

Appendix A



United States
Department of
Agriculture

Forest
Service

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McKenzie River Ranger
District

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South Fork McKenzie River Wild and Scenic River
Section 7 Analysis

EXECUTIVE SUMMARY

This document summarizes the effects of the proposed South Fork McKenzie Enhancement Project on the South Fork McKenzie and Roaring Rivers, located within the South Fork McKenzie Wild and Scenic Study River corridor, to determine if the project is consistent with Section 7 of the Wild and Scenic Rivers Act.

Wild and Scenic Rivers Act:

The South Fork McKenzie River is a Wild and Scenic Study River (WSR) because it possesses several Outstandingly Remarkable Values (ORV's) such as: prominent recreational opportunities, spectacular scenery, diverse fish populations and prehistoric values. The South Fork McKenzie River has not been designated as a Wild and Scenic River, but was found to be eligible for inclusion in an Eligibility Determination (USDA Forest Service 1992).

For the purpose of classification, the river is divided into three segments. Segment 1 originates in the Three Sisters Wilderness and is classified as "Wild" and ranges from its headwaters to the wilderness boundary. Segment 2 and Segment 3 are paralleled by Forest Road 19 and are classified as "Recreation". Segment 2 ranges from the Three Sisters Wilderness boundary downstream to the head of Cougar Reservoir. Segment 3 is located downstream of Cougar Dam to the South Fork McKenzie confluence with McKenzie River. The proposed enhancement project occurs in the channel and Riparian Reserve of Segment 2 (upstream of Cougar Reservoir) in a recreation emphasis Wild and Scenic reach. Although the South Fork McKenzie has not been designated a Wild and Scenic River, Willamette National Forest plan direction requires it be managed as though it were until its WSR designation is decided. This analysis will examine potential project effects to the Outstandingly Remarkable Values of the Wild and Scenic Study River.

Oregon State Scenic Waterway

The South Fork McKenzie River is designated an Oregon Scenic Waterway. The Oregon Scenic Waterway program is administered by the Oregon State Parks and Recreation Department. Goals of the program include: 1) protecting the free-flowing character of Oregon state rivers that are designated scenic waterways for fish, wildlife and recreation; 2) protect and enhance scenic aesthetic, natural recreation, scientific, and fish and wildlife values along scenic waterways; and 3) encourage other local, state, and



federal agencies to act consistently with the goals of the program. The Oregon State Parks and Recreation Department reviews plans and decisions made by other agencies to ensure consistency with the Scenic Waterway program. The Oregon State Parks and Recreation Department will be involved in evaluation of the South Fork's resources and qualities using Oregon Scenic Waterway standards. Concurrence of project effects to Oregon Scenic Waterway values with Oregon State Parks and Recreation Department will be necessary through Section 7 Wild and Scenic River analysis, prior to project implementation.

SECTION 7 DETERMINATION

Based on the analysis below, it is my finding that the proposed South Fork McKenzie River Enhancement Project is consistent with Section 7 of the Wild and Scenic Rivers Act, and will not have an adverse effect on the values for which the river was authorized by Congress. The project is also consistent with the current Forest Land and Resource Management for the Willamette N.F. and the Record of Decision for Amendments of Land Management Planning Documents Within the Range of the Northern Spotted Owl. It is recognized that there will be short-term effects but that they are at an acceptable level. There will be no long-term adverse effects.

/s/ Mary Allison

Mary Allison
District Ranger

EVALUATION

The process outlined below follows the direction established by the Washington Office in 1994 as a "Procedure to Evaluate Water Resource Projects" (FSM 2354.7). The objective is to establish a uniform and consistent process to determine if projects would affect: 1) the free-flowing characteristics of the river and water quality, or 2) the values for which the river was established Outstandingly Remarkable Values (ORVs). ORVs are resource values that are unique, rare, or exemplary features of the South Fork McKenzie River. The South Fork McKenzie River is recognized for four ORVs: Scenery, Recreation, Prehistoric values, and Fish.

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1) Establish Need and Evaluate Consistency with Management Goals and Objectives

The primary purpose and need for the South Fork McKenzie River Enhancement Project (South Fork Project) is to provide the means to restore historic conditions over time and to improve aquatic habitat quality for fish. The proposed project meets the objectives of the Willamette Forest Plan as amended by the Northwest Forest Plan. The Willamette National Forest also recognizes the economic need to provide project related employment opportunities.

The proposed action is consistent with Riparian Reserve Standard and Guidelines as it is designed to restore the structure and function of the South Fork McKenzie River and lower Roaring River channel, which is expected to benefit aquatic habitat and biota. Increasing the level of channel complexity will meet Riparian Area/Reserve objectives as the project promotes long-term integrity of river habitat, conserves genetic integrity of native species, and attains Aquatic Conservation Strategy objectives (maintains and restores channel function, bank and bottom configuration, coarse woody debris supply to meet Aquatic Conservation Strategy objective 8).

The proposed action is consistent with and tiered to the 1990 Willamette National Forest Land and Resource Management Plan (LRMP) direction and meets the intent of the 1994 Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (Final SEIS, Record of Decision dated 4/13/94). The project area is located within two LRMP management areas: The South Fork McKenzie Wild and Scenic Study River (MA 6d), and Riparian Area/Reserve (MA 15; and Final SEIS management area designation of Riparian Reserve). This project is consistent with the standards and

guidelines required of all of management areas, with the exception of the following Standard and Guideline from the LRMP: MA-6d-15 states, 100% of the existing streamside shade should be maintained. The utilization of approximately 40 stream-adjacent trees to serve as key features in the South Fork and Roaring River channels will reduce stream shade by 1.2% along the enhancement reach. This small reduction in available stream shade will not result in a measurable increase in stream temperature. This project is located within Critical Spotted Owl Habitat. The proposed project is consistent with the Interagency Scientific Committee Conservation Strategy.

The proposed restoration action is consistent with Forest-wide standard and guideline FW-117 as it is based upon watershed limiting factor analysis. The loss of off-channel habitat and low channel complexity have been attributed to low quantities of in-stream wood and are identified as factors limiting production of native aquatic biota. The LRMP also directs active participation in activities that support bull trout recovery (FW-175).

This portion of the South Fork McKenzie River is designated an Oregon State Scenic Waterway. The proposed action is consistent with State management standards and meets the Oregon Administrative Rules governing resource protection [736-040-0043 (1) (f)] which states “Improvements needed for public recreation use or resource protection may be visible from the river, but must be designed to blend with the natural character of the landscape”. Restoration project design will utilize whole trees in river restoration effort, designed to mimic natural woody material accumulations. Where trees are utilized from adjacent riparian areas, those trees are selected in a dispersed fashion to minimize reduction in stream shade and maintain visual quality of the river corridor, and are spread over the length of the 8.5 mile long reach. Native vegetation will provide substantial vegetative screening due to the high density of evergreen and deciduous vegetation remaining along the enhancement reach.

The in-stream restoration project is co-sponsored by Oregon Department of Fish and Wildlife and U.S. Army Corps of Engineers, with the common objective of recovering South Fork McKenzie/Roaring River bull trout and spring Chinook salmon populations. The project must meet approval of Oregon Parks and Recreation Department and Oregon Division of State Lands, both responsible for managing activities in the State Scenic Waterway, Lane County Planning Department, Oregon Department of Fish and Wildlife, and the Natural Resource Conservation District prior to implementation.

Consultation with Oregon Parks and Recreation Department and Oregon Division of State Lands and concurrence is necessary prior to project implementation. Consultation with U.S. Fish and Wildlife (bull trout regulatory agency) and NOAA Fisheries (spring Chinook salmon) will occur through programmatic consultation, as the project will meet project design criteria resulting in a Not Likely to Adversely Affect listed species or not adversely modify Critical Habitat for listed species.

Forest Plan direction requires that this portion of the South Fork McKenzie be managed as if it were officially designated in order to preserve the values that led to its finding of eligibility under the W&SR's Act. The mechanism to make this determination is Section 7(b) of the W&SR's Act. The action agency is required to determine if this project will directly and adversely affect the Scenic, Recreation, Prehistoric, and Fish ORVs present in the area. The effects of this project upon the ORVs of the South Fork McKenzie River are evaluated in this Section 7 assessment. The proposed projects are designed to

enhance the channel function and water quality of the South Fork McKenzie and Roaring River while maintaining the vegetative diversity of stands within the corridor, and must not have an adverse effect on the values of Scenery, Recreation, Prehistoric, and Fish ORVs of the river.

The project area reach located between Homestead Campground and Elk Creek confluence, approximately eight miles long, and lower Roaring River, ½ mile long, is known habitat of two at-risk species above Cougar Dam. Roaring River is used by bull trout as spawning and rearing habitat. Bull trout utilize the South Fork McKenzie River as juvenile and sub-adult rearing and foraging habitat, and adult foraging habitat. Spring Chinook salmon use the South Fork McKenzie and Roaring River as spawning and rearing habitat. Currently adult spring Chinook are transported upstream of Cougar Dam by ODFW. Both species are listed as Threatened and protected by the Endangered Species Act. Recent monitoring of the South Fork McKenzie bull trout population find the population is very low in number, estimated at 50 adults, and considered at high risk of extinction (Buchanan et. al 1997). The treatment reach has been designated Critical Habitat for bull trout and spring Chinook salmon. As a Tier 1 Key Watershed providing habitat for at-risk stocks of spring Chinook salmon and bull trout, this drainage has been identified as a high priority for watershed restoration efforts.

2) Define the Proposed Activity

A need has been identified for channel restoration in the South Fork McKenzie and Roaring River, located within the boundaries of the South Fork McKenzie Wild and Scenic Study River area. The proposed project consists of restoration of large wood to the channels and closure of non-system roads to restore the function of the channel and water quality in the treatment reach. A low density of large woody material (LWM) is present in the South Fork McKenzie and lower Roaring River. The low volume of large wood as flow deflection provides little opportunity for the South Fork channel to migrate laterally and maintain off-channel habitat of importance to rearing listed species. The South Fork Project proposes supplementation of existing woody material, currently at a density of 29 pieces of large wood per mile (>24 inch diameter by 50 foot length), to act as flow deflection to maintain off-channel habitat upstream of Homestead Campground. Desired densities of LWM are approximately 80 pieces of material per mile. Post-project density of large wood would be about 80 pieces of material per mile.

Supplementing the natural rate of large wood input with human placed large wood is designed to provide additional complexity necessary to restore aquatic habitat for bull trout, Chinook salmon, rainbow trout, cutthroat trout and aquatic insects, to nearer historic conditions. The natural rate of input is not sufficient to replace in-stream wood deficits in the foreseeable future (approximately 50 to 100 years with an estimated net recruitment of about one piece/mile/year).

Existing large woody material would be supplemented with approximately 40 trees selected from the adjacent riparian reserve, with imported woody material (280 trees) from nearby upland sources, and through repositioning previously placed restoration LWM. Stream-adjacent trees range in size from 22 to 52 inches in diameter (average 32 inch diameter) and are located from stream bank to 50 feet from the channel. Approximately 14 trees along the north bank, and 26 trees along the south bank would be pulled over into the channel with root mass intact. The large stream adjacent trees are selected for their size and

to serve as key features around which a debris accumulation will be formed. Once key features are in place, the imported wood will be aurally placed using helicopter and hand crews. Material will be added to each key piece of woody material, to mimic natural accumulations. Woody material jams would consist of 4-9 pieces in off-bank accumulations, with numerous opportunities for channel spanning accumulations. Following placement of large wood, channel character will be monitored periodically to determine off-channel development. Periodic aerial photographs and field inventories will be used to quantify off-channel habitat area development. A total of 45 large wood accumulations would be placed in the 8.5 mile long treatment reach, utilizing several existing, natural key wood pieces.

For helicopter access, a service landing is located at the end of Rd 1900-985. Helicopter placed wood, most with their root mass intact, would be flown from staging sites along the South Fork McKenzie River (Figure 1). Placement of woody material by helicopter would occur during one to two days, depending upon weather (6-8 hours of flight time). To ensure public safety, the treatment reach would be closed to public use for 4-5 days during tree-lining and aerial placement of large wood. Seasonal restrictions to protect spotted owl, peregrine falcon, bull trout and spring Chinook will require aerial and in-stream placement occur during July 15-August 15. Hand crew placement of large wood would require implementation during the same in-stream work period. Hand crews may be utilized to reposition smaller woody material placed during 1996 and 1998. Project implementation will occur during the week, to minimize impact to weekend recreation. The project design and contract will include a Flight Safety Plan and Spill Containment Plan, with requirements to ensure contractor safety and spill containment.

The stand of trees adjacent to the South Fork McKenzie and Roaring River restoration reach is described as predominately Douglas fir with a hemlock and cedar understory. The stand is a multi-layered canopy with a Douglas fir old growth dominant overstory. The portion of the river adjacent stand identified for use is composed of a Douglas fir overstory, and understory of Douglas fir, hemlock and cedar averaging 110 years old and measuring 125 feet tall. The stand is considered fully stocked due to the following indicators: 1) Suppression of saplings is occurring with 1-4 inch diameter trees averaging 19 years old. 2) A suppressed rate of growth on all but dominant trees. 3) A canopy more than 75% closed. 4) A stand density index reflecting a dominant suppressing overstory is inducing mortality in the understory.

Treatment of 12 non-system, native-surfaced roads through barrier placement or campsite delineation would result in alteration of access to 12 dispersed campsites. Road accesses that travel through the South Fork McKenzie and Roaring River floodplains would be modified to exclude vehicle entry into stream channels and wet areas. There would be no change in access to 14 dispersed campsites, with modification of access to 12 dispersed campsites. The 12 dispersed campsites would continue to exist and be accessible to foot traffic, with vehicle parking available at the road blockage and on native surfacing. Approximately 3,000 feet of road surfaces would be scarified or ripped to prepare the road bed for native seed and plants.

3) Describe How the Proposed Activity Will Directly Alter Within-Channel Conditions.

The placement of wood is designed to enhance conditions in a mostly straight, single channel and restore sources of lateral migration to improve off-channel habitat area. This would be achieved through increased channel roughness provided by greater in-stream wood density. The additional roughness supplied in this project is expected to encourage re-establishment of meander pattern, lost since salvage of in-stream wood during 1960-1984.

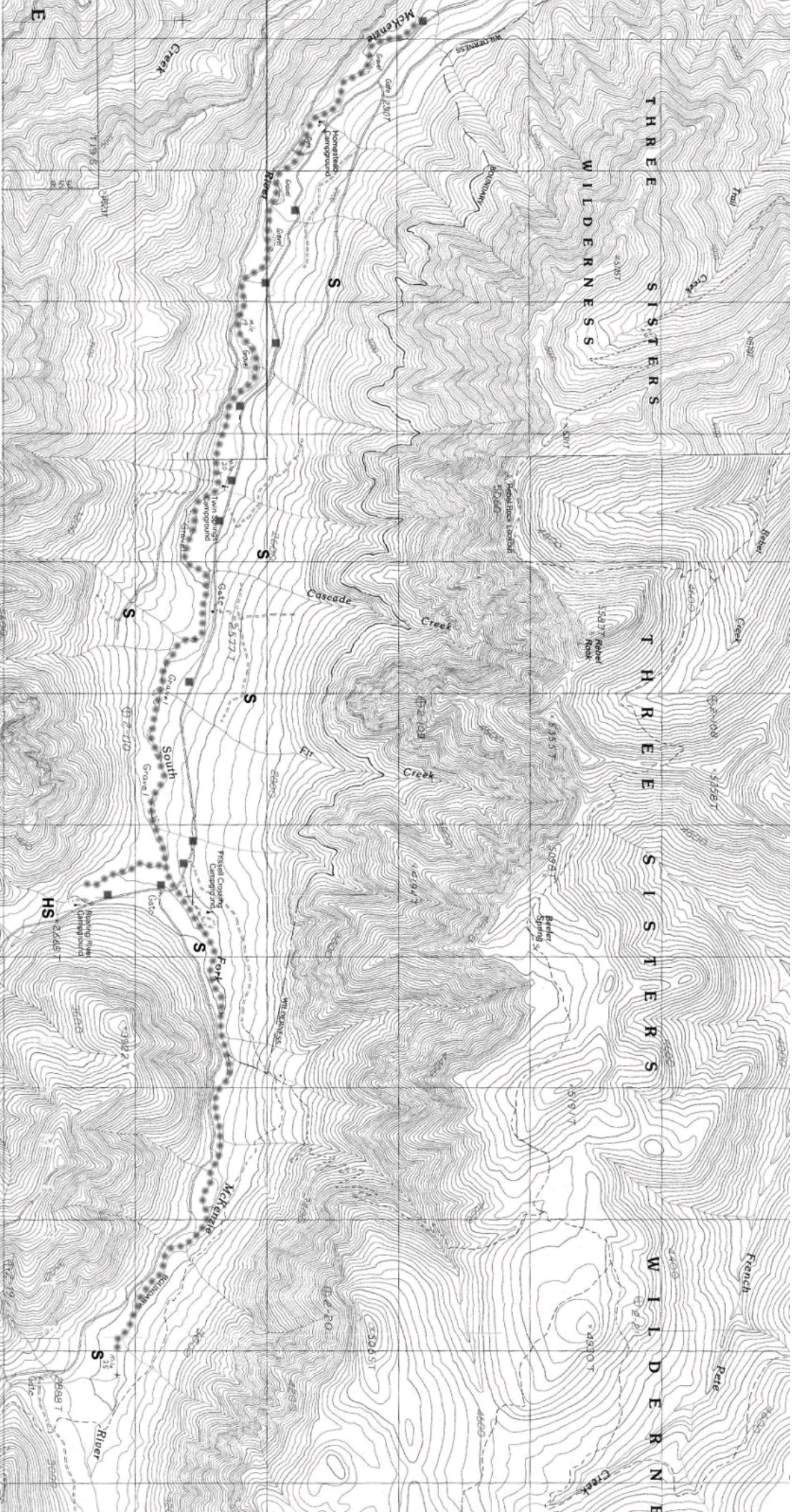
The South Fork McKenzie River channel is described as a Rosgen type C3 to C4 channel, with channel materials dominated by cobble and gravel, and slope range less than 2%. Type C3/4 channels are typically unconstrained by valley walls and characterized by broad flood plains. In the case of the South Fork McKenzie River, restoration wood is expected to provide areas of off-channel refuge of value to native salmonid species, particularly rearing bull trout and spring Chinook salmon. As wood placement will not utilize equipment in or near the channel, water quality parameters may be expected to remain high with no increase in turbidity. There would be some expected increase in nutrient retention through slower water velocities and the capturing nature of debris accumulations. Nutrient retention would not adversely affect water quality.

Project design may place full channel-spanning structures into the river. Full spanning structures would mimic existing natural wood in the channel, but are subject to a greater frequency of migration due to the surface area exposed to high flows. Restoration wood would be expected to migrate during an extreme flood event. No artificial attachment will be utilized; rather imported wood will depend upon the mass and weight of an intact rootmass to stabilize material. During a typical flow year (1.5 recurrence interval), minimal adjustment and settling of wood accumulations are expected. During high flow events, for example the November 1996 event - estimated at a 50 year recurrence event in the South Fork McKenzie River, 10% of restoration wood similarly placed was found to reposition for a distance of up to 300 feet. Restoring wood to reflect pre-salvage conditions will not affect the free-flowing character of the river, as natural conditions of flow will be maintained. Water quality will be maintained with restoration of channel complexity.

THREE SISTERS WILDERNESS

THREE SISTERS

WILDERNESS



South Fork McKenzie Enhancement Project

- ***** In-stream enhancement reach
- Non-system road treatment
- S Large woody material staging site
- HS Helicopter service site



CONTOUR INTERVAL 40 FEET

NATIONAL

FOREST

4) Describe How the Proposed Activity Will Directly Alter Riparian and/or Floodplain Conditions.

In-stream restoration activity would be located within the 100-year floodplain of the South Fork McKenzie River. Material utilized from the riparian area adjacent to the channel will consist of up to 40 live trees pulled over into the South Fork and lower Roaring River. Imported material, most with intact root-mass, will originate from along roads upslope of the South Fork and Roaring River (roadside salvage of wind thrown trees). Utilization of live trees will not measurably change the vegetative composition, age structure, quantity, or vigor of riparian stands. Available stream shade will be reduced by 1.2%, and will not result in measurable increase in stream temperature as simulated using Brown's Model. Densities of downed woody material within the riparian area will not be reduced and will be supplemented due to off-bank placement of LWM. Wildlife values in the Wild and Scenic River will be maintained or improved. The South Fork McKenzie and Roaring River is known nesting habitat for harlequin ducks and addition of downed wood is expected to benefit harlequin nesting habitat.

Placement of wood within South Fork and Roaring River would increase channel roughness. Encouragement of flow of water onto the floodplain with additional roughness is expected to result in floodplain function more closely resembling natural function (as compared to salvaged channel function and current low in-stream wood density). The recent channel straightening documented in the South Fork McKenzie Watershed Analysis reflects a channel response to lower channel roughness resulting from lower density in-stream wood. Following enhancement activity, building of the floodplain through deposition of sediment during flood flows is expected at a rate more approximate of historic conditions. Benefits of restored channel LWM and improved riparian function are expected to provide improved habitat condition for riparian dependent species.

Treatment of 12 non-system roads through barrier placement or campsite delineation would result in reduced vehicle impacts to wet areas and live channels adjacent to the South Fork McKenzie and Roaring River. In the short-term, sources of fine sedimentation and turbidity would be reduced. Active stabilization and natural re-vegetation of road surfaces are expected to restore nearly 1 acre of floodplain vegetation in the project area. Long-term benefits of non-system road closures are restored hydrology, re-establishment of native vegetation and improved water quality.

5) Describe How the Proposed Activity Will Directly Alter Upland Conditions.

For helicopter access, an existing service landing is located along Rd 19-985. Salvaged tree staging sites are located on existing landings on spurs to Rd 19 (Figure 1). All landings used as staging sites or service landing are on existing landings and require no further development. Salvaged wind thrown trees from roadsides in the South Fork McKenzie watershed will serve as the source of material to place in-stream. Road side removal of downed trees occur annually as part of district road maintenance and firewood programs, in this case roadside removal in the South Fork McKenzie watershed would include utilization of road side trees for in-stream enhancement. Trees collected to serve as in-stream wood will be removed from the road prism by self-loading log truck operator. If cultural resources, sensitive wildlife or

botanical resources are found in the project area prior to or during project implementation, the resource(s) will be protected by avoidance of the site. Road surfaces used during project implementation will require equipment operators clean equipment to prevent the introduction of noxious weeds. Post-project mitigation will monitor project used roads and utilize hand pulling to prevent introduction of noxious weeds.

6) Evaluate and Describe How Changes in On-Site Conditions Can/Will Alter Existing Hydrologic or Biologic Processes.

The proposed action of wood addition to South Fork McKenzie and Roaring River is designed to restore channel function. The natural condition of flow would be maintained or enhanced by restoration of pre-management in-stream wood densities. Stream bank erosion potential is expected to reflect natural rates of channel migration, sediment routing and floodplain function. With additional channel roughness, nutrient trapping is expected to improve as fine organic material is caught in wood accumulations, of benefit to aquatic invertebrates. Fish rearing success is expected to improve within the project area in response to improved off-channel habitat. A variety of low velocity margin areas are expected to benefit rearing salmonids. Habitat for amphibians and macroinvertebrates may be expected to improve by increasing channel complexity in the river. Improvement of habitat for riparian dependent species is an expected benefit of restoration of riparian function. Wildlife values will be maintained throughout the Wild and Scenic corridor.

Treatment of 12 non-system roads through barrier placement or campsite delineation would result in reduced vehicle impacts to wet areas and live channels adjacent to the South Fork McKenzie and Roaring River. Active stabilization and natural re-vegetation of road surfaces are expected to restore nearly 1 acre of floodplain vegetation in the project area. Long-term benefits of non-system road closures are restored hydrology, re-establishment of native vegetation and improved water quality. Aggregate Recovery Percent (ARP) is a measure of the vegetative condition related to its ability to intercept rain, snow and wind. Proposed restoration activity will maintain or exceed ARP midpoints prescribed in the Willamette Forest Plan. No adverse alteration of hydrologic processes would occur with the South Fork Project.

7) Estimate the Magnitude and Spatial Extent of Potential Off-Site Changes.

There is potential for some restoration material to migrate downstream and redeposit. Use of larger material and project design seek to stabilize LWM in the river. Results of monitoring in the South Fork McKenzie River by OSU in 1996 and 1998 and in Quartz Creek following the floods of 1996 (Gregory and Wildman 1999) indicate a portion of material migrates a short distance in response to a 50-year or larger recurrence event. Approximately 10% of unattached woody material placed during 1996 and 1998 in the South Fork McKenzie River migrated up to 300 feet from its original position in response to flood flows. Larger sized material placed in this effort is expected to be stable due to placement design, namely through the utilization of key features as a structure backbone. Placement design would utilize off-bank structures and will stabilize material by use of off-bank cinches or binds within river adjacent vegetation. Use of larger sized material with root-masses will provide greater stability and resistance to migration

during high flows. The intent of this design is to mimic natural off-bank recruitment and avoid exposure of restoration wood to the full force of bankfull flow and subsequent migration. Some material migration to lower river reaches is expected to occur due to increased densities of LWM in the river. A large bedrock obstruction near river mile 18, about 2 miles downstream of the project area has effectively captured and retained nearly all LWM migrating to that point in the river. Entire project migration is not expected in any but the most extreme events.

8) Define the Time Scale Over Which Steps 3 - 7 are Likely to Occur.

Following restoration of LWM volumes, channel response is expected to occur following events exceeding bankfull flow (>1.5 year recurrence interval). Recovery and maintenance of channel health is expected to continue for centuries with continued natural debris recruitment.

The beneficial effects of placement of wood in the South Fork McKenzie and Roaring River may be partially realized immediately following implementation and is expected to be fully realized and persist for centuries with replenishment of human-placed debris by natural input. Addition of large wood in the South Fork Project is designed to provide channel complexity and low velocity habitat for a variety of fish species and other aquatic organisms for many years. The longevity of human-placed wood will provide habitat benefits for as long as in-stream wood remains sound, approximately 50-100 years. The duration of time that placed wood occupies the enhancement reach will depend upon flood frequency and decay rates. Flood events in excess of 50-year recurrence interval (approximately 5,070 cfs at Homestead Campground) may be expected to reposition or transport some portion of restoration material. Margin water alcoves and off-channel habitat are expected to be developed during high flow events with return intervals of 10 years or greater (approximately 3,550 cfs at Homestead Campground). Immediately following placement of LWM, cover and attachment sites will be provided for the aquatic organisms. An immediate and continuing benefit of in-stream wood presence and decay will be as a source of cover and nourishment for macro-invertebrates. Shortly after placement, scour of pools and deflection of flows through dissipation of river energy may begin (> 1.5 year recurrence; about 1,950 cfs at Homestead Campground).

Treatment of 12 non-system roads through barrier placement or campsite delineation is expected to result in reduced sources of sedimentation and turbidity in a short period (immediately following exclusion of vehicles from wet areas/channels) and continuously following stabilization of road surfaces with native seed (within one year).

9) Compare Project Analyses to Management Goals and Objectives

The Forest Plan established Management Area 6d which includes the South Fork McKenzie Wild and Scenic Study River. All MA-6d Standards and Guidelines apply to the proposed activity, with the Standards and Guidelines listed below specifically related to the proposed activity. Riparian Area Standards and Guidelines (MA-15) apply to the riparian areas within MA-6d, as amended by the Northwest Forest Plan.

MA-6d-07 All design and implementation practices should be modified as necessary to meet the Visual Quality Objectives of Retention and Partial Retention as prescribed on the viewshed map for the river corridor.

The goal of management within the Wild and Scenic River corridor is to create and maintain desired visual characteristics of the forest landscape through time and space. The enhancement reach along the South Fork McKenzie and Roaring River will be managed for a high level of scenic quality. Utilization of riparian trees for aquatic restoration in a dispersed manner will maintain a high level of canopy closure and placement in the river will remain natural in appearance (root mass intact, appearing as a wind thrown tree in the channel).

MA-6d-09 The total area of cumulative detrimental soil conditions should not exceed 10% of the total acreage within the activity area, including roads and landings. Severely burned areas should not exceed 3% of an activity area. Detrimental soil conditions include compaction, displacement, puddling, and severely burned soil layers.

Non-system road closures contained in the South Fork Project are designed to address road problems of compaction, erosion, puddling, and interception of live waterways. Closure of non-system roads is expected to reduce cumulative detrimental soil conditions, particularly those leading to degradation of water quality. Temporary roads will not be constructed within the Wild and Scenic River Study corridor with implementation of the South Fork Project. Restoration material placement systems will utilize helicopter, hand crews and cable yarding systems to minimize potential impacts within the Wild and Scenic corridor. Ground based equipment utilized in restoration activities will remain on existing road surfaces. No heavy equipment will be utilized off of roads to avoid soil compaction, displacement, and puddling potentially caused by equipment. Placement of large woody material will be accomplished by means selected to avoid impacts to sensitive riparian areas. Detrimental soil conditions would not be caused by enhancement activity.

FW-313 Road closures or access restrictions shall consider the effects on developed and dispersed recreation sites and trailheads. Proposed access restrictions will consider season of use, alternative routes, and availability of similar experiences.

Non-system road closures contained in the South Fork Project are designed to meet the demand for a variety of recreation experience along the South Fork McKenzie and Roaring River. Currently a high frequency of dispersed campsite is accessible by road (3.0 sites per mile). Following non-system road closures, 1.6 sites per mile would be accessible by road (14 sites in the project area) and 1.4 sites per mile would be accessible by trail. Change in access would not change the number of established dispersed campsites. A greater variety of dispersed camping experience may be expected, ranging from those more readily accessible by vehicle to walk-in sites.

FW-316 Temporary roads left from past activities should be evaluated as they are encountered during project environmental analysis and rehabilitated as soon as practicable.

Non-system roads treated during the South Fork Project are temporary roads remaining from salvage efforts during 1960-1984. Those roads contributing to diminished water quality (crossing wetlands and live waterways) would be decommissioned. Other temporary roads from this period will be retained to provide access to dispersed campsites and to continue a variety of recreational access in the Wild and Scenic River corridor.

MA-6d-15 100% of the existing streamside shade should be maintained.

Restoration activity along the South Fork and Roaring River would influence streamside shade resulting in a 1.2% reduction in existing shade. Results using shade modeling (EPA 1980, Brown's Model) yield a potential increase in stream temperature of 0.007°F, an immeasurable difference between pre-project and post-treatment condition.

MA-6d-28 Management activities shall consider the habitat requirements of ecological indicators for mature and old-growth forests.

The proposed project will meet the Standards and Guidelines provided in the Willamette National Forest Plan as amended by the Northwest Forest Plan. Additional guidance provided by the Endangered Species Act was used in project design and is described in project environmental analyses.

MA-6d-33 New in-stream structures should be limited. Existing structures as well as new structures and activities associated with fisheries enhancement work may be allowed, providing the waterway remains generally natural in appearance and stream flows are not inhibited.

Placement of woody material in the South Fork Project is designed to restore quantities of naturally occurring material to aid in recovery of ESA listed spring Chinook and bull trout. Restoration activity would use native materials and mimic existing structure in seeking natural appearance. Attachments such as cable or other devices would not be used. The placement of restoration wood would not impede or inhibit stream flow, and the material would function as natural in-stream material once placed.

Protection and enhancement of ORVs and special attributes (Scenic, Recreation, Prehistoric, Fish and free-flowing condition) is a management goal for the South Fork McKenzie Wild and Scenic Study River. Previous sections detail the enhancement aspects of this proposal. They can be summarized as follows: The project is consistent with Northwest Forest Plan objectives in restoring habitat for at-risk salmonids. Restoration is also expected to enhance riparian function and provide benefit to riparian dependent wildlife. Native vegetation would provide substantial vegetative screening due to the high density of evergreen and deciduous vegetation along the enhancement reach. Although reduction of stream adjacent shade would occur along the reach, the magnitude of effect is small with no measurable influence on stream temperature. The aesthetic value of the Wild and Scenic Study River would be maintained by providing restoration material that is natural in appearance. The casual observer will not be able to distinguish woody material accumulations from naturally occurring accumulations. Restoration is also expected to enhance riparian function and provide some benefit to riparian dependent wildlife. No

temporary roads would be constructed within the Wild and Scenic River corridor or project area. No alteration of South Fork McKenzie or Roaring River flow would occur as a result of this project.

Findings on effects of the proposed project upon ORV's of the South Fork McKenzie River:

1. Scenic values. The scenic qualities of the South Fork McKenzie River are seen from Aufderheide National Scenic Byway (Road 19), campsites, forest roads, and user trails. Views of the channel from Rd. 19 (north side of the South Fork) are intermittent, when the Byway closely approaches the channel. The majority of the view toward the river from Rd. 19 is screened by vegetation. The view of the river is not continuous along an intermittent un-maintained trail, located on the north side of the river, which varies in distance to the channel from the bank to screened locations away from the river.

The aesthetic value of the Wild and Scenic River corridor would be maintained by providing enhancement material that is only natural in appearance. No form of attachment or cabling will be utilized to stabilize the large woody material. Native vegetation will provide substantial vegetative screening due to the high density of evergreen and deciduous vegetation along the enhancement reach. The majority of restoration material would be imported from outside the Wild and Scenic corridor. Woody material accumulations will be designed to mimic existing accumulations in the South Fork McKenzie and Roaring River corridor. Storage of wood prior to placement will be on established landings that will be out of sight of Wild and Scenic corridor users. The project would not adversely impact the ORV of scenery.

2. Recreation. Recreationists seek a wide variety of recreational experiences use the river corridor in the project area; these include developed and dispersed camping, recreational driving, fishing, and bicycling and hiking. Kayaking and rafting segments of the South Fork McKenzie River occur in segments of river downstream of the enhancement reach. Exploratory kayak use of the enhancement reach has been documented. Willamette Kayak and Canoe Club members conducted boating examination following a restoration project in 1996-8. The treatment reach was deemed to have a low gradient and too many portages to be a high quality kayak experience. A high quality kayaking destination has been documented in Soggy Sneakers (Willamette Kayak and Canoe Club Guide to Oregon Rivers) and begins on the South Fork McKenzie River at Rd 1980 bridge near French Pete Campground. This kayak put-in (starting point) lies 8.0 miles downstream of the project area and 6.2 miles downstream of a large channel obstruction that captures and retains most migrating large woody material.

Enhancement is expected to improve riparian function and provide some benefit to riparian dependent wildlife. Harlequin ducks are known to utilize this portion of the McKenzie River as nesting and rearing habitat. Downed wood within riparian areas is utilized by nesting Harlequins. Similarly, wildlife such as mergansers, water ouzel, herons, river otter, and mink that prey upon aquatic organisms, may be expected to benefit from improvement in rearing fish habitat and aquatic insect production. As a result, enhancement of this portion of the Wild and Scenic River may provide greater opportunities for wildlife viewing. Some short-term interference with area road use, camping, angling and trail recreation would

occur with project activity during 4-5 days of tree-lining and aerial placement of restoration material. Nearby trails, roads and dispersed campsites would be closed temporarily for protection of the public. Beyond a short-term interruption of recreational use in the project area, restoration effort would not have long lasting direct or adverse effects upon recreational values of the South Fork McKenzie Wild and Scenic Study River.

3. Prehistoric. Periodic changes in channel location following material placement are expected to result in variations of channel characteristics such as thalweg position, pool frequency, off-channel habitat, and gravel deposition. Post-enhancement changes in channel location are expected to more closely resemble a properly functioning Rosgen Type C channel. South Fork McKenzie and Roaring River channel and floodplain function is not expected to affect cultural resources beyond the natural rate of channel migration. Identification of sites of cultural or historic importance was accomplished through field surveys and review of known sites. Avoidance of sites will be used to remove potential impacts to prehistoric values. Sites potentially identified during project implementation will be avoided and described to the District Cultural Resource Specialist. This project would not directly and adversely affect Prehistoric resources.

4. Fish. Water quality parameters may be expected to improve, such as increased nutrient retention in woody material accumulations and an increase in depositional areas through project implementation. Improved floodplain/channel interaction is expected to more naturally process migrating organic and inorganic material. Potential to introduce fine sediments through utilization of stream adjacent riparian trees will be mitigated with scattering duff and litter over bare soils and seeding with native grasses. Utilization of stream adjacent trees would result in a reduction of 1.2% of existing shade in the restoration reach. Calculating the influence of site latitude, critical time of year, height of adjacent vegetation, orientation of stream, stream width, maximum solar angle and changes in available shade, Brown's Model (EPA 1980) demonstrates falling trees in the restoration reach will not result in increases in stream temperature. A reduction of 1.2% of existing stream adjacent shade is evaluated using Brown's Model to calculate potential increases in water temperature through the restoration reach. Results using the model yield a potential increase of 0.007° Fahrenheit, an immeasurable difference between pre-project and post-treatment condition.

No adverse effects to water quality are expected to result from this project. Benefits are expected from an increase in large woody material, particularly increases in rearing habitat area, and improved function of floodplain and adjacent riparian areas of the South Fork McKenzie and Roaring River. Project design seeks to minimize migration of enhancement material through use of large sized material with root-mass intact. The in-stream work period of mid-July to mid-August would minimize potential impacts to at-risk species present in treatment reaches (timed to avoid adult spring chinook and adult bull trout presence). There is some potential to disturb juvenile spring chinook and bull trout with placement of woody material. Since a portion of the material would be fallen from the adjacent Riparian Reserve and the majority placed aerially, the possibility of disturbing listed juvenile fish will be of short duration,

during the 4-5 days of project implementation. Alteration of aquatic habitat qualities will occur, and are expected to remain within the range of proper channel and floodplain function. Restored habitat conditions are expected to enhance fisheries resources. While there is some potential to disturb fish in the short-term, this project is expected to beneficially affect fish resources over the long term.

Other values:

Wildlife: Restoration material sources and material placement are factors that could affect wildlife resources in the Wild and Scenic River. As mentioned previously, enhancement is expected to improve riparian function and provide some benefit to riparian dependent wildlife. Harlequin ducks are known to utilize this portion of the McKenzie River as nesting and rearing habitat, utilizing downed wood within riparian areas. Wildlife such as mergansers, water ouzel, herons, river otter, and mink that prey upon aquatic organisms, may be expected to benefit from improvement in rearing fish habitat and aquatic insect production.

Ground disturbance would be mitigated to insignificant levels from utilizing stream adjacent trees in restoration. No ground disturbance will occur as a result of helicopter or hand placement of material. Placement of material by helicopter will meet wildlife operational period specifications. Habitat of value to at-risk species will be identified during field surveys and will be avoided during project implementation. This project would not diminish wildlife resources.

Botanical: Identification of botanical resources was accomplished during environmental analysis. All botanical resource sites such as C-3 Survey and Manage species have been identified and will be avoided by this project. Sites potentially identified during project implementation will be avoided. This project will not directly or adversely affect Botanical resources.

10) Section 7 Determination.

The free-flowing condition of the South Fork McKenzie River would be maintained with implementation of the proposed activity. Enhancement of wood to nearer historic conditions will maintain the natural flowing condition of the Wild and Scenic Study River. No adverse effects upon the free-flowing condition of the South Fork McKenzie Wild and Scenic Study River would occur with implementation of this project. Diminishment of Scenic, Recreation, Prehistoric, or Fisheries values associated with project activities would not occur within, above or below the enhancement area.

Effects Upon Study River Outstandingly Remarkable Values:

	Scenic	Recreation	Prehistoric	Fish
Alt A Action	<i>No Effect</i>	<i>Short Term Interruption (4-5 day closure of sites in the vicinity of project activity)</i>	<i>No Effect</i>	<i>Potential Short-Term Disturbance, Long-Term Benefit</i>
Alt B No Action	<i>No Effect</i>	<i>No Effect</i>	<i>No Effect</i>	<i>No Effect</i>

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