the environment is already highly altered and will remain so. Examples: a. In parking lot areas or on irrigated areas. b. Sites where native species cannot handle the use and non-natives can. c. Places where non-natives might add a desirable attribute to the site and not degrade other areas. d. Road shoulders where continual disturbance is assured. 5. When the large size of the seeding requires use of commercially obtained native species that...Example: a. May not be adapted to the area. b. May contaminate the gene pool of natives on the site.

Timber Sales and Forest Health Treatments

S1, S3, V4, AQ1, AQ3	To reduce soil disturbance and compaction, machine pile using excavator with grapple, or as an alternative to piling masticate or chip fuel loads.
S3, AQ1, AQ3, AQ5, AQ6, T4-6	Install water bars and apply native seed, when available, to skid trails and landings prior to temporary seasonal closures and following harvest operations. Consider ripping or subsoiling on skid trails and abandoned haul roads to reduce compaction where soil and slope conditions permit.
AC1, WSR1, S1, S3, VR1	Cutting areas would be shaped and designed to blend as closely as possible with natural terrain and landscape minimizing the effect on total forest vistas. Consideration will be given to future harvesting, impacts of road construction and other relevant factors.
S1, S3, V4, V5, AQ1, W8, VR1, FU3, V1	Use silvicultural practices that best meet the management goals and related land-use prescriptions. Each sale plan must include plans for prompt reforestation of the sale area after completion of the timber harvest operation by natural or artificial means (Disturbed areas will be artificially reforested when natural forest regeneration cannot be reasonably expected in 5-15 years).
V4, S1, S3, AQ1, VR1, WSR1, AQ11	Selection cutting, shelter wood cutting, clear cutting or their various modifications are available options. Clear cutting should not be used as a cutting practice where a) soil slope or other watershed conditions are fragile and subject to unacceptable damage; b) there is no assurance that the area can be adequately restocked within five years after harvest, or c) aesthetic values outweigh other considerations.
V4, V5, S1, S3, AQ1, VR1, WSR1, AQ12	Clear cutting should be used only where it is silviculturally essential to accomplish the relevant forest management objectives, or where the size of clear-cut blocks, patches, or strips is kept at the minimum necessary to accomplish silvicultural and other multiple-use management objectives. Cutting units should not exceed 40 acres in normal circumstances. More than 40 acres may be appropriate for salvage of an area already environmentally damaged by fire, insect or wind, or where larger cutting units would minimize road construction and other actions which would result in greater adverse environmental impact on the total forest.
AQ10, V1, V5, W7, W8	The selection of trees in partial cuts would be made in a manner to improve the genetic composition of the reforested stand.
V5	Logging units will be laid out in a manner that would reduce the risk of windthrow.
V2, V4, AQ11, W4, W7, W8	Encourage complete utilization of all harvested trees, including marginal and non-commercial species. Each forest products sale will provide opportunity for maximum use of all timber or other vegetative resources sold and to prevent destruction of unused materials, provided that such utilization is consistent with wildlife requirements.
A1, V4, V5,FU3,AQ1, S3, W1,W4, W5, W6,	To achieve fire hazard reduction, and to provide for reforestation and other intensive forest management opportunities, full consideration must be given at time of sale planning to desirability and method of slash disposal and site preparation. Factors to be considered include but are not limited to utilization of material, removal of debris, smoke management, fire protection, watershed protection, soil compaction, nutrient loss, wildlife habitat requirements, animal damage, and reforestation requirements.
S3, FU1	Plan for use of harvest systems that minimize damage to the site and reserved trees, and provide maximum protection from fire, insects, disease, wind, and other hazards.
AQ3, AQ6, AQ11, W4, W5, W8, V5, N1	Use directional felling systems where needed to minimize site damage; to protect streams, buffer strips, riparian areas, cultural sites, or reserved timber (including wildlife trees); or to increase timber utilization.
S1, S3, AQ6, AQ10	Logging systems that least disturbs the soil mantel and RMAs are preferred to those methods that contribute to soil movement.

Vegetation Management - Timber Sales and Forest Health Treatments (cont.)

S1, S3, AQ1, AQ3, AQ6, AQ12, AQ7	Tractor skid trails would be designed and located to avoid cross ridge and cross drainage operations. Tractor skidding would be avoided on slopes greater than 35 percent. Waterbars would be installed on skid trails when logging is finished.
S1, S3, W8, AQ3, AQ6, W5, W8, VR1, WC1	Landings will be of minimum size commensurate with safety and equipment requirements and located on stable areas to minimize the risk of material entering adjacent streams and waters. Landings should be located on firm ground away from RMAs. Avoid landing locations on unstable areas, steep side hills or areas which require excessive excavation.
VR1, V5, WSR1, AC1, R5, R6	Shape and design cutting areas to blend as much as possible with the natural terrain and landscape. The cutting area should minimize the effect on the total forest vista with due regard for future harvesting, impacts of road construction and other relevant factors.
S1, W5, W7, W8, L2, R5	Logging activities would be timed to minimize adverse impacts to other resource values.
S1, S3, V4,	Preserving the upper soil strata for the subsequent growing of future forest crops depends in large part on the care, planning, and professional judgment exercised in sale layout. Allow no more than 12 percent of the area, excluding permanent roads, to become compacted during initial stand entry. Reentry of previously compacted stands will include mitigation (ripping, tilling, etc.) to reduce compaction to acceptable levels.
A1, V4, V5,FU1,AQ1, S3, W1,W4, W5, W6,	Protection of streams, wetlands-riparian areas, and other waters. When planning operations along streams, lakes, bogs, swamps marshes, wet meadows, springs, seeps or other sources where the presence of water is indicated, protect soil and vegetation from disturbance that could cause non-attainment of Aquatic and Wildlife Objectives. Give special consideration around sources that supply domestic water. Use streamside buffer strips of vegetation to attain Aquatic Objectives and protect natural streamside beauty.
F3, V4, AQ4, AQ7, AQ9, L2	Where timber should be removed because it would be subject to excessive wind throw and where it is difficult to leave an adequate buffer of timber to shade and protect the stream, plan to reestablish cover along the stream after cutting is completed. Fast growing deciduous species or other suitable vegetation may be required to restore shade as quickly as possible. Leave understory vegetation as undisturbed as possible to filter runoff and help stabilize the soil.
AQ1, AQ3, S3	Avoid trapping and turning small streams out of their natural beds.
AQ3, AQ6, AQ11, W4, W5, W8, V5, N1	If debris should unintentionally enter any stream, such debris shall be removed concurrently with the yarding operation and before removal of equipment from the project site. Removal of debris shall be accomplished in such a manner that the natural streambed conditions and streambank vegetation are not disturbed.

Seeding for Vegetative Rehabilitation

AQ10, V1, V5, W4, AC10, N1, W7, W8	Guidance is also given in BLM Manual Section 1745; Introduction, Transplant, Augmentation, and Reestablishment of Fish, Wildlife, and Plants. This manual states that: "native species shall be used, unless through the NEPA process it is determined that . . ." 1. Suitable native species are not available. 2. The natural biological diversity will not be diminished. 3. Exotic or naturalized species can be confined within the proposed treatment area. 4. Analysis of appropriate information (including ecological site inventory) indicates that a site will not support reestablishment of a species that was historically part of the natural environment. 5. Resource management objectives cannot be met with native species.
AQ10, V1, V5, W4, AC1, N1, W7, W8, FU1	In addition to the initial 5 questions from BLM Manual Section 1754 emergency fire rehabilitation requires that the following questions are addressed: 1. Is the use of non-native plants necessary to meet objectives, e.g., consistent with applicable land use / activity plans? 2. Will non-native plants meet the objective(s) for which they are planted without unacceptably diminishing diversity and disrupting ecological processes (nutrient cycling, water infiltration, energy flow, etc.) in the plant community? 3. Will non-native plants stay on the site they are seeded and not significantly displace or interbreed with native plants?
AQ10, V1, V5, W4, AC10, N1, W7, W8	The BLM does not generally seed desirable non-native species where ecosystems are intact because there is no reason to do so if a site is properly functioning. Desirable non-natives would be given consideration when trying to restore degraded sites (i.e. rangeland infested with weeds or annual grasses, abandoned agriculture fields, areas with high probability of weed infestation after some form of disturbance, and areas where noxious weed infestations are being treated and competitive species are needed to aid in restoration/rehabilitation). Even in these cases the site would not be seeded to 100% desirable non-natives, a mixture of natives and desirable non-natives would be used (generally at least 50% natives) so that when those desirable non-natives that will eventually go out of the stand no longer persist, the seed source is there for native species regeneration. Some desirable non-native species will, however, persist indefinitely in open conditions. Ideally, seeding with non-natives should be a short-term measure to protect resource values until natives can re-establish. However, the objectives of each particular project, both short and long term, should drive the process of species selection. If research or information becomes available on a particular species that causes concern for the invasive potential of that species, it would not be included in a species mix.

Watershed Restoration

Riparian Vegetation Treatment

AQ6, W4, W8, AQ3, AQ11	Conduct non-commercial treatments of vegetation in the riparian area (as defined by the Aquatic objectives) as a means to help restore plant species composition and structure that would occur under natural disturbance regimes. The resulting benefits to the aquatic system can include desired levels of stream shade, bank stability, stream nutrients, large wood inputs, increased grasses, forbs, and shrubs, and reduced soil erosion. An additional benefit includes fuels reduction, which decreases the probability of a catastrophic fire in a watershed containing isolated populations of ESA listed fish. Treatments may include, but are not limited to, the following: thin conifers in even-age stands (typically plantations) to expedite late-seral conditions; thin conifer under-story to maintain viability of later-seral trees; create stand structure that would be expected under natural disturbance regimes; alder treatments; disease pocket treatments; create planting gaps to promote growth of conifers, deciduous trees, shrubs, and grass. Further, brush (felled trees) removal, planting of tree seedlings (conifer and deciduous) and shrubs, and animal damage control (no pesticides) are included. Equipment may include chainsaws, pruning shears, winch machinery, and slash-busters. The use of feller-buncher machinery is not specifically provided for here.
AQ6, W4, W8, AQ3, AQ11	An experienced silviculturist, botanist, ecologist, or associated technician, and wildlife biologist shall be involved in designing vegetation treatments.
W4, W5, W7, W8, AQ9, AQ10	No new roads or landings will be constructed in RMAs except at minimal crossings designed to attain Aquatic Objectives. Re-route existing roads and restore landings
AQ6, W4, W8, AQ3, AQ11	Thin conifers to accelerate attainment of late-seral conditions. A project example is thinning riparian areas in the ecosystem initiation or competitive exclusion developmental stages (Cary and Cuertis 1996) within plantations (i.e., where even-aged stands are growing because of previous silvicultural prescriptions, wildfire, or disease.)
AQ6, W4, W8, AQ3, AQ11	Thin dense understories to maintain survival of late-seral trees. A project example is thinning dense understory stands of early- to mid-seral ponderosa pine which have become established as a result of fire exclusion.
AQ6, W4, W8, AQ3, AQ11	Restore meadow sites along stream corridors or adjacent uplands through removal of conifers which have become established as a result of fire exclusion or other anthropogenic causes.
AQ6, W4, W8, AQ3, AQ11	To increase species diversity of riparian vegetation, fell conifer and/or hardwood trees (if above natural stocking levels) to create planting gaps.
AQ6, W4, W8, AQ3, AQ11	Trees felled within riparian area will be used to restore aquatic and terrestrial habitat by returning large and coarse woody debris levels to within the range of natural variability (RNV). Felled trees in excess of the RNV can be removed or piled and burned.
AQ7, AQ10, W8	Restoration and construction shall be designed to produce native facultative, wetland and obligate species in wetland/hydric soils and manage to have arrested or retrogressed growth forms in the woody species.
AQ1, AQ3, AQ5, AQ12	Within each sixth field sub watershed containing listed aquatic species or water quality limited streams, no more than 10% of the total riparian area, measured as adjacent stream length, will be treated within any one year period. This includes 10% of flowing streams, and 10% of intermittent streams, measured separately.

Riparian Vegetation Treatment (controlled burning)

AQ11, AQ12, W8, V4, AQ10	Implement controlled burning to help restore plant species composition and structure that would occur under natural fire disturbance regimes. Controlled burning of piled, pre-commercially thinned trees associated with other vegetation treatments is permissible. Resulting benefits include restoration of desired levels of stream shade, bank stability, soil erosion and stream turbidity, stream nutrients, and/or large wood inputs. Additional benefits include maintenance of late-seral (old-growth) trees which serve as sources of large wood to streams and a reduced potential of catastrophic fire within watersheds occupied by isolated populations of ESA-listed fish. This treatment should maintain the function of the riparian area as it affects the aquatic environment (e.g., temperature regime). Equipment would include drip torches and chainsaws, along with fire suppression vehicles and equipment.
AQ3	An experienced fuels technician, silviculturist, and fisheries biologist shall be involved in designing prescribed burn treatments.
AQ10, V1, V5, W4, AC1, N1, W7, W8	Prescriptions/burn plans should be written to help restore plant species composition and structure that would occur under natural fire regimes.
FU3, AQ11, V5, S3, AQ6	Low severity burns shall constitute the dominant type of controlled burn, resulting in a mosaic pattern of burned and unburned landscape. Low severity burns, as defined in the National Fire Plan, are characterized by the following: low soil heating, or light ground char, occurs where litter is scorched, charred, or consumed, but the duff is left largely intact, although it can be charred on the surface. Woody debris accumulation is partially consumed or charred. Mineral soil is not changed. Fire severity in forest ecosystems is low if the litter and duff layers are scorched but not altered over the entire depth.
FU3, AQ11, V5, S3, AQ6	Moderate-severity burns are permitted in no more than 20% of the riparian area to invigorate decadent aspen stands, willows, and other relevant deciduous species. Such burns shall be contained within the observable historic boundaries of the aspen stand or willow site. Moderate-fire severity, as defined in the National Fire Plan, is characterized by the following: moderate soil heating, or moderate ground char, occurs where the litter on forest sites is consumed and the duff is deeply charred or consumed, but the underlying mineral soil surface is not visibly altered. Light colored ash is present. Woody debris is mostly consumed, except for logs, which are deeply charred.
FU3, AQ11, V5, S3, AQ6	Non-commercial tree thinning and slash removal may be required to reduce fuel loads required to implement a low to moderate severity burn.
FU3, AQ11, V5, S3, AQ6	Tree thinning may be required prior to project implementation to create fuel loads necessary to carry a controlled fire.
AQ3, W8, FU3, AQ11, V5, S3, AQ6	To the greatest degree possible, avoid creating hydrophobic soils when burning slash piles within the riparian areas adjacent to the stream. Slash piles should be far enough away from the stream channel so as any sediment resulting from this action will be less likely to reach the stream.
AQ3, W8, FU3, AQ11, V5, S3, AQ6	Ignition can occur within certain riparian area as long as these BMPs and aquatic objectives are met.

Riparian Area Invasive Plant Treatment

General

AQ5, AQ10, V1, V4, W4, AC1, N1, W7, W8	Invasive plant treatment in riparian areas is intended to improve the function of riparian areas by restoring native ecosystem components. In general, improved riparian function due to invasive plant treatment will benefit listed fish by restoring inputs of native detritus to stream systems and reducing erosion. Treatment of invasive plant sites may include one or more of the following treatment methods listed below. A combination of treatments may be necessary to achieve effective control or eradication of an invasive plant species at many sites. All herbicide applications will comply with label instructions and may be further restricted as stated below. Treatment methods were selected due to their low potential for adversely affecting aquatic species, while facilitating riparian restoration through invasive plant control. Herbicides were selected due to their low toxicity to aquatic species and application methods were selected for their low potential for contaminating soils, thereby minimizing the risk of herbicides leaching to streams. Design invasive plant treatments to reduce or eliminate adverse effects to species and critical habitats proposed and/or listed under the ESA. This may involve surveying for listed or proposed plants prior to implementing actions within unsurveyed habitat if the action has a reasonable potential to adversely affect the plant species. Use site-specific project design (e.g., application rate and method, timing, wind speed and direction, nozzle type and size, buffers, etc.) to mitigate the potential for adverse disturbance and/or contaminant exposure to ESA species.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8, WSR1	Invasive plant infestation sites treated using herbicide, biological, manual or mechanical methods may be revegetated by planting cuttings, seedlings, or seeding.
AQ6, AQ10, V1, V4, W4, AC1, N1, W7, W8, WSR1	Site preparation can involve removal of litterlduff layer suitable to allow proper soil to seedroot contact. This will be accomplished by scuffing/scalping micro-sites (generally less than one square meter) with hand tools within the larger planting/seeding site.
AQ6, AQ10, V1, V4, W4, AC1, N1, W7, W8, WSR1, S3	Minimize ground disturbance by clearing only the area necessary for effective planting.

Manual and Mechanical

AQ5, AQ10, V1, V4, W4, AC1, N1, W7, W8	Hand pulling of weeds - Uprooting is performed either by hand or using hand (non-motorized) tools. Generally appropriate for non-rhizome forming, tap-rooted species andlor species which produce only from seed. Treatment occurs when plant growth stage and soil conditions allow, and prior to seed-set for annual species. Hand pulling of emergent invasive plants is included.
AQ5, AQ10, V1, V4, W4, AC1, N1, W7, W8	Seed clipping - Weed seed heads are cut, bagged, and removed from the area. The remainder of plant is left intact but is likely to be treated with another method.
AQ5, AQ10, V1, V4, W4, AC1, N1, W7, W8	Stabbing weeds - Some invasive plants can be severely weakened or klled by severing or injuring the carbohydrate storage structure at the base of the plant. Depending on species, this structure may be a root corm, storage rhizome, or taproot. Can be accomplished with shovel, hoe, or similar hand tool.

Manual and Mechanical (cont.)

AQ5, AQ10, V1, V4, W4, AC1, N1, W7, W8	Girdling - A strip of bark is removed around the base of susceptible woody species.
AQ5, AQ10, V1, V4, W4, AC1, N1, W7, W8	The vascular cambium, or inner bark, which translocates carbohydrates between roots and leaves, is removed
AQ5, AQ10, V1, V4, W4, AC1, N1, W7, W8	Cutting weeds- Removal of the above-ground portion of an invasive plant by cutting with chainsaw, handsaw, pruning shears, or similar hand held device. Also includes mowinglcutting with a string-trimmer type machine, which does not have wheels or contact the ground.
AQ5, AQ10, V1, V4, W4, AC1, N1, W7, W8	Solarization (ground cover)of weeds - Invasive plant infestations may be covered with plastic, geotextile, cardboard, or other ground cover material to kill the plant and roots or reduce plant vigor prior to treatment with another method.
AQ12, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Minimize treating invasive plants on banks from the stream when listed aquatic species are present.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Use the least ground disturbing method that results in effective invasive plant treatment.

Biological Controls

AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Biological control is the inoculation of an infestation site with insects, parasites, or pathogens that specifically target the invasive plant species of concern. Treatment of invasive plant infestations with biological controls is a gradual process requiring several years to reach full effectiveness. Subsequent treatment with other methods may also occur.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8, L2	All biological controls used will be U.S. Animal and Plant Health Inspection Service and state approved.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8, L2	Agents demonstrated to have direct negative effects on non-target organisms will not be released.

Herbicide Treatments

AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8, L2	Stem-injection - Stems of actively growing species are injected with herbicide, usually near the base of the plant.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Cut-stump -Herbicide is applied by spray, squirt, or Wickinglarge woodiping to the stump of a plant (usually a shrub or tree) shortly after the shoot or trunk is cut down.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Wicking, & wiping - Use a sponge or wick to wipe herbicide onto foliage, stems, or trunk. Use of Wickinglarge woodiping method reduces the possibility affecting non-target plants.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Spot application - Herbicide is directly sprayed onto target plants only, and spraying of desirable, non-target vegetation is avoided. Includes backpack and hand-pumped spray or squirt bottles, which can target very small plants or parts of plants (foliage, stems, or trunk).
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Hack & squirt - Woody species are cut using a saw or axe or drilled; herbicide is then immediately applied to the cut with a backpack sprayer, squirt bottle, syringe, or similar equipment.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Only daily use quantities of herbicides will be transported to the project site. For extremely remote locations, such as portions of the Lower John Day River, less than a 5 day quantity will be transported.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	In order to allow efficient volatilization of naptha solvent, application like sethoxydim will only occur during warm (above 60°F), dry weather.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Do not apply herbicides if precipitation is likely within 24 hours.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	The only herbacide application methods for plants emergent from water are stem injection,wicking or wipping, and hand-held spray bottle application. No application to submerged aquatic vegetation with any herbicide is included.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Areas used for mixing herbicides will be placed where an accidental spill will not run into surface waters or result in groundwater contamination. Impervious material will be placed beneath mixing areas in such a manner as to contain any spills associated with mixing/refilling.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Equipment cleaning and storage and disposal of rinsates and containers will follow all applicable state and Federal laws.

Herbicide Treatments (cont.)

AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	When approved herbicides are transported to a project site in a watercraft (inflatable boat, motor boat, etc), the following protections shall be implemented: no more than one day volume of herbicide(s) shall be transported to project site; herbicide(s) shall be transported in one gallon or smaller containers, sealed in a water- and air-tight plastic bag, and placed in a buoyant dry-bag. The entire package should be securely tied to the watercraft.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	When consistent with label instructions, use water when diluting herbicides prior to application.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	A spill cleanup kit will be available whenever herbicides are used, transported, or stored.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	A certified/licensed pesticide applicator will oversee all herbicide application projects.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Use only surfactants or adjuvants in riparian areas that do not contain any ingredients on EPA's List 1 or 2, where listing indicates a chemical is of toxicological concern, or is potentially toxic with a high priority for testing.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Individual special status plants would be flagged or carefully mapped prior to weed treatment.
V2	In sites with special status plants, manual treatment would be preferred over chemical.
V2	Application of chemicals would be carefully controlled in/near sites with special status plants.
V2	Chemicals which result in residual effects would not be allowed in sites with special status plants.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Weed stem-injection: Individuals will be familiar with proper stem-injection methodology prior to treatment. Only aquatic glyphosate formulations will be used. New formulations may be used if they afford better or equivalent protection for aquatic species. The formulation can be used at up to 100% concentration for the stem injection method. The formulation will be diluted to 50% or less active ingredient when applied directly to fresh stem cuts using wicking and wiping and up to the percentage allowed by label instructions when applied to foliage using low pressure hand-held spot spray applicators. Larger emergent weeds can be treated with glyphosate by stem injection, and smaller emergent weeds by wicking/wiping and spot spray with hand-held sprayers. Wicking/wiping and hand-held spray bottle application of glyphosate is allowed to emergent weed plants less than four to five feet tall, and usually smaller. Emergent plants with stems over 0.75 inch in diameter will be treated by stem injection.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Cut-stump and hack & squirt : Herbicides which may be used are imazapyr, metsulfuron methyl, and aquatic labeled glyphosate. New herbacides may be used if they provide equivalent or better protection for aquatic species. Application with aquatic labeled glyphosate and aquatic labeled imazapyr allowed to waters edge and to bankfull level for metsulfuron methyl and imazapyr not labeled for aquatic use.

Herbicide Treatments (cont.)

AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Wicking and wiping: Herbicides to be used are chlorsulfuron, clopyralid, aquatic labeled glyphosate, imazapyr, metsulfuron methyl, sethoxydim, and sulfometuron methyl. New herbacides may be used if they provide equivalent or better protection for aquatic species. For perennial streams, Wicking and wiping application with aquatic labeled glyphosate and aquatic labeled imazapyr is allowed to waters edge and to bankfull level for chlorsulfuron, clopyralid, imazapyr (not aquatic labeled), metsulfuron methyl, sethoxydim, and sulfometuron methyl. For perennial streams, emergent weed-stems < 0.75 inches in diameter can be treated with wichng and wiping of aquatic labeled glyphosate. For intermittent and ephemeral channels, chlorsulfuron, clopyralid, aquatic labeled glyphosate, imazapyr, metsulfuron methyl, sethoxydim, and sulfometuron methyl can be applied to all dry portions of the channel.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Spot application: Herbicides to be used are chlorsulfuron, clopyralid, aquatic glyphosate, imazapyr, sethoxydim, metsulfuron methyl, and sulfometuron methyl. New herbacides may be used if they provide equivalent or better protection for aquatic species. Do not spot spray sethoxydim or clopyralid within 15 feet, and chlorsulfuron within 50 feet, of perennial stream bankfull. Do not spot spray sethoxydim, clopyralid, or chlorsulfuron within intermittent or ephemeral channels. Spot spray using aquatic labeled glyphosate and aquatic labeled imazapyr allowed to edge of water with hand-held, hand-pump spray or squirt bottles (no backpack sprayers). Do not spot spray sethoxydim or clopyralid within 15 feet, and chlorsulfuron within 50 feet, of perennial stream bankfull.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Do not spot spray sethoxydim, clopyralid, or chlorsulfuron within intermittent or ephemeral channels. Spot spray using aquatic labeled glyphosate and aquatic labeled imazapyr allowed to edge of water with hand-held, hand-pump spray or squirt bottles (no backpack sprayers). Hand-held spot spray of aquatic glyphosate to emergent weed (c 0.75 inches stem diameter) is allowed. Spot spray using metsulfuron methyl and sulfometuron methyl allowed to bankfull level of perennial streams with backpack sprayers, hand-pump sprayers, and squirt bottles. Spot spray of aquatic labeled glyphosate, imazapyr, metsulfuron methyl, and sulfometuron methyl within dry intermittent and ephemeral channels allowed onlywith hand-held, hand-pumped sprayers and squirt bottles (no backpack sprayers). Excluding backpack spot spray is a conservation measure intended to minimize overspray within channels, and subsequent "first flush" exposures to aquatic resources, while still allowing full efficacy of the treatment
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	For foliar backpack spray applications, use only low pressure sprayers producing droplet sizes between 200 and 800 microns to minimize drift. Backpack spray activities will only occur during conditions with low drift potential, defined as wind velocities greater than two and less than 10 mph, or as stated on the herbicide label.

Fuel Handling

AQ14, AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Transport no more than a one day supply of fuel for chainsaws and string trimmers into riparian areas. The exception would include very remote areas such as portions of the Lower John Day River. In those areas, transport no more than a 5 day supply.
AQ14, AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Fueling of chainsaws and string-trimmers will not occur within 100 feet of surface waters.

Riparian Vegetation Planting

AQ10, AQ11, V4	Conduct riparian vegetation planting as a means to help restore plant species composition and structure that would occur under natural disturbance regimes. The resulting benefits to the aquatic system can include desired levels of stream shade, bank stability, stream nutrients, large wood inputs, increased grasses, forbs, and shrubs, and reduced soil erosion. Activities may include the following: planting conifers, deciduous tress and shrubs; placement of sedge and or rush mats; gathering and planting willow cuttings. Equipment may include excavators, backhoes, dump trucks, power augers, chainsaws, and manual tools.
FV4, FU3	An experienced silviculturist, botanist, ecologist, or associated technician shall be involved in designing vegetation treatments.
W4, W5, W7, W8, AQ9, AQ10	No roads or landings will be constructed in RMAs.
V4, AQ10, AC1, WSR1	Species to be planted must be of the same species that naturally occurs in the project area.
AQ4, AQ6, V4	Tree and shrub species as well as sedge and rush mats to be used as transplant material shall come from outside the bankfull width, typically in abandoned flood plains, and where such plants are abundant.
V4, AQ10, AC1, WSR1	Sedge and rush mats should be sized as to prevent their movement during high flow events.
AQ4, AQ6, V4	Concentrate plantings above the bankfull elevation.

In-stream Habitat Structures

AQ4, AQ12, V4	Place large wood and/or boulders in stream channels and adjacent floodplains to increase channel stability, rearing habitat, pool formation, spawning gravel deposition, channel complexity, hiding cover, low velocity areas, and floodplain function. In areas where natural gravel supplies are low (immediately below reservoirs, for instance), gravel placement may be used to improve spawning habitat. Full channel-spanning porous boulder weirs (boulder weirs) can only be installed in streams with a legacy of splash damming, stream cleaning, or other activities that have resulted in highly uniform, incised, bedrock-dominated channels with few boulders or woody debris. Live and or dead trees may be removed to provide large wood for restoration projects, under special conditions described herein. Large wood, boulder, and gravel projects would include the use of log trucks and dump trucks for transport and excavator-type machinery, spyders, cable yarders, draft horses, or helicopters for placement
AQ4, AQ12, V4	Place large wood and boulders only in those areas where they would naturally occur and in a manner that closely mimics natural accumulations for that particular stream type. large wood includes whole conifer and hardwood trees, logs, and root wads. large wood size (diameter and length) should account for bankfull width and stream discharge rates. When available, trees with rootwads should be a minimum of 1 . 5 bankfull channel width, while logs without rootwads should be a minimum of 2.0 x bankfull width. Structures may partially or completely span stream channels or be positioned along stream banks.
AQ6, W4, W8, AQ3, AQ11	No conifers should be felled in the riparian area for in-channel large wood placement unless conifers are fully stocked and are consistent with prescriptions in vegetation treatment categories. Felled hazard trees can be used for in-channel wood placement.
AQ4AQ6, AQ12, V4	Key boulders (footings) or large wood can be buried into the stream bank or channel but shall not constitute the dominant placement method of boulders and large wood.

In-stream Habitat Structures (cont.)

AQ4AQ6, AQ12, V4	Anchoring large wood with cable should be used sparingly, primarily for the protection of infrastructure and in consideration of downstream landowner concerns. Before using cable, attempt to use, when feasible, the following anchoring alternatives, in preferential order: 1) use adequate sized wood sufficient for stability; 2) orient and place adequate sized wood in such a way that wood movement is unlikely; 3) use ballasting (gravel and/or rock) to increase the mass of the structure to resist movement; 4) use large boulders as anchor points for the large wood; and 5) pin wood to large rock with rebar to increase wood weight.
AQ4AQ6, AQ12, V4	Gravel augmentation should only occur in areas where the natural supply has been eliminated or significantly reduced through anthropogenic means. Gravel to be placed in streams shall be a properly sized gradation for that stream, clean, and non-angular. When possible use gravel of the same lithology as found in the watershed. After gravel placement, allow the stream to naturally sort and distribute the material.
AQ4AQ6, AQ12, V4	Full channel spanning boulder weirs are to be installed only in highly uniform, incised, bedrock-dominated channels to enhance or provide fish habitat in stream reaches where log placements are not practicable due to channel conditions (not feasible to place logs of sufficient length, bedrock dominated channels, deeply incised channels, artificially constrained reaches, etc.), where damage to infrastructure on public or private lands is of concern, or where private landowners will not allow log placements due to concerns about damage to their streambanks or property.
AQ4AQ6, AQ12, V4	Install boulder weirs low in relation to channel dimensions so that they are completely overtopped during channel-forming flow events (approximately a 1.5- year flow event). If larger boulders are needed to withstand bankfull flows, boulder size should be determined through a site-specific analysis - such as a shear stress analysis - and should not promote bank scouring and channel routing around the structure.
AQ4AQ6, AQ12, V4	Boulder weirs are to be placed diagonally across the channel or in more traditional
AQ4AQ6, AQ12, V4	"V" or "U" boulder weir configurations with the apex oriented upstream. bouldeweirs are to be constructed to allow upstream and downstream passage of all native fish species and life stages that occur in the stream. This can be accomplished by providing plunges no greater than 6" in height, allowing for juvenile fish passage at all flows.
AQ4AQ6, AQ12, V4	The use of gabions, cable or other means to prevent the movement of individual boulders in a boulder weir is not allowed.
AQ4AQ6, AQ12, V4	Rock for boulder weirs shall be durable and of suitable quality to assure permanence in the climate in which it is to be used. Rock sizing depends on the size of the stream, maximum depth of flow, plan form, entrenchment, and ice and debris loading
AQ4AQ6, AQ12, V4	The project designer or an inspector experienced in these instream structures should be present during installation.
AQ4AQ6, AQ12, V4	Full spanning boulder weir placement should be coupled with measures to improve habitat complexity and protection of riparian areas to provide long-term inputs of large wood.
W7, W8, AQ10, AQ5, WSR1	A wildlife biologist must be fully involved in all "Individual Tree Removal" planning efforts, and involved in making decisions on whether individual trees are suitable for nesting or have other important listed bird habitat value.
AQ4AQ6, AQ12, V4	For large wood restoration projects in RMAs, trees may be removed by cable, horses or helicopters, and felled directly into the stream. Felled trees may be stock piled for later use for instream restoration projects.

In-stream Habitat Structures (cont.)

W7, W8, AC1, AQ13	No suitable nesting trees greater the 36″ dbh are to be removed. Trees greater than 36″ may be felled if a wildlife biologist determines those trees do not provide suitable nesting habitat
AQ6, W4, W8, AQ3, AQ11, V4	Individual trees or small groups of trees (<5) should come from the periphery of permanent openings (roads, etc) or from the periphery of non-permanent openings (e.g., plantations, along recent clear-cuts, etc).
W7, W8, AC1	Single trees may only be removed from the first two lines of trees.
W7, W8, AC1, AQ13	Trees selected for harvest for large wood restoration projects must be spaced at least one site potential tree height apart and at least one crown width from any trees with potential nesting structure for ESA listed bird species.
W7, W8, AC1, AQ4AQ6, AQ12, AQ13	No conifers should be felled in the riparian area for in-channel large wood placement unless conifers are fully stocked and are consistent with vegetation objectives. Felled hazard trees should be used for in-channel wood placement.
W7, W8, AC1, AQ4AQ6, AQ12, AQ13	When removing large wood from blow-down or an area burned by a wildfire, consult a wildlife biologist to determine which trees can be removed without adversely affecting wildlife habitat.

Large Wood, Boulder, and Gravel Placement

AQ4, AQ12, V4	Place large wood and/or boulders in stream channels and adjacent floodplains to increase channel stability, rearing habitat, pool formation, spawning gravel deposition, channel complexity, hiding cover, low velocity areas, and floodplain function. In areas where natural gravel supplies are low (immediately below reservoirs, for instance), gravel placement may be used to improve spawning habitat. Full channel-spanning porous boulder weirs (boulder weirs) can only be installed in streams with a legacy of splash damming, stream cleaning, or other activities that have resulted in highly uniform, incised, bedrock-dominated channels with few boulders or woody debris. Live and or dead trees may be removed to provide large wood for restoration projects, under special conditions described herein. Large wood, boulder, and gravel projects would include the use of log trucks and dump trucks for transport and excavator-type machinery, spyders, cable yarders, draft horses, or helicopters for placement
AQ4, AQ12, V4	Place large wood and boulders only in that area where they would naturally occur and in a manner that closely mimics natural accumulations for that particular stream type. Large wood includes whole conifer and hardwood trees, logs, and root wads. large wood size (diameter and length) should account for bankfull width and stream discharge rates. When available, trees with root wads should be a minimum of 1 . 5 bankfull channel width, while logs without root wads should be a minimum of 2.0 x bankfull width. Structures may partially or completely span stream channels or be positioned along stream banks.
AQ6, W4, W8, AQ3, AQ11	No conifers should be felled in the riparian area for in-channel large wood placement unless conifers are fully stocked and are consistent with prescriptions in vegetation treatment categories. Felled hazard trees can be used for in-channel wood placement.
AQ4AQ6, AQ12, V4	Key boulders (footings) or large wood can be buried into the stream bank or channel but shall not constitute the dominant placement method of boulders and large wood.
AQ4AQ6, AQ12, V4	Anchoring large wood with cable should be used sparingly, primarily for the protection of infrastructure and in consideration of downstream landowner concerns. Before using cable, attempt to use, when feasible, the following anchoring alternatives, in preferential order: 1) use adequate sized wood sufficient for stability; 2) orient and place adequate sized wood in such a way that wood movement is unlikely; 3) use ballasting (gravel and/or rock) to increase the mass of the structure to resist movement; 4) use large boulders as anchor points for the large wood; and 5) pin wood to large rock with rebar to increase wood weight.

Large Wood, Boulder, and Gravel Placement (cont.)

AQ4AQ6, AQ12, V4	Gravel augmentation should only occur in areas where the natural supply has been eliminated or significantly reduced through anthropogenic means. Gravel to be placed in streams shall be a properly sized gradation for that stream, clean, and no angular. When possible use gravel of the same lithology as found in the watershed. After gravel placement, allow the stream to naturally sort and distribute the material.
AQ4AQ6, AQ12, V4	Full channel spanning boulder weirs are to be installed only in highly uniform, incised, bedrock-dominated channels to enhance or provide fish habitat in stream reaches where log placements are not practicable due to channel conditions (not feasible to place logs of sufficient length, bedrock dominated channels, deeply incised channels, artificially constrained reaches, etc.), where damage to infrastructure on public or private lands is of concern, or where private landowners will not allow log placements due to concerns about damage to their streambanks or property.
AQ4AQ6, AQ12, V4	Install boulder weirs low in relation to channel dimensions so that they are completely overtopped during channel-forming flow events (approximately a 1.5- year flow event). If larger boulders are needed to withstand bankfull flows, boulder size should be determined through a site-specific analysis - such as a shear stress analysis - and should not promote bank scouring and channel routing around the structure.
AQ4AQ6, AQ12, V4	Boulder weirs are to be placed diagonally across the channel or in more traditional.
AQ4AQ6, AQ12, V4	"V" or "U" boulder weir configurations with the apex oriented upstream. bouldeweirs are to be constructed to allow upstream and downstream passage of all native fish species and life stages that occur in the stream. This can be accomplished by providing plunges no greater than 6" in height, allowing for juvenile fish passage at all flows.
AQ4AQ6, AQ12, V4	The use of gabions, cable or other means to prevent the movement of individual boulders in a boulder weir is not allowed.
AQ4AQ6, AQ12, V4	Rock for boulder weirs shall be durable and of suitable quality to assure permanence in the climate in which it is to be used. Rock sizing depends on the size of the stream, maximum depth of flow, plan form, entrenchment, and ice and debris loading
AQ4AQ6, AQ12, V4	The project designer or an inspector experienced in these instream structures should be present during installation.
AQ4AQ6, AQ12, V4	Full spanning boulder weir placement should be coupled with measures to improve habitat complexity and protection of riparian areas to provide long-term inputs of large wood.
W7, W8, AQ10, AQ5, WSR1	A wildlife biologist must be fully involved in all "Individual Tree Removal" planning efforts, and involved in making decisions on whether individual trees are suitable for nesting or have other important listed bird habitat value.
AQ4AQ6, AQ12, V4	For large wood restoration projects in RMAs, trees may be removed by cable, horses or helicopters, and felled directly into the stream. Felled trees may be stock piled for later use for instream restoration projects.
W7, W8, AC1, AQ13	No suitable nesting trees greater the 36" dbh are to be removed. Trees greater than 36" may be felled if a wildlife biologist determines those trees do not provide suitable nesting habitat
AQ6, W4, W8, AQ3, AQ11, V4	Individual trees or small groups of trees (<5) should come from the periphery of permanent openings (roads, etc) or from the periphery of non-permanent openings (e.g., plantations, along recent clear-cuts, etc).
W7, W8, AC1	Single trees may only be removed from the first two lines of trees.

Large Wood, Boulder, and Gravel Placement (cont.)

W7, W8, AC1, AQ13	Trees selected for harvest for large wood restoration projects must be spaced at least one site potential tree height apart and at least one crown width from any trees with potential nesting structure for ESA listed bird species.
W7, W8, AC1, AQ4AQ6, AQ12, AQ13	No conifers should be felled in the riparian area for in-channel large wood placement unless conifers are fully stocked and are consistent with vegetation objectives. Felled hazard trees should be used for in-channel wood placement.
W7, W8, AC1, AQ4AQ6, AQ12, AQ13	When removing large wood from blow-down or an area burned by a wildfire, consult a wildlife biologist to determine which trees can be removed without adversely affecting wildlife habitat.

Reconnection of Existing Side Channels and Alcoves

AQ4AQ6, AQ12, V4, W8	Reconnect and/or restore existing side channels and alcoves to increase rearing habitat for juvenile fish and high flow refuge areas for all life stages of fish. Functioning side channels have inlet and outlet connections to the main channel and often contain flow only during flood events-bankfull or greater. Functioning alcoves are back-water channels that typically contain water during both low and high flows. This action includes the removal of plugs which block water movement through side channels and alcoves. Further, side channel and alcove improvements include fill removal within channels and alcoves, large wood and/or boulder placement, riparian planting, etc. Boulder placement may be used in the main river to stabilize the channel and bring the entrance of the side channel into alignment (vertically and horizontally). Construction would involve use of heavy equipment, such as excavators, spyders, backhoes, and dump trucks. These BMPs do not cover creation of new side channels, or excavation of severely aggraded (completely filled in) side channels and alcoves.
AQ4, AQ6, AQ7	Excavated material removed from side-channels or alcoves shall be hauled to an upland site or spread across the adjacent floodplain in a manner that does not restrict floodplain capacity.
AQ4, AQ6, AQ7	Design and construct side-channels in such a manner as to prevent the capture and relocation of the main channel.
AQ4, AQ6, AQ7, AQ11	Design project to naturally maintain inlet and outlet connections with the main stream channel (i.e., placement of large wood to increase local scour).

Head-cut Stabilization and Associated Fish Passage

AQ4, AQ6, AQ12	Stabilize active or potentially active head-cuts to prevent further channel degradation (upstream migration of head-cut) and to promote downstream channel aggredation. In streams currently or historically occupied by fish, provide fish passage over the stabilized headcut. Construction would involve use of heavy equipment, such as excavators, spyders, backhoes, dump trucks. These BMPs do not fully cover structures that include the use of gabion baskets, sheet pile, concrete, articulated concrete block, and/or cable anchors; and straight weirs, which disperse flows and can cause channel widening and thus structure "flanking" (erosion around the ends of the structure). The choice of design should be based on site characteristics and limitations (i.e., channel slope, bed material type), but may also be based on material availability, economics, land use, design competence or familiarity, and/or regulatory restrictions (i.e., jump heights for fish).
AQ6, AQ13	Rock and organic material placement is often used on severe headcuts in meadow areas to stop further channel incision. Stream types are typically Rosgen "C" and "E" channel types.

Head-cut Stabilization and Associated Fish Passage (cont.)

AQ6, AQ13	When armoring a head-cut, use sufficient sizes and amounts of material to prevent continued up-stream movement of the headcut. Materials can include both rock and organic materials which are native to the area.
AQ6, AQ13	Focus stabilization efforts in the plunge pool, the head cut, as well as a short distance of stream above the headcut.
AQ6, AQ13	Minimize lateral migration of channel around head cut ("flanking") by placing rocks and/or organic material at a lower elevation in the center of the channel cross section to direct flows to the middle of channel.
AQ6, AQ12, AQ13	In streams with current or historic fish presence, provide fish passage over stabilized head-cut. Log or rock weir structures may be used to provide fish passage.
AQ6, AQ12, AQ13	Short-term headcut stabilization (including emergency stabilization projects) may occur without associated fish passage measures. However, fish passage must be incorporated into the final head cut stabilization action and be completed during the first subsequent in-water work period.
AQ6, AQ12, AQ13	In streams without current or historic fish presence, it is recommended to construct a series of downstream log or rock weirs to expedite channel aggradation.
AQ6, AQ12, AQ13	Rock and log weirs are very low channel spanning structures that may be used to stabilize streambeds and halt channel incision in low gradient streams (generally less than 2%).
AQ6, AQ12, AQ13	Construct weirs in a 'V' shape, oriented with the apex upstream, and lower in the center to direct flows to the middle of channel.
AQ6, AQ12, AQ13	Key weirs into the stream bed to minimize structure undermining due to scour, preferably at least 2.5 their exposure height. The weir should also be keyed greater than 8 feet into both banks, if feasible.
AQ6, AQ12, AQ13	If several structures will be used in series, space the weirs at the appropriate distances to promote fish passage of all life stages of native fish. Incorporate State fish passage criteria (jump height, pool depth, etc.) in the design of weir structures. Recommended weir spacing should be no closer than the net drop divided by the channel slope (for example, a one-foot high weir in a stream with a two-percent gradient will have a minimum spacing of 50-feet.
AQ6, AQ12, AQ13	Include fine material in the weir material mix to help seal the weir channel bed, thereby preventing subsurface flow. Geotextile material can be used as an alternative approach to prevent subsurface flow.
AQ6, AQ12, AQ13	Large roughness elements, such as wood and boulder placement, are the preferred head-cut treatment for those areas where large wood and boulders provide natural grade control. This technique is applicable to a wide range of stream types, from low gradient meandering streams (less than 1%) to high gradient cascade channels (greater than 8%). The goal of using large roughness elements is not to completely halt the incision process, but rather to slow it down and spread the elevation change over a greater length of channel. Because log jams are porous structures, not all of the sediment will be held in place; sediment inputs, however, will be spread out over time and space.
AQ6, AQ12, AQ13	Rock and wood structures should mimic natural colluvial features, such as debris flow or landslide deposits, to provide channel stabilization.
AQ6, AQ12, AQ13	Rock and wood should be sized so that it is not mobile during the design flood. An engineering technical note regarding buoyancy is available through NRCS (http:llarge woodww.or.nrcs.usda.gov/technicallengineerin~eng-notes.html).
AQ6, AQ12, AQ13	To promote or maintain fish passage, ensure that wood and boulder structures should contain enough spaces to allow for up and downstream movement of fish

Removal of Legacy Structures

AQ6, AQ12, AQ13	Remove large wood, boulders, rock gabions, and other in-channel structures that were constructed to improve fish habitat but were installed in a manner that was and continues to be inappropriate for the given stream type. Examples of such structures, which were typically installed in the 1980s and early 1970s, include boulder configurations in meadow streams, stair-step perpendicular log weirs, and rock gabions. These legacy structures typically resulted in widened stream channels, increased width/depth ratios, decreased sinuosity, and increased stream exposure to solar radiation. Removal of legacy structures would include the use of excavator-type machinery, spyders, backhoes, and dump trucks.
AQ6, AQ12, AQ13	If the structure being removed contains material (i.e., large wood, boulders, etc) not typically found within the stream or floodplain at that site, remove material from the 100-year floodplain.
AQ6, AQ12, AQ13	If the structure being removed contains material (i.e., large wood, boulders, etc) that is typically found within the stream or floodplain at that site, the material can be reused to implement habitat improvements described under Large Wood, Boulder, and Gravel Placement activity category in these BMPs
AQ6, AQ12, AQ13	If the structure being removed is keyed into the bank, fill in "key" holes with native materials as to restore contours of stream bank and floodplain. Compact the fill material adequately to prevent washing out of the soil during over bank flooding. Do not mine material from the stream channel to fill in "key" holes.
AQ6, AQ12, AQ13	When removal of buried (keyed) structures may result in significant disruption to riparian vegetation and/or the floodplain, consider using a chainsaw to extract the portion of log within the channel and leaving the buried sections within the streambank.
AQ6, AQ12, AQ13	Assess sites for a potential to headcut below the natural stream gradient.
AQ6, AQ12, AQ13	If headcutting and channel incision are likely to occur due to structure removal, additional measures must be taken to reduce these impacts.
AQ6, AQ12, AQ13	If the structure is being removed because it has caused an over-widening of the channel, consider implementing other restoration actions to decrease the width to depth ratio of the stream at that location to a level commensurate with upstream and downstream (within the same channel type).

Riparian Juniper Treatment (non-commercial)

AQ4, AQ6, V4	Fell juniper trees occurring in riparian and associated uplands to help restore natural plant species composition and structure that would occur under natural fire regimes. The associated benefits to aquatic and riparian environments include the following: reduction of soil erosion into stream channels; increased frequencies and diversity of herbaceous, shrub, and tree species; increased bank stability and stream nutrients. Associated uplands include those areas where juniper stands are or will create conditions that result in lost ground cover and increased sedimentation into stream channels; upland treatments would only be covered if those treatments directly benefit the aquatic environment. Treatments will emphasize the removal of junipers above natural stocking levels. Equipment may include the use of feller-buncher type equipment, slashbuster, chainsaws, winch machinery, and/or prescribed fire.
W1, V4, S3, AQ1, A3, AQ4, WSR1, AC1	Do not cut old-growth juniper, which typically has several of the following features: sparse limbs, dead limbed or spiked-tops, deeply furrowed and fibrous bark, branches covered with bright-green arboreal lichens, noticeable decay of cambium layer at base of tree, and limited terminal leader growth in upper branches (Miller et al. 2005).

Riparian Juniper Treatment (non-commercial) (cont.)

W1, V4, S3, AQ1, A3, AQ4, WSR1, AC1	Where ground vegetation is sparse, leave felled juniper in sufficient quantities to promote reestablishment of vegetation and prevent erosion.
S3, AQ6, AQ7, V4, L1, W7	If seeding is a part of the action, consider whether seeding would be most appropriate before or after juniper treatment.
AQ4, AQ6, AQ12	Where appropriate, move cut juniper stems into the stream channel and floodplain to provide aquatic benefits. Juniper can be felled or placed into the stream to promote channel aggradation as long as such actions do not obstruct fish movement, cover spawning gravels of ESA-listed fish or increase width to depth ratios.
AQ4, AQ6, AQ12	Do not place juniper in streams if the action will preclude the stream from attaining its natural sinuosity.
W4, V1	In forest and juniper woodland Bio-physical Settings, management activities must retain a minimum of 10% of live trees per acre including dominants. These trees are not to be counted toward future snag recruitment.
AQ6, AQ12, AQ13, V4	Prohibit activities that would degrade the sediment regime of perennial, perennial interrupted or intermittent stream channels. Activities may be allowed if the long term intent of an activity is to restore stream physical function (e.g. juniper removal, thinning conifer encroachment, etc). The combination of BLM actions to restore upland watershed conditions and other landowner activities shall not risk (1% or 100 year event) degrading sediment and flow regimes longer than 3 years. Limit treatment of riparian areas within each sixth field sub watershed, to less than 10% of the total riparian vegetation within any one year period. As an exception, low intensity burns backing into riparian areas may not exceed 50% of riparian area in 6th field watershed.

Bank Restoration

AQ4, AQ6, AQ12	Restore eroding stream banks to reduce chronic bank erosion, improve water quality, restore natural channel cross-sections, expand floodplain area, promote growth of riparian vegetation and create undercut banks for adult and juvenile fish hiding cover. Projects will not significantly restrict the channel migration zone and ability of the channel to form and maintain habitat. Construction may involve use of heavy equipment, such as excavators, spyders, backhoes, and dump trucks.
AQ4	Work will focus on eroding stream banks, primarily the outside edge of meander bends.
V4, AQ10, AC1, WSR1	To the extent possible, use bank stabilizing materials that would naturally occur at that site (such as large wood, woody and herbaceous plantings, native sedge/rush mats, and native rock).
AQ4, AQ6, VR1, WSR1	Stream banks may be reshaped and sloped where the objective is to reduce blank slope angle to provide more favorable planting surfaces. Such work should not change the location of the bank toe.
AQ4, AQ6, VR1, WSR1	Jute matting or other biodegradable material can be used with plantings to help prevent erosion of affected banks.

Floodplain Overburden Removal

AQ4, AQ6, AQ7	Remove anthropogenic overburden and fill, such as dredged mine tailings, railroad beds, dikes, berms, levees, and other fill types, from floodplains to restore natural floodplain functions. Such functions include overland flow during high-water events, dissipation of flood energy, increased water storage to augment low flows, sediment and debris deposition, growth of riparian vegetation, nutrient cycling, and development of side channels and alcoves. Construction would involve use of heavy equipment, such as excavators, earthmovers, scrapers, backhoes, front-end loaders, dump trucks, and bull dozers.
AQ4, AQ6, AQ7	Create floodplain characteristics (elevation, width, gradient, length, and roughness) that mimic, those that would naturally occur at that stream and valley type.
AQ4, AQ6, AQ7	Overburden or fill comprised of native materials, which originated from the project area, may be used to reshape the floodplain, placed in small mounds on the floodplain, used to fill anthropogenic holes, buried on site, and/or disposed into upland areas.
AQ4, AQ6, AQ7	To the greatest degree possible, non-native fill material, originating from outside the project area, shall be removed from the floodplain to an upland site.
AQ4, AQ6, AQ7	Where it is not possible to remove all portions of dikes and berms, create openings with culverts and/or breaches. Place culverts through or remove portions of such structures to pass high flows-bankfull or greater- into floodplain areas. The width of a culvert or breach should be equal to or greater than the bankfull width of the stream. Culverts and breaches should be located at a depositional area of the channel. Design proper number and location of culvert and breach sites to help prevent fish stranding as high flows recede.
AQ1, AQ5, AQ12, AQ8, HM1	Conduct a contaminant survey for mine tailing removal projects prior to project implantation. If contaminants are found above levels set by the Environmental Protection Agency, consult with appropriate agencies.
AQ4, AQ6, AQ7, S3	Consider decompaction of soils once overburden material is removed.

Livestock Grazing, Wild Horses

Grazing Use

V4, AQ10, AC1, WSR1	Consider livestock quarantine, removal, or timing limitations in weed infested areas.
WSR1, AQ1, AQ4, AQ11, L1	Develop alternative sources of water to lessen the grazing pressure on the riparian habitat.
WSR1, AQ1, AQ4, AQ11	Maintaining adequate untreated peripheral zones around important moist-sites (i.e. wet sedge meadows, springs, riparian zones).
S3, AQ6, AQ7, V4, L1, W7	Consider modifying season of use to avoid trampling of biological crusts in the dry season in areas where biological crusts exceed 10 percent of the potential ground cover.
S3, AQ6, AQ7, V4, L1, W7	Consider defining and scheduling spring and fall grazing at the fine scale to reflect actual soil moisture conditions to avoid disturbance of biological crust when soils are extremely dry.

Grazing Use (cont.)

AQ1, AQ3, AQ11, L1	Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that will not retard or prevent attainment of aquatic objectives.
V2	Adjust livestock grazing use season to accommodate special status plants.
V2	Concentrate livestock use/movement away from special status plant habitat; i.e., eliminate trailing, salting and/or watering sites that might affect special status plants.
AQ1, AQ3, AQ11, L1	Adjust wild horse and burro management to avoid impacts that prevent attainment of aquatic Objectives.
V2, AQ4, AQ6, AQ9, HB1	Wild horse use in special status plant habitat would be monitored and herd size would be adjusted as needed to minimize impacts.
AQ11, AQ12, W8, V4, AQ10	Place of salt or other supplements to distribute livestock throughout uplands and away from riparian areas.
AQ1, AQ3, AQ11, L1	Use riding and herding livestock to control use in sensitive areas.
AQ1, AQ3, AQ11, L1	"In order to meet aquatic objectives in developing livestock grazing systems and pasture designs, consider: o Changing class of stock from cow/calf pairs to herded sheep or yearlings; either eliminating hot season grazing (i.e., grazing during the hottest part of summer) or scheduling hot season grazing on a rotational basis (e.g., only one year out of every three); o Locating salt away from riparian zones; o Laying out pasture fences so that each pasture has as much riparian habitat as possible; o Locating fences so that they do not confine or concentrate livestock near the riparian zone; o Developing alternative sources of water to lessen the grazing pressure on the riparian habitat; and o As a last resort, excluding livestock completely from riparian by protective fencing.

Developments

S3, AQ6, AQ7, V4, L1, W7	Livestock developments include fences, corrals, seedings, water gaps/stream crossings, and other activities.
W1, WSR1, AC1	Fence types may include permanent barbed-wire, high-tension, smooth-wire, let-down, electric, buck and pole, and other similar types.
W1, WSR1, AC1, S3	Fence construction may involve use of all-terrain vehicles, flatbed trucks, and manual power tools.
L1, AQ4, AQ5, AQ6	Water gap and/or stream crossings construction may involve dump trucks and excavator-type equipment. The size of equipment used should be commensurate with the project requirements. Follow BMPs under 'Watershed Restoration" to guide heavy equipment use in and around stream channels."
AQ4, AQ6	Fence placement should allow for lateral movement of a stream.

Developments (cont.)

AQ11, AQ12, W8, V4, AQ10	Minimize vegetation removal, especially potential large wood recruitment sources, when constructing fence lines. No conifers should be felled in the riparian area conifers are fully stocked and are consistent with prescriptions in vegetation treatment categories.
L1, AQ4, AQ5, AQ6	Locate crossings and/or water gaps where stream banks are naturally low.
AQ12	When possible, crossings and gaps should not be constructed within known or suspected spawning areas (e.g., pool tailouts where spawning may occur).
AQ6, AQ12	Fences at stream crossings and water gaps should not inhibit up or downstream movement of fish and or significantly impede bedload movement. Consider passage of large wood and other debris when constructing fence and water gaps.
AQ4, AQ6	If necessary at water gaps, the stream bank and approach lanes can be stabilized with native vegetation and/or angular rock to reduce chronic sedimentation. The stream crossing or water gap should be armored with up to cobble-size rock, and use angular rock if natural substrate is not of adequate size.
S3, V2, AQ9, W8	Livestock crossings or water gaps should not be located in areas where compaction or other damage may occur to sensitive soils and vegetation (e.g., wetlands) due to congregating livestock.
S3, V2, AQ9, W8	The maximum width of a water gap or stream crossing should be no less than 10 feet and no more than 20 feet wide in the upstream-downstream direction (NRCS, 2001).
AQ5, AQ12	When using pressure treated lumber for fence posts only, complete all cutting/drilling offsite so that treated wood chips and debris does not enter water or flood prone areas.
W1, WSR1, AC1	All new fences will be built to standard Bureau wildlife specifications. Wildlife escape devices will be installed and maintained in water troughs.
S1, S3, W8, AQ3, AQ6, W5, W8, VR1, WC1	Locate new livestock handling and/or management facilities outside of riparian management areas (RMAs, see Aquatic Resources section in Chapter 2). For existing livestock handling facilities inside the RMAs, assure that facilities do not prevent attainment of aquatic objectives. Relocate or close facilities where these objectives cannot be met.
S3, AQ6, AQ7, V4, L1, W7	Install water developments (i.e., spring developments, pipelines/troughs and reservoirs) to facilitate upland distribution and reduce concentration in riparian wetland areas of livestock, wildlife and wild horses.
S3, V2, AQ9, W8	If necessary, install hardened crossings and water access points, or water gaps to direct livestock use to specific watering locations and reduce use over larger riparian wetland areas.
V2, AQ4, AQ6, AQ9, AQ11	Plant desirable forage species in uplands to attract livestock away from riparian or other sensitive areas.
S3, AQ6, AQ7, V4, L1, W7	Fence to delineate pastures associated to area specific management objective(s), or to establish permanent, temporary or seasonal exclusion from specific areas.
V4, AQ10, AC1, WSR1	Install barriers (i.e., trees, brush, boulder, gap fences) to reduce access or avoid specific areas.

Developments (cont.)

AQ13, AQ9, AQ6, W1,W4, W5, W6, W7, W8, A1, V4, V5,FU1,AQ1, S3	Spring development may provide a more dependable source of water for livestock and wildlife while protecting the source from trampling. In the major canyons the springs can improve livestock distribution by pulling livestock from the canyon bottoms, allowing use of previously unused rangeland. These developments will permit a variety of grazing systems.
AQ13, AQ9, AQ6, W1,W4, W5, W6, W7, W8, A1, V4, V5,FU1,AQ1, S3	Develop springs by hand labor or backhoe to install a buried collection system. A short pipeline may be installed to deliver water to a trough. Ramps, rocks or flatboards are installed in all water troughs to allow small birds and mammals to gain access to and/ or escape from the water. As springs are developed, fence to protect riparian vegetation, water source and areas where significant overflow from troughs occurs to protect riparian vegetation.
S3, AQ6, AQ7, V4, L1, W7	Locate troughs associated with spring developments and off channel water on ground with a slope, vegetated buffer, and distance (25 feet minimum) away from stream channels, floodplains, and lentic areas sufficient to ensure that the disturbed area associated with the guzzler, trough, or drinker does not contribute sediment to or remove vegetation from hydric soils, riparian or wetland areas. Use automatic shutoff or efficiently return overflow to the source in a short return interval.

Recreation

Recreation Activities

AQ1, AQ3, AQ6, AQ11, S3	Better control or close recreation use along streams and within riparian areas. This could include removal of designated campgrounds, dispersed camp sites, and foot trails as well as treatments of off-road vehicle (ORV) roads/trails in riparian areas.
AQ1, AQ3, AQ6, AQ11, S3	Dispersed and developed campground restoration usually include some or all of the following: removal of campground fill material and/or structures, such as berms, toilets, fences, picnic tables; ripping or sub-soiling sites to remove compaction; stream bank restoration; placement of rock or other barriers such as fences to block vehicle access; gravel surfacing of existing sites to designate access routes and parking; planting shrubs and trees to restore streamside, floodplain, and meadow vegetation; reducing or clearing noxious weeds.
AQ4, AQ6, AQ7	Design remedial actions to restore floodplain characteristics-elevation, width, gradient, length, and roughness-in a manner that closely mimics, to the greatest degree possible, those that would naturally occur at that stream and valley type.
AQ4, AQ6, AQ7	Overburden or fill comprised native materials, which originated from the project area, can be used to reshape the floodplain, placed in small mounds on the floodplain, used to fill anthropogenic holes, buried on site, and/or disposed into upland areas.
AQ4, AQ6, AQ7	To the greatest degree possible, non-native fill material, originating from outside the project area, shall be removed from the floodplain to an upland site.
AQ4, AQ6, AQ7, S3	Consider de-compaction of soils once overburden material is removed.
W8,V4, AQ6, AQ10, AQ12, S3	Place barriers-boulders, fences, gates, etc-outside of the bankfull width and across traffic routes to prevent unauthorized ORV access into and across streams and RMAs.

Recreation Activities (cont.)

AQ1, AQ3, AQ6, AQ11, S3	Design, construct, and operate recreation facilities, including trails and dispersed sites, in a manner that does not retard or prevent attainment of the aquatic objectives. Complete and ID team analysis of aquatic objectives prior to construction of new recreation facilities inside riparian management areas (RMAs, see aquatic resources section in Ch2). For existing recreation facilities inside RMAs, assure that the facilities or use of the facilities will not prevent attainment of aquatic objectives. Relocate or close recreation facilities where aquatic objectives cannot be met.
AQ1, AQ3, AQ6, AQ11, S3	Adjust dispersed and developed recreation practices that retard or prevent attainment of aquatic objectives. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective in meeting aquatic objectives and avoiding adverse effects on aquatic objectives, eliminate the practice or occupancy.
S1, S3, W8, AQ3, AQ6, W5, W8, VR1, WC1	Prohibit solid and sanitary waste facilities in RMAs.
S3, AQ4	Do not allow "Open" OHV designations on sensitive soils.
V2	Campgrounds, OHV play areas and other areas concentrating recreational uses would be developed well away from special status plant habitat.
V2	OHV use would be limited to designated routes when adjacent to special status plant habitat.
W4, W5	Manage public vehicle access to maintain the habitat effectiveness of security cover and key seasonal habitat (such as winter range) for deer and elk.
W5, W4	Consult with ODFW prior to undertaking major construction, and/or surface disturbing activities in high value wildlife habitats.

Roads, Trails, and Landings

AQ6, AQ12, AQ13	Removal or replacement of existing road-stream crossing structures (culverts, bridges, etc.). Construction may involve use of heavy equipment, such as excavators, cranes, backhoes, front-end loaders, dump trucks, bull dozers, and on occasion pile-drivers and helicopters. Upstream of the isolated project area, coffer dams (diversions) constructed with non-erosive materials are typically used to divert stream flow with pumps or a by-pass culvert. Heavy equipment may only be used when an ID team has determined that it will not retard attainment of Aquatic Objectives. Also follow BMPs under Watershed Restoration - Removal of Legacy Structures
AQ3, AQ6, T1	Projects should be reviewed by an engineer with design input from an experienced fisheries biologist and hydrologist. Such personnel shall oversee or review the project during construction to ensure that BMPs are being properly implemented. A licensed engineer will provide design review for projects that result in structures that are greater than 20′ in width.
AQ4, AQ6	Assess sites for a potential to headcut below the natural stream gradient. Use field surveys and quantitative analysis to assess headcut potential.

Culverts, Bridges, Stream Crossings, and Construction Sites (cont.)

AQ4, AQ12, AQ13	Flood relief culverts will be designed to restore and maintain access to off-channel holding areas for aquatic species (including fish). Therefore, existing floodplain channels should be the first priority for location of flood relief culverts. Flood relief culverts should be installed in a manner that match floodplain gradient and do not lead to scour at the outlet.
AQ6, AQ12, AQ13	The stream slope at the stream crossing shall approximate the average channel gradient of the natural stream up and downstream of the structure. The maximum slope for closed-bottomed culverts shall not exceed 6% because of difficulties in retaining substrate in the culvert at higher gradients. Open-bottom arches can be placed in channel gradients that exceed 6%.
AQ6, AQ13	If a closed culvert is used, the bottom of the culvert shall be buried into the streambed not less than 20% and not more than 50% of the culvert height. For open-bottomed arches and bridges, the footings or foundation shall be designed to be stable at the largest anticipated scour depth. Substrate and habitat patterns within the culvert should mimic stream patterns that naturally occur above and below the culvert. Coarser material may be incorporated to create velocity breaks during high flows, thereby improving fish passage, and to provide substrate stability.
AQ6, AQ12, AQ13	The use of riprap is permissible above bankfull height to protect the embankment. If the use of riprap is required for structure stability, then an additional analysis may be required to ensure that the structure is not undersized. Riprap may only be placed below bankfull height when necessary for protection of abutments and pilings for bridges. However, the amount and placement of riprap around the abutments and/or pilings should not constrict the bankfull flow.
AQ6, AQ12, AQ13	Grade control structures are permitted to prevent headcutting above or below the culvert or bridge. Grade control typically consists of boulder structures that are keyed into the banks, span the channel, and are buried in the substrate. The hydraulic impacts of grade control structures must be analyzed for effects on the stream crossing.
S3, AQ1, AQ3, AQ5, AQ6, T4-6	Incorporate road dips into stream crossing design, to ensure catastrophic flood events will transport overflow back into the stream channel instead of onto the road bed.
AQ6, AQ12, AQ13	Structures containing concrete must be cured or dried (approx 7 days) before they come into contact with stream flow.
AQ6, AQ12, AQ13, W8	In cases of structure removal or replacement, restore the stream channel and reconnect the floodplain at the site. Also follow BMPs under Watershed Restoration - Removal of Legacy Structures
AQ6, AQ12, AQ13, W8	Limit activities of mechanized equipment to streambank areas or temporary platforms when installing or removing structures, unless channel is dewatered.
AQ6, AQ12, AQ13, W8, S3	If access is required through construction site, a temporary crossing shall be constructed and removed within the same instream period and the disturbed ground shall be rehabilitate to pre-existing conditions. Rehabilitation will include re-vegetating, re-contouring and controlling surface erosion through the following two years.
AQ6, AQ12, AQ13, W8	Re-vegetate disturbed areas with vegetation of similar structure and composition to pre-existing vegetation and ground cover. Use native species. Conserve on site woody vegetation for rehabilitating disturbed areas (in channel structure, upland down wood, bank erosion control, etc). Flush cut or remove entire root wad. If wood is kept on site to meet upland down wood objectives, place away from area prone to firewood use. Large woody debris resulting from clearing activities may be placed in the downstream channel to meet aquatic objectives.
W8,V4, AQ6, AQ10, AQ12, S3	Mitigate loss of snags where snags will not create a safety hazard.

Culverts, Bridges, Stream Crossings, and Construction Sites (cont.)

AQ6, AQ12, AQ13, W8	Design temporary crossings to pass existing flow plus the 10 year event (probability) for 6 hr rainfall events to account for summer thunderstorms or 24 hour event for winter flows.
AQ6, AQ12, AQ13	Monitor structures after high flow events, which occur during the first fall/winter/spring after project completion. Assess the following parameters: headcutting below natural stream gradient, substrate embeddedness in the culvert, scour at the culvert outlet, and erosion from sites associated with project construction. Apply remedial actions to correct.
AQ6, AQ12, AQ13	If necessary to meet Aquatic Objectives, per an ID team review, isolate construction area and remove fish from project area (see BMPs under Monitoring and Other Activities).
W8,V4, AQ6, AQ10, AQ12, S3	Limited cutting or removal of vegetation on the closed road-bed to the amount required to access the culvert site
S3, AQ4, AQ6	Minimize water velocity, and minimize water travel time on roads, road cuts, road fills, in ditches and in other drainage features containing coarse or fine sediment.
AQ4, AQ6	For road removal projects within riparian areas, recontour the affected area to mimic natural floodplain contours and gradient..
AQ13, AQ9, AQ6, W1,W4, W5, W6, W7, W8,	Restore natural drainage patterns and when possible promote passage of all fish species and life stages present in the area. Evaluate channel incision risk and construct in-channel grade control structures when necessary.
AQ6, AQ12	Use sediment control barriers immediately adjacent to the stream, between the disturbance areas and the stream as necessary to ensure no visible increase in stream turbidity occurs.
T1, T2, AQ6, W8	Space drainage features used for storm-proofing and treatment projects to prevent road surface runoff from entering stream channels.
AQ4, AQ6, AQ7	Dispose of slide and waste material in stable sites out of the flood prone area (the elevation at two times max bankfull depth). Waste material other than hardened surface material (asphalt, treated timbers, metal objects, etc) may be used to restore natural or near-natural contours.
AQ4, AQ6, AQ10, V4, W8	Minimize disturbance of existing vegetation in ditches and at stream crossings.
S3, AQ4	Conduct activities during dry-field conditions-low to moderate soil moisture levels
AQ6, AQ12, AQ13, W8	When removing a culvert from a first or second order, second order, or non-fishing bearing stream, ID team shall determine if culvert removal should require dewatering or fish removal or both as described under Monitoring and Other Activities.
AQ6, AQ12, AQ13, W8	Culvert removal on fish bearing streams requires dewatering and fish removal as described under Monitoring and Other Activities.
AQ5, AQ6, AQ14	Diversions constructed with material mined from the streambed or floodplains are not permitted.
AQ12	Pumps must have fish screens and be operated in accordance with state and federal fish screen criteria.
AQ12, AQ13	If diversion allows for downstream fish passage, (i.e., is not screened), place diversion outlet in a location to promote safe reentry of fish into the stream channel, preferably into pool habitat with cover.
AQ6, AQ10	Dissipate flow energy at the bypass outflow to prevent damage to riparian vegetation or stream channel.

Culverts, Bridges, Stream Crossings, and Construction Sites (cont.)

AQ5, AQ6, AQ12	When necessary, pump seepage water from the de-watered work area to a temporary storage and treatment site or into upland areas and filter water prior to reentering the stream channel.
AQ6, AQ12, AQ13, W8	When dewatering is no longer required, slowly release water back into the channel. Prevent loss of surface water downstream as the construction site streambed absorbs water. Prevent a sudden increase in stream turbidity. Monitor downstream during this process to prevent stranding of aquatic organisms below the construction site.
AQ6, AQ12, AQ13, AQ3, W8, W4	Use temporary stream crossings to access the opposite side with any equipment or vehicles (including ATVs). Follow BMPs under Stream Crossings.
AQ6	Use materials that would withstand 100-year flow events (e.g., concrete, well anchored concrete mats, etc.) on permanent low water ford crossings.
AQ6	Utilize natural bedrock geology to provide hardened and stable low water ford crossings. Where erosive soils exist, harden approaches with non-erodible materials on permanent crossings. Provide relief drainage on approaches.
AQ6, AQ12, AQ13, AQ3, W8, W4	Use washed rock/gravel in temporary low water ford crossings, where a non-fill structure is not possible.
AQ6, AQ12, AQ13, AQ3, W8, W4	Restrict access to temporary crossings.
AQ6, AQ12, AQ13, AQ3, W8, W4	Use ramped low water fords in debris flow susceptible streams (e.g., if the temporary crossing is a low water ford, access should be restricted to blocked residences, emergency vehicles, contractors, and BLM inspection personnel).

Road and Landing Construction, Maintenance, Renovation, and Improvements

AQ4, AQ6, AQ13, AQ13, W8, W4, W5	Road rehabilitation includeds everything from simple closures to more complex road obliteration and removal, with an overall goal of restoring hydrologic functions. This includes the following: eliminate or reduce erosion and mass-wasting hazards associated with roads; eliminate or reduce human access and associated impacts to aquatic systems; enhancing natural hydrologic processes through reduction of drainage network. Actions such as bridge and culvert removal, removal of asphalt and gravel, installing drainage culverts, constructing road dips, subsoiling or ripping of road surfaces, outsloping, waterbarring, fill removal, sidecast pullback, re-vegetating with native species and placement of large wood and/or boulders are included. Roadway barricading to exclude vehicular traffic is covered only if the overall road remediation project substantively addresses restoration of hydrologic function. This category also includes storm-proofing roads intended to remain open, thereby hydrologically disconnecting such roads from watershed streams. For culvert removals on closed roads, limited cutting or removal of vegetation on the closed road-bed to access the culvert site may be required. Construction would involve use of heavy equipment, such as excavators, backhoes, front-end loaders, dump trucks, and bull dozers.
AQ4, AQ6, AQ13, AQ13, W8, W4, W5, S3	Reconstruct road and drainage features that: do not meet design criteria or operation and maintenance standards; have been shown to be less effective for controlling sediment delivery; prevent attainment of terrestrial, aquatic, or riparian objectives; or do not protect watersheds from increased sedimentation and peak flows. Prioritize reconstruction based on current and potential damage to terrestrial, aquatic, or riparian resources; ecological value of the resources affected; and feasibility of options such as helicopter logging and road relocation out of riparian conservation areas.

Road and Landing Construction, Maintenance, Renovation, and Improvements (cont.)

W4, W5, W7, W8, AQ9, AQ10	Close and stabile or obliterate and stabilizing roads not needed for future management activities. Prioritize based on current and potential damage to terrestrial, aquatic, and riparian resources and ecological value of the resources affected.
AQ6, AQ7	For road removal projects within riparian areas, recontour the affected area to mimic natural floodplain contours and gradient to the greatest degree possible.
AQ6, AQ7	When obliterating or removing segments immediately adjacent to the stream, consider using sediment control barriers between the project and the stream.
AQ6, AQ7	Drainage features used for stormproofing and treatment projects should be spaced as to hydrologically disconnect road surface runoff from stream channels.
AQ4, AQ6, AQ7	Dispose of slide and waste material in stable sites out of the flood prone area (the elevation at two times max bankfull depth). Waste material other than hardened surface material (asphalt, treated timbers, metal objects, etc) may be used to restore natural or near-natural contours.
AQ6, AQ7, AQ10, AQ11	Minimize disturbance of existing vegetation in ditches and at stream crossings to the greatest extent possible.
S3	Conduct activities during dry-field conditions-low to moderate soil moisture levels
AQ11, AQ12	For culvert removal projects, restore natural drainage patterns and when possible promote passage of all fish species and life stages present in the area. Evaluate channel incision risk and construct in-channel grade control structures when necessary. Also follow BMPs under Watershed Restoration - Removal of Legacy Structures
S3, AQ6, AQ7,	Minimize water velocity, and minimize water travel time on roads, road cuts, road fills, in ditches and in other drainage features containing coarse or fine sediment.
AQ6, AQ12	During maintenance or repair, place woody debris from the road-crossing inlet downstream of the road crossing.
AQ6, AQ12	Monitor stream crossing structures after high flow events. Assess the following parameters: headcutting below natural stream gradient, structural damage, substrate embeddedness in the culvert, debris collection, embankment erosion and scour at the structure outlet and footings. Apply remedial actions to correct. Also follow BMPs under Watershed Restoration - Removal of Legacy Structures
W8, AQ6	Mitigate loss of snags where snags will not create a safety hazard.
W4, W5, W7, W8, AQ9, AQ10	Locate landings outside of Jurisdictional Wetlands and RMAs.
W4, W5, W7, W8, AQ9, AQ10	Locate new landings outside of Riparian Management Areas or at least 300 ft from waterbodies (whichever is greater) and avoid expanding existing landings in Riparian Management Areas when sediment delivery to stream channels could occur.
W4, W5, W7, W8, AQ9, AQ10, S3	Locate landings in areas with low risk for landslides.
AQ3, AQ13, AQ9, AQ10, W4, W8, S3	Retain vegetation on cut slopes unless it poses a safety hazard or restricts maintenance activities. Roadside brushing of vegetation should be done in a way that prevents disturbance to root systems and visual intrusions (such as avoid using excavators for brushing).

Road and Landing Construction, Maintenance, Renovation, and Improvements (cont.)

S3, AQ6, W5	Leave abandoned roads in a condition that provides adequate drainage without further maintenance. Close abandoned roads to traffic. Physically obstruct the road with gates, large berms, trenches, logs, stumps, or rock boulders as necessary to accomplish permanent closure.
S3, AQ4, AQ6, W5	Decommission or obliterate roads no longer needed.
W5	Manage public vehicle access to maintain the habitat effectiveness of security cover and key seasonal habitat (such as winter range) for deer and elk.
W4, W5, W7, W8, AQ6, AQ9, AQ10, S3	Keep roads and other facilities to a minimum. When needed to meet short and long term management objectives, they should be located, designed and constructed to the standards necessary for the total land use and resource values involved.
AQ5, AQ6, AQ14	Locate new roads to minimize the risk of material entering adjacent streams or other waters.
VR1, AC1, AQ6, S3, V4	Roads should fit the topography so that a minimum alteration of natural features will be necessary.
VR1, AC1, AQ6, S3, V4	Locate roads on stable terrain such as moderate sideslopes or ridgetops wherever possible. When roads must cross potential unstable terrain, design the road to the extent necessary to prevent unacceptable damage. Where sidecasting of waste material during road excavation will cover the downslope soil with rock and subsoil incapable of supporting productive vegetation, consider endhauling waste material to stable areas of more moderate topography.
VR1, AC1, AQ6, AQ9, S3, V4	Locate roads away from wet or marshy areas and other wetlands, meadows, riparian areas, and stream banks. Provide necessary drainage and streambank protection.
AQ6, S3, V4	Minimize the number of stream crossings. Cross streams as close to a right angles to the main channel as possible.
AQ5, AQ6, S3, V4	Areas of vegetation should be left or established between roads and streams.
W5	Avoid locating roads through crucial deer and elk winter range, when feasible.
VR1, AC1, AQ6, S3, V4, W5, W8	Roads should avoid being located through non-forest or non-commercial forest habitats with high wildlife values.
AQ3, AQ13, AQ9, AQ10, W4, W8	Avoid brushing along stream channels and floodplains. Brushing may be unavoidable if it is necessary for human safety or to avoid threats to structural stability where modifying structure design would not eliminate the need for brushing. Do not brush beyond 4 feet of the road as measured by the edge of the drivable road surface (not measured from turnouts or road shoulder). Maintain riparian overstory to provide stream shade. Maintaining a minimum height of riparian vegetation by brushing once every 3 years instead of once every 5 years. Prune riparian vegetation rather than completely removing it. Preserve as much ground vegetation as possible, and brush only where necessary for human safety rather than for convenience.
VR1, T1, AQ5, AQ6	Consistent with good safety practices and intended use, design each road to the minimum-use standards adapted to the terrain and soil materials to minimize surface disturbance and damage to water quality.
AQ5, AQ6, S3	Use a flexible design to minimize damage to soil and water quality.
VR1, AC1, AQ6, S3, V4	Design roads no wider than necessary to accommodate the immediate anticipated use.

Road and Landing Construction, Maintenance, Renovation, and Improvements (cont.)

S3, AQ6	Design cut and fill slopes at the normal angle of repose or less.
S3, T1, AQ6	Do not allow culvert out-flow to be discharged onto unprotected fill slopes. Install energy dissipaters at culvert outlets or in half rounds where needed.
AQ13	Design water crossing structures to provide for adequate fish passage, minimum impact on water quality, and the 25-year frequency storm. Increases in water yield and peak flows resulting from vegetation removal would be kept in mind when designing structures.
AQ6	Design roads to drain normally by outsloping and by grade changes whenever possible. Where outsloping is not feasible, use roadside ditches and culverts to drain roads onto undisturbed ground.
S3, AQ1, AQ3, AQ5, AQ6, T4-6	Provide dips, waterbars, and cross-drainage on all temporary roads.
AQ6	Place drainage diversions approximately 50 ft above stream crossings so that water may be filtered through vegetative buffers before entering the stream.
AQ5, AQ6, S3	Provide drainage where groundwater causes slope instability.
AQ5, AQ6, S3, T1, AQ13	Skew culverts approximately 30 degrees toward the inflow to provide better inlet efficiency.
AQ6, S3	Plan ditch gradients steep enough (generally greater than 2% to prevent sediment deposition.
AQ5, AQ6, S3, T1, AQ13	Limit excavation to the essential amount needed to meet the necessary road standards. Plan for stabilization of exposed soil and for rehabilitation of other environmental damage during construction.
AQ6, S3	Haul all excess material removed by maintenance operations to safe disposal areas. Apply stabilization measures on disposal sites if necessary to assure that erosion and sedimentation do not occur.

Mining

Mineral Development and Use

AQ3, W8, V2, V4, V5, W8	Develop inspection, monitoring, and reporting requirements for mineral activities. Evaluate and apply the results of inspection and monitoring to modify mineral plans, leases, or permits as needed to eliminate impacts that retard attainment of aquatic objectives.
AQ3, W8, V2, V4, V5, W7, W8	Require the claimant to obtain all required state and federal operating permits.
AQ5, AQ6, AQ14	Locate, design, operate and maintain sediment settling ponds in conformance with Oregon Department of Environmental Quality guidelines.
AQ6, W5	Use existing roads, skid trails and stream crossings whenever possible.
AQ5, AQ6, AQ12	Adequate drainage of surface runoff will be necessary for roads that are constructed or reconstructed for vehicular access to the mining area. If roads are to be utilized during winter months (October 15 - April 15) surface the roads with rock.

Mineral Development and Use (cont.)

R1, AQ3, AQ4, W1	Reclaim the mining area and access roads and trails at the conclusion of mining operations and at reasonable intervals to minimize disturbed areas not in use for a few years.
AQ5, AQ6	Construct a berm or trench between disturbed areas and water courses when needed to protect water quality.
W4, W5, W7, W8, AQ9, AQ10, S3	Stockpile topsoil for use during reclamation of the site. In the interim, stabilize stockpiled topsoil to prevent erosion and contamination of other resources in the area.
AQ6, S3	If erosion is predicted to occur from October 15 to May 15, contour and mulch disturbed areas that will not be mined for at least 30 days.
AQ5, AQ6	If possible, retain an undisturbed riparian buffer strip between mining operations and water courses to protect integrity of streambanks, provide for water temperature control, and for filtration of sediment from surface runoff.
AQ6, S3	Confine operations to bench areas rather than allow encroachment on the RMA.
AQ6, AQ10, V1, V2, V4, W4, AC1, N1, W7, W8	Locate and maintain sanitation facilities in accordance with state and local regulations and district policies.
AQ6, AQ12, AQ13, AQ3, W8, W4	Construct and rehabilitate temporary roads to minimize total surface disturbance, consistent with intended use.
W5	In areas of important big game habitat, consultation with the wildlife biologist will be necessary to reduce impacts on wildlife, particularly in areas such as ridgelines, saddles, and upper drainage heads.
W5	Manage public vehicle access to maintain the habitat effectiveness of security cover and key seasonal habitat (such as winter range) for deer and elk;
W5, W4	Consult with ODFW prior to undertaking major construction, and/or surface disturbing activities in high value wildlife habitats.

Lands and Realty

Land Acquisition, Exchange, Retention, or Disposal; Rights-of-Way, and Utility Corridors

AQ10, AQ11, AQ12, V2, W7	Use land acquisition, exchange, and conservation easements to meet RMP objectives and facilitate restoration of fish stocks and other species at risk of extinction.
AQ1, AQ3-AQ10	Adjust existing leases and permits, rights-of-way, and easements to eliminate effects that would retard or prevent attainment of the aquatic objectives. If adjustments are not effective, eliminate the activity. Where the authority to adjust was not retained, negotiate to make changes in existing leases, permits, rights of way, and easements to eliminate effects that would prevent attainment of the aquatic objectives. Priority for modifying existing leases, permits, rights of way, and easements will be based on the current and potential to attain aquatic objectives.
S3, W4, W5, AQ7	Disturbance from rights-of-way and/or disturbance in utility corridors use areas adjoining or adjacent to previously disturbed areas, rather than traverse undisturbed communities.
W5	In areas of important big game habitat, consultation with the wildlife biologist will be necessary to reduce impacts on wildlife, particularly in areas such as ridgelines, saddles, and upper drainage heads.
AQ10, AQ11, AQ12, V2, W7, W5	When categorizing public land for retention or disposal, and for identifying acquisition priorities, consider the following criteria: Threatened or Endangered or sensitive animal species habitat; riparian areas; important habitat for game animals; key big game seasonal habitat; and others.

Irrigation Screen Installation and Replacement (includes weir removal)

AQ12, AQ13	Irrigation screening and replacement is for existing diversions only and is focused on installing, replacing, or upgrading off-channel screens to improve fish passage or prevent fish entrapment in irrigation canals. This action also includes the removal of non-needed existing diversions that are less than six feet high or impound less than 15 acre feet of water. Construction would involve use of heavy equipment, such as excavators, backhoes, front-end loaders, dump trucks, and bull dozers.
AQ12, AQ13	All fish screens must be sized to match the landowner's documented or estimated historic water use and legal water right(s) which ever is less.
AQ12	Irrigation diversion intake and return points must be designed (to the greatest degree possible) to prevent all native fish life stages from swimming or being entrained into the irrigation system.
AQ8, W8, WSR1	Locate water drafting sites to avoid adverse effects to instream flows, and in a manner that does not retard or prevent attainment of aquatic objectives.
AQ6, AQ12, AQ13, AQ3, W8, W4	Screens, including screens installed in temporary and permanent pump intakes, must meet NMFS fish screen criteria (NMFS 1995). NMFS fish screen criteria applies to federally listed salmonid species under their jurisdiction as well as bull trout under Service jurisdiction.
AQ12, AQ13	Size of bypass structure should be big enough to pass kelt steelhead and migratory bull trout back into the stream.
AQ6, AQ12, AQ13	Abandoned ditches and other similar structures will be plugged or backfilled, as appropriate, to prevent fish from swimming or being entrained into them. Also follow BMPs under Watershed Restoration - Removal of Legacy Structures
AQ12, AQ13	When making improvements to pressurized irrigation systems, install a totalizing flow meter capable of measuring rate and duty of water use. For non-pressurized systems, install a staff gage or other measuring device capable of measuring instantaneous rate of water flow.

Monitoring and Other Activities

Fish Handling

AQ12, AQ13	Fish handling includes capture, removal, and relocation of fish.
AQ12, AQ13	All fish capture, removal, and handling activities shall be conducted by an experienced fisheries biologist or technician.
AQ6, AQ12, AQ13	Isolated captures - Install block nets at up and downstream locations and leave in a secured position to exclude fish from entering the project area. Leave nets secured to the stream channel bed and banks until fish capture and transport activities are complete. If block nets or traps remain in place more than one day, monitor the nets and or traps at least on a daily basis to ensure they are secured to the banks and free of organic accumulation and to minimize fish predation in the trap.
AQ12, AQ13	Hand collection - Collect fish by hand or dip nets, as the area is slowly dewatered.
AQ12, AQ13	Seining - Use seine with mesh of such a size to ensure entrapment of the fish of concern
AQ12, AQ13	Minnow traps - Traps will be left in place overnight and in conjunction with seining.
AQ10, AQ12, AQ13	Reduce risk of introduction of aquatic invasive species by sterilizing wading and sampling equipment.
AQ6, AQ12, AQ13, W8	Electrofishing - Prior to dewatering, use electrofishing only where other means of fish capture may not be feasible or effective. If fish are observed spawning during the in-water work period, electrofishing shall not be conducted in the vicinity of spawning adult fish or active redds. Only Direct Current (DC) or Pulsed Direct Current (PDC) shall be used for electrofishing. Conductivity <I00 use voltage ranges from 900 to 1100. Conductivity from 100 to 300 then use voltage ranges from 500 to 800. Conductivity greater than 300 then use voltage to 400. Begin electrofishing with minimum pulse width and recommended voltage and then gradually increase to the point where fish are immobilized and captured. Turn off current once fish are immobilized. Do not allow fish to come into contact with the electrofishing anode. Do not electrofish an area for an extended period of time. Remove fish immediately from water and handle as described below. Dark bands on the fish indicate injury, suggesting a reduction in voltage and pulse width and longer recovery time.
AQ6, AQ12, AQ13, W8	Do not dewater a channel in a way that halts water flow downstream beyond the project site. Gradually dewater and water project area to maintain downstream flow.

Survey and Monitoring

AQ3, AQ4	Projects may include but are not limited to surveys to document recreation use, resource values, aquatic and riparian attributes, cultural resources (including excavating test pits <1 square meter in size), and presence/absence surveys for listed terrestrial wildlife, bird, and plant species in the project area.
AQ12	When monitoring requires the relocation of fish or work in fish habitat, use personnel trained in methods that prevent or minimize disturbance of fish.
AQ12	Avoid impacts to fish redds. When possible, avoid sampling during spawning periods.
AQ1,W1, N1	Coordinate with other local agencies to prevent redundant surveys.
AQ6	Locate excavated material from cultural resource test pits away from stream channels.
AQ6, AQ7	Replace all material in test pits when survey is completed and stabilize the surface.
AQ5, AQ10, AQ12, AQ13	Reduce risk of introduction of aquatic invasive species by sterilizing wading and sampling equipment.

Appendix C: Noxious Weed Control Mitigations/Stipulations

The following District mitigation/stipulations apply to the District's Integrated Weed Management program for all noxious weed control activities all BLM lands except for WSAs without specific management plans or EA's pertaining to weed management:

1. Cultural (prevention) activities such as inspection (weed surveys), regulation (ROWs), sanitation (wash and clean vehicles) and education will be encouraged and enforced for all high priority developed multi-use recreational areas, especially those along the Lower John Day River.
2. Physical control practices (Mechanical) such as mowing, tilling, disking, seedbed preparation, and prescribed burning (if over 40 acres) treatments will require a separate EA. Small mechanical treatment areas of less than 5 acres may only require a CE.
3. All manual control practices (hand pulling and hand tools) will be done before seed ripe or dispersal and the plant residue collected as needed for burning (piles) or bagged and removed from site(s). On small isolated sites such as undeveloped primitive camp sites along the JDR manual control may be given priority consideration and users are encouraged to manually pull, grub, or hoe out the few plants to small patches of noxious weeds. Educational brochures identifying weed species of concern will be made available at all developed boating access points.
4. Biological control practices methods such as introduced insects, competitive seedings, pathogens or grazing (goats or sheep) will be given consideration District wide. ODA approved biocontrol agents (insects or pathogens) will be given emphasis for release to control/contain larger infestations where containment is major goal. The approval for release of beneficial insects or pathogens must use the same procedures as herbicides – using the Biological Control Agent Release Proposal (BCARP) and Record (BCARR). Only ODA approved biological control agents will be allowed for release after District and State Office approval.
5. A Special Status Plant and Animal survey or clearance will be done prior to any treatment.
6. A cultural survey or clearance is required before any soil surface disturbing activity from physical weed control practices (mechanical or prescribed fire) occurs. Hand pulling, grubbing or hoeing a few plants or scattered plants on public land sites less than 5 acres (such as undeveloped campgrounds along the Lower JDR in WSAs and/or WSRs is authorized)
7. All herbicide use will comply with USDI rules and policy, BLM policy and guidelines, Oregon State laws and regulations, OR Department of Agriculture (ODA) laws and regulations, Environmental Protection Agency (EPA) , federal pesticide laws (FIRCA), Oregon Department of Environmental Quality (DEQ) regulations, Local County Weed District Priorities and requirements and by Law must follow product label requirements.
8. All pesticide (herbicide) applicators are required to submit proposals using
   a. a Pesticide Use Proposal (PUP) form (which BLM may approve for use of up to 3 years, if same chemical, same target weed, and same area);
   b. a Pesticide Application Record (PAR) to be completed after application and promptly submitted to the district office.
9. All herbicide applications will only be applied by a Oregon State licensed and certified applicator.
10. Material Safety Data Sheets (MSDSs for each herbicide being applied will be at site with applicator, and guidelines and information found in "Oregon Pesticide Applicator Manual" as updated will be followed
11. Areas of known or suspected Federal Listed, Candidate or Proposed or Oregon Candidate (old C-1) or Species of Concern (old C-2) amphibians will have as a minimum 100-foot buffer strip from live water for all herbicide applications, with the exception for the use of Rodeo.

12. Use of existing trails/access routes or roads for emergency weed control activities will be allowed by vehicles even in WSAs, but use off existing routes for prescribed fire, herbicide application, or seeding practices will only be by ATV type vehicles. All seeding in WSAs will be by broadcast methods.
13. Herbicide Use Restrictions are as follows:
    a. No vehicle mounted or powered boom sprayers or handguns will be used within 25 feet of surface (live) water.
    b. No booms or powered equipment applicators would be used in riparian areas, where weeds are closely intermingled with trees and shrubs.
    c. Liquid herbicides can be applied (at a height of 0.5 ft to 2.5 ft. above ground) to areas for spot treatments with hand spraying (backpack) equipment (single nozzle, low pressure and volume) to within 10 feet of live water. Use of mule or horse mounted equipment would also be allowed.
    d. Spreader equipment (broadcast) could be used to apply granular formulations applied at a height of about 3.5 feet, to within 10 feet of the high water line of live water.
    e. Contact Systemic Herbicides (such as Glyphosate - Rodeo or Accord) may be allowed using hand wipe applications on individual plants up to the existing high water line.
    f. When wind speeds exceed 5 mph, no spray equipment will be used in riparian areas or near water, and no aerial applications are allowed in riparian or wetland areas. No aerial application of Glyphosate is allowed.
    g. No application of herbicides will occur if wind speeds exceed 8 mph.
    h. All aerial application of herbicides will be done only by helicopter and allowed within the constraints of the Final NW Area Noxious Weed Control Program EIS (1985) as supplemented 1987, and ROD pages 1-3 (May 5, 1987). A buffer strip of 100 feet will be established between target weed areas and any live water/riparian areas.
    i. No aerial application of herbicides will be permitted without written approval from the authorized officer.
    j. No aerial application of herbicides will be permitted when wind speeds exceed 5 mph.
    k. For OR/WA only 2,4-D, picloram (Tordon), dicamba, and glyphosate (Rodeo and Accord only) and approved combinations will be allowed as per ROD (1987) from Supplemental FEIS (1987). Acceptable formulations, EPA registration numbers, maximum rates of application, and mixture stipulations are referenced from BLM Approved list March 1994 (see Appendix 6 as updated) and from Table 1-3 p. 9 FEIS (1985)
    l. All chemicals will be applied only in accordance with BLM, EPA, ODA requirements, and Herbicide LABEL standards/stipulations.
    m. Pesticide Use Proposals (3 year approval) for herbicide application within boundaries of WSAs, or WAs, and RNAS will be reviewed and evaluated by Resource Area staff on a year to year basis.
    n. Monitoring pretreatment and post-treatment will be done yearly (pre and post spray applications) on all treated areas.
    o. In aerial applications a 500 foot unsprayed buffer strip will be left next to inhabited dwellings unless waived in writing by the residents. A 100 foot buffer of unsprayed strip will be left next to croplands and barns.
    p. Additional Herbicides if approved may be used subject to all the above mitigation measures, label restrictions and within limits of ROD or specific approval recommendations.
    q. The maximum rates of application for the four approved herbicides (per Table 3-1 from FEIS 1985): (ai = active ingredients of specific herbicide).

Rates for Herbicide Applications by Ground Methods (vehicle and hand)

Application of Single Herbicide:		Application of Tank Mixes:	
Herbicide	**Maximum Rate**	**Herbicide**	**Maximum Rate**
2,4-D Dicamba Glyphosate Picloram	3 lb ai/ac 6 lb ai/ac 3 lb ai/ac 1 lb ai/ac	2,4-D and Dicamba Picloram and 2,4-D	2 lb ai/ac 2,4-D 1.5 lb ai/ac Dicamba 0.5 lb ai/ac Picloram 1 lb ai/ac 2,4-D
Rates for Herbicide Applications by Aerial Method (helicopter only)			
2,4-D Picloram	3 lb ai/ac 1.0 lb ai/ac	2,4-D and Dicamba	2.0 lb ai/ac 2,4-D 1.5 lb ai/ac Dicamba
(ai = active ingredients of specific herbicide)			

14. All other stipulations and mitigation in FEIS (1985) pp. 1-7 to 1-10, Supplemental FEIS (1987) pp. 119-122, RODs (1986) or (1987), and the ROD for the national *BLM Vegetation Treatments Using Herbicides on BLM Lands in the 17 Western States Final Programmatic EIS* (October 2, 2007); see PEIS Appendix B; IM 2008-030) will apply. In addition, the stipulations and mitigation from the FEIS 1991 and its ROD will apply for all additional chemicals (herbicides) if or when approved for noxious weed control.

Appendix D: Special Status Plants Documented or Suspected on BLM Lands in the John Day Basin Planning Area

Species	Common Name	Occurrence	No. BLM Sites	STATUS (see below for explanation)			
				BLM	Federal	State	ONHIC
Achnatherum hendersonii				SEN	SOC	CA	1
Achnatherum wallowaensis				SEN	SOC		1
Astragalus collinus var. *laurentii*	Lawrence's milkvetch	Suspected		SEN	SOC	LT	1
Astragalus conjunctus var. *rickardii*	Idaho milkvetch	Suspected		STR			3
Astragalus diaphanus var. *diurnus*	transparent milkvetch	Documented	22	SEN		LT	1
Astragalus tegetarioides	bastard kentrophyta	Suspected		SEN	SOC	CA	1
Botrychium ascendens	triangle-lobe moonwort	Suspected		SEN	SOC	CA	1
Botrychium crenulatum	scalloped moonwort	Suspected		SEN	SOC	CA	1
Botrychium minganense	Mingan moonwort	Suspected		SEN			4
Botrychium montanum	mountain moonwort	Suspected		SEN	SOC		2
Calochortus longebarbatus var. *peckii* 1/	Peck's mariposa lily	Suspected		SEN	SOC	CA	1
Camissonia pusilla	little wiry suncup	Suspected		STR			3
Camissonia pygmaea	dwarf evening-primrose	Documented	1	SEN	SOC	CA	1
Carex idahoa	Parry's sedge	Suspected		STR	SOC		1
Coryphantha vivipara var. *vivipara*	cushion coryphantha	Suspected		STR			2
Cymopterus nivalis	Hayden's cymopterus	Suspected		SEN			2
Cypripedium fasciculatum 2/	clustered lady's slipper	Suspected		SEN	SOC	CA	2
Delphinium nuttallii	upland larkspur	Suspected		SEN			2
Heliotropium curassavicum	seaside helitrope	Suspected		SEN			2
Lepidium dictyotum var. *dictyotum*	alkali pepperweed	Suspected		STR			3
Lomatium ravenii	Raven's lomatium	Suspected		SEN			2
Luina serpentina	colonial luina	Suspected		SEN	SOC	CA	1
Malacothrix stebbinsii	Stebbin's malacothrix	Suspected		STR			3
Mimulus evanescens	disappearing monkeyflower	Suspected		SEN	SOC	CA	1
Myosurus sessilis	sessile mousetail	Suspected		STR	SOC	CA	1

Species	Common Name	Occurrence	No. BLM Sites	STATUS (see below for explanation)			
				BLM	Federal	State	ONHIC
Navarretia leucocephala ssp. leucocephala	whitehead navarretia	Suspected		SEN			2
Penstemon deustus var. *variabilis*	hot rock penstemon	Documented	3	STR			3
Phacelia minutissima	dwarf scorpion-weed	Suspected		SEN	SOC	CA	1
Rorippa columbiae	Columbia cress	Suspected		SEN		CA	1
Thelypodium eucosmum	arrow-leaf thelypody	Documented	46	SEN	SOC	LT	1
Thelypodium howellii ssp. *howellii*	Howell's thelypody	Suspected		STR	SOC		2-ex

1/ Conservation strategy in preparation
2/ Conservation assessment prepared (related to Western Oregon Survey and Manage)

Appendix A also indicates various status designations for each species. Following is an explanation of each:

BLM: SEN – Sensitive; STR - Strategic
Federal: SOC – Species of Concern
State: CA – Candidate; SE – Endangered; ST – Threatened

ONHIC (Oregon Natural Heritage Information Center):

1 – Threatened with extinction or presumed to be extinct throughout their entire range;
2 – Threatened with extirpation or presumed to be extirpated from the state of Oregon;
2-ex – Presumed to be extirpated from Oregon;
3 – More information is needed before status can be determined;
4 – Of conservation concern but not currently threatened or endangered

Appendix E: Biophysical Setting Summary

BPS #	Name	Fire Regime	Average Fire Size	Class A Dominant Species	Class A Canopy Cover	% Low ARV	% Mid ARV	% High ARV	Class B Dominant Species	Class B Canopy Cover	% Low ARV	% Mid ARV
81123	Columbia Plateau Steppe and Grassland	2	No Data	PSSP, POSE, FEID	10-50%	4	5	6.5	PSSP, POSE, FEID	50-90%	56	80
81065	Columbia Plateau Scabland Shrubland	5	No Data	ERTH4, POSE, LOMA, STST5	0-10%	4	5	6.5	ERTH4, ARRI2, POSE, STST5	0-10%	4	5
R2SBDWwt	Stiff and Low Sagebrush with Trees	3	No Data	PSSP6, ACTH7, ACHY, POSE	0-4%	7	10	13	ARAR8, ACHY, PSSP6	5-9%	46	65
81080	Inter-Mountain Basins Big Sagebrush Shrubland	3	No Data	POSE, HECO2, AMSIN, EPILO	0-10%	11	15	19.5	POSE, ARTR, GRSP, HECO2	0-10%	25	35
91062	Inter-Mountain Basins Mountain Mahogany W & S land	4	No Data	CELE3, ARTR2, CHRYS, SYMPH	0-40%	4	5	6.5	CELE3, ARTRV, PUTR2, SYMPH	10-50%	7	10
R2SBWYwt	Wyoming Big Sagebrush Semi Desert with Trees	4	No Data	ACHY, HECOC, CHVI8, ARTR	0-10%	11	15	19.5	ARTR, ACHY, CHVI8, HECO2	11-25%	35	50
R2SBMTwc	Mountain Big Sagebrush with Conifers	4	No Data	PSSP6, FEID, SYMPH, ARTRV	0-5%	14	20	26	ARTRV, PUTR2, CONIF, SYMPH	6-25%	35	50
R2PIJU	Juniper Steppe Woodland	3	No Data	EPAN, CRAC, CRYP, SENEC	2-10%	4	5	6.5	ARTRV, SYOR, ACOC3, CRAC	5-10%	4	5
81053x	N. Rocky Mt. Ponderosa Pine Woodland-Xeric	3	No Data	ARTR, CHVI8, AGSP, ELEL5	0-50%	18	25	32.5	PIPO, JUOC, FEID, ARTR	25-70%	4	5
81053m	N. Rocky Mt. Ponderosa P. Woodland Mesic	1	No Data	PIPO, FEID, PUTR2	0-30%	7	10	13	PIPO, PUTR2, FEID	41-80%	4	5
81045	N. Rocky Mt. Dry-Mesic Montane Mixed Conifer Forest	1	1000	PIPO, PSME, LAOC, CAGE2	0-20%	7	10	13	PIPO, PSME, LAOC, ABGR	41-100%	4	5
910470	Northern Rocky Mountain Western Hemlock-Western Red-cedar Forest	3	No Data	CEVE, ACGL, SASC, PHMA	0-100%	11	15	19.5	PSME, ABGR, PIPO, LAOC	51-100%	28	40
911670	Rocky Mountain Poor Site Lodgepole Pine Forest	4	No Data	PICO	0-80%	18	25	32.5	PICO	41-85%	39	55
91046	Northern Rocky Mountain Subalpine Woodland and Parkland	3	No Data	VASC, POPU3, FEVI	0-20%	18	25	32.5	PIAL, VASC, POPU3	21-60%	14	20
91055	Rocky Mt. Subalpine Dry-Mesic Spruce Forest	4	No Data	VASC, ARCO9, ACOC3	0-40%	4	5	6.5	PICO, ABLA, PIEN, PSME	31-60%	14	20

% High ARV	Class C Dominant Species	Class C Canopy Cover	% Low ARV	% Mid ARV	% High ARV	Class D Dominant Species	Class D Canopy Cover	% Low ARV	% Mid ARV	% High ARV	Class E Dominant Species	Class E Canopy Cover	% Low ARV	% Mid ARV	% High ARV
100	ARTR, CHVI4, ERNA1, PSSPS	0-30%	11	15	19.5										
6.5	ARRI2, ERTH4, POSE, STST5	11-30%	63	90	100										
84.5	ARAR8, PSSP6, ACHY	10-20%	7	10	13	JUOC, PSSP6	6-40%	11	15	19.5					
45.5	ARTR, GRSP, POSE, HECO2	11-20%	28	40	52	ARTR, GRSP, POSE, HECO2	21-40%	7	10	13					
13	CELE3, ARTRV, CHRYS, SYMPH	10-50%	11	15	19.5	CELE3, ARTRV, PUTR2	11-40%	32	45	58.5	CELE3, SYMPH, ARTRV, FEID	10-60%	18	25	32.5
65	ARTR, CHVI8, ELEL5, HECO2	26-35%	18	25	32.5	JUNIP, ARTR	0-15%	4	5	6.5	JUNIP	16-90%	4	5	6.5
65	ARTRV, PUTR2, SYMPH, CONIF	26-45%	11	15	19.5	CONIF, ARTRV, PUTR2, SYMPH	10-25%	7	10	13	CONIF, ARTRV, PUTR2, SYMPH	26-80%	4	5	6.5
6.5	ARTRV, SYOR, POSE, ACOC3	11-20%	7	10	13	JUOC, SYOR, FEID	11-30%	25	35	45.5	JUOC, FEID, BASA	21-40%	32	45	58.5
6.5	PIPO, ARTR, PUTR, AGSP	0-25%	18	25	32.5	PIPO, ARTR, CELE3, ELEL5	0-25%	28	40	52	PIPO, CELE3, JUOC, FEID	25-70%	4	5	6.5
6.5	PIPO, PUTR2, FEID, CEVE	10-40%	25	35	45.5	PIPO, PUTR2, FEID, CEVE	10-40%	32	45	58.5	PIPO, PUTR2, FEID	41-80%	4	5	6.5
6.5	PIPO, PSME, LAOC, ABGR	11-40%	21	30	39	PIPO, PSME, LAOC, ABGR	11-40%	32	45	58.5	PIPO, PSME, ABGR, LAOC	41-100%	7	10	13
52	PIPO, LAOC, PSME, ABGR	0-50%	7	10	13	PSME, PIPO, LAOC, ABGR	0-50%	7	10	13	ABGR, PSME, PIPO, LAOC	51-100%	18	25	32.5
71.5	PICO, LUPIN, RICE	0-40%	14	20	26										
26	PIAL, ABLA, VASC, POPU3	21-50%	39	55	71.5										
26	PICO, ABLA, PIEN	11-30%	28	40	52	ABLA, PIEN, PICO, VASC	11-40%	18	25	32.5	ABLA, PIEN, PICO, VASC	41-70%	7	10	13

BPS #	Name	Fire Regime	Average Fire Size	Class A Dominant Species	Class A Canopy Cover	% Low ARV	% Mid ARV	% High ARV	Class B Dominant Species	Class B Canopy Cover	% Low ARV	% Mid ARV
91056	PNW Subalpine Wet-Mesic Spruce Forest	4	1000	CHAN9, SASC, VAME, PICO	0-100%	11	15	19.5	ABLA2, PIEN, PSME, ABGR	0-100%	14	20
810610	Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodland	2	10	POTR5, SYOR2, RIBES	0-99%	10	14	18.2	POTR, SYOR2, RIBES	40-100%	28	40
81153	Inter-Mt. Basins Greasewood Flat	5	1	LECI4, SPAI, SAVE4	0-20%	4	5	6.5	SAVE4, DISTI, SPAI, LECI4	0-30%	67	95
81154	Inter-Mountain Basins Montane Riparian Systems	5	100	POPUL, SALIX, ALNUS, CAREX	0-80%	18	25	32.5	POPUL, ALNUS, SALIX	21%-100	46	65
00001	Riparian Systems	3 to 5	100	POPUL, SALIX, ALNUS, CAREX	0-100%	18	25	32.5	POPUL, ALNUS, SALIX	(0-21)-100%	42	60
81159	Rocky Mt. Montane Riparian System	3	100	POPUL, SALIX, ALNUS, CAREX	0-100%	21	30	39	POPUL, SALIX	0-100%	35	50
91160	Rocky Mt. Subalpine/ Upper Montane Riparian Systems	3	10	SALIX, CAREX, PICEA	0-100%	35	50	65	SALIX, CAREX, PICEA	0-100%	35	50
91143	Rocky Mountain Alpine Fell-Field	5	1	SIAC, TRNA2, FEBR	0-20%	4	5	6.5	SIAC, TRNA2, FEBR	21-50%	67	95
911350	IMB Semi-Desert Grassland	4	250	ARTR2, HECO2, ACHY	21-40%	14	20	26	ARTR2, HECO2, ACHY	0-30%	56	80
911400	NRM Subalpine - Upper Montane Grassland	5	No Data	FEVI, LUPIN, JUPA, ACOCO	11-40%	1	1	1.3	FEVI, LUPIN, JUPA, ACOCO	41-90%	56	80
911240	CP Low Sagebrush Steppe	4	No Data	PSSP6, POSE, LOMA, EPPA	0-30%	7	10	13	PSSP6, POSE, LOMA, ARAR8	1-10%	28	40
911450	RM Subalpine-Montane Mesic Meadow	4	50	ERIGE2, LUPIN, DECA	0-100%	4	5	6.5	ERIGE2, LUPIN, DECA	0-100%	32	45

% High ARV	Class C Dominant Species	Class C Canopy Cover	% Low ARV	% Mid ARV	% High ARV	Class D Dominant Species	Class D Canopy Cover	% Low ARV	% Mid ARV	% High ARV	Class E Dominant Species	Class E Canopy Cover	% Low ARV	% Mid ARV	% High ARV
26	PICO, LIBO3, VAME, VASC	0-100%	25	35	45.5	PICO, LIBO3, VAME, VASC	0-100%	14	20	26	ABLA, PIEN, CLUN2, VAME	0-100%	7	10	13
52	POTR, SYOR2, RIBES	40-100%	25	35	45.5	POTR, ABCO, ABLA,	0-40%	7	10	13	ABLA, ABCO, POTR,	40-80%	1	1	1.3
100	SAVE4, DISTI, SPAI, LEIC4	0.00%													
84.5	POPUL, ALNUS, SALIX	21-100%	7	10	13										
78	POPUL, PINUS, ALNUS, SALIX	(0-21)-100%	11	15	19.5										
65	POPUL, PINUS, SALIX	0-100%	14	20	26										
65															
100															
100															
100	ABLA, PIAL, FEVI, ARAC2	21-70%	13	19	24.7										
52	ARAR8, PSSP6, POSE, LOMA	11-30%	35	50	65										
58.5	ASTER, LUPIN, ROWO, RIBES	0-10%	35	50	65										

Appendix F: Comparison of Current Vegetation Conditions to the Acceptable Range of Variability

Grassland	Shrubland	Juniper Woodland	Forestland	Riparian
Rangeland				

BPS	Seral Class	Plan Area Deficit Acres	Plan Area Surplus Acres	BLM Deficit Acres	BLM Surplus Acres	% of BpS in Priority Areas	Probable Treatment Type
IMB Semi-Desert Grassland	A		3897		1498	15.9	RX Fire/Seeding
	B	-498997		-6686			
	U		723619		18343		
CP Steppe & Grassland	B	-229518				0.0	RX Fire/Seeding
	C	-253465		-362			
	U		1238143		5295		
NRM Subalpine - Upper Montane Grassland	A	-124				0.0	RX Fire/Seeding
	B			-2888			
	C	-1977		-686			
	U		3780				
CP Low Sagebrush Steppe	A		119974		3517	23.7	RX Fire/Seeding
	B	-166343		-3006			
	C	-169500		-3013			
	U		358448		6719		
CP Scabland Shrubland	A		224084		2869	2.8	RX Fire/ Mechanical/ Seeding
	B	-15875		-224			
	C	-295167		-3771			
	U		219455		2554		
Stiff & Low Sagebrush w/ Trees	A		365464		2202	26.1	RX Fire/ Mechanical/ Seeding
	B	-566397		-16418			
	C			-473			
	D		3790	-630			
	U		323110		2138		
IMB Big Sagebrush Shrubland	A		295240		15256	3.1	RX Fire/ Mechanical/ Seeding
	B	-575177		-20849			
	C	-641393		-24700			
	U		1394826		28822		

Grassland	Shrubland	Juniper Woodland	Forestland	Riparian
Rangeland				

BPS	Seral Class	Plan Area Deficit Acres	Plan Area Surplus Acres	BLM Deficit Acres	BLM Surplus Acres	% of BpS in Priority Areas	Probable Treatment Type
Wyoming Big Sagebrush Semi-Desert w/ Trees	A		546751		14677	0.0	RX Fire / Mechanical / Seeding
	B	-2588703		-34566			
	C	-531495					
	D		1143557		38618		
	E		285440		18280		
	U		2323975		17147		
Mountain Big Sagebrush w/ Conifers	A		111465			50.0	RX Fire / Mechanical / Seeding
	B	-386582		-4736			
	C	-675					
	D		120132		3745		
	E		193812		5168		
	U		64666		287		
IMB Mountain. Mahogany Woodland and Shrubland	A		16252		18	0.0	RX Fire / Mechanical / Seeding
	B	-6434		-273			
	D			-86			
	U		1545		41		
IMB Greasewood Flat Seral	A		603		22	27.2	RX Fire / Mechanical / Seeding
	B	-2202		-502	9		
	U		2563		37		
Juniper Steppe Woodland	A		28050		877	33.4	Mechanical / RX Fire / Seeding
	B	-11255		-293			
	D	-67226		-3098			
	E		23313				
	U		18605		351		
NRM Ponderosa Pine Woodland - Xeric	A			-197		42.0	Mechanical / RX Fire
	B		258475		3111		
	C	-79527		-1088			
	D	-211431		-5347			
	E		215375		160		
	U		5759		29		
NRM Ponderosa Pine Woodland - Mesic	A				1772	32.5	Mechanical / RX Fire
	B		1190315		9844		
	C	-722343		-3301			
	D	-1110425		-6311			
	E		1299283		5230		
	U		14120		90		

Grassland	Shrubland	Juniper Woodland	Forestland	Riparian
Rangeland				

BPS	Seral Class	Plan Area Deficit Acres	Plan Area Surplus Acres	BLM Deficit Acres	BLM Surplus Acres	% of BpS in Priority Areas	Probable Treatment Type
NRM Dry-Mesic Montane Mixed Conifer Forest	A		33369		37	0.0	Mechanical/ RX Fire
	B		1971674		6661		
	C	-1625468		-4597			
	D	-2424037		-6026			
	E		3211852		18669		
	U		12998		67		
NRM W. Hemlock - W. Red Cedar Forest	A			-40		0.0	Mechanical/ RX Fire
	B			-226			
	C	-39788		-89			
	D	-35584					
	E		100501				
	U		125				
IMB Aspen-Mixed Conifer Forest and Woodland	A			-169		66.8	Mechanical/ RX Fire
	B	-235613		-1550			
	C	-208005		-1406			
	D				1157		
	E		606431		3724		
	U		12267		42		
RM Poor Site Lodgepole Pine Forest	A	-17249		-64		46.8	Mechanical/ RX Fire
	B	-47885		-175			
	C	-17491		-64			
	U		120199		454		
NRM Subalpine Dry Woodland & Parkland	A		15390			0.0	Mechanical
	B			-1			
	C	-12782		-7			
	U		1163				
RM Subalpine Dry-Mesic Spruce Forest	A		56900		3	21.9	Mechanical
	B		74733		7		
	C	-121794		-2			
	D	-74290		-1			
	E		97952		5		
	U		6686				

Grassland	Shrubland	Juniper Woodland	Forestland	Riparian
Rangeland				

BPS	Seral Class	Plan Area Deficit Acres	Plan Area Surplus Acres	BLM Deficit Acres	BLM Surplus Acres	% of BpS in Priority Areas	Probable Treatment Type
RM Subalpine Wet-Mesic Spruce Forest	A		3261			28.6	Mechanical
	B		4582	-3			
	C	-38874		-8			
	D		20811	-4			
	E			-1			
	U		1652				
IMB Montane Riparian Systems	A	-121168		-353		0.0	Mechanical\ Rx Fire
	B	-377346		-2816			
	C		466215		2858		
	U		236584		1442		
Riparian Systems	A		27197		647	23.0	Mechanical\ Rx Fire
	B	-20638		-88			
	C	-4427					
	U		10473		234		
RM Montane Riparian Systems	A	-172232		-986		0.0	Mechanical\ Rx Fire
	B	-313359		-2053			
	C		358017		3529		
	U		291242		846		
RM Subalpine-Montane Mesic Meadow	A		8430		530	40.4	Mechanical\ Rx Fire
	B	-21806		-338			
	C	-24158		-422			
	U		56225				
RM Subalpine/Upper Montane Riparian Systems	A				55	34.3	Mechanical\ Rx Fire
	B	-66215					
	U		77536		74		

Appendix G: Desired Conditions for Stream Channel Restoration

Desired Condition - Streambank Stability

Minimum Percent Cover[1] by Capability Groups		
Percent Stream Gradient	**Substrate Classes**	**Percent of greenline represented by late seral community types or anchored rocks/logs**
Less than 0.5%	Gravel, Cobble, or consolidated[2] Silt, Clay or Sand	98% +
	Non-consolidated Silt, Clay or Sand	90% +
0.5 to 2.0%	Gravel, Cobble, or consolidated Silt, Clay or Sand	90% +
	Non-consolidated Silt, Clay or Sand	85% +
2.0 to 4.0%	Gravel, Cobble, or consolidated Silt, Clay or Sand	85% +
	Non-consolidated Silt, Clay or Sand	80% +
4.0 to 10%	Non-consolidated Silt, Clay or Sand	80% +
	Gravel or consolidated Silt, Clay or Sand	85% +
10% +	Bedrock	98% +

[1]Minimum percent cover is used as a measure of streambank stability. Adapted from Winward, 2000. Values are intended as a starting point for discussions of restoration projects. Inter-Disciplinary (ID) teams decide final design of site.

[2] Consolidated material refers to situations where at least one major soil horizon within the rooting zone consists of strongly compacted, cohesive, or cemented particles.

Desired Condition - Width to Depth Ratios

Gradient %	Entrenchment less than 1.4	Entrenchment greater than 1.4 and:	
		Columbia Plateau	**Blue Mountains**
0-0.5	5-10	4 x Drainage Area (sq. miles) $^{0.27}$	15.4 x Drainage Area (sq. miles) $^{0.09}$
0.5+	3-12		

This table was initiated with data from local ODFW stream surveys and then ratios were reduced based on regional rating curves from Castro, 1997. Values are not intended as targets, just starting point for discussions of restoration projects. Inter-Disciplinary (ID) teams decide final design.

Desired Condition - Percent Pools

% Gradient	Precipitation (inches)						
	7-9	**9-14**	**14-16**	**16-25**	**25-40**	**40-60**	**60-80**
0-0.5	40-70				30-60	30-60	30-60
0.5-2	30-50	20-40		40-60			
2-4	20-30	20-30		20-40	20-50	20-40	30-50
4+	10-20	10 to 20	20 to 30		30-40	20-30	10-20

LWD very important	=LWD forms approximately two thirds of pools
LWD important	=LWD forms approximately half of pools
LWD less important	=LWD forms less than half of pools

These ranges were generated from local ODFW stream surveys, studies of Eastern Oregon LWD, old GLO land survey notes from 1800s, and several studies on the increase in pools resulting from increases in LWD (approx 50%). Values are not intended as targets, just starting point for discussions of restoration projects. Inter-Disciplinary (ID) teams decide final design of site specific restoration of pools and large wood.

Desired Condition - Residual pool depth as % of Reach Bankfull Width

% Gradient	Precipitation (inches)			
	7-14	**14-25**	**25-35**	**35+**
0-0.5	2+%	3+%	4+%	5+%
0.5-2	2+%	4+%	5+%	7+%
2-4	4+%	5+%	7+%	8+%
4+	6%+	7%+	9%+	10%+

These ranges were generated from local ODFW stream surveys, studies of Eastern Oregon LWD, old GLO land survey notes from 1800s, and several studies on the increase in pools resulting from increases in LWD (approx 50%). Values are **not intended as targets**, just as starting points for restoration projects. Inter-Disciplinary (ID) team discussion guides site specific implementation of restoration work to restore pools and large wood.

Appendix H: Special Status Wildlife

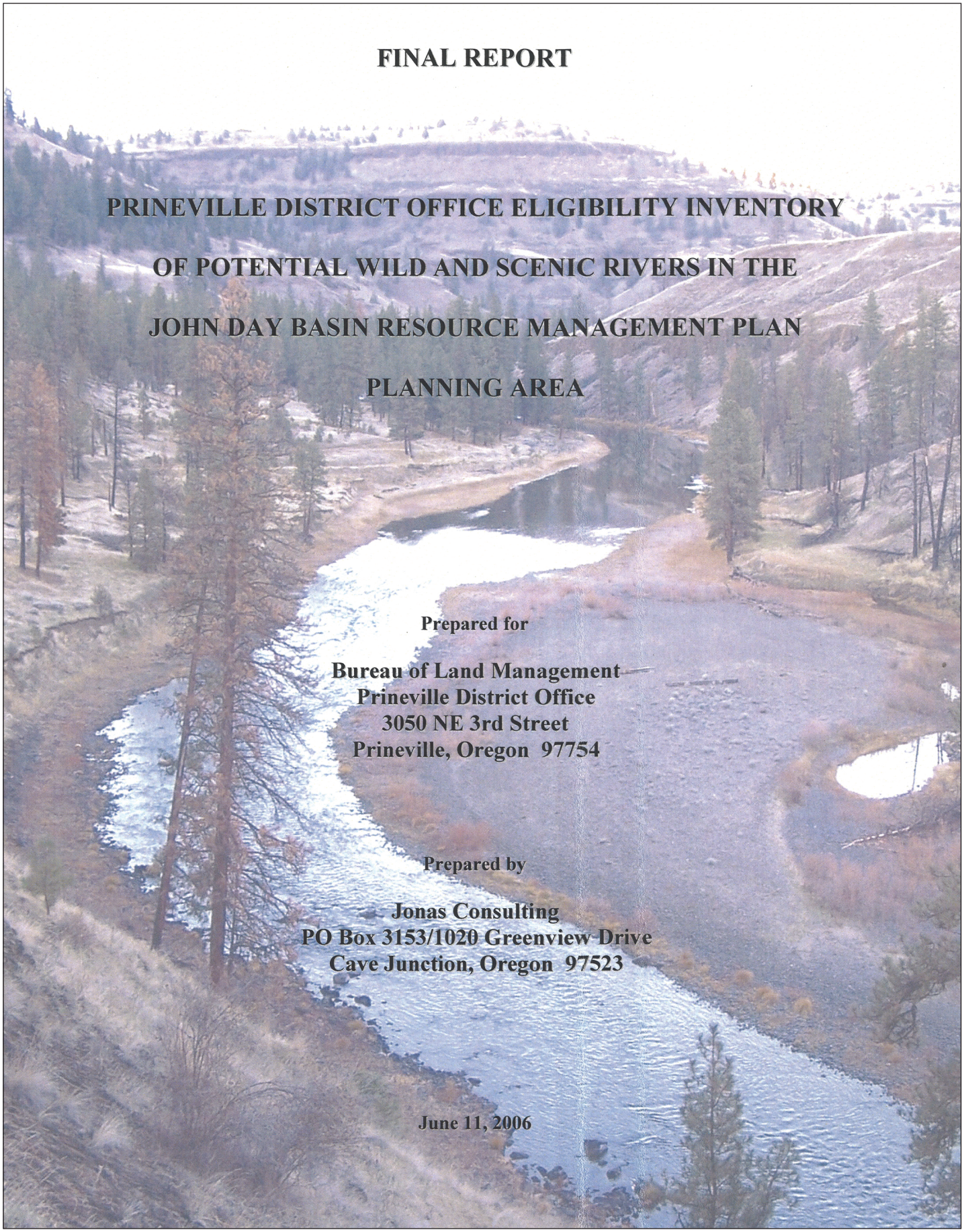
Species	Scientific Name	Planning Area Occurrence	General Habitat Description (Csuti 1997)
Federally Listed Species			
Canada Lynx (T)	*Lynx canadensis*	Suspected – dispersal only	Dense boreal forests that have openings such as meadows, bogs, or rock outcroppings. 14 sq. mile home range. Den under logs, hollow trees, under thick brush.
Sensitive Species			
Mammals			
California Wolverine	*Gulo gulo*	Suspected – dispersal only	Open forests at higher elevations in alpine areas. Will cross clear-cuts, but avoids young, dense regenerating forests or brushy areas.
Fisher	*Martes pennanti*	Suspected	Mature closed canopy coniferous forests w/ some deciduous component. May travel 50 miles in 3 days. Den in hollow logs, brush piles, or rocks.
Pallid Bat	*Antrozous pallidus*	Suspected	Arid regions or open forests with p pine or oak. Uses desert vegetation (sagebrush, juniper, salt desert shrub). Cliff-faces, caves, mines or buildings. Forages on ground – crickets, beetles, grasshoppers, scorpions, mice, and lizards.
Pygmy Rabbit	*Bachylagus idahoensis*	Documented	Tall dense clumps of Great Basin sagebrush or greasewood. Deep friable soils to burrow.
Spotted Bat	*Euderma maculatum*	Documented	Variety of habitats from p pine to desert water holes. Crevices in cliffs used for reproduction are more important than veg. type. Eats moths.
Townsend's Big-eared Bat	*Corynorhinus townsendii*	Documented	Pacific coast east to Great Plains including arid eastern OR. The presence of suitable roost sites is more important than veg. Roosts in buildings, caves, mines, and bridges. Feed on moths.
Washington Ground Squirrel	*Spermophilus washingtoni*	Documented	Arid deserts & grasslands, most freq. in sagebrush or grasslands associated w/ river banks, hillsides, or ravines.
Birds			
American Peregrine Falcon	*Falco peregrinus anatum*	Documented	Suitable nest is most critical: cliffs, overlooking fairly open areas with ample food. Usually nest near where waterbirds are plentiful. Home range – 25 to 100 sq. miles.

Species	Scientific Name	Planning Area Occurrence	General Habitat Description (Csuti 1997)
American White Pelican	*Pelecanus erythrorhynchos*	Unknown	Inland lakes and marshes during breeding season. A predator-free island is required for nesting. Almost any water body outside of breeding season.
Black Swift	*Cypseloides niger*	Unlikely	Cliff faces near or behind waterfalls – usually in deep canyons in wooded areas.
Bobolink	*Dolichonyx oryzivorus*	Unknown	Open prairies, grasslands, wet meadows, pastures, irrigated hay meadows, and grain crops.
Bufflehead	*Bucephala albeola*	Unknown	Nests near mountain lakes surrounded by open woodlands containing snags. Preferred nest trees: aspen, p pine, and doug fir. After breeding season found on open water or major rivers and that coast.
Grasshopper Sparrow	*Ammodramus savannarum*	Suspected	Short grasslands with occasional shrubs < 35% CC. Prefer native bunch grasses on north slopes of hills with scattered shrubs. Use cultivated grasslands and pastures. 1-4 ac. territory.
Greater Sage Grouse	*Centrocercus urophasianus*	Documented	Areas dominated by big sagebrush with cover 15 to 50%. Males use open areas as leks.
Lewis' Woodpecker	*Melanerpes lewis*	Documented	Open forests at lower elevation, white oak-pine, p pine, and cottonwood riparian woodlands in river valleys. 15 ac. territory. Eat berries and nuts in fall. Uses other WP holes.
Northern Bald Eagle	*Haliaeetus leucocephalus*	Documented	Rivers, lakes, & marshes with nearby tall trees or cliffs for nesting. Nests are usually 1 mile apart. May travel 10 miles from roost to forage. Nest in large tall tree within ½ m. of water.
Northern Waterthrush	*Seiurus noveboracensis*	Unknown	Riparian thickets in forests, near rapidly flowing water. Occasionally uses dense vegetation at the edges of lakes.
Tricolored Blackbird (breeding pop.)	*Agelaius tricolor*	Documented	Breeds in freshwater marshes with cattails or thickets of willows or shrubs. High elevation habitat use is unlikely.
Trumpeter Swan	*Cygnus buccinators*	Unknown	Freshwater cattail and bulrush marshes. Nests on the shores of large inland lakes and marshes.

Species	Scientific Name	Planning Area Occurrence	General Habitat Description (Csuti 1997)
Upland Sandpiper	*Bartramia longicauda*	Suspected	Nests in partially flooded meadows and grasslands, usually with a fringe of trees, and often in the middle of high-elevation sagebrush. Meadows are little grazed and have forbs. Perches in trees/ snags surrounding the nest site.
White-headed Woodpecker	*Picoides albolarvatus*	Documented	Closely associated with P pine & mixed conifer with p pine. Requires large trees >20"dbh, 250 – 500 ac. home range. Nest on edge of a clearing.
Yellow-billed Cuckoo	*Coccyzus americanus*	Documented Historically	Thick closed-canopy riparian forest with an understory of dense brush. Willow, black cottonwoods along rivers of E. OR Patches must be > 37 ac. in size with >7 ac. of closed canopy. Feed primarily amount cottonwoods.
Yellow Rail	*Coturnicops novebroacensis*	Suspected	Freshwater marshes & wet meadows w/ sedges, usually surrounded by willow, standing water up to 1' during breeding.
Amphibians and Reptiles	General Habitat Description (Corkran and Thom, 2006)		
Columbia Spotted Frog	*Rana luteiventris*	Documented	Marshes, permanent ponds, lake edges and slow streams, usually where there is abundant aquatic vegetation. Breed in very shallow water.
Cope's Giant Salamander	*Dicamptondon copei*	Unlikely	Small, steep-gradient, permanent streams with clear, cold water. Streambeds composed of large gravel to small boulders with some large logs, has no silt. Large logs and rock along the stream bed.
Invertebrates			
Dalles Juga	*Juga hemphillii dalliensis*	Unlikely	Found in large springs and medium sized creeks at low elevations. Needs highly oxygenated, cold and fast flowing water. Water cress (Rorippa sp). is present at most sites. Little or no epiphytic algae and few other macrophytes.
Deschutes Mountain snail	*Oreohelix variabilis nov.*	Documented	Talus piles on northern aspects on the Oregon side of the Columbia gorge. The talus is often associated with springs although it usually occupies only the margins of those springs.
Deschutes Sideband	*Monadenia fidelis nov.*	Unlikely	Not well defined at this time.

Species	Scientific Name	Planning Area Occurrence	General Habitat Description (Csuti 1997)
Meadow fritillary	*Boloria Bellona*	Suspected	Usually wet places marshes, wet aspen groves. Favorite nectar sources are composites, including black-eyed susans, dandelions, and ox-eyed daisy. Plants from other families, such as verbena and dogbane, are visited less often.
Purple-lipped Juga	*Juga hemphillii maupensis*	Unlikely	Found in large streams with gravel/ cobble riffles. Needs well oxygenated water. omewhat tolerant of siltation and slack water. Found with other more widely distributed species of snails. Little or no epiphytic algae or macrophytes are found at the sites.
Silver-bordered fritillary	*Boloria selene*	Suspected	Wet meadows, bogs, marshes. Favorite nectar sources are composite flowers, including goldenrod and black-eyed susans.

Appendix I-1: Wild and Scenic River Eligibility Inventory



FINAL REPORT

PRINEVILLE DISTRICT OFFICE ELIGIBILITY INVENTORY OF POTENTIAL WILD AND SCENIC RIVERS IN THE JOHN DAY BASIN RESOURCE MANAGEMENT PLAN PLANNING AREA

Prepared for

Bureau of Land Management
Prineville District Office
3050 NE 3rd Street
Prineville, Oregon 97754

Prepared by

Jonas Consulting
PO Box 3153/1020 Greenview Drive
Cave Junction, Oregon 97523

June 11, 2006

FINAL REPORT

PRINEVILLE DISTRICT OFFICE ELIGIBILITY INVENTORY* OF POTENTIAL WILD AND SCENIC RIVERS IN THE JOHN DAY BASIN RESOURCE MANAGEMENT PLAN PLANNING AREA

Prepared for

Bureau of Land Management
Prineville District Office
3050 NE 3rd Street
Prineville, Oregon 97754

Prepared by

Jonas Consulting
PO Box 3153/1020 Greenview Drive
Cave Junction, Oregon 97523

June 11, 2006

* This report only presents recommendations for Wild and Scenic Rivers eligibility and does not make final eligibility determinations.

TABLE OF CONTENTS

Chapter Page Number

I. INTRODUCTION 1

A. PUBLIC INVOLVEMENT AND COORDINATION 1

II. PROCESS 1

STEPS I & II: WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA REVIEW AND TENTATIVE CLASSIFICATION 2

Eligibility Criteria 2

Tentative Classification 4

Results of the Wild and Scenic Rivers Eligibility Inventory for the John Day Basin Resource Management Plan Planning Area 5

STEP III: MANAGEMENT OF RIVERS RECOMMENDED ELIGIBLE 10

ATTACHMENT A: OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE A-1

ATTACHMENT B: RIVER SEGMENT NARRATIVE TABLE B-1

ATTACHMENT C: MANAGEMENT OF WATERWAYS WITHIN THE JOHN DAY BASIN RESOURCE MANAGEMENT PLAN PLANNING AREA THAT MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA C-1

ATTACHMENT D: LITERATURE CITED D-1

PRINEVILLE DISTRICT OFFICE ELIGIBILITY INVENTORY OF POTENTIAL WILD AND SCENIC RIVERS IN THE JOHN DAY BASIN RESOURCE MANAGEMENT PLAN PLANNING AREA

I. INTRODUCTION

As part of the planning effort for development of the John Day Basin Resource Management Plan (RMP), the Bureau of Land Management (BLM) Interdisciplinary (ID) Team initiated a Wild and Scenic Rivers (WSR) inventory of approximately 1,400 miles of waterways within the John Day Basin RMP planning area. This inventory was to determine if any of these waterways that flow through public lands meet the WSR eligibility criteria as identified in the WSR Act of 1968, as amended.

A. PUBLIC INVOLVEMENT AND COORDINATION

The results of this WSR eligibility inventory will be included in the Prineville RMP planning effort. The public will be given the opportunity to comment on the WSR eligibility inventory results during the normal planning process for the RMP planning effort. Concerns voiced by the public will be included in deciding if those waterways recommended eligible in this report are also suitable to be recommended to Congress for inclusion into the WSR National System.

II. PROCESS

The following definitions apply to key terms used in the WSR eligibility inventory process.

- **River (or waterway)**: A flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runs, kills, rills, and small lakes. For purposes of this review, a river is not required to have water in it year-round as long as flows are regular and predictable, even though intermittent, seasonal, or interrupted (BLM 2004).

- **Public lands**: The BLM-administered public land surface along waterways within a planning area. Those "split estate lands," where the land surface is state or privately owned and the federal mineral estate is administered by the BLM, are not involved with these reviews. This study involves the review of public lands; data on segments, parcels, corridors, rivers, and waterways were collected on public lands only, and are the basis for this review.

This WSR eligibility inventory of waterways in the John Day RMP planning area entails a three-step process:

1. Evaluate each river segment in the study area to recommend whether or not it is eligible for inclusion into the national WSR system;

2. Tentatively classify each segment recommended eligible as either wild, scenic, or recreational;

3. Identify and make recommendations for interim protection.

The subsequent step in the process, determining if any of those public lands that meet the eligibility criteria also meet WSR suitability factors, is not addressed in this report.

STEPS I & II: WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA REVIEW AND TENTATIVE CLASSIFICATION

Eligibility Criteria

To meet the eligibility criteria, a waterway must be "free-flowing" and, along with its adjacent land area, must possess one or more "outstandingly remarkable" values. Only those portions of waterways flowing through public lands are to be considered. The following are the guidelines used in applying the eligibility criteria:

- **Free-flowing**: As applied to any river or section of a river, free-flowing 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 WSR 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 WSR system (WSR Act Sec. 16(b)).

  A river need not be "boatable or floatable" in order to be eligible as long as the volume of flow is sufficient enough to maintain the outstandingly remarkable values identified within the segment (BLM 1993). In addition, flows need not to be permanent but can be intermittent, seasonal, or interrupted, as long as they are regular and predictable and derived from naturally occurring circumstances (BLM 2004).

- **Outstandingly Remarkable Values**: The public lands along waterways must also possess one or more outstandingly remarkable values to be eligible for further consideration. Outstandingly remarkable values relate to scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar resource values.

In order to be assessed as outstandingly remarkable, a river-related value must be "a unique, rare or exemplary feature that is significant at a comparative regional or national scale," that is, such a value "would be one that is a conspicuous example from among a number of similar values that are themselves uncommon or extraordinary" (USFS and NPS 1999, p. 13). In addition, all such values should be directly river related. That is, they should be located in the river or on its immediate shorelands (generally within one-quarter mile on either side of the river); contribute substantially to

the functioning of the river ecosystem; and/or owe their location or existence to the presence of the river.

The following criteria for outstandingly remarkable values were used in assessing waterways in the John Day Basin RMP planning area:

- **Scenic**: The landscape elements of landform, vegetation, water, color and related factors result in notable or exemplary visual features and/or attractions within the geographic region. When analyzing scenic values, additional factors such as seasonal variations in vegetation, scale of cultural modifications, and the 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 and not common to other rivers in the geographic region.

- **Recreational**: Recreational opportunities are or have the potential to be unusual enough to attract visitors to the geographic region. Visitors are 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, camping, photography, hiking, fishing, hunting, and boating. Interpretive opportunities may be exceptional and attract or have the potential to attract visitors from outside the geographic region. The river may provide or have the potential to provide settings for national or regional commercial usage or competitive events. In addition, the river may be eligible if it is determined to provide a critically important regional recreation opportunity, or be a significant component of a regional recreation opportunity spectrum setting.

- **Geologic**: The river or the area within the river corridor contains one or more example(s) of a geologic feature, process, or phenomenon that is unique or rare within the region of comparison. 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, or other geologic structures).

- **Fish**: Fish values may be judged on the relative merits of either fish populations, habitat, or a combination of these river-related conditions:

  a **Populations**. The river is nationally or regionally one of the top producers of resident, indigenous, and/or anadromous fish species. Of particular significance may be the presence of wild stocks or unique stocks, or populations of state, federally listed, or candidate threatened and endangered species.

  b **Habitat**. The river provides exceptionally high quality habitat for fish species indigenous to the region. Of particular significance is habitat for state, federally listed, or candidate threatened and endangered species.

- **Wildlife**: Wildlife values may be judged on the relative merits of either wildlife populations or habitat, or a combination of these conditions:

  a **Populations**. The river or area within the river corridor contains nationally or regionally important populations of resident or indigenous wildlife species dependent on the river environment. Of particular significance may be species considered to be unique or populations of state, federally listed, or candidate threatened or endangered species.

  b **Habitat**. The river, or area within the river corridor, provides exceptionally high quality habitat for wildlife of national or regional significance, and/or may provide unique habitat or a critical link in habitat conditions for state, federally listed, or candidate threatened or endangered species. Contiguous habitat conditions are such that the biological needs of the species are met.

- **Cultural**: The river, or area within the river corridor, contains a site(s) where there is evidence of occupation or use by Native Americans. Sites must be rare, have unusual characteristics, or exceptional human interest value(s). Sites may have national or regional importance for interpreting prehistory; may be rare; may represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; or may have been used by cultural groups for rare sacred purposes.

- **Historic**: The river or area within the river corridor contains a site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare or unusual in the region. A historic site(s) and/or features(s) in most cases is 50 years old or older. Sites or features listed in, or eligible for inclusion in, the National Register of Historic Places, may be of particular significance.

- **Other Similar Values**: While no specific national evaluation guidelines have been developed for the ■other similar values• category, additional values deemed relevant to the eligibility of the river segment should be considered in a manner consistent with the foregoing guidance -- including, but not limited to, hydrology, ecologic/biologic diversity, paleontology, botanic, and scientific study opportunities.

Tentative Classification

At the same time that eligibility recommendations are made, rivers that meet the eligibility criteria are also given a tentative classification (either wild, scenic, or recreational), as required by the WSR Act. Tentative classification is based on the type and degree of human developments associated with waterway and adjacent lands as they exist at the time of the review. This classification, however, is a planning recommendation and is tentative to Congressional legislative determination.

The tentative classifications are further defined as follows:

- **Wild River Area**: Wild river areas are those where the 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. Wild means undeveloped; roads, dams, or diversion works are generally absent from a one-quarter mile corridor on both sides of the river.

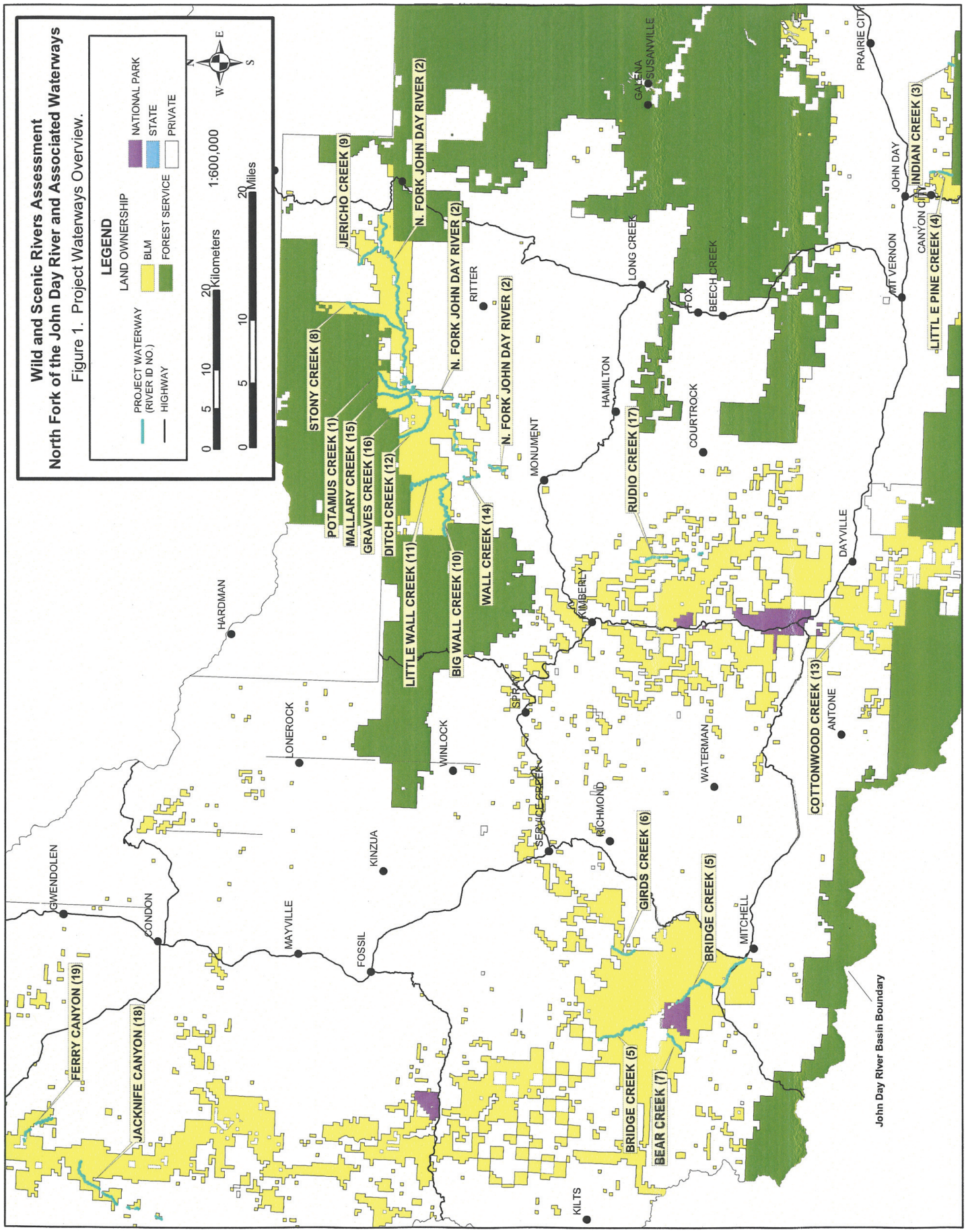
- **Scenic River Area**: Scenic river areas are those where the rivers or sections of rivers that are generally free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads. Scenic does not necessarily mean the river corridor has to have scenery as an outstandingly remarkable value; however, it means the waterway or waterway segment may contain more development (except for major dams or diversion works) than a wild segment and less development than a recreational segment. For example, roads may cross the river in places but generally do not run parallel to it. In certain cases, if a parallel road is unpaved and well-screened from the river by vegetation, a hill, etc., it could qualify for scenic river area classification.

- **Recreational River Area**: Recreational river areas are 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. Parallel roads or railroads or the existence of small dams or diversions can be allowed in this classification. A recreational river area classification does not imply that the river or section of river will be managed or have priority for recreational use or development.

Results of the Wild and Scenic Rivers Eligibility Inventory for the John Day Basin Resource Management Plan Planning Area

Members of the BLM ID Team, consisting of resource specialists from the Prineville District Office and the John Day Field Office, met on May 20, 2005 to examine approximately 1,400 miles of perennial and intermittent waterways within the John Day Basin RMP planning area. Existing designated WSRs were not re-evaluated. During this review, it was recommended that 39 waterways (many with more than one segment) needed further review. Out of these 39 waterways, the BLM ID team suspected that 18 waterways totaling approximately 93 miles had potential or may have potential to possess outstandingly remarkable values and thus required further review. These waterways include one river (North Fork John Day) and 17 creeks (Bear, Big Wall, Bridge, Cottonwood, Ditch, Ferry Canyon, Graves, Indian, Jackknife, Jericho, Little Pine, Little Wall, Mallory, Potamus, Rudio, and Stony). Approximately two miles along one additional creek, Wall Creek, was later added for further review. The remaining 20 waterways were dropped from further consideration due to lacking the potential outstandingly remarkable values and/or not crossing public lands.

The 19 waterways (1 river and 18 creeks) suspected to potentially possess outstandingly remarkable values were contracted out for further review. The locations of these waterways are presented in Figure 1. Each of these waterways was visited to document their free-flowing nature and to identify


Wild and Scenic Rivers Assessment
North Fork of the John Day River and Associated Waterways
Figure 1. Project Waterways Overview.
LEGEND
PROJECT WATERWAY (RIVER ID NO.)
HIGHWAY
LAND OWNERSHIP
BLM
FOREST SERVICE
NATIONAL PARK
STATE
PRIVATE
0 5 10 20 Kilometers
0 5 10 20 Miles
1:600,000
N
E
S
W
STONY CREEK (8)
POTAMUS CREEK (1)
MALLARY CREEK (15)
GRAVES CREEK (16)
DITCH CREEK (12)
LITTLE WALL CREEK (11)
BIG WALL CREEK (10)
WALL CREEK (14)
JERICHO CREEK (9)
N. FORK JOHN DAY RIVER (2)
RUDIO CREEK (17)
COTTONWOOD CREEK (13)
INDIAN CREEK (3)
LITTL E PINE CREEK (4)
GIRDS CREEK (6)
BRIDGE CREEK (5)
BEAR CREEK (7)
FERRY CANYON (19)
JACKNIFE CANYON (18)
GWENDOLEN
CONDON
MAYVILLE
FOSSIL
KINZUA
LONEROCK
HARDMAN
WINLOCK
SPRAY
SERVICE CREEK
RICHMOND
KIMBERLY
MONUMENT
RITTER
HAMILTON
LONG CREEK
GALENA
SUSANVILLE
FOX
BEECH CREEK
COURTROCK
WATERMAN
MITCHELL
KILTS
DAYVILLE
ANTONE
MT VERNON
JOHN DAY
CANYON CITY
PRAIRIE CITY
John Day River Basin Boundary

existing outstandingly remarkable values, where possible. Data were gathered only on those waterway segments that cross public lands; that is, no private, state, or other federal lands were reviewed. Fieldwork was conducted between October 2005 and March 2006. Digital photos were taken and GPS referenced as part of the documentation process. Existing pertinent data from state, federal, and local sources were also reviewed to substantiate or refute the existence of outstandingly remarkable values. Finally, BLM staff at the Prineville District Office and the John Day Field Office was consulted for their expertise on specific river-related values along the 19 studied waterways.

Eighteen of the 19 waterways with potential to possess outstandingly remarkable values (Bear, Big Wall, Bridge, Cottonwood, Ditch, Ferry Canyon, Graves, Indian, Jackknife Canyon, Jericho, Little Pine, Little Wall, Mallory, Potamus, Rudio, and Stony creeks) were found not to meet the WSR eligibility criteria and dropped from further consideration. Table 1 below summarizes these findings. One River (North Fork John Day) was identified as possessing outstandingly remarkable values and is thus recommended as eligible.

Table 1. Summary of the John Day Basin RMP Planning Area WSR Potential Eligibility Review

River/Stream (Waterway) Reviewed	Free-flowing	Estimated Flows During Study Period*	Outstandingly Remarkable Values on BLM Lands	BLM Lands Recommended
North Fork John Day River	***Yes***	***197, 205, & 207 cfs***	***Scenic Recreational Fish***	***Yes***
Bear Creek	Yes	0-3 cfs	None	No
Big Wall Creek	Yes	15 cfs	None	No
Bridge Creek	Yes	15-18 cfs	None	No
Cottonwood Creek	Yes	2-3 cfs	None	No
Ditch Creek	Yes	4-8 cfs	None	No
Ferry Canyon Creek	Yes	7-10 cfs	None	No
Girds Creek	Yes	0	None	No
Graves Creek	Yes	1-7 cfs	None	No
Indian Creek	Yes	7-10 cfs	None	No
Jackknife Canyon Creek	Yes	5-10 cfs	None	No
Jericho Creek	Yes	0-3 cfs	None	No
Little Pine Creek	No	0-5 cfs	None	No
Little Wall Creek	Yes	15 cfs	None	No
Mallory Creek	Yes	2-12 cfs	None	No
Potamus Creek	Yes	7-10 cfs	None	No
Rudio Creek	Yes	0-10 cfs	None	No
Stony Creek	Yes	0-10 cfs	None	No

*Flows are measured in cubic feet per second (cfs). These measurements are based on estimates made during field work, with the exception of the North Fork John Day where flows were taken from the USGS gauge in Monument, Oregon. Flows often varied along different waterway segments, with some waterways experiencing no flows along some segments but steady flows along other segments.

Attachment A (WSR Outstandingly Remarkable Value Summary Table) provides details on scenic, fisheries, recreation, wildlife, historical, geologic, cultural, and similar values for all 19 waterways,

and identifies why such values were or were not considered outstandingly remarkable. Attachment A also includes maps illustrating all segments of the North Fork John Day recommended as eligible as well as identifies the location of outstandingly remarkable values. Those values identified as outstandingly remarkable for the North Fork John Day River are discussed in greater detail below. Attachment B, Table B1, is a narrative table that provides details for each segment of the 19 waterways reviewed and shows the tentative classification (either scenic or recreational) suggested for each of the North Fork John Day segments that meet the eligibility criteria.

Outstandingly Remarkable Values along the North Fork John Day River:

Sixteen segments of the North Fork John Day River that flow through public lands were reviewed, totaling 25.55 miles. The shortest segment is 0.13 mile and the longest segment is 7.79 miles. All 16 segments are located within a section of the river that is 36.24 miles long, beginning along County Road 31 (Wall Creek Road, roughly 3 miles northeast from Monument) in Section 23, T. 7 S., R. 28 E., in Grant County, and ending in Section 26, T. 6 S., R. 31 E., in Umatilla County. The 16 review segments through public lands make up 70.5 percent of this section of river. All 16 segments possess outstandingly remarkable scenic, recreation, fish, and wildlife values.

Scenic values: The review segment North Fork John Day River "flows through some of the finest scenery in Oregon" (BLM 2000, p. 110), which involves a river valley bordered by steep, rugged hillsides with rock outcroppings and a variety of vegetarian types, including strands of ponderosa pines and Douglas fir, grassy meadows, and lush riparian vegetation. Views of adjacent mountain peaks are offered along some sections of the river. This mix of landform, vegetation, water, and color add to the visual values along the river. While such features are not unique among rivers in the Blue Mountains ecoregion of northeastern Oregon, they are notable and of a quality to attract visitors from outside the area. The scenic values were also considered important enough to protect that the entire river section, including all 16 segments through public lands, were included into the State Scenic Waterway System under the Oregon Scenic Waterways Act (ORS 390.826). Only 18 other waterways and 1 lake in Oregon are afforded such protective status.

A well-maintained gravel road runs adjacent to the river from Hwy 395 to Potamus Creek, which occasionally can intrude on the scenic nature of the river, while, at the same time, provides easy access for visitors to view the scenery. The river corridor in this section is narrow and the hills rise over 2,000 feet, with dense strands of ponderosa pines on north-facing slopes. A few houses and ranches are located along this section of the river.

A primitive road (with no public easement through private sections) located from Potamus Creek downstream to the confluence with Wall Creek, is less conspicuous and the scenery more primitive. Only a few human-made structures and 4x4 roads are seen along this segment of the river, leaving much of the area in a more natural state. Here, the river flows through a wide valley with adjacent mountain peaks rising less than 2,000 feet. The area is mostly rangeland, with steep hillsides dotted with strands of ponderosa pine.

Recreation Values: The North Fork John Day offers numerous recreational opportunities, including boating, hunting, fishing, camping, hiking, sightseeing, watchable wildlife, recreational gold panning, nature study, and photography. The boating opportunities are particularly rare or unique in northeastern Oregon as visitors are offered opportunities for solitude and a natural environment without extremely challenging white water (only Class I & II rapids) or access issues that could otherwise make the trip too difficult or dangerous for less experienced river runners. It also provides opportunities for various trip lengths, from day trips to trips lasting a few days. While the mainstem John Day, from Service Creek to Clarno, offers similar river rafting experiences (e.g., Class I & II rapids and numerous access points) the North Fork (from Dale to Monument, which encompasses the study section) is considered by some as having better scenery and whitewater (Cassady et al. 1994).

Boater registration (albeit incomplete) collected between 1998 and 2005 documented that nearly one third of trip leaders traveled from outside of Oregon to float the river, while the majority those coming from Oregon (all except one) traveled over 100 miles. This data suggest that visitors are willing to travel long distances to use the river resources for recreational purposes.

Fish Values: All steelhead trout in the John Day River Basin are genetically grouped into the Middle Columbia Evolutionarily Significant Unit (ESU). Steelhead in this ESU were listed as threatened under the Endangered Species Act (ESA) on March 25, 1999 ([64 FR 14517], effective May 24, 1999, with threatened status reaffirmed on January 5, 2006). The John Day basin is included in the ESU. The North Fork subbasin supports the largest and most important run of anadromous fish within the basin (ODFW 2005a), producing approximately 43 percent of the total summer steelhead population in the basin (BLM 2000). This estimate may have increased in recent years as trend estimates for the lower segment of the North Fork John Day, including the study section, showed an 11 percent increase in population abundance between 1997 and 2001 (Cooney 2005). During this same period, the mainstem John Day River and South and Middle Forks have experienced downward trends. Consequently, the North Fork John Day is an important contributor to the total population of Middle Columbia summer steelhead trout in the Middle Columbia ESU. The 25.55 miles of river that flow through BLM land serve an important role in this contribution.

In addition, the North Fork John Day population of the Middle Columbia Summer Steelhead Species Management Unit meets all six criteria used to determine near-term sustainability (e.g., existing populations, distribution, abundance, productivity, reproductive independence, and hybridization; ODFW 2005). This includes the study segment as well as approximately 54 miles upstream from the study segment through US Forest Service lands that are currently part of the national WSR system. This designation is partially due to possessing outstandingly remarkable fisheries values, including steelhead trout. The protection afforded by the upstream WSR designation adds to the integrity of the fisheries in the review segments and helps ensure that the biological needs (i.e., migration corridor) of the species are met.

STEP III: MANAGEMENT OF RIVERS RECOMMENDED ELIGIBLE

Waterways determined eligible and given a tentative classification as wild, scenic, and/or recreational require protective measures necessary to preserve their free-flowing nature, protect their identified outstandingly remarkable values, and maintain their tentative classification. Specific management prescriptions for eligible river segments provide protection in the following ways (BLM 1993):

a **Free-Flowing Values**: The free-flowing characteristics of eligible river segments cannot be modified to allow stream impoundments, diversions, channelization, and/or rip-rapping to the extent the BLM is authorized under law.

b **River-Related Values**. Each segment shall be managed to protect identified outstandingly remarkable values (subject to valid existing rights) and, to the extent practicable, such values shall be enhanced.

c **Classification Impact**. Management and development of the eligible river and its corridor cannot be modified, subject to valid existing rights, to the degree that its eligibility or tentative classification would be affected (i.e., its tentative river area classification cannot be changed from wild to scenic, or from scenic to recreational). Should a nonsuitable determination be made in the RMP process, then the river shall be managed in accordance with management objectives as outlined in the plan document.

Although this report only recommends the North Fork John Day River as eligible, it includes interim protection measures for each of the outstandingly remarkable values identified. These recommendations are presented in Attachment C (Interim Protection Measures for Outstandingly Remarkable Values identified along the North Fork John Day River). Comprehensive protective management as identified in BLM Manual 8351 would be applied to the North Fork John Day River if it were determined eligible and include management objectives, management actions, and appropriate allocations of land and resource uses that would maintain or enhance the outstandingly remarkable values and tentative WSR classification identified on the public lands involved. Such protective measures would be subject to valid existing rights and would remain in effect until eligibility determinations are superseded.

ATTACHMENT A

OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE

June 11, 2006

ATTACHMENT A: OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE

OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
01 Potamus Creek
Scenic: The scenery along the creek is common to that found along other creeks in the geographic region, and it does not appear to be of a quality that would attract visitors from outside the area. **Fisheries:** While the creek has suitable habitat for Mid Columbia steelhead trout, and the species is known to spawn in the creek, it is not a top producer for the species, and the habitat is not exceptional in terms of quality due to grazing and past logging. **Recreation** While a number of recreational opportunities are provided (hunting, hiking, backpacking, horseback riding), these are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to riparian vegetation and a perennial source of water. However, this characteristic is not unique to Potamus Creek as it is common along tributaries of the North Fork John Day. The creek corridor supports a number of wildlife species, including bighorn sheep that were reintroduced to the area in 2002. The sheep, however, have a wide range and are not confined to the creek corridor. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: Little is know about the specific cultural resources along Potamus Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during field work. **Similar Values**: Potamus Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
02 North Fork John Day
Scenic: River flows through extremely step hillsides with rock outcroppings and a variety of vegetation types, including stands of ponderosa pine, grassy meadows, and lush riparian vegetation. In portions of the study area, the river flows through a wide valley with adjacent mountain peaks in clear view. This mix of landform, vegetation, water, and color results in notable or exemplary visual features and/or attractions within the geographic region. A well-maintained gravel road runs adjacent to the river from Hwy 395 to Potamus Creek, which occasionally can intrude on the scenic nature of the River, while, at the same time, providing easy access for visitors to view the scenery. A primitive road (with no public easement through private sections) located from Potamus Creek downstream to the confluence with Wall Creek, is less conspicuous and the scenery more primitive. The entire segment is designated a State Scenic Waterway. **Fisheries:** All steelhead trout in the John Day River Basin are genetically grouped into the Middle Columbia Evolutionarily Significant Unit (ESU). Steelhead in this ESU were listed as threatened under the Endangered Species Act (ESA) on March 25, 1999. According to the Oregon Native Fish Status Report (ODFW

OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
2005), the North Fork John Day population of the Mid Columbia Summer Steelhead Species Management Unit meets all six criteria used to determine near-term sustainability (e.g., existing populations, distribution, abundance, productivity, reproductive independence, and hybridization). This makes the North Fork important in terms of contributing to the overall populations of resident and/or indigenous fish species. Approximately 54 miles of the North Fork upstream from the currently reviewed sections through US Forest Service lands are part of the National WSR System, partially due to the possession of outstandingly remarkable fisheries values, including steelhead trout. This upstream protection adds to the integrity of the fisheries in the review segments. Due to the existing population of threatened steelhead trout, its viability, and connectivity to upstream populations currently provided protection under the National WSR system, the North Fork John Day contain outstandingly remarkable fishery values. **Recreation:** Recreation opportunities along the North Fork from Hwy 395 to Potamus Creek include fishing, boating, dispersed camping, picnicking, and driving for pleasure. Access to various points along the river is easy due to a well-maintained gravel road with public access. Boating use includes one to three day trips from various locations, primarily occurring in May and June. Recreation opportunities exist downstream from Potamus Creek to Wall Creek, but are more limited due to the lack of public access. Boating occurs without risk of trespass (if recreationists do not land or camp on private property) as there are downstream locations on public lands or in the developed Monument River Access Park to serve as take-out locations. While there are a number of boating opportunities within the region (northeastern Oregon), what is offered on the N. Fork is unique as it offers semi-primitive boating opportunities on a relatively peaceful river, perfect for the novice boater and those desiring a family oriented trip. These recreation opportunities, specifically those related to boating and fishing, can be considered outstandingly remarkable. **Wildlife**. In general, wildlife diversity along the river is relatively high due to the riparian vegetation, grasslands, perennial source of water, and availability of prey. The study section contains several documented wintering nocturnal roost sites used by Bald Eagles, a threatened species. The river also has a large population of Lewis' woodpeckers, which is listed on the Oregon Sensitive Species List as critical. However, these populations are not large enough to be considered at a regional or national level and thus cannot be considered outstandingly remarkable. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. A number of historic (i.e., 50 years older or older) structures occur within the ½-mile boundary of the river on BLM lands; however, these are not known to be unique or to have any significance. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the river. **Cultural**: Little is know about the specific cultural resources along the North Fork John Day River as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during field work. Consequently, cultural and historic resources are not considered outstandingly remarkable. **Similar Values**: North Fork John Day River contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
03 Indian Creek
Scenic: The scenic values within the creek corridor are not notable or exemplary, but are common to other waterways in the geographic region. **Fisheries**: While Indian Creek has adequate habitat for westslope cutthroat trout, a state special status species listed as vulnerable, such habitat is not

OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
exceptionally high and the abundance of adult fish (50 – 500 as per the 2005 Oregon Native Fish Status Report) does not make it a major contributor for the species. **Recreational**: Recreational opportunities are limited (hunting, hiking, nature viewing) and not unique enough to attract visitors from outside the region. **Wildlife**: While wildlife are present (deer, elk, etc.) along the creek corridor and habitat is in fair condition (with the exception of heavily grazed areas), the public lands do not contribute as one of the top producers of resident or indigenous wildlife species important to the area, and habitat quality is not exceptionally high. **Historical**: The public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: No archaeological sites are known to occur within the creek corridor and none have been observed during field work. While no formal cultural inventories have been conducted within the creek corridor, it is unlikely that any significant or unusual sites would be identified. **Similar Values**: Indian Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
04 Little Pine Creek
(Below only applies to the upstream segments of Little Pine Creek as the Downstream segment is not free flowing) **Scenic**: The scenic values within the creek corridor are not notable or exemplary, but are common to other waterways in the geographic region. **Fisheries**: While the upstream segments of Little Pine Creek (between USFS and private lands) do contain adequate habitat for westslope cutthroat trout, a state special status species listed as vulnerable, such habitat is not exceptionally high and the abundance of adult fish (less than 50 as per the 2005 Oregon Native Fish Status Report) does not make it a major contributor for the species. **Recreational**: While numerous recreational opportunities are afforded (hunting, hiking, nature viewing, OHV use, horseback riding) these are common throughout the area and not unique enough to attract visitors from outside the region. **Wildlife**: The creek corridor offers good habitat for a number of species (deer, elk, turkeys, etc.), the public lands do not contribute as one of the top producers of resident or indigenous wildlife species important to the area, and habitat quality is not exceptionally high. **Historical**: The public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located within a ½-mile corridor along the creek.

OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
Cultural: No archaeological sites are known to occur within the creek corridor and none have been observed during field work. While no formal cultural inventories have been conducted within the creek corridor, it is highly unlikely that any significant or unusual sites would be identified. **Similar Values**: Little Pine Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
05 Bridge Creek
Scenic: The scenery along the creek is common to that found along other creeks in the geographic region, and it does not appear to be of a quality that would attract visitors from outside the area. **Fisheries:** Spawning and rearing of Mid Columbia steelhead trout occurs at a high rate in Bridge Creek. The creek provides important spawning and rearing habitat for steelhead in a section of the mainstem of the John Day (the lower John Day River) relatively devoid of other tributaries. Bridge Creek also acts as a corridor to a number of other spawning tributaries in the region, further adding to the population in the Lower John Day River. However, an increasing proportion of hatchery fish entering the lower John Day River from the Columbian River (53% in 2004 compared to 8% in 2001) has reduced the reproductive independence of the lower John Day River population. It is believed that some of these fish hatchery fish may enter Bridge Creek, which would reduce the uniqueness of the fish produced in the stream as well as the importance of population contributions to the John Day River. **Recreation** While a number of recreational opportunities are provided (driving for pleasure, hunting, hiking, backpacking, horseback riding, camping), these are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to the riparian vegetation and perennial source of water. However, this characteristic is not unique to Bridge Creek as it is common along tributaries of the John Day River. **Historical**: The Bridge Creek corridor was very active during the pioneer days and includes sites from a number of early homesteads and ranches of historical note. Stephen Carroll settled with his family on Bridge Creek near the Painted Hills in 1868. While the locations of most of the old homesteads are on NPS lands, the Carroll cemetery is located on public lands (Crook County Historical Society 1998). The Connolly Ranch was one of the biggest operations in the area that was started in 1902. Portions of the ranch are on public lands. Other historic figures of particular note that settled the Bridge Creek area (although no known structures associated with these individuals are on public lands) include A. Sutton, who was one of the first settlers who operated the Bridge Creek Post Office from 1868 to 1882. While the location of the post office occurred on private lands, the activity associated with it spread onto BLM lands. Christian A. Meyers and "Alkali" Frank Hewott were also among the first settlers in the area. They established the Bridge Creek stage station in 1863, which was the first white settlement of any kind in Wheeler County (Fussner 1975). Although these events are important from an historical standpoint, no structures of any of the sites occur on public lands. Some structures that did occur on public lands (e.g., Connolly sheep shearing barn) have completely collapsed. It would thus be nearly impossible to have any of the historical sites along Bridge Creek on public lands listed on the National Register of Historic Places, making it difficult to consider historical elements of Bridge Creek as outstandingly remarkable. Part of the Dalles Military Road (established February 25, 1867) runs through much of the study section of Bridge Creek. Some segments still exist, with much of Burnt Ranch Road having been built on top of the old route. The route followed the Dalles-Canyon City Wagon Road, which was an important travel corridor and motivation for building homesteads, ranches, and businesses along the route. The Dalles Military Road was part of a fraudulent government land trade (see Beckham and Lentz 2000). Early paleontologists, including Thomas Condon, William de Gracey, and John C. Merriam, also relied heavily on the route during their initial

OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
exploration, beginning the late 1800s. While some segments of the original route in its historic state can be found along Bridge Creek, the longest being in Segment 5.06, longer as well as more interesting segments in terms of engineering can be found outside the Bridge Creek corridor. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek that is dependent upon the creek (or restricted to ¼ mile on either side of the creek). While the potential for fossils is abundant, such occurrences are not unique compared to what can be found in the region, including the Painted Hills unit of John Day Fossil Beds National Monument. **Cultural**: Little is know about the specific cultural resources along Bridge Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during fieldwork. Consequently, cultural and historic resources are not considered outstandingly remarkable. **Similar Values**: Bridge Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
06 Girds Creek
Scenic: The waterway corridor does have scenic values. Ephemeral waterfalls attract visitors. While they are in the river corridor, the scenic values are dependent upon the flows of side streams flowing over the cliffs. Such flows are not river-related and are not regular or predictable. **Fisheries**: Creek does not contain suitable habitat or sufficient flows to support important fisheries. **Recreational**: Recreational opportunities are limited (driving for pleasure, nature viewing, hiking) and not unique enough to attract visitors from outside the region. **Wildlife**: Wildlife populations are limited due to major road though the creek bottom. Habitat is not high quality due to the presence of the road. **Historical**: The public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: No archaeological sites are known to occur within the creek corridor and none have been observed during field work. While no formal cultural inventories have been conducted within the creek corridor, it is unlikely that any significant or unusual sites would be identified. **Similar Values**: Girds Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
07 Bear Creek
Scenic: The scenery along the creek is common to that found along other creeks in the geographic region, and it does not appear to be of a quality that would attract visitors from outside the area. **Fisheries:** While the creek has suitable habitat for Mid Columbia steelhead trout, and the species is known to spawn in the creek, it is not a top producer for the

OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
species and the habitat is not exceptionally high due to past grazing activities and a recent flash flood that removed much of the riparian vegetation (although the habitat is recovering). **Recreation** While a number of recreational opportunities are provided (hunting, hiking, backpacking, horseback riding, camping), these are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to the riparian vegetation and perennial source of water. However, this characteristic is not unique to Bear Creek as it is common along tributaries of the John Day River. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. A shearing cabin is located on public lands in the review section; however, this structure does not pose any significant historic value. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: Little is know about the specific cultural resources along Bear Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during field work. Consequently, cultural and historic resources are not considered outstandingly remarkable. **Similar Values**: Bear Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
08 Stony Creek
Scenic: The scenery along the lower portion of the creek can be considered common that found along other creeks in the geographic region. The upper portion of the creek does provide greater scenic contrasts due to its steep canyons, sheer cliffs, waterfalls, and views; however, such scenic values are not unique enough in the region to warrant being considered outstandingly remarkable. The narrow portion of the canyon with the sheer cliffs is relatively short (less than one mile) and is comparable to that found along Jericho Creek, although more pristine. The canyons through which the mainstem and North Fork John Day rivers flow are more spectacular from a scenic perspective. **Fisheries:** While the creek has suitable habitat for Mid Columbia steelhead trout, and the species is known to spawn in the creek, it is not a top producer for the species and the habitat is not exceptional in terms of quality due to past logging and grazing. **Recreation** While a number of recreational opportunities are provided (hunting, hiking, backpacking, horseback riding), these are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to the riparian vegetation and perennial source of water. However, this characteristic is not unique to Stony Creek as it is common along tributaries of the North Fork of the John Day. Wildlife is thus not considered an outstandingly remarkable value. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a

OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: Little is know about the specific cultural resources along Stony Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during field work. Consequently, cultural and historic resources are not considered outstandingly remarkable. **Similar Values**: Stony Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
09 Jericho Creek
Scenic: The scenery along the creek seems common to that found along other creeks in the geographic region and not of a quality that would attract visitors from outside the area. **Fisheries:** Habitat is marginal for steelhead trout as portions of the creek are dry during some parts of the year (with water going underground) and the creek is partly modified by the road running along and over it. While spawning does occur, it is limited. **Recreation** While a number of recreational opportunities are provided (OHV and 4x4 use, hunting, hiking, backpacking, horseback riding), these are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity and habitat are below normal due to the level of disturbance caused by the existing road, making it poorer compared to that found along other tributaries of the North Fork of the John Day. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: Little is know about the specific cultural resources along Jerricho Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during field work. **Similar Values**: Jericho Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
10 Big Wall Creek
Scenic: The scenery along the creek is common to that found along other creeks in the geographic region, and it does not appear to be of a quality that would attract visitors from outside the area. **Fisheries:** While the creek has suitable habitat for Mid Columbia steelhead trout, and the species is known to spawn in the creek, it is not a top producer for the

OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
species and the habitat is not exceptional due to past grazing and logging activities. In addition, much of the channel is bedrock controlled, which reduces available spawning habitat. **Recreation** While a number of recreational opportunities are provided (driving for pleasure, OHV and 4x4 use, hunting, hiking, backpacking, horseback riding, camping), these are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to the riparian vegetation and perennial source of water. However, this characteristic is not unique to Big Wall Creek as it is common along tributaries of the North Fork of the John Day. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: Little is know about the specific cultural resources along Big Wall Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during field work. **Similar Values**: Big Wall Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
11 Little Wall Creek
Scenic: The scenery along the creek is common to that found along other creeks in the geographic region, and it does not appear to be of a quality that would attract visitors from outside the area. **Fisheries:** While the creek has suitable habitat for Mid Columbia steelhead trout, and the species is known to spawn in the creek, it is not a top producer for the species and the habitat is not exceptional in terms of quality due to past grazing and logging activities. **Recreation:** Recreation opportunities are currently limited due to private land at the mouth of Little Wall Creek that prevents access; however, there is the potential for such opportunities as hiking, nature viewing, hunting, , backpacking, and horseback riding. Even if a public easement was acquired, the recreation opportunities are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to the riparian vegetation and perennial source of water. However, this characteristic is not unique to Little Wall Creek as it is common along tributaries of the North Fork of the John Day. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek.

OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
Cultural: Little is know about the specific cultural resources along Little Wall Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during field work. Consequently, cultural and historic resources are not considered outstandingly remarkable. **Similar Values**: Little Wall Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
12 Ditch Creek
Scenic: The scenery along the creek is common to that found along other creeks in the geographic region, and it does not appear to be of a quality that would attract visitors from outside the area. **Fisheries:** While the creek has suitable habitat for Mid Columbia steelhead trout, and the species is known to spawn in the creek, it is not a top producer for the species and the habitat is not exceptionally high due to past logging and grazing activities. **Recreation** While a number of recreational opportunities are provided (hunting, hiking, backpacking, horseback riding), these are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to the riparian vegetation and perennial source of water. However, this characteristic is not unique to Ditch Creek as it is common along tributaries of the North Fork of the John Day. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: Little is know about the specific cultural resources along Ditch Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during field work. Consequently, cultural and historic resources are not considered outstandingly remarkable. **Similar Values**: Ditch Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
13 Cottonwood Creek
Scenic: The scenic values within the creek corridor are not notable or exemplary, but are common to other waterways in the geographic region. **Fisheries**: While steelhead spawning occurs in Cottonwood Creek, there is a considerable amount of streambed modification and the habitat is not sufficient to support the numbers of fry produced. **Recreational**: While numerous recreational opportunities could be provided (hunting, hiking, nature viewing, OHV use, horseback riding), these are common throughout the area and not unique enough to attract visitors from outside the region. The lack of a public easement through private land along the creek

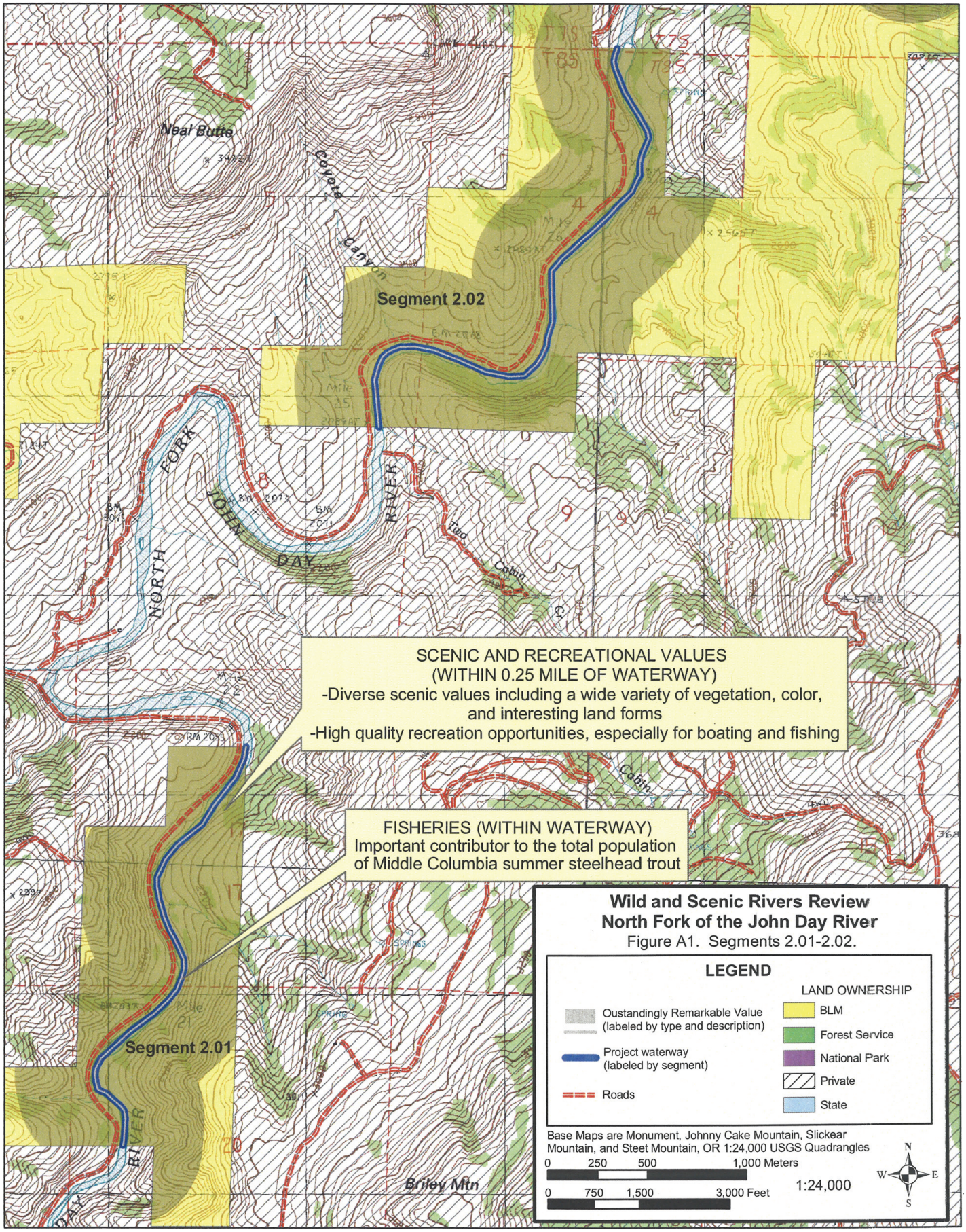
OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
currently prevents most use. **Wildlife**: While the creek corridor offers good habitat for a number of species (deer, elk, turkeys, etc.), the public lands do not contribute as one of the top producers of resident or indigenous wildlife species important to the area, and habitat quality is not exceptionally high. **Historical**: The public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located within a ½-mile corridor along the creek. **Cultural**: No archaeological sites are known to occur within the creek corridor and none have been observed during field work. While no formal cultural inventories have been conducted within the creek corridor, it is highly unlikely that any significant or unusual sites would be identified. **Similar Values**: Cottonwood contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
14 Wall Creek
Scenic: The scenery along the creek is common to that found along other creeks in the geographic region, and it does not appear to be of a quality that would attract visitors from outside the area. **Fisheries:** While the creek has suitable habitat for Mid Columbia steelhead trout, and the species is known to spawn in the creek, it is not a top producer for the species and the habitat is not exceptionally high due to past logging and grazing activities. In addition, much of the channel is bedrock controlled, which reduces available spawning habitat. **Recreation**: Recreational opportunities are generally limited to driving for pleasure, nature watching, picnicking, and possibly fishing. These are not unique enough to attract visitors from outside the region. **Wildlife**: In general, wildlife diversity along the creek is relatively high due to the riparian vegetation and perennial source of water. However, this characteristic is not unique to Wall Creek as it is common along tributaries of the North Fork of the John Day. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: Little is know about the specific cultural resources along Wall Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during field work. **Similar Values**: Wall Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.

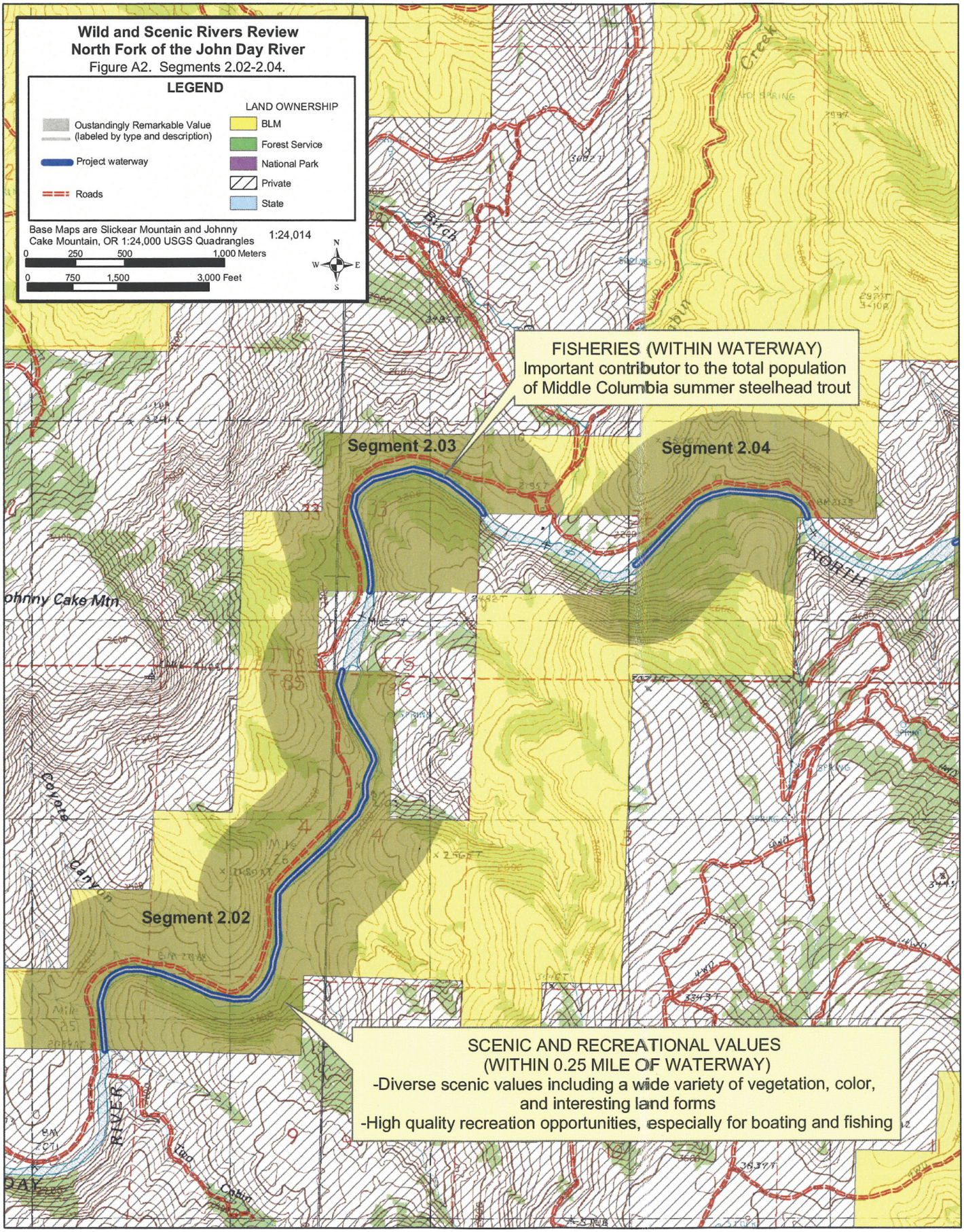
OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
15 Mallory Creek
Scenic: The scenery along the creek seems common to that found along other creeks in the geographic region, and it does not appear to be of a quality that would attract visitors from outside the area. **Fisheries:** While the creek has suitable habitat for Mid Columbia steelhead trout, and the species is known to spawn in the creek, it is not a top producer for the species and the habitat is not exceptionally high due to past logging and grazing activities. **Recreation** While a number of recreational opportunities are provided (OHV and 4x4 use, hunting, hiking, backpacking, horseback riding), these are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to the riparian vegetation and perennial source of water. However, this characteristic is not unique to Mallory Creek as it is common along tributaries of the North Fork of the John Day. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: Little is know about the specific cultural resources along Mallory Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during field work. Consequently, cultural and historic resources are not considered outstandingly remarkable. **Similar Values**: Mallory Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
16 Graves Creek
Scenic: The scenery along the creek is common to that found along other creeks in the geographic region, and it does not appear to be of a quality that would attract visitors from outside the area. **Fisheries:** While the creek has suitable habitat for Mid Columbia steelhead trout, and the species is known to spawn in the creek, it is not a top producer for the species and the habitat is not exceptional in terms of quality due to past logging and grazing. **Recreation** While a number of recreational opportunities are provided (hunting, hiking, backpacking, horseback riding), these are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to the riparian vegetation and perennial source of water. However, this characteristic is not unique to Graves Creek as it is common along tributaries of the North Fork John Day. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a

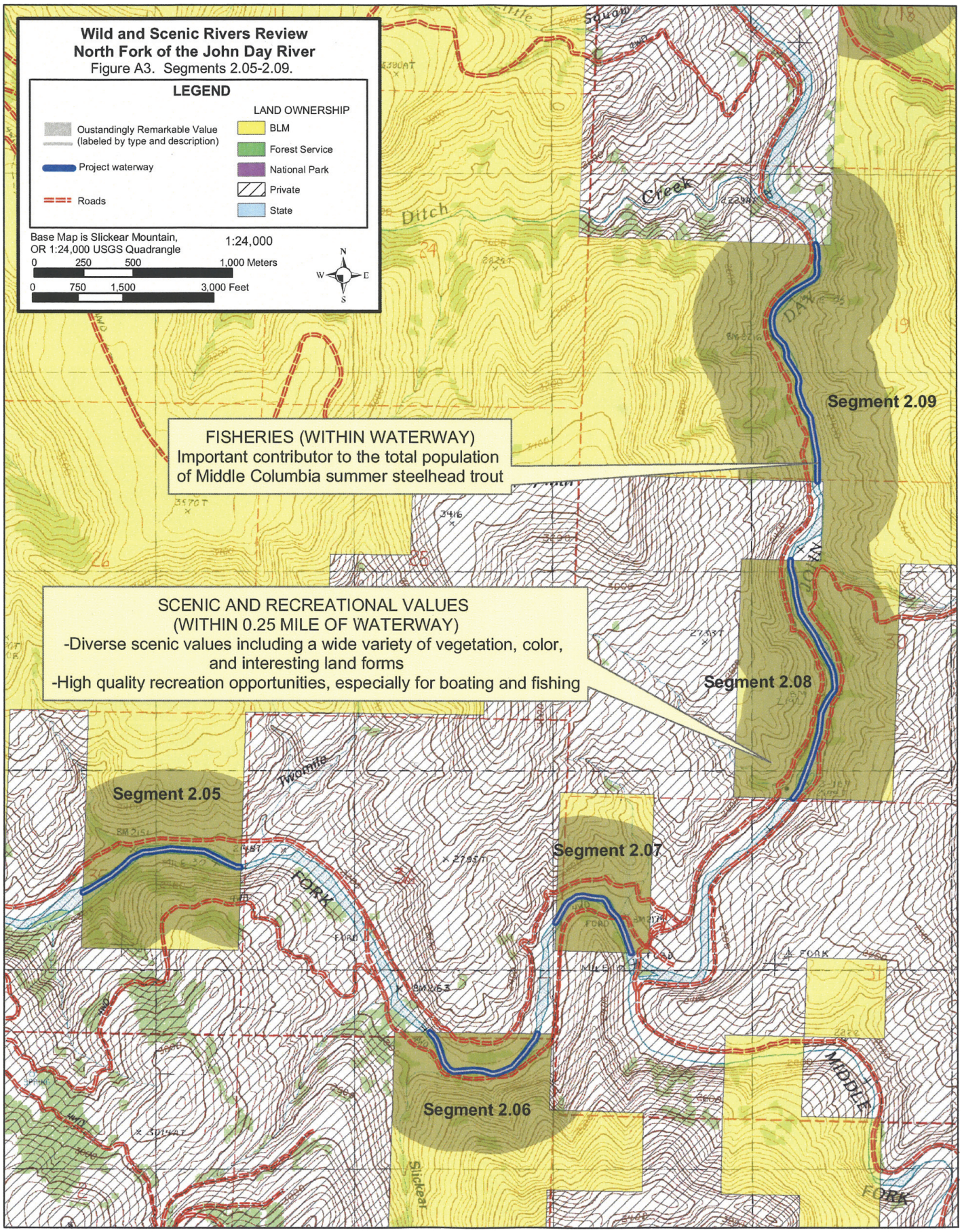
OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: Little is know about the specific cultural resources along Graves Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and none have been observed during field work. **Similar Values**: Graves Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
17 Rudio Creek
Scenic: While the scenery along the creek differs from that found along most other creeks in the geographic region, it does not appear of a quality that would attract visitors from outside the area. **Fisheries:** While the creek has suitable habitat for Mid Columbia steelhead trout, and the species is known to spawn in the creek, it is not a top producer for the species and the habitat is not exceptional in terms of quality due to grazing and past logging. **Recreation:** Public access through private land is currently allowed along Rudio Creek, which offers opportunities for hiking, backpacking, horseback riding, and hunting, with trophy elk hunting a major draw to the area. However, the hunting is not restricted to the creek corridor, and hunting also occurs on private land where hunters pay for guided hunting services. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to the thick cover, perennial source of water, and travel corridor. Elk are especially prevalent, as are mountain lions, deer, and bear. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. An interpretive site is being considered along the creek as it is one of the few places to view dikes crated during lava flows along the hillside (lava infill); however, this geological phenomena is outside the ½-mile corridor and not creek related. **Cultural**: No archaeological sites are known to occur within the creek corridor and none have been observed during field work. While no formal cultural inventories have been conducted within the creek corridor, it is highly unlikely that any significant or unusual sites would be identified. **Similar Values**: Rudio Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
18 Jackknife Canyon Creek
Scenic: The scenery along the creek is common to that found along other creeks in the geographic region, and it does not appear to be of a quality that would attract visitors from outside the area.

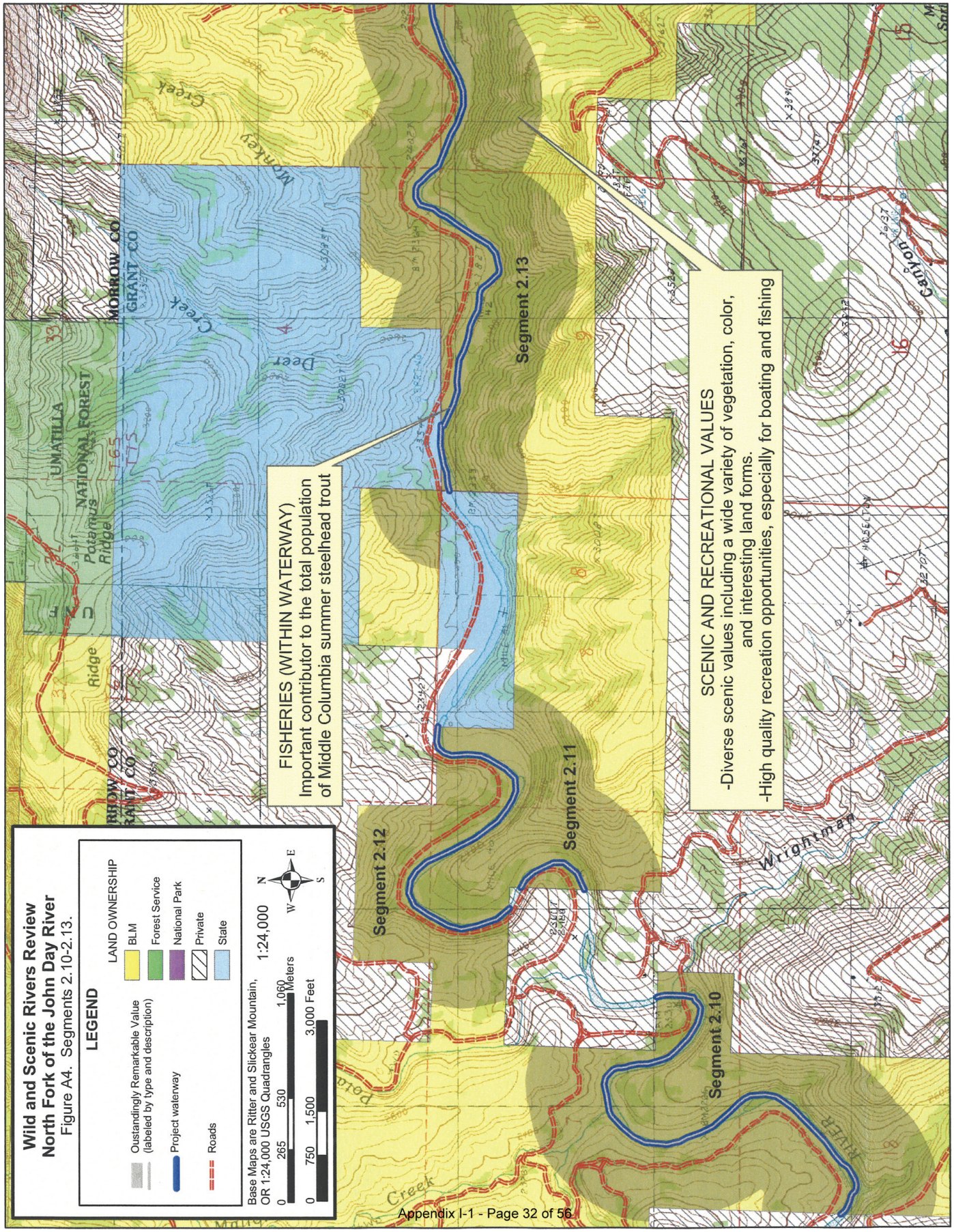
OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
Fisheries: While the creek has suitable habitat for Mid Columbia steelhead trout, the species is known to spawn in the creek, and it is in an area of the lower John Day River that has few spawning tributaries, it is not a top producer for the species and the habitat is not exceptionally high quality. In addition, roughly half of the steelhead spawning in the lower John Day River are hatchery fish coming from the Columbia River, which reduces reproductive independence of that population. **Recreation** While a number of recreational opportunities are provided (hunting, hiking, backpacking, horseback riding, camping), these are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to the riparian vegetation and perennial source of water. A number of bighorn sheep use the canyon. However, these characteristics are not unique to Jackknife Canyon Creek as it is common along tributaries of the John Day River. **Historical**: While no formal historic surveys have been conducted, it is most likely that the public lands do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: Little is know about the specific cultural resources along Jackknife Canyon Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. While signs of prehistoric use have been observed during fieldwork, including some stone tool flakes and a cave that appeared to have been sifted for artifacts, such sites could not be considered rear or unusual. **Similar Values**: Jackknife Canyon Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
19 Ferry Canyon Creek
Scenic: The scenery along the creek is common to that found along other creeks in the geographic region and not of a quality that would attract visitors from outside the area. **Fisheries:** While the creek has suitable habitat for Mid Columbia steelhead trout, the species is known to spawn in the creek, and it is in an area of the lower John Day River that has few spawning tributaries, it is not a top producer for the species and the habitat is not exceptionally high quality. In addition, roughly half of the steelhead spawning in the lower John Day River are hatchery fish coming from the Columbia River, which reduces reproductive independence of that population. **Recreation** While a number of recreational opportunities are provided (hunting, hiking, backpacking, horseback riding, camping), these are not unique enough to attract visitors from outside the region. **Wildlife**. In general, wildlife diversity along the creek is relatively high due to the riparian vegetation and perennial source of water. However, this characteristic is not unique to Ferry Canyon Creek as it is common along tributaries of the John Day River. **Historical**: The confluence of Ferry Canyon Creek and the John Day River contains a historic river crossing (ferry); however, the location of this crossing

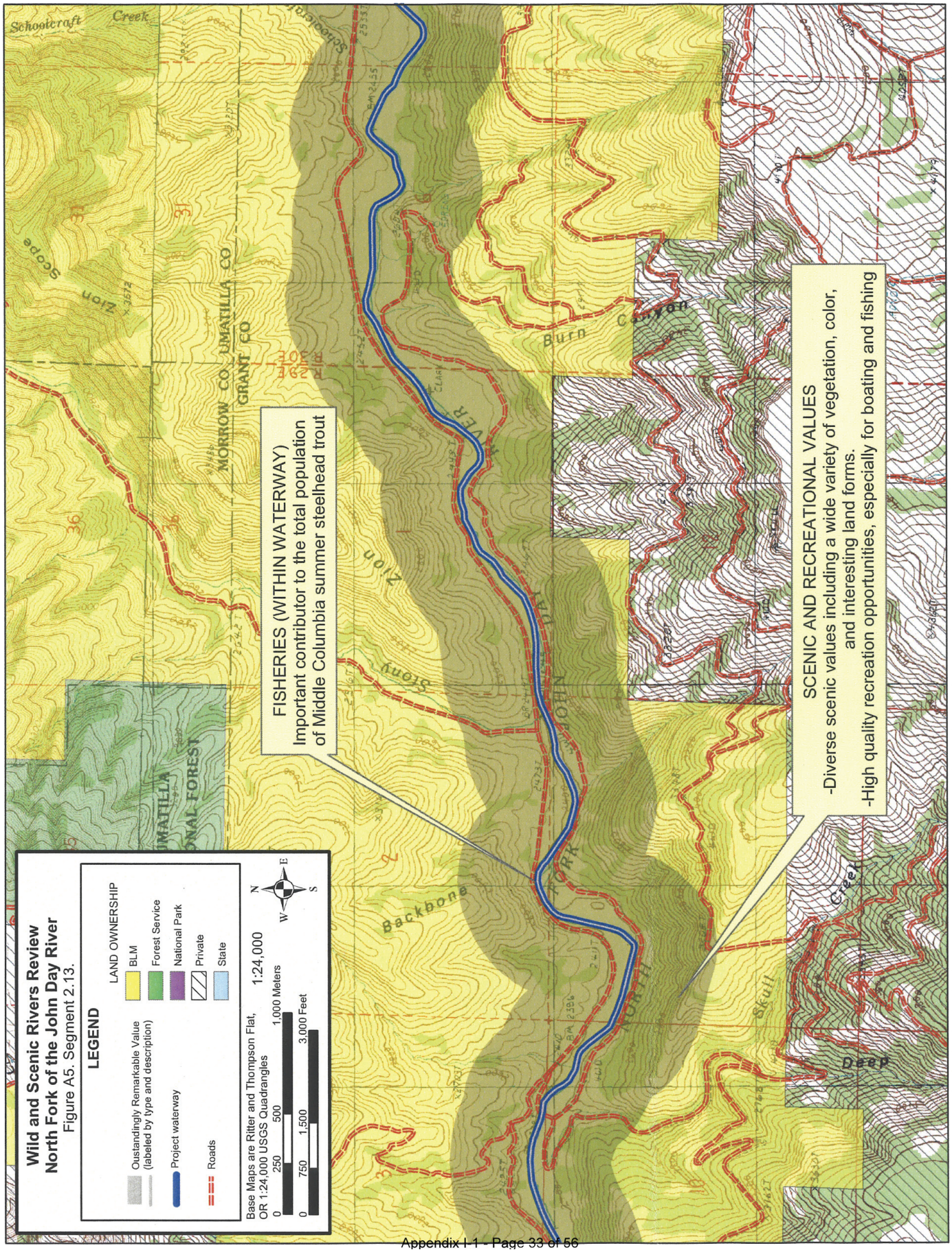
OUTSTANDINGLY REMARKABLE VALUES SUMMARY TABLE
already occurs with the ¼-mile corridor of the Wild and Scenic John Day River and is thus within the national WSR System. The public lands upstream of the confluence most likely do not contain any sites or features associated with a significant event, important person, or cultural activity of the past that was rare or unusual in the area. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena are located along the creek. **Cultural**: Little is know about the specific cultural resources along Ferry Canyon Creek as no formal inventories of cultural values have been conducted. In fact, there have been few formal studies in the geographic area. No archaeological sites are known to occur within the creek corridor and no sites have been observed during field work. **Similar Values**: Ferry Canyon Creek contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.

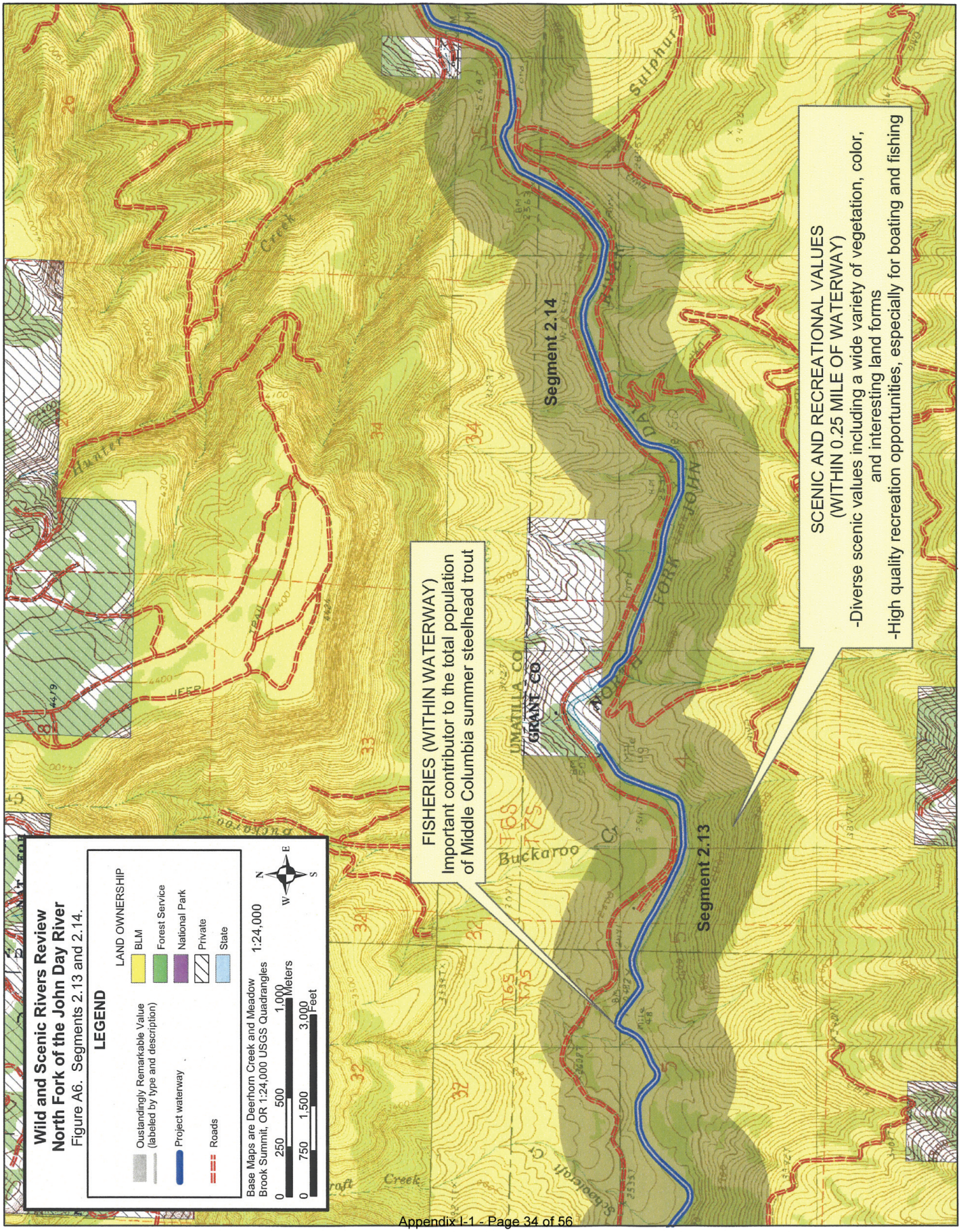

Neal Butte
Coyote Canyon
Segment 2.02
NORTH FORK JOHN DAY RIVER
Two Cabin
SCENIC AND RECREATIONAL VALUES
(WITHIN 0.25 MILE OF WATERWAY)
-Diverse scenic values including a wide variety of vegetation, color, and interesting land forms
-High quality recreation opportunities, especially for boating and fishing
FISHERIES (WITHIN WATERWAY)
Important contributor to the total population of Middle Columbia summer steelhead trout
Segment 2.01
Briley Mtn
Wild and Scenic Rivers Review
North Fork of the John Day River
Figure A1. Segments 2.01-2.02.
LEGEND
Oustandingly Remarkable Value (labeled by type and description)
Project waterway (labeled by segment)
Roads
LAND OWNERSHIP
BLM
Forest Service
National Park
Private
State
Base Maps are Monument, Johnny Cake Mountain, Slickear Mountain, and Steet Mountain, OR 1:24,000 USGS Quadrangles
0 250 500 1,000 Meters
0 750 1,500 3,000 Feet
1:24,000
N
W
E
S

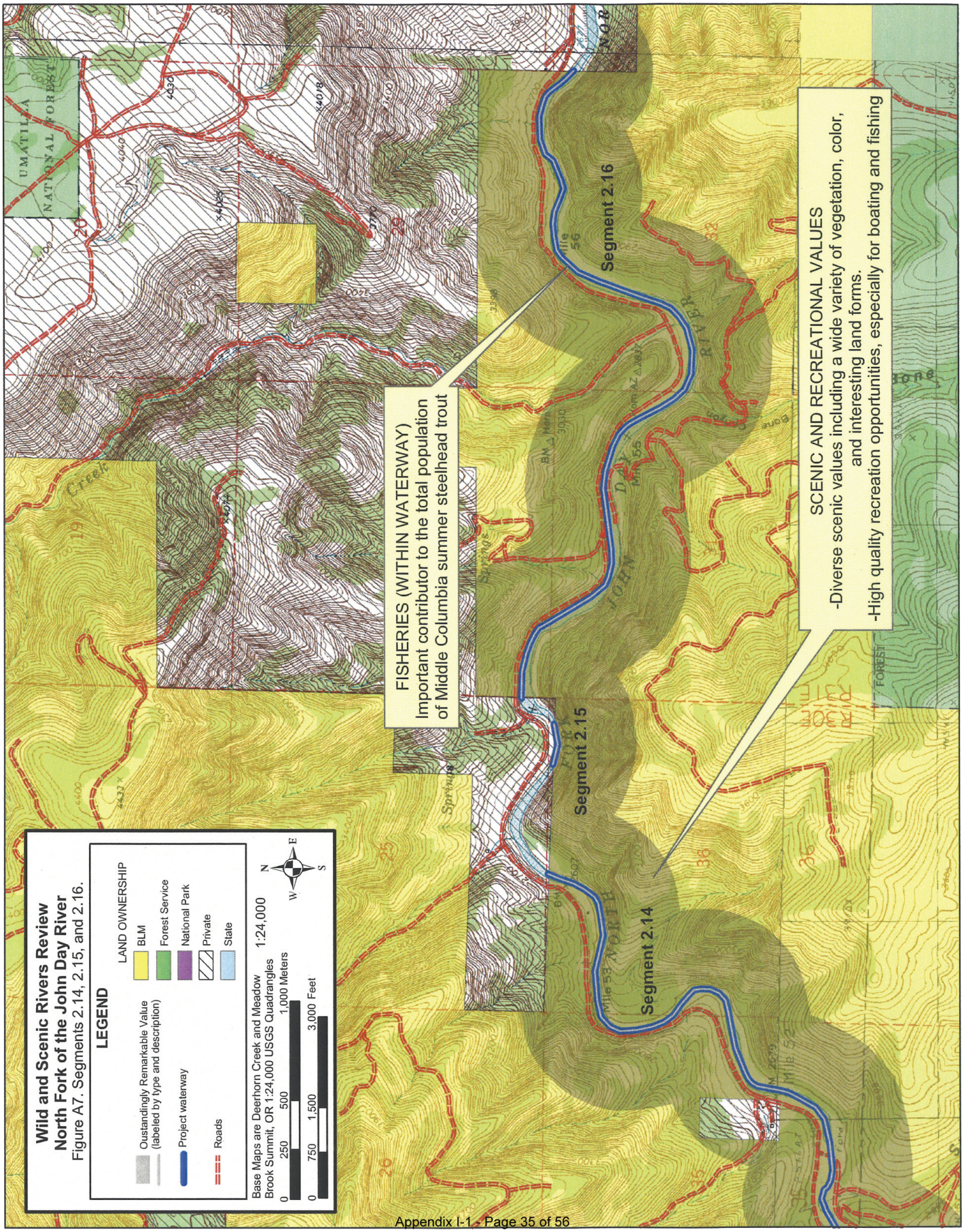

Wild and Scenic Rivers Review
North Fork of the John Day River
Figure A2. Segments 2.02-2.04.
LEGEND
Oustandingly Remarkable Value (labeled by type and description)
Project waterway
Roads
LAND OWNERSHIP
BLM
Forest Service
National Park
Private
State
Base Maps are Slickear Mountain and Johnny Cake Mountain, OR 1:24,000 USGS Quadrangles
1:24,014
0 250 500 1,000 Meters
0 750 1,500 3,000 Feet
N
W
E
S
FISHERIES (WITHIN WATERWAY)
Important contributor to the total population of Middle Columbia summer steelhead trout
Segment 2.03
Segment 2.04
Segment 2.02
SCENIC AND RECREATIONAL VALUES
(WITHIN 0.25 MILE OF WATERWAY)
-Diverse scenic values including a wide variety of vegetation, color, and interesting land forms
-High quality recreation opportunities, especially for boating and fishing
Johnny Cake Mtn
Coyote Canyon
Birch
Creek
NORTH
RIVER
Two Cabin


Wild and Scenic Rivers Review
North Fork of the John Day River
Figure A3. Segments 2.05-2.09.
LEGEND
Oustandingly Remarkable Value (labeled by type and description)
Project waterway
Roads
LAND OWNERSHIP
BLM
Forest Service
National Park
Private
State
Base Map is Slickear Mountain, OR 1:24,000 USGS Quadrangle
1:24,000
0 250 500 1,000 Meters
0 750 1,500 3,000 Feet
N
W
E
S
FISHERIES (WITHIN WATERWAY)
Important contributor to the total population of Middle Columbia summer steelhead trout
SCENIC AND RECREATIONAL VALUES
(WITHIN 0.25 MILE OF WATERWAY)
-Diverse scenic values including a wide variety of vegetation, color, and interesting land forms
-High quality recreation opportunities, especially for boating and fishing
Segment 2.05
Segment 2.06
Segment 2.07
Segment 2.08
Segment 2.09
Ditch
Creek
Twomile
FORK
MIDDLE
Slickear


Wild and Scenic Rivers Review
North Fork of the John Day River
Figure A4. Segments 2.10-2.13.
LEGEND
Oustandingly Remarkable Value (labeled by type and description)
Project waterway
Roads
LAND OWNERSHIP
BLM
Forest Service
National Park
Private
State
Base Maps are Ritter and Slickear Mountain, OR 1:24,000 USGS Quadrangles
1:24,000
0 265 530 1,060 Meters
0 750 1,500 3,000 Feet
N
E
S
W
FISHERIES (WITHIN WATERWAY)
Important contributor to the total population of Middle Columbia summer steelhead trout
SCENIC AND RECREATIONAL VALUES
-Diverse scenic values including a wide variety of vegetation, color, and interesting land forms.
-High quality recreation opportunities, especially for boating and fishing
Segment 2.10
Segment 2.11
Segment 2.12
Segment 2.13
UMATILLA NATIONAL FOREST
MORROW CO
GRANT CO
Deer Creek
Monkey Creek
Potamus Ridge
Wrightman
Canyon
RIVER
Creek


Wild and Scenic Rivers Review
North Fork of the John Day River
Figure A5. Segment 2.13.
LEGEND
Oustandingly Remarkable Value (labeled by type and description)
Project waterway
Roads
LAND OWNERSHIP
BLM
Forest Service
National Park
Private
State
Base Maps are Ritter and Thompson Flat, OR 1:24,000 USGS Quadrangles
1:24,000
0 250 500 1,000 Meters
0 750 1,500 3,000 Feet
N
E
S
W
FISHERIES (WITHIN WATERWAY)
Important contributor to the total population of Middle Columbia summer steelhead trout
SCENIC AND RECREATIONAL VALUES
-Diverse scenic values including a wide variety of vegetation, color, and interesting land forms.
-High quality recreation opportunities, especially for boating and fishing
Schootcraft Creek
Zion Scope
MORROW CO
UMATILLA CO
GRANT CO
Burn Canyon
Zion
Stony
Backbone
Skull Creek
Deep


Wild and Scenic Rivers Review
North Fork of the John Day River
Figure A6. Segments 2.13 and 2.14.
LEGEND
Oustandingly Remarkable Value (labeled by type and description)
Project waterway
Roads
LAND OWNERSHIP
BLM
Forest Service
National Park
Private
State
Base Maps are Deerhorn Creek and Meadow Brook Summit, OR 1:24,000 USGS Quadrangles
1:24,000
0 250 500 1,000 Meters
0 750 1,500 3,000 Feet
N
E
S
W
FISHERIES (WITHIN WATERWAY)
Important contributor to the total population of Middle Columbia summer steelhead trout
SCENIC AND RECREATIONAL VALUES
(WITHIN 0.25 MILE OF WATERWAY)
-Diverse scenic values including a wide variety of vegetation, color, and interesting land forms
-High quality recreation opportunities, especially for boating and fishing
Segment 2.14
Segment 2.13
UMATILLA CO
GRANT CO
Buckaroo
Sulphur
Creek
Hunter
Buckaroo Cr
Schoolcraft Cr
Creek


Wild and Scenic Rivers Review
North Fork of the John Day River
Figure A7. Segments 2.14, 2.15, and 2.16.
LEGEND
LAND OWNERSHIP
BLM
Forest Service
National Park
Private
State
Oustandingly Remarkable Value (labeled by type and description)
Project waterway
Roads
Base Maps are Deerhorn Creek and Meadow Brook Summit, OR 1:24,000 USGS Quadrangles
1:24,000
0 250 500 1,000 Meters
0 750 1,500 3,000 Feet
N
E
S
W
FISHERIES (WITHIN WATERWAY)
Important contributor to the total population of Middle Columbia summer steelhead trout
SCENIC AND RECREATIONAL VALUES
-Diverse scenic values including a wide variety of vegetation, color, and interesting land forms.
-High quality recreation opportunities, especially for boating and fishing
Segment 2.14
Segment 2.15
Segment 2.16
UMATILLA NATIONAL FOREST
NORTH FORK JOHN DAY RIVER
Mile 53
Mile 55
Mile 56
Appendix I-1 - Page 35 of 56

ATTACHMENT B

RIVER SEGMENT NARRATIVE TABLE

June 11, 2006

ATTACHMENT B: RIVER SEGMENT NARRATIVE TABLE

Table B1. River Segment Narrative Table

River Segment Unique ID	River Name	Township Range and Section and Quad Name	Start River Mile	End River Mile	Length (Miles)	Free Flowing	BLM Eligible	List of ORVs	Tentative Classification/ ORV Description
1.01	Potamus Creek	T 7S, R 29E, Sec. 6, 7 Slickear Mountain	0.40	1.28	0.89	YES	NO	NONE	NON-ELIGIBLE
1.02	Potamus Creek	T 7S, R 29E, Sec. 6; T 6S, R 29E, Sec. 31, 32 Lake Penland, Slickear Mountain	1.30	3.63	2.33	YES	NO	NONE	NON-ELIGIBLE
2.01	North Fork of the John Day	T8S, R28E, Sec. 17, 20 Johnny Cake Mountain, Monument	20.43	21.94	1.51	YES	YES	Scenic Recreation Fisheries	**Recreational River Area** due to a highly visible and well-traveled road parallel to river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality recreation (boating and fishing) opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.
2.02	North Fork of the John Day	T8S, R28E, Sec. 4, 5, 8, 9 Johnny Cake Mountain, Slickear Mountain	25.09	26.98	1.89	YES	YES	Scenic Recreation Fisheries	**Scenic River Area** due to largely undeveloped shorelines and parallel road receives little use and is generally well screened from river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality boating and fishing opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.

Table B1. River Segment Narrative Table

River Segment Unique ID	River Name	Township Range and Section and Quad Name	Start River Mile	End River Mile	Length (Miles)	Free Flowing	BLM Eligible	List of ORVs	Tentative Classification/ ORV Description
2.03	North Fork of the John Day	T7S, R28E, Sec. 33 Slickear Mountain	27.08	27.86	0.78	YES	YES	Scenic Recreation Fisheries	**Scenic River Area** due to largely undeveloped shorelines and parallel road receives little use and is generally well screened from river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality boating and fishing opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.
2.04	North Fork of the John Day	T7S, R28E, Sec. 34 Slickear Mountain	27.99	28.64	0.66	YES	YES	Scenic Recreation Fisheries	**Scenic River Area** due to largely undeveloped shorelines and parallel road receives little use and is generally well screened from river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality boating and fishing opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.
2.05	North Fork of the John Day	T7S, R28E, Sec. 34 Slickear Mountain	29.19	29.73	0.55	YES	YES	Scenic Recreation Fisheries	**Scenic River Area** due to largely undeveloped shorelines and parallel road receives little use and is generally well screened from river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality boating and fishing opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.

Table B1. River Segment Narrative Table

River Segment Unique ID	River Name	Township Range and Section and Quad Name	Start River Mile	End River Mile	Length (Miles)	Free Flowing	BLM Eligible	List of ORVs	Tentative Classification/ ORV Description
2.06	North Fork of the John Day	T8S, R28E, Sec. 1 Slickear Mountain	30.59	31.06	0.47	YES	YES	Scenic Recreation Fisheries	**Scenic River Area** due to largely undeveloped shorelines and parallel road receives little use and is generally well screened from river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality boating and fishing opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.
2.07	North Fork of the John Day	T7S, R29E, Sec. 31 Slickear Mountain	31.41	31.79	0.38	YES	YES	Scenic Recreation Fisheries	**Scenic River Area** due to largely undeveloped shorelines and parallel road receives little use and is generally well screened from river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality boating and fishing opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.
2.08	North Fork of the John Day	T7S, R29E, Sec. 30 Slickear Mountain	32.08	32.88	0.80	YES	YES	Scenic Recreation Fisheries	**Scenic River Area** due to largely undeveloped shorelines and parallel road receives little use and is generally well screened from river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality boating and fishing opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.

Table B1. River Segment Narrative Table									
River Segment Unique ID	**River Name**	**Township Range and Section and Quad Name**	**Start River Mile**	**End River Mile**	**Length (Miles)**	**Free Flowing**	**BLM Eligible**	**List of ORVs**	**Tentative Classification/ ORV Description**
2.09	North Fork of the John Day	T7S, R29E, Sec. 19 Slickear Mountain	34.37	35.21	0.84	YES	YES	Scenic Recreation Fisheries	**Scenic River Area** due to largely undeveloped shorelines and parallel road receives little use and is generally well screened from river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality boating and fishing opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.
2.10	North Fork of the John Day	T7S, R29E, Sec. 7, 18 Slickear Mountain	36.72	38.50	1.78	YES	YES	Scenic Recreation Fisheries	**Scenic River Area** due to largely undeveloped shorelines and parallel road receives little use and is generally well screened from river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality boating and fishing opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.
2.11	North Fork of the John Day	T7S, R29E, Sec. 7 Slickear Mountain	39.05	39.33	0.28	YES	YES	Scenic Recreation Fisheries	**Recreational River Area** due to a highly visible and well-traveled road parallel to river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality recreation (boating and fishing) opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.

Table B1. River Segment Narrative Table

River Segment Unique ID	River Name	Township Range and Section and Quad Name	Start River Mile	End River Mile	Length (Miles)	Free Flowing	BLM Eligible	List of ORVs	Tentative Classification/ ORV Description
2.12	North Fork of the John Day	T7S, R29E, Sec. 6, 7, 8 Slickear Mountain	39.40	40.65	1.25	YES	YES	Scenic Recreation Fisheries	**Recreational River Area** due to a highly visible and well-traveled road parallel to river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality recreation (boating and fishing) opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.
2.13	North Fork of the John Day	T7S, R29E, Sec. 1, 2, 3, 4, 9, 10, 11; T7S, R30E, Sec. 4, 5, 6 Meadow Brook Summit, Ritter, Slickear Mountain	41.49	49.28	7.79	YES	YES	Scenic Recreation Fisheries	**Recreational River Area** due to a highly visible and well-traveled road parallel to river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality recreation (boating and fishing) opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.
2.14	North Fork of the John Day	T7S, R30E, Sec. 2, 3, 4; T6S, R30E, Sec. 35, 36 Deerhorn Creek, Meadow Brook Summit	49.55	53.44	3.89	YES	YES	Scenic Recreation Fisheries	**Recreational River Area** due to a highly visible and well-traveled road parallel to river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality recreation (boating and fishing) opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.

Table B1. River Segment Narrative Table

River Segment Unique ID	River Name	Township Range and Section and Quad Name	Start River Mile	End River Mile	Length (Miles)	Free Flowing	BLM Eligible	List of ORVs	Tentative Classification/ ORV Description
2.15	North Fork of the John Day	T6S, R30E, Sec. 36 Deerhorn Creek	53.86	53.99	0.13	YES	YES	Scenic Recreation Fisheries	**Recreational River Area** due to a highly visible and well-traveled road parallel to river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality recreation (boating and fishing) opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.
2.16	North Fork of the John Day	T6S, R31E, Sec. 29, 30, 31, 32 Deerhorn Creek	54.12	56.67	2.55	YES	YES	Scenic Recreation Fisheries	**Recreational River Area** due to a highly visible and well-traveled road parallel to river. Diverse scenic values include a wide variety of vegetation, color, and interesting land forms. High quality recreation (boating and fishing) opportunities. Important contributor to Mid Columbia steelhead trout, a threatened species.
3.01	Indian Creek	T14S, R33E, Sec. 10 Strawberry Mountain	6.29	6.81	0.52	YES	NO	NONE	NON-ELIGIBLE
4.01	Little Pine Creek	T14S, R32E, Sec. 6 John Day	2.05	2.41	0.36	NO	NO	NONE	NON-ELIGIBLE
4.02	Little Pine Creek	T14S, R32E, Sec. 7 Canyon Mountain, John Day	2.80	3.06	1.06	YES	NO	NONE	NON-ELIGIBLE
5.01	Bridge Creek	T10S, R20E, Sec. 3 Painted Hills	0.20	0.50	0.30	YES	NO	NONE	NON-ELIGIBLE
5.02	Bridge Creek	T10S, R20E, Sec. 2, 11, 13, 14, 24 Painted Hills	0.55	5.06	4.51	YES	NO	NONE	NON-ELIGIBLE

Table B1. River Segment Narrative Table

River Segment Unique ID	River Name	Township Range and Section and Quad Name	Start River Mile	End River Mile	Length (Miles)	Free Flowing	BLM Eligible	List of ORVs	Tentative Classification/ ORV Description
5.03	Bridge Creek	T11S, R21E, Sec. 5 Sutton Mountain	8.31	8.46	0.15	YES	NO	NONE	NON-ELIGIBLE
5.04	Bridge Creek	T11S, R21E, Sec. 5 Sutton Mountain	8.76	9.18	0.42	YES	NO	NONE	NON-ELIGIBLE
5.05	Bridge Creek	T11S, R21E, Sec. 5, 8, 9, 16 Mitchell, Sutton Mountain	9.33	12.70	3.37	YES	NO	NONE	NON-ELIGIBLE
5.06	Bridge Creek	T11S, R21E, Sec. 21, 26, 27, 28, 35 Mitchell	13.58	16.78	3.20	YES	NO	NONE	NON-ELIGIBLE
6.01	Girds Creek	T10S, R21E, Sec. 11, 12, 13, 14 Sutton Mountain	1.10	2.21	2.11	YES	NO	NONE	NON-ELIGIBLE
7.01	Bear Creek	T10S, R20E, Sec. 35; T11S, R20E, Sec. 2, 3 Painted Hills	1.82	3.87	2.05	YES	NO	NONE	NON-ELIGIBLE
8.01	Stony Creek	T7S, R29E, Sec. 1, 2; T6S, R29E, Sec. 36; T6S, R30E, Sec. 19, 30, 31 Ritter, Thompson Flat	0.00	3.88	3.88	YES	NO	NONE	NON-ELIGIBLE
8.02	Stony Creek	T6S, R30E, Sec. 18, 19 Thompson Flat	3.88	5.15	1.27	YES	NO	NONE	NON-ELIGIBLE
8.03	Stony Creek	T6S, R30E, Sec. 18 Thompson Flat	5.15	5.83	0.68	YES	NO	NONE	NON-ELIGIBLE
9.01	Jericho Creek	T6S, R30E, Sec. 23, 25, 26 Deerhorn Creek	0.19	2.45	2.26	YES	NO	NONE	NON-ELIGIBLE

Table B1. River Segment Narrative Table

River Segment Unique ID	River Name	Township Range and Section and Quad Name	Start River Mile	End River Mile	Length (Miles)	Free Flowing	BLM Eligible	List of ORVs	Tentative Classification/ ORV Description
10.01	Big Wall Creek	T7S, R28E, Sec. 31; T7S, R27E, Sec. 25, 26, 27, 28, 34, 36 Johnny Cake Mountain, Turner Mountain	0.55	6.79	6.24	YES	NO	NONE	NON-ELIGIBLE
11.01	Little Wall Creek	T7S, R28E, Sec. 18, 19, 30; T7S, R27E, Sec. 13 Johnny Cake Mountain	1.02	4.72	3.70	YES	NO	NONE	NON-ELIGIBLE
11.02	Little Wall Creek	T7S, R27E, Sec. 13 Johnny Cake Mountain	4.92	5.45	0.53	YES	NO	NONE	NON-ELIGIBLE
12.01	Ditch Creek	T7S, R28E, Sec. 10, 14, 15, 23, 24 Slickear Mountain	0.83	5.09	4.26	YES	NO	NONE	NON-ELIGIBLE
13.01	Cottonwood Creek	T12S, R26E, Sec. 32 Day Basin	1.99	2.84	0.85	YES	NO	NONE	NON-ELIGIBLE
13.02	Cottonwood Creek	T13S, R26E, Sec. 7 Day Basin	4.01	4.31	0.30	YES	NO	NONE	NON-ELIGIBLE
13.03	Cottonwood Creek	T13S, R26E, Sec. 18 Day Basin	5.49	5.55	0.06	YES	NO	NONE	NON-ELIGIBLE
13.04	Cottonwood Creek	T13S, R26E, Sec. 18 Day Basin	5.66	5.68	0.02	YES	NO	NONE	NON-ELIGIBLE
13.05	Cottonwood Creek	T13S, R26E, Sec. 19 Day Basin	7.50	7.52	0.02	YES	NO	NONE	NON-ELIGIBLE
14.01	Wall Creek	T8S, R28E, Sec. 7 Quad: Johnny Cake Mountain	0.82	1.33	0.51	YES	NO	NONE	NON-ELIGIBLE

Table B1. River Segment Narrative Table

River Segment Unique ID	River Name	Township Range and Section and Quad Name	Start River Mile	End River Mile	Length (Miles)	Free Flowing	BLM Eligible	List of ORVs	Tentative Classification/ ORV Description
14.02	Wall Creek	T8S, R28E, Sec. 6 Johnny Cake Mountain	1.60	1.74	0.14	YES	NO	NONE	NON-ELIGIBLE
14.03	Wall Creek	T8S, R28E, Sec. 6 Johnny Cake Mountain	1.88	2.51	0.63	YES	NO	NONE	NON-ELIGIBLE
15.01	Mallory Creek	T6S, R29E, Sec. 31; T7S, R29E, Sec. 6, 7 Lake Penland, Slickear Mountain	0.00	3.08	3.08	YES	NO	NONE	NON-ELIGIBLE
16.01	Graves Creek	T7S, R28E, Sec. 1, 12; T7S, R29E, Sec. 7 Slickear Mountain	0.00	3.22	3.22	YES	NO	NONE	NON-ELIGIBLE
17.01	Rudio Creek	T10S, R26E, Sec. 12, 13 Miller Flat	6.91	7.42	0.51	YES	NO	NONE	NON-ELIGIBLE
17.02	Rudio Creek	T10S, R26E, Sec. 13, 24 Miller Flat	8.00	9.09	1.09	YES	NO	NONE	NON-ELIGIBLE
17.03	Rudio Creek	T10S, R26E, Sec. 25 Miller Flat	9.36	9.70	0.34	YES	NO	NONE	NON-ELIGIBLE
17.04	Rudio Creek	T10S, R26E, Sec. 36 Miller Flat	10.70	11.65	0.95	YES	NO	NONE	NON-ELIGIBLE
17.05	Rudio Creek	T11S, R27E, Sec. 6 Miller Flat	12.73	13.10	0.37	YES	NO	NONE	NON-ELIGIBLE
18.01	Jackknife Creek	T3S, R18E, Sec. 10, 11, 14, 15, 16, 21	0.00	3.47	3.47	YES	NO	NONE	NON-ELIGIBLE
18.02	Jackknife Creek	T3S, R18E, Sec. 20, 29	3.88	5.54	1.66	YES	NO	NONE	NON-ELIGIBLE
18.03	Jackknife Creek	T3S, R18E, Sec. 31	6.48	6.72	0.24	YES	NO	NONE	NON-ELIGIBLE

Table B1. River Segment Narrative Table

River Segment Unique ID	River Name	Township Range and Section and Quad Name	Start River Mile	End River Mile	Length (Miles)	Free Flowing	BLM Eligible	List of ORVs	Tentative Classification/ ORV Description
18.04	Jackknife Creek	T4S, R18E, Sec. 6	7.23	7.53	0.31	YES	NO	NONE	NON-ELIGIBLE
18.05	Jackknife Creek	T4S, R18E, Sec. 18	9.22	9.77	0.55	YES	NO	NONE	NON-ELIGIBLE
19.01	Ferry Creek	T2S, R18E, Sec. 24	0.00	0.18	0.19	YES	NO	NONE	NON-ELIGIBLE
19.02	Ferry Creek	T2S, R19E, Sec. 19	0.47	1.23	0.76	YES	NO	NONE	NON-ELIGIBLE
19.03	Ferry Creek	T2S, R19E, Sec. 29, 32	2.07	3.82	1.75	YES	NO	NONE	NON-ELIGIBLE

ATTACHMENT C

MANAGEMENT OF BLM-ADMINISTERED PUBLIC LANDS WITHIN THE JOHN DAY BASIN RESOURCE MANAGEMENT PLAN PLANNING AREA THAT MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA

June 11, 2006

ATTACHMENT C: MANAGEMENT OF WATERWAYS WITHIN THE JOHN DAY BASIN RESOURCE MANAGEMENT PLAN PLANNING AREA THAT MEET THE WILD AND SCENIC RIVERS ELIGIBILITY CRITERIA

The recommendations for interim protection measures described in this document are meant to provide temporary or interim protection of the Wild and Scenic Rivers (WSR) values on eligible waterway areas prior to the completion of the John Day Basin Resource Management Plan (RMP). Included are management objectives, management actions, and appropriate allocations of land and resource uses that would maintain the outstandingly remarkable values and tentative classifications identified for the North Fork John Day River. Pursuant to the WSR Act of 1968, as amended, until the public reviews are completed and final decisions are made on WSR eligibility determinations, no uses of the reviewed Bureau of Land Management (BLM)-administered public land surfaces (public lands) will be authorized which could impair any outstandingly remarkable value they may contain, or would otherwise reduce or destroy their potential eligibility classification for consideration for inclusion in the national WSR system. In general, management requirements for river or river segments that are found eligible for consideration as components of the national WSR system are the same that apply to designated and study rivers (BLM 1993).

I. WILD AND SCENIC RIVERS REVIEW PROCESS

In conducting the WSR review process, application of the WSR eligibility criteria and determining the tentative WSR classifications focused on the public lands within a one-half mile wide corridor along the reviewed river segment (i.e., approximately one-quarter mile wide along each bank of the waterway along the length of the review segments). The public lands within and adjacent to this corridor will be considered in future site specific, activity or management implementation planning to fulfill the stated management objective.

The reviewed segments of Bear, Big Wall, Bridge, Cottonwood, Ditch, Ferry Canyon, Graves, Indian, Jericho, Little Pine, Little Wall, Mallory, Potamus, Rudio, and Stony creeks were determined not to meet the WSR eligibility criteria and are dropped from further consideration. Public lands along the reviewed segments of the North Fork John Day River were found to meet the WSR eligibility criteria to be given further consideration for inclusion in the national WSR system. Determinations on the suitability of inclusion for this river have not been made at this time, but will occur as part of the John Day Basin RMP planning process.

II. MANAGEMENT OBJECTIVE

The management objective for the waterways that meet the WSR eligibility criteria is to maintain or enhance their outstandingly remarkable values and WSR classification, until their eligibility determinations are superseded (BLM 1993). The interim protection measures for eligible waterways in the John Day Basin RMP planning area apply only to the waterway corridor which extends the length of the identified waterway segments and includes the waterway area, its immediate

environment, and an average of no more than one-quarter mile (1,320 feet) from the ordinary high water mark on both sides of the waterway. This boundary is preliminary and, by Section 3(b) of the WSR Act, may vary on either side of the waterway and be narrower or wider as long as the total corridor width averages no more than 320 acres (half of a mile or 2,640 feet wide) per river mile, and can be delineated by legally identifiable lines (e.g., survey or property lines) or some form of on-the-ground physical feature (e.g., canyon rims, roads, etc.) which provide the basis for protecting the waterway's outstandingly remarkable values. Final boundary delineation will be made if and when Congress decides to designate the waterway segments under review.

North Fork John Day River

Sixteen segments of the North Fork John Day River through public lands (including 25.55 miles of the river) were found to meet the WSR eligibility criteria to be given further consideration for inclusion in the national WSR system. Nine segments (totaling 8.15 miles) of the river are tentatively classified as scenic and seven segments (totaling 17.40 miles) are tentatively classified as recreational. All segments are designated as Accessible Natural River Areas as part of the North Fork John Day River Scenic Waterway, as designated in 1988. Current management under this designation (OAR 736-040-0066) is compatible with management under the WSR Act (see BLM 2000).

Management of BLM lands along the North Fork John Day River in the review section is currently covered under the John Day River Management Plan, Two Rivers, and John Day Resource Management Plan Amendments (BLM 2001). These plans are consistent with the protection of outstandingly remarkable values identified along the North Fork John Day River.

The North Fork John Day River is also managed under the Oregon State Scenic Waterway System as identified under the Scenic Waterways Act (ORS 390.805 to 390.925). Management under this system is consistent with the management of outstandingly remarkable values. As with wild and scenic rivers, scenic waterways designations cover the river and related adjacent lands within one-quarter mile of the bank on either side of the river. Some management standards apply to all scenic waterways, while specific rules are also developed for each river during the management planning process. All such rules are aimed at managing development within the scenic waterway corridor to protect the scenic beauty, fish and wildlife, scientific and recreation features of the river (OAR 736-040-0020).

Interim protective measures aimed at protecting outstandingly remarkable scenic values:

The study segment of the North Fork John Day is currently managed as an Accessible Natural River Area under the Oregon State Scenic Waterway System, which is administered by the Oregon Parks and Recreation Department. Management of an Accessible Natural River Area includes the protection or enhancement of the river's essentially primitive scenic character, while allowing compatible public outdoor recreation use (OAR 736-040-0040(1)(e)(B)). General rules and regulations governing land management on all scenic waterways that protects scenic values is presented in OAR 736-040-0035.These general management directions, in addition to specific

management actions identified in OAR 736-040-0066(1) that apply to the North Fork John Day, either meet or exceed the management requirements for protecting outstandingly remarkable scenic values identified in BLM Manual 8351. No additional protective measures are thus recommended at this time.

Protective measures identified OAR 736-040-0066(1) that currently protect outstandingly remarkable scenic values along the North Fork John Day River, including the 16 segments that flow through public lands, are as follows:

(D) New structures and associated improvements shall be totally screened from view from the river by topography and/or vegetation, except as provided under OAR 736-040-0030(5), and except those minimal facilities needed for public outdoor recreation or resource protection. If inadequate topographic or vegetative screening exists on the site, the structure or improvement may be permitted if native vegetation can be established to provide total screening of the proposed structure or improvement within a reasonable time (4–5 years). The condition of "total screening," as used in Section (1) of this rule, shall consist of adequate topography and/or density and mixture of native evergreen and deciduous vegetation to totally obscure (100%) the subject improvement.

(E) Commercial public service facilities, including resorts and motels, lodges and trailer parks which are visible from the river, shall not be permitted.

(F) New mining operations, except recreational placer mining and recreational prospecting, as those terms are defined and used in ORS 390.835, and similar improvements, shall be permitted only when they are totally screened from view from the river by topography and/or vegetation. If inadequate topographic or vegetative screening exists to totally screen the proposed mining site, the mining operation may be permitted if native vegetation can be established to provide total screening of the proposed mining site within a reasonable time (4–5 years).

(G) New roads may be permitted only when totally screened from view from the river by topography and/or vegetation. If inadequate topographic or vegetative screening exists to totally screen the proposed road, the road may be permitted if acceptable topography can be created or road design techniques used to totally screen the road at the time of construction or native vegetation can be established to provide total screening of the proposed road within a reasonable time (4–5 years).

(H) Where existing roads are visible from the river, major extensions, realignments, or upgrades to existing roads shall not be permitted. Necessary minor road improvements shall be substantially screened from view from the river. If inadequate topography or vegetation exists to substantially screen the road improvement, the road improvement may be permitted if acceptable topography can be created or road design techniques used to substantially screen the road at the time of construction or native vegetation can be established to provide substantial screening of the road improvement within a reasonable

time (4–5 years). The condition of "substantial screening," as used in Section (1) of this rule, shall consist of adequate topography and/or density and mixture of native, evergreen and deciduous vegetation to substantially obscure (at least 75%) the subject improvement. When an existing road is regraded, no side cast into or visible from the river shall be permitted. Excess material shall be hauled to locations out of view from the river.

(I) Visible tree harvest or other vegetation management may be permitted provided that:
- (A) The operation complies with the relevant Forest Practices Act rules;
- (B) Harvest and management methods with low visual impact are used;
- (C) The harvest or vegetation management does not degrade the riparian buffer of any waterway; and
- (D) The harvest or vegetation management is designed to enhance the scenic view within a reasonable time (5–10 years). For the purposes of this paragraph, "enhance" means to benefit forest ecosystem function and vegetative health by optimizing forest stand densities and vegetative composition, fostering forest landscape diversity and promoting sustainable forest values.

(J) Improvements needed for public recreation use or resource protection may be visible from the river, but shall be primitive in character and designed to blend with the natural character of the landscape.

(K) Proposed utility facilities shall share existing utility corridors, minimize any ground and vegetation disturbance, and employ non-visible alternatives when reasonably possible.

(L) Whenever the standards of OAR 736-040-0035 and section (1), subsections (c) through (k) of this rule are more restrictive than Grant County's or Umatilla County's Land Use and Development Ordinance, the above Oregon Administrative Rules shall apply.

Interim protective measures aimed at protecting outstandingly remarkable recreational values:

Outstandingly remarkable recreation values on the North Fork John Day River are partially protected by measures currently applied to scenic values, as identified above. These protective measures help preserve the scenic quality of the river corridor, an essential part of the visitor experience that draws users from outside the area.

Recreation use on public lands along the North Fork John Day has been relatively low, but use has been increasing steadily over the past decade due to the scenic quality, low use, and good fishing (BLM 2000). Such increases may impact the feeling of solitude and remoteness within the river corridor. Recreation facilities on public lands on the North Fork John Day River are limited to two information kiosks and boater registration boxes. Registration is currently voluntary and thus does not allow for accurate estimates on total use. The BLM may consider mandatory registration to help determine use levels. A permit system is not necessary at this time; however, in depth, recreational use studies would help aid in determining any needs to

place limits on use levels deemed necessary to protect or enhance visitor experiences. Additional campsite studies could help determine the condition of campsites and need for improvements or restrictions.

In general, North Fork John Day River segments 2.02 to 2.10 that are recommended a tentative classification as Scenic should be managed for semi-primitive nonmotorized to semi-primitive motorized settings. Motorized vehicle use, including off-highway vehicles, could be permitted, although trespass through private property should not be allowed. The BLM should consider attaining a public easement that would allow easy access to public lands. A mix of access types should be available, including open roads, roads closed to motorized use, and walk-in or horseback opportunities in a few remote areas. Recreation developments such as additional kiosks or boater registration sites should not be built along this section of river to preserve its more natural appearance.

Segments 2.01 and 2.11 to 2.16 that are recommended a tentative classification as Recreational should be managed for roaded to rural settings. Motorized use should continue to be permitted, with OHV use permitted on designated trails. Road access should continue along all seven river segments. Additional recreation development sites may be permitted, including additional recreation kiosks, boater registration sites, as well as viewpoints, interpretive sites, and developed campgrounds and access sites/boat launch ramps. If a boat launch is developed, it should be located along the upstream-most river segment (segment 2.16) and include a boater registration box. This would allow for the gathering of more complete user data.

Interim protective measures aimed at protecting outstandingly remarkable fishery values:

Habitat problems affecting steelhead trout populations include irrigation diversions and cattle grazing. These activities modify river channels; remove riparian vegetation; block migration corridors; decrease summer flows, occasionally to complete dewatering; and increase summer water temperatures. Many populations have retreated to headwater areas because of these activities, causing extensive population fragmentation and declines in numbers. Management actions aimed at maintaining or increasing Middle Columbia Steelhead in the North Fork John Day River should thus be aimed at reducing these impacts to steelhead habitats.

As a threatened species, the Middle Columbia Steelhead are protected under the Endangered Species Act (ESA). Section 4(f) of the ESA requires that a recovery plan be developed and implemented for species listed as endangered or threatened under the statute. These plans must, at a minimum, contain (1) a description of site-specific management actions necessary to achieve the plan's goal for the conservation and survival of the species; (2) objective, measurable criteria which, when met, would result in a determination that the species be removed from the list; and (3) estimates of the time required and cost to carry out the measures needed to achieve the plan's goal and to achieve intermediate steps toward that goal.

Currently, a recovery plan for Oregon's Middle Columbia River Steelhead is in its draft stage. An early draft of a recovery plan identifies the conditions that have led to the listing of the

Middle Columbia steelhead and provides early recovery framework (Carmichael 2006). Limiting factors in the lower North Fork John Day River listed in that report include habitat diversity, sediment load, temperature, and key habitat quantity. Anthropogenic threats associated with these limiting factors are riparian disturbance, stream channelization and relocation, grazing, timber harvest, road building, irrigation withdrawals, mining, and dredging (NMFS 2004).

The above threats to steelhead populations in the North Fork of the John Day are currently managed under the John Day River Management Plan, Two Rivers, and John Day Resource Management Plan Amendments (BLM 2001); the John Day River Subbasin Plan and the Columbia River Anadromous Fish Restoration Plan (CRITFC 1996); Oregon Wild Fish Management Policy (OAR 635-07-525); Strategy for Salmon amendment to the Columbia River Basin Fish and Wildlife Program (Collette and Harrison 1992); and PACFISH (USFS and BLM 1995). Management emphasis of these plans and programs is to maintain or increase wild run populations of steelhead in the John Day Basin and restore watersheds and fish habitat. The State Scenic Waterway System Act also implements protection of steelhead trout within the North Fork Scenic Waterway through maintaining the river's free-flowing character in quantities necessary for steelhead migration and protecting migration corridor blockage due to the construction of dams, diversions, or other water impoundment facilities and excessive water withdrawals from irrigation and other domestic or agricultural use. Steelhead habitat is also protected from degradation of riparian areas along the river; the discharge of debris, silt, chemicals or other materials into the river from mining, prospecting, and dredging activities; and habitat disturbance from road construction and maintenance (ORS 390.835). Due to the extensive current management of steelhead trout in North Fork John Day River, no additional protective measures are suggested at this time.

ATTACHMENT D

LITERATURE CITED

June 11, 2006

ATTACHMENT D: LITERATURE CITED

Bureau of Land Management. 1993. *Manual 8351 – Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, and Management*. Washington, D.C.

Bureau of Land Management. 2000. *John Day River Proposed Management Plan, Two Rivers and John Day Resource Management Plan Amendments and Final Environmental Impact Statement.* Volume 1. Prineville, Oregon.

Bureau of Land Management. 2001. *Record of Decision: John Day River Management Plan, Two Rivers, John Day, and Baker Resource Management Plan Amendments*. Prineville, Oregon.

Bureau of Land Management. 2004. "Clarification of Policy in the BLM Manual Section 8351, Wild and Scenic Rivers, with Respect to Eligibility Criteria and Protective Management," *Instruction Memorandum No. 2004-196*, Washington, D.C.

Carmichael, R. W. 2006. *Draft Recovery Plan for Oregon's Middle Columbia River Steelhead.* Oregon Department of Fish and Wildlife, La Grande, OR.

Cassady, J., B. Cross, F. Calhoun. 1994. *Western Whitewater: From the Rockies to the Pacific.* Edwards Brothers; Ann Arbor, MI.

Collette, C. and J. Harrison. 1992. *Columbia River Basin Fish and Wildlife Program - Strategy for Salmon. Volumes I & II.* Northwest Power Planning Council.

Columbia River Inter-Tribal Fish Commision. 1996. *Wy-Kan-Ush-Mi Wa-Kish-Wit, Spirit of the Salmon: The Columbia River Anadromous Fish Restoration Plan of the Nez Perce, Umatilla, Warm Springs, and Yakima Tribes*. Volume 1. Portland, OR.

Cooney, Thomas. 2005. "Middle Columbia Steelhead ESU," in Good, T. P., R. S. Waples, and P. Adams (editors), *Updated Status of Federally Listed ESUs of West Coast Salmon and Steelhead.* U.S. Dept. Commer., NOAA Tech Memo. NMFS-NWFSC-66, 598p.

National Marine Fisheries Service. 2004 *Initial Assessment of NMFS' Critical Habitat Analytical Review Teams (CHARTs) for 13 Evolutionarily Significant Units of Pacific Salmon and O. mykiss (November 2004), including Appendix K: Initial CHART Assessment for the Middle Columbia River Steelhead.* NOAA's National Marine Fisheries Service, Northwest egion, Seattle, Washington.

U.S. Forest Service and Bureau of Land Management. 1995. *Decision Notice/Decision Record, Finding of No Significant Impact, Environmental Assessment for the Interim Strategies for*

Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California. Decision Notice/Record, Finding of No Significant Impact.

Oregon Department of Fish and Wildlife. 2005a. *Oregon's Comprehensive Wildlife Conservation Strategy*. Salem, Oregon.

Oregon Department of Fish and Wildlife. 2005b. *Oregon Native Fish Status Report 2005 Public Draft: Volume I – Species Management Unit Summaries*. Salem, Oregon.

U.S. Forest Service and National Park Service. 1999. "The Wild and Scenic Rivers Study Process," *Technical Report Prepared for the Interagency Wild and Scenic Rivers Coordinating Council.* Portland, Oregon and Anchorage, Alaska.

Appendix I-2: Documentation of Wild and Scenic River Eligibility for the North Fork John Day River

DOCUMENTATION OF ELIGIBILITY

Eligibility Assessment for North Fork John Day River (NFJDR) Segments Identified For Possible Inclusion as Components of the National Wild and Scenic Rivers System

SECTION B

River Segment	Description of Values – Either Outstandingly Remarkable (*) or Less than Outstandingly Remarkable
North Fork John Day River – Segment A – Camas Creek to Mallory Creek	* **Scenic ORV** – The river flows through extremely steep hillsides with rock outcroppings and a variety of vegetation types, including stands of ponderosa pine, grassy meadows, and lush riparian vegetation. * **Recreation ORV** - The NFJDR is unique as it offers semi-primitive boating opportunities on a relatively peaceful river, perfect for the novice boater and those desiring a family oriented trip. These recreation opportunities, specifically those related to boating and fishing. * **Fishery ORV** - . Due to the existing viable population of threatened steelhead trout, and connectivity to upstream populations currently provided protection under the National WSR system, the North Fork John Day contains fishery ORVs. **Wildlife** - The habitat adjacent to the river accommodates a population of Lewis' woodpeckers, which is listed on the Oregon Sensitive Species List as critical. However, these populations are not large enough to be considered at a regional or national level and thus cannot be considered outstandingly remarkable. **Historical/Cultural**: A number of historic (i.e., 50 years older or older) structures occur within the ½-mile boundary of the river on BLM lands; however, these are not known to be unique or to have any significance. Cultural and historic resources are not considered outstandingly remarkable. **Geologic**: No rare, unusual, or unique geologic features, processes, or phenomena exist in this river segment. **Similar Values**: The North Fork John Day River contains no other significant hydrological, paleontological, botanical, scientific, or ecological resources that are waterway related.
North Fork John Day River – Segment B– Mallory Creek – RM 20.4	* **Scenic ORV** - The river flows through a wide valley with adjacent mountain peaks in clear view. This mix of landform, vegetation, water, and color results in notable or exemplary visual features and/or attractions within the geographic region. * **Recreation ORV** – Same as Segment A. * **Fishery ORV** - Same as Segment A. **Wildlife** - Same as Segment A. **Historical/Cultural** - Same. As Segment A **Geologic** - Same as Segment A. **Similar Values** - Same as Segment A.

DOCUMENTATION OF ELIGIBILITY

Eligibility Assessment for North Fork John Day River (NFJDR) Segments Identified For Possible Inclusion as Components of the National Wild and Scenic Rivers System

SECTION C

River Name	Free-Flowing Values		Outstandingly Remarkable Values 3/							Potential Classification			Eligibility Determi-nation	
	Y	N	a	b	c	d	e	f	g	Wild	Scenic	Recre -ation	Y	N
NFJDR Segment A (Camas Creek to Mallory Creek)	X		X	X		X					X	X	X	
NFJDR Segment B (Mallory Creek to River Mile 20.4)	X		X	X		X					X		X	

3/ (See Section B for description of values)
- a – Scenic
- b – Recreational
- c – Geological
- d – Fish
- e – Historical
- f – Cultural
- g – Other Similar Values

Christina M. Welch 3/19/2008

Christina M. Welch / Central Oregon Resource Area Date