

# **ENVIRONMENTAL ASSESSMENT**

## **West Fork Horse Creek Bridge Rehabilitation Project**

**Lane County, Oregon**

**Prepared by:**

**U.S.D.A. Forest Service  
Willamette National Forest  
McKenzie River Ranger District**

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VICINITY MAP

FIGURE 1

West Fork Horse Creek  
Bridge Rehabilitation Project

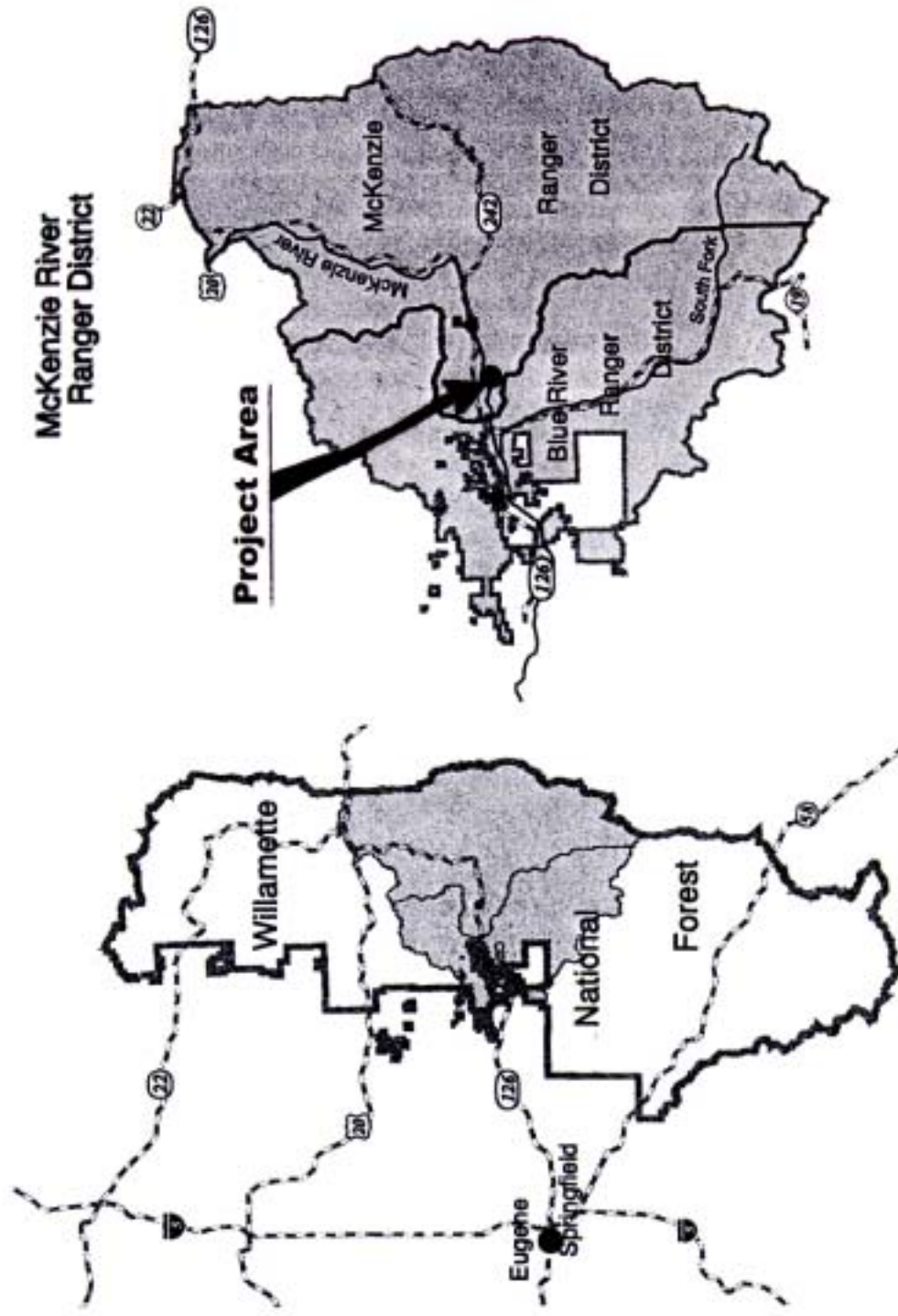
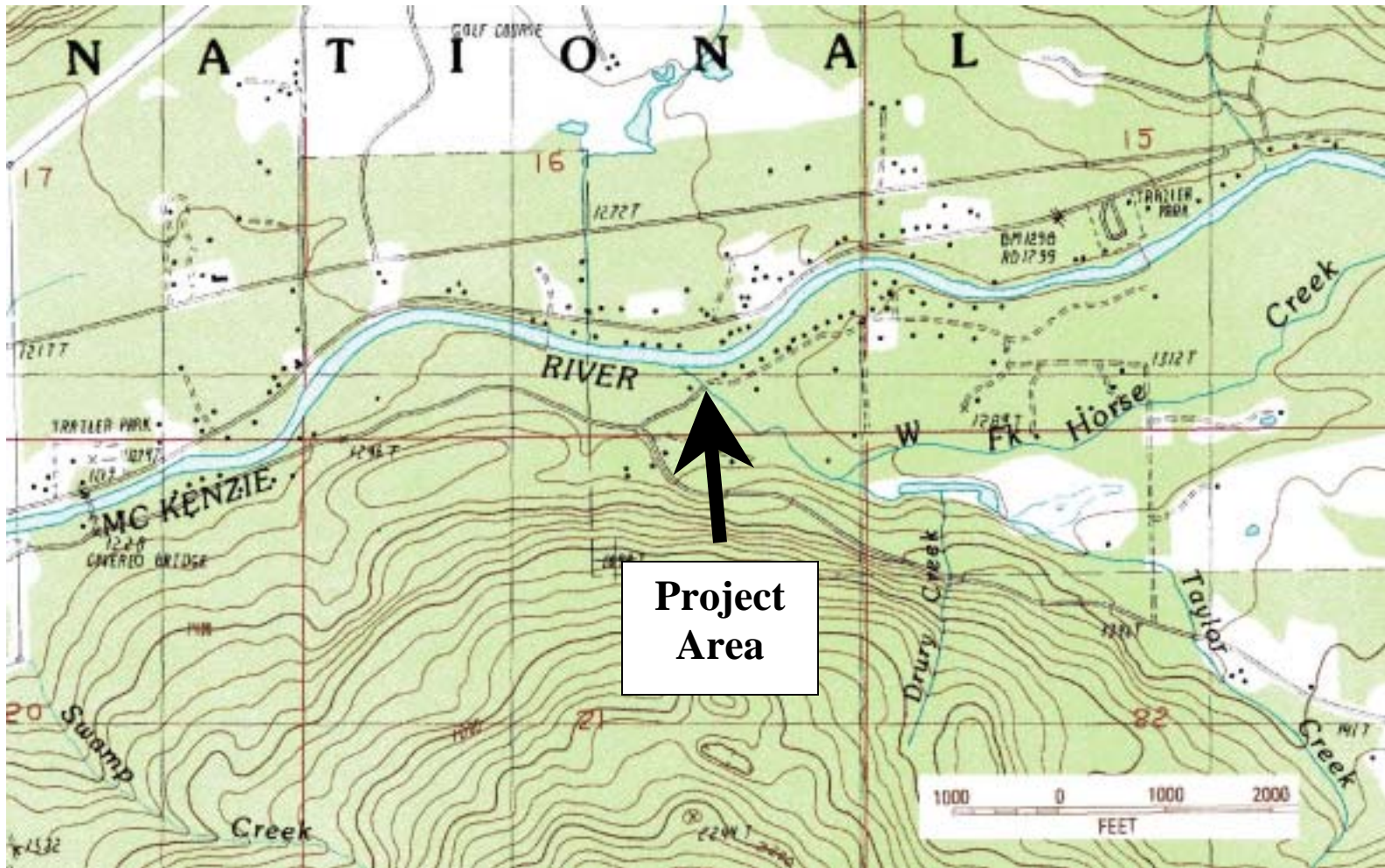


Figure 2.

## West Fork Horse Creek Rehabilitation Project



**FIGURE 3**

## **West Fork Horse Creek Bridge**



View from Delta Rd. looking north.



View from Delta Rd. looking south.

## Table of Acronyms:

AASHTO	American Association of State Highway Traffic Officials
DN/FONSI	Decision Notice/Finding of No Significant Impact
EA	Environmental Assessment
EWEB	Eugene Water And Electric Board
FLIR	Forward Looking Infra-red (imagery)
HBRR	Highway Bridge Replacement and Rehabilitation Program
IDT	Inter-disciplinary Team
NEPA	National Environmental Policy Act
OBEC	OBEC Consulting Engineers
ODOT	Oregon Department of Transportation
OSHA	Occupational Safety and Health Administration
PETS	Proposed, Endangered, Threatened, Sensitive species
ROD	Record of Decision
SHPO	State Historic Preservation Office
SOPA	Schedule of Proposed Actions
TES	Threatened, Endangered, Sensitive species
USDA	United States Department of Agriculture
USDI	United States Department of Agriculture
USFS	United States Forest Service
WA	Watershed Analysis
WNF	Willamette National Forest



# I. PURPOSE AND NEED FOR ACTION

This environmental assessment is written to fulfill the purposes and requirements of the National Environmental Policy Act (NEPA), as well as to meet policy and procedural requirements of the USDA Forest Service. The intent of NEPA, its implementing regulations, and Forest Service policy is to evaluate and disclose the effects of proposed actions on the quality of the human environment. The intent of these procedures is to improve the quality of decision-making, as well as make the decision-making process more accessible and transparent to the affected public.

## INTRODUCTION

The West Fork Horse Creek Bridge, on Delta Road (also known as Forest Road 2639164), was constructed in 1950 by the U.S. Forest Service. Both the West Fork Horse Creek Bridge and Delta Road, a local access road, are located on National Forest System lands. However, in 1972, the U. S. Government granted an easement for a public road to Lane County, thereby relinquishing responsibility for the road and its appurtenances, including the bridge.

The bridge is one of three remaining bowstring-truss bridges of this kind in the state of Oregon. The fifty-two year old bridge is 30.5-meters (101 ft.) long, 6.5 meters (21 ft.) wide, and is made with timber glulam truss components. The glulams and other wooden components have deteriorated with age. Following a June 1997 inspection, the bridge was given a sufficiency rating of 29.6 due to deterioration of truss members and other components. According to the Federal Highway Administration, bridges with a sufficiency rating of 80 or less are eligible for rehabilitation, and bridges with sufficiency ratings of 50 or less are eligible for replacement. Because of its current condition, load limits have been reduced to approximately half the Oregon Department of Transportation (ODOT) standards for bridges of this type.

There are approximately forty-five single-family residences on the island, consisting of intermingled private and National Forest leased summer-home properties. Because the bridge is on a local access road, the County is not allowed to spend highway funds for bridge maintenance or inspection. All responsibility falls on the residents using the road and bridge.

The Federal Highway Administration, through the Highway Bridge Replacement and Rehabilitation (HBRR) Program, makes funds available to states for bridge projects. ODOT approves expenditure of funds for bridge projects. In April 1998, the Lane County Commissioners agreed to accept the West Fork Horse Creek Bridge into the county maintained road system if it was replaced with a bridge meeting modern standards, and if the residents who use the bridge would provide the local matching funds associated with a HBRR grant. Total cost of rehabilitation or replacement of the bridge is estimated at \$435,000. On March 28, 2000, Lane County Commissioners issued an order stating that the rehabilitation or replacement be financed as follows: Federal Highway Administrator Highway Bridge Rehabilitation or Replacement grant – 80%; ODOT – 10%; and benefiting homeowners – 10%. In late 2000, the benefiting landowners, including the McKenzie River Ranger District, made the 10% payment of \$43,500 to cover the local match.

**Legal description of the project:** T.16S., R.5E., Sec. 16; Willamette Meridian; Lane County, Oregon.

## **PROPOSED ACTION**

The Lane County Board of Commissioners proposes to rehabilitate the fifty-two year old West Fork Horse Creek Bridge on Delta Road. The project would occur in the summer of 2003. The rehabilitation would include structural repairs throughout, and replacement of portions of the deteriorated timber glulam truss members. A temporary bridge would be installed adjacent to the West Fork Bridge to provide access for the local residents and Forest Service summer-home leaseholders that depend on the bridge for access to their homes. The clearing for the temporary bridge and realignment would require falling approximately ten trees near to the bridge.

### **Connected Actions**

The proposed action necessitates the connected actions of relocating existing utility rights-of-way on National Forest land. Utility relocation would include: 1) overhead power lines owned by Lane Electric Cooperative, 2) overhead television cable owned by Charter Communications, 3) buried telephone lines owned by Qwest Communications, and 4) a water pipe owned by the Upper McKenzie Water District. The water pipe and telephone line are currently attached to the bridge, and would be temporarily relocated during the project. Relocating utilities requires falling approximately five trees.

## **PURPOSE AND NEED**

The West Fork Horse Creek Bridge serves approximately 20 permanent private residents and 25 Forest Service summer-home leaseholders on Delta Island. The Bridge is currently posted for restricted load limits following a 1997 bridge inspection that identified deterioration of the primary truss members. Posted load limits have been reduced to approximately half the state standard for a bridge of this type. There is no cost-effective alternative detour route for residents living on Horse Creek Delta Island if use of the bridge is further restricted or if the bridge is closed in the future.

The Lane County Board of Commissioners and the McKenzie River District Ranger have acknowledged that the West Fork Horse Creek bridge rehabilitation project is needed to provide long-term access to Horse Creek Delta Island for residents living on the island. The current reduced load limits for the bridge need to be increased to accommodate fire emergency vehicles and to meet ODOT weight limit standards. Lane County has agreed to accept a portion of Delta Road, (to the end of the guard rails on the north end of the bridge) into its maintained-road system if the bridge is rehabilitated to meet modern standards and if the residents who use the bridge provide the local matching funds associated with a HBRR grant.

Since the bridge has recently been recognized as a significant historic structure by the State Historic Preservation Office, there is a need to preserve the qualities of historical significance for the bridge. The bridge meets Criteria C of the National Historic Preservation Act, in that “it possesses distinctiveness of style or type.”

Management activities selected to satisfy the above purpose would need to be consistent with standards and guidelines established in the 1990 Willamette National Forest Land and Resource Management Plan, as amended in 1994 and 2001 (Willamette Forest Plan).

## **DECISION FRAMEWORK**

The McKenzie River District Ranger will decide, in which of the alternatives, if any, meets the purpose and need of providing residents of Horse Creek Delta Island long-term bridge access. The decision maker, in a Decision Notice and Finding of No Significant Impact (DN/FONSI), will document any concurrence with the findings in this Environmental Assessment. The following items should also be considered:

- The selected alternative needs to result in a bridge over West Fork Horse Creek with weight limits that meet ODOT standards and can provide access to Horse Creek Delta Island for fire emergency vehicles with a full load of water.
- The selected alternative needs to meet standards required by Lane County for accepting the bridge and a portion Delta Road to approximately the eastern terminus of the bridge, into the county maintained-road system.
- The selected alternative needs to preserve the qualities of historical significance of the existing West Fork Horse Creek Bridge.
- The selected alternative needs to be consistent with the amended Willamette Forest Plan.

## **THE FOREST PLAN**

In April 1994, the Willamette National Forest Land and Resource Management Plan, (Willamette Forest Plan, 1990, 1994, 2001) was amended by the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Spotted Owl, April 1994 (USDA, USDI Northwest Forest Plan ROD, 1994). The Northwest Forest Plan modified the Willamette Forest Plan by overlaying management areas and their accompanying standards and guidelines.

The proposed action would occur within a Riparian Reserve and within the Central Cascades Adaptive Management Area.

In January 2001, the Willamette Forest Plan was further amended by the Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (USDA, USDI Survey and Manage ROD, 2001). This Record of Decision amended a portion of the Northwest Forest Plan by adopting new standards and guidelines for Survey and Manage, Protection Buffers and other mitigating measures.

Surveys for all applicable Survey and Manage species required by the amended Willamette Forest Plan have been completed for West Fork Horse Creek Bridge Rehabilitation Project area.

## **Watershed Analysis**

The Aquatic Conservation Strategy in the Northwest amendments to the Willamette Forest Plan includes two designations for Key Watersheds: Tier 1 and Tier 2. This project is located within the West Fork of the Horse Creek watershed, a Tier 1 Key Watershed, which has a conservation emphasis.

The Horse Creek Watershed Analysis, completed in September 1997, developed and documented a scientifically based understanding of the processes and interactions occurring within the watershed. Horse Creek contributes directly to conservation of at-risk anadromous salmonids, bull trout, and resident fish species. The amended Forest Plan requires that actions be designed to maintain or restore aquatic habitat and riparian ecosystems in accordance with the Aquatic Conservation Strategy objectives found in the Northwest Forest Plan ROD. The Aquatic Conservation Analysis, Appendix A, addresses the Aquatic Conservation Strategy objectives and this proposed action.

## **ISSUE DEVELOPMENT**

### **Scoping and Public Involvement**

Scoping is the process for determining issues relating to a proposed action and includes review of written comments, distribution of information about the project, public meetings, interdisciplinary Team (IDT) meetings, tours of the project area, and local news releases.

The West Horse Creek Bridge Project was initiated in 1999 and was then listed in the spring 1999 issue of the Willamette Forest Focus--the quarterly schedule of proposed actions (SOPA) for the Willamette National Forest. The project has since appeared in the Forest Focus through the current issue (Spring 2002).

In March 2000, a public meeting hosted by a County Commissioner and the County Engineer, was held at the McKenzie Ranger Station, to discuss funding issues and the commitment of the property owners to provide matching funds. Approximately 25 people attended the meeting.

On May 7, 2002, a public meeting was conducted at the Upper McKenzie Community Center in McKenzie Bridge, Oregon. Lane County officials and the contracted project design team from OBEC Consulting Engineers hosted the meeting. The McKenzie River District Ranger and the District IDT assigned to analyze the effects of the proposal were also present. A notice for the meeting appeared in the local upper McKenzie river newspaper, The River Reflections, on May 1, 2002. Approximately thirty members of the McKenzie Bridge community attended the meeting and open house. Many of the comments and questions from the meeting addressed timing and funding issues and were directed to the County Engineer. However, specific comments that address concerns about safety, adequacy of the temporary bridge, and construction noise were included in this analysis.

In addition to comments received during project scoping, several letters have been written to Lane County Commissioners during the solicitation of funds period for the project. One letter that was written in 1997 on behalf of the Forest Service summer home permit holders expressed a common desire for the county to move forward with a bridge project as soon as possible.

## **SIGNIFICANT ISSUES**

Forest Service regulations (1950, chapter 11(3)) require that issues that are not significant to the project or that have been covered by prior environmental review be identified and eliminated from detailed study. Discussion of these issues should be limited to a brief statement of why they will not have a significant effect on the human environment or a reference to their coverage elsewhere. The issues will be listed as “Significant Issues,” and “Other Issues”.

The public and ID team identified seven issues. The ID team and responsible official considered these pertinent issues and have determined which are significant to the project. The following three Significant Issues drove the development of the alternatives and provided criteria for measuring each alternative. The Significant Issues are tracked through issue identification (in this chapter), alternative description in Chapter II, and environmental consequences in Chapter III.

### **Water Quality/Aquatic Resources**

During construction activities, disturbance to the stream banks, channel, or riparian area of the West Fork of Horse Creek could occur. This could result in erosion and introduction of sediment into the stream. In addition, use and storage of heavy equipment in and around the work site could create a risk of fuel or hydraulic fluid spills that could reach the West Fork of Horse Creek. Use of hazardous materials such as preservatives and fumigants, and removal of existing lead based paint could result in contamination of water in West Fork Horse Creek and downstream in the McKenzie river. Beneficial effects could result if trees felled as needed for the project are left in the stream channel of the West Fork of Horse Creek.

### **Public Safety and Emergency Access to Delta Island**

The West Fork Horse Creek Bridge currently has posted weight limits that are less than needed to accommodate fire emergency vehicles.

During the construction project contract period, equipment left unattended at the project site after work hours could present a safety hazard to the public.

### **Proposed, Endangered, Threatened, Sensitive, and other Species of Concern**

The proposed action may affect species through habitat removal or degradation, and from noise disturbance.

## **OTHER ISSUES:**

These *other issues* were addressed in project development. The issue statements below are followed by reasons why they were not considered significant to the development of alternatives and not fully analyzed.

### **Heritage Resources**

The bridge rehabilitation and other ground-disturbing activities could potentially affect heritage resources in the vicinity of the bridge.

Surveys of the proposed project area have been completed. No historic properties were identified. Any properties discovered during the course of project implementation would be evaluated for significance by the Zone Archaeologist.

## **Construction Noise**

The public has a concern about increased noise levels from construction equipment. A comment regarding this issue was received at the May 7, 2002, public meeting.

The Lane County Engineer responded to the comment by stating, “though some periods of noise are unavoidable during construction projects, there will not be a lot of equipment of the type that produces a high level of noise. Most activities that will occur won’t produce a lot of noise.”

## **Temporary Bridge**

In another comment at the May 7, 2002, public meeting, the public wanted to know if the temporary bridge would have adequate posted weight limits during construction to meet the residents needs.

The Project Team Leader responded, “the contractor will be required to ensure that the temporary bridge will have adequate posted weight limits to meet all access requirements for the residents.” There would not be interruption of access to Horse Creek Delta Island for the residents.

## **Noxious Weeds**

Machinery used to construct the bypass road for the temporary bridge could transport seeds to the site and contribute to the spread of noxious weeks to the project area. Site rehabilitation following removal of the bypass road may provide conditions that would allow noxious weed invasion.

The bridge rehabilitation contract would require pressure washing of off-road construction equipment prior to arriving on the project site for the purpose of controlling noxious weeds. Project site rehabilitation would require reseeding the restored temporary bypass road location with native seed. The area would also be monitored for noxious weeds following construction.

## II. ALTERNATIVES

This chapter displays detailed information about the alternatives and their proposed actions for comparison. The ID Team developed one action alternative that responds to the issues and is designed to meet the purpose and need for the project through implementation. The action alternative was designed to meet the purpose and need and respond to significant issues from Chapter I.

A no action alternative was also developed. It is required by Federal law (National Environmental Policy Act, 1969). The no action alternative provides the baseline from which effects of other alternatives can be compared and measured.

### LEGAL REQUIREMENTS

The alternatives for this project were designed to comply with the following:

#### **Federal Laws:**

*The Preservation of Antiquities Act, June 1906 and National Historic Preservation Act, October 1966* -- Field surveys for the area around the bridge where ground-disturbing activities would occur have been completed. The State Historic Preservation Office (SHPO) has identified the bridge as a significant historic structure. It is eligible to be included in the National Register of Historic Bridges. A Determination of Effects Report for the rehabilitation work was submitted SHPO the by the Lane County project team. The county project team recommends a no-effect d determination.

*The National Environmental Policy Act (NEPA), 1969* -- NEPA establishes the format and content requirements of environmental analysis and documentation. Preparation of the West Fork Horse Creek Bridge EA is in full compliance with these requirements.

*The Endangered Species Act (ESA), December 1973* -- The ESA establishes a policy that all federal agencies will seek to conserve endangered and threatened species of fish, wildlife and plants. Biological Evaluations for plants and wildlife have been prepared, which describes possible effects of the proposed action on sensitive, and other species of concern that may be in the West Fork Horse Creek Bridge EA project area. A Biological Assessment was prepared for threatened fish in the area.

*The National Forest Management Act (NFMA), 1976* -- The alternatives were developed to be in full compliance with NFMA through compliance with the Amended Willamette National Forest Land and Resource Management Plan (US Forest Service, 1990).

*Clean Air Act Amendments, 1977* -- The alternatives are designed to meet the National Ambient Air quality standards through avoidance of practices that degrade air quality below health and visibility standards.

*The Clean Water Act, 1987* -- The alternatives meet and conform to the Clean Water Act, Amended 1987. This act establishes a non-degradation policy for all federally proposed projects. The selected alternative is not likely to degrade water quality below standards set by the State of Oregon. This

would be accomplished through planning, application and monitoring of Best Management Practices (BMPs).

## **State Laws:**

*Oregon State Best Management Practices (BMPs)* -- State BMPs would be employed to maintain water quality.

*The Oregon Smoke Management Plan* -- The Oregon State Implementation Plan and the Oregon State Smoke Management Plan would be followed to maintain air quality.

Consultation with the Oregon State Historic Preservation Officer (SHPO) has occurred (see above).

Oregon State Forest Worker Safety Codes, The Oregon Occupational Safety and Health Code for Forest Activities would be met with implementation of the action alternative.

This project would incorporate all measures contained in the Final Environmental Impact Statement for Managing Competing and Unwanted Vegetation, November 1988; the Record of Decision, signed December 8, 1988; and the requirements of the Mediated Agreement, signed May 24, 1989 by the USFS, NCAP, OFS, et al. This project would use prevention as the main strategy to manage unwanted and competing vegetation.

## **AFFECTED ENVIRONMENT**

### **Water Quality/Aquatic Resources**

The existing bridge crosses the West Fork of Horse Creek, approximately three hundred feet above its confluence with the McKenzie River. Both streams are currently identified on the 1998 303(d) List of Water Quality Limited Streams. (Oregon Department of Environmental Quality, 1998) The streams have been listed because water temperatures exceed the standard of 50 degrees Fahrenheit for waters providing habitat for Bull Trout. The McKenzie River and tributaries, including Horse Creek, are the source of the City of Eugene's drinking water, which is drawn directly from the river for treatment at the Eugene water and Electric Board (EWEB) facility at Hayden Bridge.

The bridge site is also situated within the 100-year flood plain associated with these streams. (Flood Insurance Study - Lane County Oregon, Federal Emergency Management Agency 1999) The most likely actual flood hazard at the site is from backwater from the McKenzie River, since prior to large flood events in 1996, a much larger proportion of the total flow of Horse Creek flowed down the West Fork channel. As a result, the current channel is over sized for the amount of water that it normally carries.

At the bridge site, stream banks along the West Fork of Horse Creek are stable and well vegetated with a variety of hardwood trees and shrubs, conifers, and ground vegetation. Aquatic and riparian vegetation are also stabilizing much of the over sized, pre-1996 channel, creating a complex and at times multi-channeled structure that creates a variety of habitats for stream dependant species. The surrounding timber stands adequately shade the bridge site, so that conditions at the site do not add to the stream temperature problems in Horse Creek.

### **Public Safety and Emergency Access to Delta Island**



Delta road is a local access road. It provides the only access to Delta Island for 20 private property owners, and approximately 25 Forest Service summer home leaseholders. Lane County has a policy of not accepting substandard facilities such as the road and bridge into its road system. The landowners have funded maintenance on the road over the past 20 years. Also, the only maintenance on the bridge in the last 20 years has been performed by, or paid for by, the nearby landowners that use the bridge. The few landowners that depend on the bridge do not have the financial resources to continue to maintain the aging timber bridge.

Following a 1997 inspection, the weight limits for the bridge were reduced to approximately half of Oregon State standards for bridges of this type. The current weight limits do not accommodate fire emergency vehicles fully loaded with water. There are no cost-effective alternative routes to provide access to the area served by the bridge.

## **Proposed, Endangered, Threatened, Sensitive, (PETS) and other Species of Concern**

There is no potential habitat for PETS plant species in the project area.

Potential habitat for harlequin ducks and bald eagles occurs in the McKenzie River adjacent to the project area and in the West Fork Horse Creek itself. Surveys have not documented any nesting, but there is a high likelihood that they forage in the area.

The primary use of West Fork Horse Creek for spring Chinook salmon is as a migratory corridor because of the flow regime. During August and September, when adults are moving toward their spawning grounds, the West Fork's stream flow is too low for adults to negotiate. If adults are trying to enter the watershed, they must use the East Fork Horse Creek channel. However, during the late winter and spring, the West Fork has sufficient flow for juvenile salmon to negotiate the channel on their way to the main stem McKenzie River.

The primary use of West Fork Horse Creek for bull trout is as a downstream migratory corridor because of the flow regime. Since bull trout are not known to spawn in the Horse Creek watershed, the W. Fork would serve as a route for adults and sub-adults to leave the watershed in spring and early summer, if they so desired. They could potentially forage on juvenile spring Chinook and other fishes as they travel through the West Fork.

## **Heritage Resources**

Although the McKenzie River corridor and main tributary valleys were likely travel routes and contained Native American campsites and work locations in prehistoric times, no such sites have been discovered in the vicinity of the bridge to date.

In terms of historic resources, several of the nearby summer homes are of historic vintage. However, other than the bridge itself, there are no historic properties known at this time that would be affected by project operations.

# ALTERNATIVES CONSIDERED IN DETAIL

## Alternative A – Rehabilitation of Existing Bridge

Alternative A meets the purpose and need by increasing posted weight limits to meet Oregon State standards and providing access to Horse Creek Delta Island for fire emergency vehicles with a full load of water. Alternative A also meets budgeting constraints for funding the project, and meet the standards required by Lane County for accepting the bridge and a portion Delta Road into the county maintained-road system (from King Road to the end of the guard rails on the north side of the bridge.) This alternative would preserve the qualities of historical significance of the West Fork Horse Creek Bridge. Alternative A would be consistent with the amended Willamette National Forest Land and Resource Management Plan.

A detailed description of this proposal can be found in the report prepared by OBEC Consulting Engineers: (W. F. Horse Creek (Delta Road) Bridge Preliminary Report for Lane County and Oregon Department of Transportation, March 28, 2002, pages 1-11). This report is made part of the project analysis file and will be available for review at the McKenzie River District office or at the Willamette Forest Supervisor's office in Eugene, Oregon.

### Action Items

The following action items would be included in the rehabilitation of the bridge:

1. Repair and/or replace truss members.
2. Rail and felloe guards would be entirely replaced.
3. Asphalt surface of bridge would be removed and replaced with a waterproof membrane and new asphalt surface.
4. The deck was found to be in good condition from below. However, once the asphalt and rails are removed some of the deck may show signs of decay at the top and would need to be replaced.
5. Approximately 25 meters of approach roadway improvements at each end of the existing bridge.
6. New two-rail steel backed timber guardrails would be added to roadway approaches to the bridge.
7. A new detour bridge would be placed just upstream of the existing bridge. This would require placing gravel on the new approaches, cutting down approximately 15 trees, and the design would incorporate vehicle turnouts at each end of the temporary bridge.
8. Surface drainage for the project would utilize existing or new roadside ditches and maintain existing drainage patterns. There would be no net change in impervious surface or change in drainage patterns.
9. Steel members and gusset plates would need to be cleaned and repainted.
10. Existing paint has been found to contain lead. This would require draping under the bridge and the use of vacuum shrouded tools for paint removal. The debris would be handled as hazardous waste.
11. Trusses that would be repaired would involve cutting out the rot, fumigating the area, and replacing the rot by injecting epoxy.
12. Temporary shoring would need to be placed under the existing bridge during work, and then removed upon completion. This would involve a piece of equipment getting into the channel to place and remove the shoring. Depending on how the work progresses, the contractor may need to get in the West Fork channel after the in-water work period to remove the shoring.

13. Place approximately 59 cubic yards of fill material at stream bank to install temporary bridge. Fill material would be removed when temporary bridge is removed.
14. Clean Bridge abutments. Remove existing paint and coat all steel elements according to ODOT Spec. Section 00549. Check and tighten bridge bolts.
15. Remove concrete wing, install post tensioning to truss, replace concrete wing and install new portal reflective markers (4 places).

## **Roadway Alignment**

The proposal to rehabilitate the existing structure would require approximately 25 m. of approach roadway improvements to each end of the existing bridge. The improvements would consist of reconstructing both approaches to facilitate the installation of 9.8 meters of two-rail steel-backed timber approach rail at each corner of the bridge to allow for the tapering of the roadway to match the existing road. The bridge rehabilitation proposal would require a detour bridge to be constructed on the upstream side of the existing bridge. The proposed detour alignment would be a gravel roadway that parallels the existing roadway and incorporates vehicle turnouts at both ends.

## **Driveways**

The existing driveway on the south side of the existing bridge would not be affected by this rehabilitation project. A driveway at the southwest corner of the project and in the location of the detour alignment is no longer used. It would be abandoned after the project.

## **Traffic Control**

The majority of the construction during the rehabilitation of West Fork Horse Creek Bridge can take place with little impact on Delta Road or King Road. A detour bridge would be constructed. The detour alignment would have a posted construction speed of 10 mph (16 kph) to meet AASHTO requirements for the curve radius approach design. Traffic control would follow ODOT standards. Utilizing ODOT standard signage can accommodate traffic control for the site.

## **Tree Removal**

Road clearing would be done to prepare for constructing the parallel alignment for the temporary bridge, and for relocating utilities. Approximately 15 trees, mainly Douglas-fir and incense cedar would be cut. One large maple downstream from the existing bridge would be cut to provide space for a new power pole. It would be felled into the stream and left in place for stream habitat. After falling, the larger trees over 10 inches dbh would be transported to Strube Flat, approximately 4 miles from the bridge, to be made available for in-stream habitat projects. Trees less than 10 inches and broken tops would be decked near the project site and sold for firewood.

## **Connected Actions**

Overhead power lines owned by Lane Electric Cooperative and overhead television cable owned by Charter Communications would be relocated to new poles installed next to the existing bridge downstream. Buried telephone lines owned by Qwest Communications would be relocated during rehabilitation, and reattached to the bridge after the project. A water pipe owned by the Upper McKenzie Water District would be relocated out of the project area on the upstream side of the bridge, and reattached to the bridge at the completion of the project.

## **Mitigation Measures**

### **Cultural Resources:**

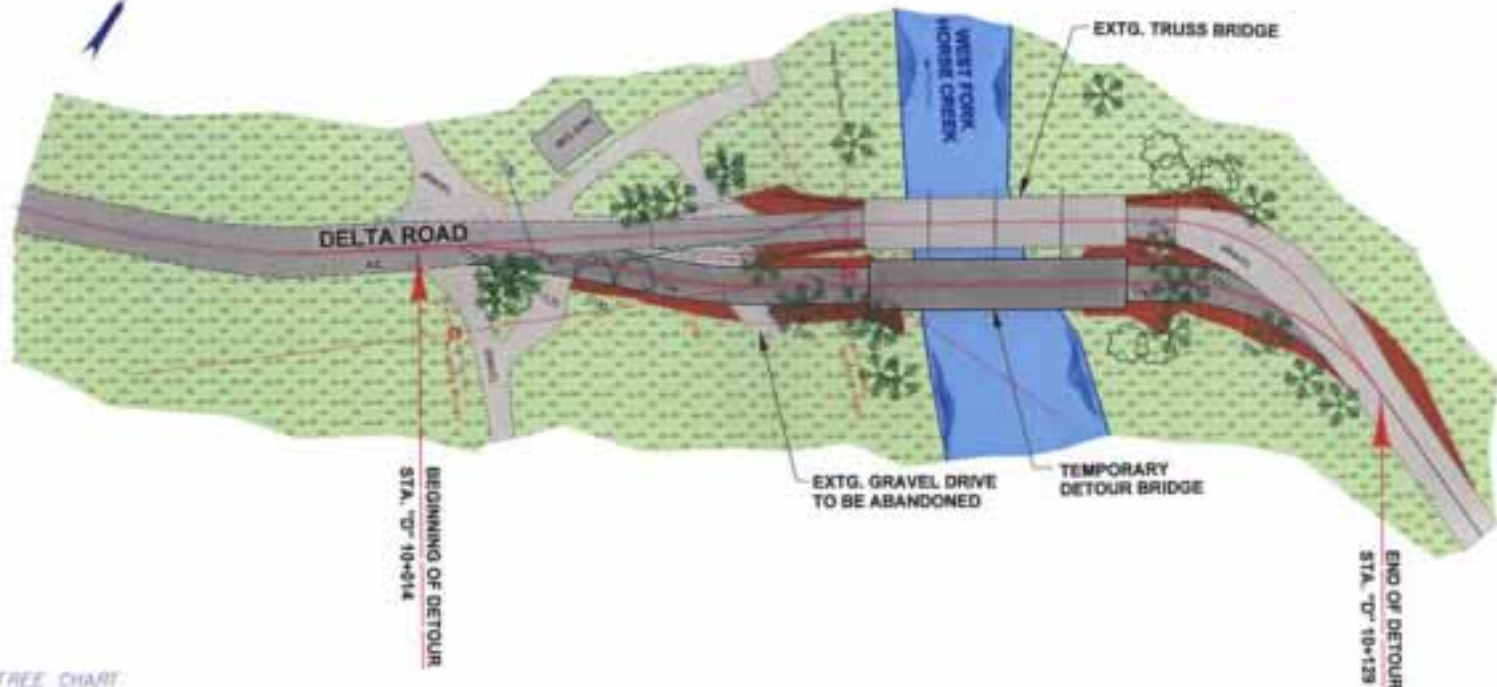
1. Previously undocumented cultural resource sites identified during project implementation, which is in conflict with ground disturbing activities, should be evaluated to determine significance to the National Register of Historic Places. Appropriate mitigation measures would be taken, including avoidance and in accordance with the contract.

### **Watershed Protection:**

2. Draping under the bridge and use of vacuum shrouded tools would be required during removal of lead based paint to prevent water contamination in the West Fork of Horse Creek. The collected debris would be handled as hazardous waste.
3. Materials such as paint, fumigant, or other substances that are used which are capable of being transported by wind, would be restricted to wind-free conditions. Regardless of wind conditions, a drop cloth should be positioned under the work area during these activities, to prevent contamination of water in the stream.
3. Equipment used in the stream channel during placement of shoring or other activities would be cleaned of all grease, oil, hydraulic fluid etc. to prevent contamination of water in the stream.
4. Place fabric cloth under any temporary fill material placed adjacent to the stream to facilitate removal upon completion of the project. This will reduce the risk of chronic, post project sedimentation and turbidity.
5. Prior to soil disturbing work activities, erosion control barriers such as straw bale or filter cloth silt fence will be placed to prevent transport of sediment to the stream.
6. Upon completion of construction activities and removal of the temporary bridge, all areas of disturbed soil will be revegetated by seeding native species ground cover, and planting of riparian hardwood trees and shrubs, and conifers
7. Fuel storage, refueling activities, and equipment maintenance such as oil changes or hydraulic repairs will be conducted outside the Riparian Reserve, which extends 360 feet from the West Fork of Horse Creek.
8. During work activities, a sorbent boom will be placed in the West Fork of Horse Creek downstream from the work site, to contain any possible spill of fuel or other hazardous materials prior to reaching the McKenzie River.

# DETOUR BRIDGE & CONSTRUCTION IMPACTS

FIGURE 4



**TREE CHART**

NUMBER	TYPE	SIZE	HW	DBH
1181	DOGWOOD			400
1182	FIR			600
1186	FIR			400
1187	FIR			300
1188	MAPLE			700
1190	ALDER			230
1211	ALDER & CEDAR			300
1212	DOGWOOD			300
1213	FIR			600
1216	FIR			600
1240	FIR			600
1241	FIR			700
1242	FIR			700
1245	ALDER			300
1249	ALDER			300

TREES TO BE REMOVED = 15 TOTAL

## W. FORK HORSE CREEK (DELTA ROAD) BRIDGE SEC.

LANE COUNTY



**LEGEND**

- DAMAGED TREE
- REMOVED TREE
- FOREST UNDESIRABILITY

## **Alternative B – No Action**

Alternative B, the no action alternative, would not rehabilitate the West Fork Horse Creek Bridge. The no action alternative would not meet the purpose and need to increase current posted weight limits to ODOT standards on the bridge, and so it would not accommodate fire emergency vehicles with a full load of water. The County would not accept the bridge and Delta Road into its maintained-road system. This alternative also does not meet the purpose and need of preserving the qualities of historical significance for the 52 year-old bowstring-truss bridge because the bridge would continue to deteriorate without maintenance, and the integrity would eventually be lost.

No temporary bridge or parallel road alignment would be required. No trees would be felled. The connecting action of relocating the four utilities would not be required. The West Fork Horse Creek channel at the bridge and the riparian habitat within it would be unchanged from current conditions.

## **ALTERNATIVES CONSIDERED, BUT ELIMINATED FROM DETAILED STUDY**

### **Alternative C - Construct New Bridge**

Lane County Engineers considered an alternative of installing a single lane, pre-stressed concrete girder bridge to span West Fork Horse Creek. The new bridge would be located next to the existing historic bridge on the upstream side, in the location of the proposed temporary bridge detailed in Alternative A. The historic bridge could either be left in place to be used as a footbridge, or moved to another location for other uses. It is not likely the existing bridge be funded for maintenance by the Lane County in the future, and would continue deteriorating over time.

This potential alternative would provide long-term access to Horse Creek Delta Island for residents living on the island. The current reduced weight limits would be increased to accommodate fire emergency vehicles and would be designed to meet ODOT weight limit standards far into the future.

Installing a new bridge is estimated to cost \$344,300. The cost of rehabilitation is estimated to be \$263,000.

#### **This Alternative was withdrawn from consideration for the following reasons:**

1. It did not preserve all the qualities of significance of the existing bridge. The very existence of the existing bridge in the future would be in doubt, since no funding has been, or is likely to be, identified for continued maintenance and preservation purposes.
2. It did not reflect the degree of public and Lane County government support for preservation and continued use of the existing bridge in its present location.
3. Its initial cost was substantially higher than the rehabilitation alternative, which still met all Lane County requirements for accepting road and bridge into the County system.
4. The loss of aesthetic consideration at this naturally beautiful setting, which is complemented by the existing bridge structure.

A detailed description of this proposal can also be found in the report prepared by OBEC Consulting Engineers: (W. F. Horse Creek (Delta Road) Bridge Preliminary Report for Lane County and Oregon Department of Transportation, March 28, 2002, pages 1-11). This report is made part of the project analysis file and will be available for review at the McKenzie River District office or at the Willamette Forest Supervisor's office in Eugene, Oregon.

# III. ENVIRONMENTAL CONSEQUENCES

This chapter analyzes, compares, and explains the effects of the alternatives. Direct, indirect, connected, and cumulative effects are described. Emphasis is placed on resources related to the significant issues. Additional information on the environmental consequences of implementing each alternative can be found in the project analysis file.

## ALTERNATIVE A

### Effects on Significant Issues

#### Water Quality/Aquatic Resources

##### Floodplains

During work activities, the fills associated with the temporary bridge would result in a brief, temporary reduction of floodplain capacity at the site. However, since the project would occur during the in-stream work period in late summer, the risk of flooding of the site during work activities is nearly non-existent. Large floods in the McKenzie River system are almost without exception associated with winter storm events or spring runoff.

After work activities are completed, the fill will be removed, so that there will be no permanent alteration of channel configuration or capacity.

##### Water Quality

Mobilization of a small quantity of sediment into the West Fork of Horse Creek would occur when equipment is operating in-stream to place the temporary pilings. This would result in temporary increases in turbidity in the short section of the stream, downstream to the McKenzie River. Since flows in the West Fork of Horse Creek will be near their seasonal lows during the activity, the amount of turbid water entering the McKenzie River would not be enough to have a meaningful impact on turbidity levels in the river. The risk of sediment transport and resultant increases in turbidity would decrease rapidly after project completion, as required re-vegetation becomes established.

The trees that would be removed to accommodate the project were examined in the field. Removal of these trees would not substantially alter the canopy characteristics of the site, including the ability to shade the stream. Consequently, measurable changes in stream temperatures as a result of the project are not anticipated.

A small risk exists that fuel, paint, epoxy, fumigant or other materials could be introduced into the West Fork of Horse Creek, despite the on site mitigation required. Should material enter the West Fork, the risk of it moving downstream into the McKenzie River has been minimized by the requirement to place a sorbent boom across the west Fork as a barrier to the downstream transport of these materials.



Future risk of hazardous spills into the West Fork of Horse Creek that could result from the current bridge safety and load problems would be reduced as a result of project implementation. Peeling lead paint on the existing bridge structure that is flaking into the West Fork of Horse Creek would be removed and this chronic source of contamination would be eliminated.

## **Public Safety and Emergency Access to Delta Island**

Alternative A would increase weight limits to meet ODOT standards and provide access to Horse Creek Delta Island for fire emergency vehicles with a full load of water. This alternative would also meet requirements for Lane County to accept the bridge and a portion Delta Road to the far end of the bridge, into the county maintained-road system.

Because this project is located near a well-traveled county road (King Road), it is not likely that equipment left unattended at the project site after work hours would present a safety hazard to the public.

## **Proposed, Endangered, Threatened, Sensitive, (PETS) and other Species of Concern**

### **Plants:**

Surveys of the project area have not documented any habitat for currently listed Threatened, Endangered or Sensitive plant species (WNF Sensitive Species List, 2002) or Survey and Manage vascular plants, lichens, bryophytes, and fungi (USDA USDI Survey and Manage ROD, 2001). There is no potential habitat for these species and no potential for this project to affect them.

### **Fish:**

Although the fish species analyzed for this project are fish that are listed under the Endangered Species Act (spring chinook salmon and bull trout), they can serve as indicators for other species that occupy Horse Creek and the McKenzie River (rainbow trout, cutthroat trout, white fish, and sculpins). This is especially true for bull trout because they are the top predator in the river ecosystem. As top predator, bull trout are affected by energy flow processes at all levels of the stream ecosystem, from primary production to decomposition, as well as by physical conditions of the habitat. The habitat elements that have potential to be affected by this proposed action, and in turn affect fish, are the stream temperatures, the sediment regime, and large woody material.

Stream temperatures have the potential to be affected due to the removal of trees along the West Fork Horse Creek. Stream temperature monitoring in the Lower Horse Creek recorded maximum 7-day average water temperatures of 13.5, 13.8, 12.6, and 13.9 degrees C. in 1995, 1996, 1997, and 1998, respectively. These cool water temperatures provide excellent rearing temperatures for spring chinook salmon. Spence (1996) found that temperatures for optimum production of spring chinook salmon ranged between 10 and 15.6 degrees C. Adult stream temperature preferences for bull trout range from 9-13 degrees C. Adult and sub-adult bull trout use Horse Creek as foraging habitat.

Given the site-specific characteristics of West Fork Horse Creek, a discussion of channel conditions and flow regime are important to the temperature discussion. Although nine bank/shade trees will need to be removed, the issue of temperature in this case is more complex than “just shade trees.” The following discussion was paraphrased from the Horse Creek Watershed Analysis (1997).

“When Horse Creek gets down to its confluence with King Creek it enters the McKenzie River valley, and flows over a broad alluvial fan. The main channel is prone to shifting its location during rare, large storm events. The 1964 flood (100 year to 120 year event) caused Horse Creek to abandon several channels and form new ones. During the 1964 event, West Fork Horse Creek aggraded and abandoned its original channel that flowed adjacent to homes in the area. New channels were created both to the north and to the east of the original West Fork Horse Creek channel.”

Today, West Fork Horse Creek is virtually dry during the summer months, flowing only during winter and spring. The main channel carrying most of the flow travels directly north into the McKenzie River. In the past, attempts have been made by private citizens to increase flow into West Fork Horse Creek through the use of structures made of gabions, rock, and logs. Installation of these structures have actually accomplished the opposite of the intended effect, causing channel downcutting in the East Fork Horse Creek and increasing streamflow in the channel that flows directly north into the McKenzie River.”

The project would not affect stream temperatures in the mainstem McKenzie River. Given the stream temperatures found in Horse Creek, and the life stage and species found in Horse Creek, this indicator is functioning appropriately and would be maintained.

Nine shade/bank trees would be removed for this project. However given the low flow of the West Fork in the summer when temperatures are an issue, it is unlikely that any temperature changes would be detected in the mainstem McKenzie River. In addition, Torgersen and others (1999) found that groundwater/subsurface processes appear to be a very important factor influencing the thermal processes in the McKenzie River. They found, using FLIR (Forward Looking Infra-red) imagery that Horse Creek contributed a small amount of relatively warm water to the river, but had no clear thermal impact on the McKenzie. This is due to the major cooling effect that Ollalie Creek (in the upper McKenzie) had on the mainstem water temperature. Given these physical conditions, stream temperatures in the main stem McKenzie River will be maintained even with the loss of nine shade trees.

Sediment from the project would not adversely affect the spawning habitat of either fish. Bull trout and spring chinook do not spawn in the West Fork Horse Creek and will not be directly affected. Bull trout spawn in tributaries found approximately 13 miles upstream of the confluence of Horse Creek and the McKenzie River. Chinook do not spawn in the West Fork but can be found spawning in the mainstem McKenzie River downstream of the confluence. Approximately 59 cubic yards of fill material would be used to place the temporary bridge. Mitigation measures would minimize the potential for sediment to get into the channel, and fill material would be removed upon completion of the project. There is potential for some of the fill material to stay within the banks, but a small amount of sediment would not adversely affect the spawning habitat in the mainstem McKenzie River. This is due to the existing coarseness of the bed load and the geomorphology of the McKenzie.

The McKenzie is a relatively young river. Streams in the upper portions of Horse Creek and the upper McKenzie River drain the relatively flat slopes of the High Cascades. The Upper McKenzie Watershed Analysis (1995) made the finding that the bed load is actually becoming coarser in the McKenzie River. This is because the McKenzie has been eroding relatively young mountains and, therefore, is very steep relative to its discharge. As a result, the river has a very high boundary shear stress and sediment transport capacity, which exceeds its natural sediment supply. Most sediment entering the system is quickly transported out, resulting in an actively incising stream that has

relatively small quantities of in channel sediment and a coarse, armored bed (Upper McKenzie Watershed Analysis 1995). Given this condition, the potential for one cubic yard of sediment to affect chinook, or bull trout, is negligible.

Sixteen trees would need to be felled within the riparian reserve, and nine of those trees could be considered “bank” or “shade” trees. One tree, a maple that would need to be cut due to utility location requirement, would be directionally felled toward the channel. The stand surrounding the bridge site is fully stocked and mature. The removal of 16 trees would not cause a meaningful change in canopy characteristics. In addition, the upstream watershed has a ready source of large woody material that could be transported to the West Fork in future high-flow events. Therefore since large woody material will continue to fall into the West Fork channel from its banks, and be transported from upstream, this element will continue to function appropriately and the removal of 16 trees would not adversely affect fish or their habitat.

### **Wildlife:**

A pre-field review of the project area for TES species identified potential habitat for bald eagles and harlequin ducks. Surveys did not document any occupation or nesting. This alternative would have no impact or effect on TES species because they do not occur directly in the project area, and potential indirect impacts related to water quality would be mitigated as part of the project. Beneficial impacts may occur if trees felled during construction are left in the stream or riparian area. Surveys for Survey and Manage, Protection Buffer, and Mitigation Species from the USDA, USDI Survey and Manage ROD, 2001, were either not needed because no habitat would be altered with the project, or if needed, they did not document occupancy. Bat mitigation-measure species (USDA, USDI Survey and Manage ROD, 2001, p. 38) may be using the bridge as a roosting site, but their disturbance during rehabilitation would be mitigated by a temporary bridge structure near the site. After rehabilitation, the bridge would be more “bat friendly” because of the presence of additional roost structures.

## **Effects on Other Selected Issues**

### **Heritage**

Alternative A would have no ancillary effect on heritage or resources around the bridge. Heritage resource surveys have been completed. No prehistoric Native American campsites and work locations have been discovered in the vicinity of the bridge to date. Though several of the nearby summer homes are of historic vintage, the bridge rehabilitation operations would not affect any known historic properties.

## **ALTERNATIVE B -- NO ACTION**

### **Effects on Significant Issues**

#### **Water Quality/Aquatic Resources**

Risk of hazardous spills during accidents, which could occur as a result of the existing load and safety problems at the bridge, would continue. Since accidents would occur without the substantial capture facilities in place that are included in the action alternative, it is unlikely that spills associated with these events could be contained prior to downstream transport of materials to the McKenzie River.

Peeling lead paint on the existing bridge structure that is flaking into the West Fork of Horse Creek would not be removed and chronic water contamination would continue.

#### **Public Safety and Emergency Access to Delta Island**

Without maintenance and repairs, the bridge would eventually be posted for lower weight limits as wood deterioration continues. There are no cost-effective detour routes that would serve as an alternative access to the area served by the bridge.

With no rehabilitation project there would not be equipment on site to pose a hazard to the public.

#### **Proposed, Endangered, Threatened, Sensitive, (PETS) and other Species of Concern**

There would be no impacts or adverse effects to PETS or other species of concern with the no-action alternative. No habitat would be removed or degraded for these species. Potential opportunities for habitat improvement from woody material introduction into the stream channel and riparian area, and increased roosting structures for bats would not occur.

### **Effects on Other Selected Issues**

#### **Heritage**

The no-action alternative would have no affect on heritage resources in the vicinity of the West Fork Horse Creek Bridge.

## **INDIRECT, CUMULATIVE, AND UNAVOIDABLE EFFECTS**

The analysis of cumulative effects considered past, present, and reasonably foreseeable future actions on these lands. This Environmental Assessment is tiered to the Final Environmental Impact Statement for the Willamette National Forest Land and Resource Management Plan of 1990 and the analysis of cumulative effects therein.

Potential changes in the physical and chemical nature of the earth's climate are likely to have impacts on the Nation's agriculture, forest, and related ecosystems. The extent and magnitude of these changes are uncertain at this time. There is a lack of sufficient information to predict and detect changes in health, diversity, and productivity of these systems due to global climatic change. The Department of Agriculture and Forest Service are researching issues of global climate change, and the implications for forest management activities. Current Forest Service direction states that NEPA disclosure documents at the regional or project levels are not the appropriate means for addressing the global climate change issues.

## **REQUIRED DISCLOSURES**

There are no proposed activities on prime farmlands or rangelands within the planning area, and therefore, there will be no adverse affects to these resources. The project would occur within the flood plain of the West Fork of Horse Creek during the summer months, or from July 15 to August 31. With the mitigation measure detailed in the action alternative, there are no foreseeable adverse effects to the flood plain.

American Indian rights, including those covered by the American Indian Religious Freedom Act, would not be affected by the implementation of this project.

The proposed action is not likely to affect aquatic systems and recreational fisheries. The effects that are likely to occur are based on sound aquatic conservation and restoration principles for the benefit of recreational fisheries, as directed by Executive Order #12962.

Proposed actions would be conducted in a manner that does not exclude persons (including populations) from participation in, deny persons (including populations) the benefits of, or subject persons (including populations) to discrimination because of their race, color, or national origin, as directed by Executive Order #12898.

### **Magnuson-Stevens**

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires the identification of habitat "essential" to conserve and enhance the federal fishery resources that are fished commercially. The Pacific Fishery Management Council (PFMC) designated Essential fish Habitat (EFH) for Chinook, coho, and Puget Sound pink salmon in their Amendment 14 to the Pacific Coast Salmon Plan, issued September 27, 2000. The interim final rule implementing the EFH provision of the MSA (62 FR 66531) requires federal agencies to consult with the NMFS for any action that may adversely affect EFH.

This project is located in the Horse Creek and the Upper McKenzie Watersheds, which are included in the waters designated as EFH for spring Chinook salmon by the PFMC.

The proposed action is not likely to adversely affect aquatic systems, recreational fisheries, or designated Essential Fish Habitat. The effects that are likely to occur are based on sound aquatic conservation and restoration principles for the benefit of recreational fisheries, as directed by Executive Order #12962. Since the project is not likely to adversely affect EFH, no further consultation under the Magnuson-Stevens Fishery Conservation and Management Act is required.

The policy of the United States Department of Agriculture Forest Service prohibits discrimination on the basis of race, color, national origin, age, religion, sex, or disability. Persons believing they have been discriminated against in any Forest Service related activity should write to: Chief, Forest Service, USDA, Washington, DC 20250.



## IV. REFERENCES

- Federal Emergency Management Agency. 1999. Flood Insurance Study - Lane County Oregon,
- OBEC Consulting Engineers. 2002. W. F. Horse Creek (Delta Road) Bridge Preliminary Report for Lane County and Oregon Department of Transportation.
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- Spence, B. C., G. A. Lomnicky, R. M. Hughes, and R. P. Novitzki. 1996. An ecosystem approach to salmonid conservation. TR-4501-96-6057. ManTech Environmental Research Services Corp., Corvallis, OR.
- Torgersen, C.E., Faux, R.N., and B.A. McIntosh. 1999. Aerial survey of the upper McKenzie River – thermal infrared and color videography. Oregon State University. Corvallis, OR.
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- USDA, USDI. 2001. Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (Survey and Manage ROD).
- USDA Forest Service, Willamette National Forest. 2002. Willamette National Forest Sensitive Species List.





## **V. APPENDICES**

Appendix A – Aquatic Conservation Strategy Objectives

Appendix B – Biological Assessment, Spring Chinook Salmon and Bull Trout

Appendix C – Biological Evaluation, Botany

Appendix D – Biological Evaluation, Wildlife

Appendix E – Cultural Resource and Heritage Consultation

