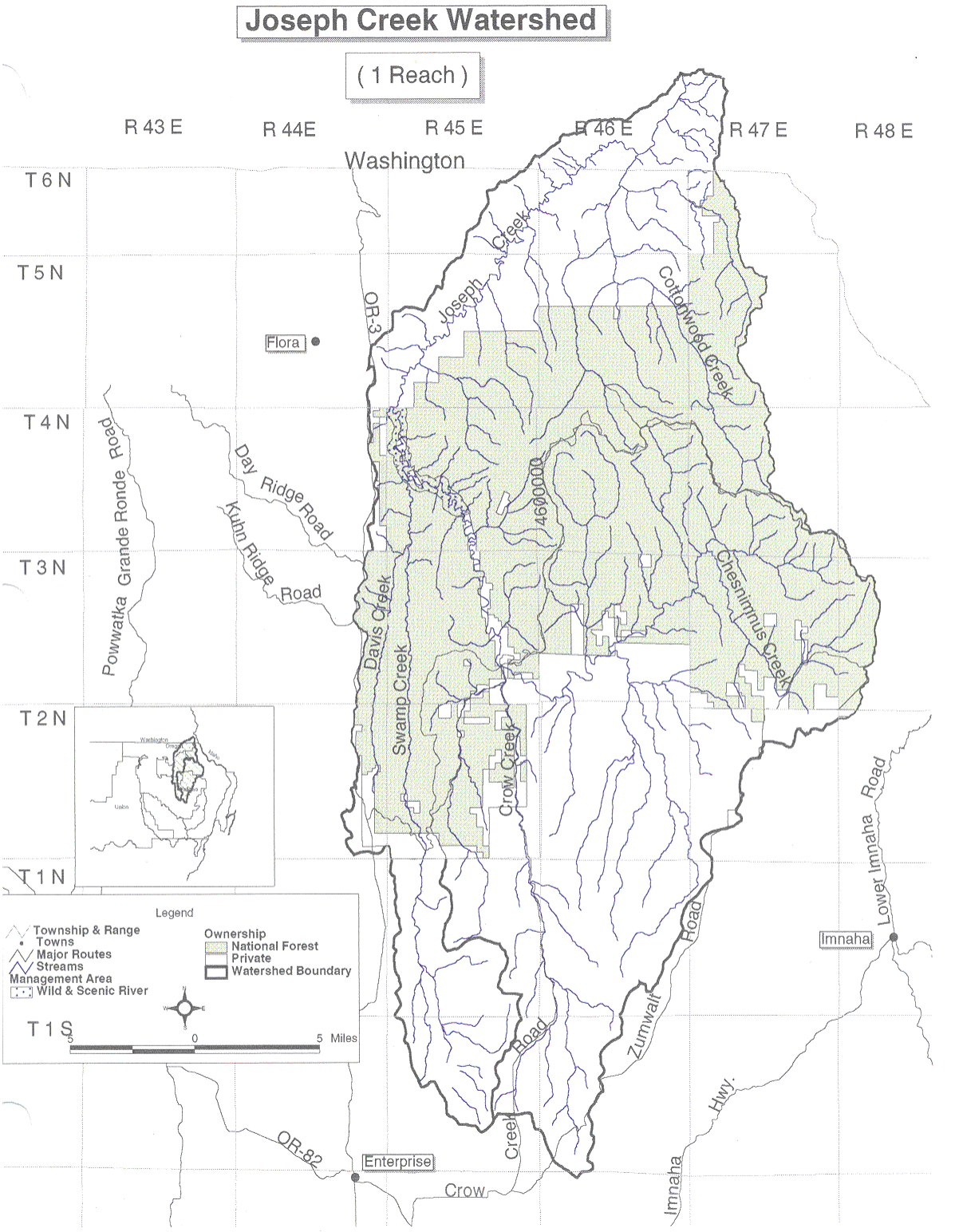
Joseph Creek Watershed
(1 Reach)
R 43 E
R 44E
R 45 E
R 46 E
R 47 E
R 48 E
Washington
T6N
T5N
T4N
T3N
T2N
T1N
T1S
Flora
OR-3
Joseph Creek
Cottonwood Creek
Grande Ronde Road
Powwatka
Day Ridge Road
Kuhn Ridge Road
4600000
Davis Creek
Swamp Creek
Crow Creek
Chesnimnus Creek
Lower Imnaha Road
Imnaha
Zumwalt Road
Imnaha Hwy.
Enterprise
OR-82
Crow Creek Road
Legend
Township & Range
Towns
Major Routes
Streams
Management Area
Wild & Scenic River
Ownership
National Forest
Private
Watershed Boundary
0
5 Miles

JOSEPH CREEK (AND TRIBUTARIES)

Joseph Creek and its tributaries, including Cottonwood Creek, Crow Creek, Swamp Creek, and Chesnimnus Creek, were considered in one reach. The tributaries that give rise to Joseph Creek arise north of Enterprise and flow north. Chesnimnus Creek drains eastern slopes. Joseph Creek proper is formed at the confluence of Chesnimnus and Crow Creeks and flows northeast to join the Grande Ronde at rivermile 4.3 miles in Washington State.

Through conversations with local inhabitants, the historical presence of spring and fall chinook in the system was documented by Stout[14] in the 1950's, although none were still present at that time. In the 1940's, Chapman[15] documented the presence of fall chinook being in Joseph Creek through conversations with local inhabitants, but could find no evidence of spring chinook still being present. There may have been some confusion during these interviews because a common name for steelhead was salmon trout (which are present in the system), and some of the residents may have used the terms interchangeably. Two fall chinook were observed spawning in the Washington portion of Joseph Creek in 1997.

Resource use on Joseph Creek includes grazing, logging, and a relatively small amount of irrigated agriculture. The largest single ownership in the Joseph Creek subbasin watershed is the Federal Government (Wallowa Whitman National Forest). Resource uses may contribute to water quality problems.

Warm water temperature is a problem on Joseph Creek and is due, in part, to the low elevation, high air temperatures, and early snowmelt, and is compounded by a lack of riparian vegetation and shade in some areas. An ODFW thermograph at mile 44 on Joseph Creek (about 3 miles below the confluence of Chesnimnus and Crow Creeks) recorded summer temperatures above 80 degrees Fahrenheit every year since it was installed in 1988. Temperatures that high can be lethal to salmonid fish. Long term base temperature data is not available; however, it is felt that high stream temperatures probably existed in the past and accounts for the lack of chinook in Joseph Creek.

The USFS has exclosures on Elk, Swamp, Davis, Peavine, Devils Run, and Chesnimnus Creeks. There are also exclosures on private land on Elk, Butte, Crow, and Chesnimnus Creeks. All of these are tributaries of Joseph Creek. Thermographs at the upstream and downstream ends of these exclosures are installed to monitor effects of increased shade in these reaches. Some of these thermographs have shown a recovery (lowering) of over 5^0 degrees Fahrenheit in water temperature.

Water Quantity

Tree Density (Low Priority).--*Some areas are too thick, others too thin.*

[14]Stout, Wendell H., 1957, Stream Surveys and Fish Relocation Feasibility Studies, Mountain Sheep and Pleasant Valley Dams. Oregon State Game Commission.

[15] Chapman, Wilber M., 1940, Report of a Field Trip to the Snake River Drainage in Idaho and Eastern Oregon (unpublished).

Provide optimum tree densities for building and retaining snowpack by planting and preserving trees where they are too thin, and thinning trees to allow precipitation to reach the ground where they are too thick. Provide for aquifer recharge, which in turn feeds spring flows that provide most of the water in the summer.

Compaction (Low Priority).--*Compaction along the riparian area contributes to the loss of vegetation and reduces the amount of aquifer recharge. In riparian upland areas, compaction causes increased surface runoff, higher peak flows, and bank erosion. Some of the older soils formed on a basalt substrate with relatively high amounts of clay are the ones in the county most likely to compact. Road and skid trail surfaces can increase rapid runoff and limit groundwater recharge.*

Limit recreational and livestock trail use in the riparian area that leads to compaction. Work on road design and/or maintenance to avoid quick runoff and promote aquifer recharge. Use dips or outslopes to limit surface water transfer along roads. Revegetate roads where appropriate and limit access by closing the road with a gate, but keep access for fire protection. Relocate roads if necessary to reduce compaction and facilitate groundwater recharge. Limit use of roads and ground skidding to times when the soil is dry or frozen because it does not compact at those times. Use lighter skidding equipment or off-ground equipment. Educate fishermen and campers about riparian erosion and compaction.
NOTE: Since the original plan was completed in 1993, there has been construction of low rinsing dips on both Forest Service and private roads, and low-impact logging equipment has been used during thinning timber stands.

Water Quality
Temperature (High Priority).--*Temperature is a high priority on Joseph Creek. Stream temperature recorders consistently show reading of over 80^0 F over the last several summers. The area's headwaters are at lower elevations than the other major streams in Wallowa County and naturally more prone to high temperatures. Loss of riparian vegetation and shade has also allowed heating of water on some reaches of Joseph Creek and its tributaries.*

Provide riparian shading to preserve cool temperatures. Protect and possibly increase spring flow by promoting aquifer recharge. Increased flow quantity from cool spring water would help dilute high temperatures. Plant and/or protect conifers in riparian area to provide thermal cover in the winter. Prevent bank erosion, destruction, and devegetation by livestock through physical or electric fencing of the riparian area, and use watering corridors or supply alternative water source.
NOTE: Since the original plan was completed in 1993, riparian vegetation has been enhanced through fencing and planting.

Excess Fine Sediment (High Priority).--*Excess sediment is supplied to portions of Joseph Creek through road use, logging, recreational activities, and livestock activities.*

Limit recreational and livestock trail use in the riparian area that leads to compaction. Prevent bank erosion and destruction by livestock through physical or electric fencing of the riparian area. Use watering corridors or supply alternative water source for livestock. Provide wetlands and/or filter strips for feedlot runoff. Work on road design and/or maintenance to avoid quick runoff and promote aquifer recharge. Limit dust floating from roads to streams with lignosulfonate, water, chip seal, or asphalt. Use dips or outslopes to limit surface water transfer along roads. Revegetate roads where appropriate and limit access by closing the road with a gate, but keep access for fire protection. Relocate roads if necessary to reduce excess sedimentation, to decrease compaction, and to facilitate groundwater recharge. Limit use of roads and ground skidding to when the soil is dry or frozen because it does not compact at these times, and less vegetation is disturbed. Use lighter skidding equipment or off-ground equipment such as helicopters. Educate fishermen and campers about riparian erosion and compaction. Avoid excessively high peak flows and consequent bank erosion by preserving enough watershed vegetation to slow runoff, and enough riparian vegetation to stabilize streambanks.
NOTE: Since the original plan was completed in 1993, in the various tributaries, numerous landowners have constructed fences along the smaller waterways and planted various vegetation to help improve bank stability and reduce erosion. One landowner installed rip rap on the Joseph Creek streambanks to reduce erosion.

Fuel Density (Low Priority).--*Some areas of this watershed have high fuel levels. There is a risk of forest fire and consequent sedimentation.*

Prescribed burns, commercial thinning, or precommercial thinning should be used to reduce fuel levels in some areas. Fuel rearrangement and/or piling can reduce fire risk while preserving the organic material and nutrients for the health and productivity of the forest. In some areas controlled and/or seasonal grazing helps to reduce the "flash" fuels.
NOTE: Since the original plan was completed in 1993, thinning has occurred on both Forest Service and private lands.

Herbicides/Pesticides (High Priority).—See Countywide Issues

Stream Structure
Channelization (Low Priority).--*Channelization limits stream habitat for anadromous fish.*

Avoid building on the floodplains. Develop mitigation strategies for necessary channelization and bank protection.

Substrate

No problems were identified.

Habitat Requirements

Riparian Vegetation (High Priority)

Protect existing riparian vegetation and the benefits it provides such as shade and streambank stabilization. Plant conifers in riparian area to provide thermal cover in winter. Plant deciduous shrubs and trees to restore riparian vegetation and to provide shade in the summer (and provide habitat for other species as well as salmon). Prevent bank erosion, bank degradation, and riparian devegetation by livestock with physical or electric fencing. Use watering corridors or supply alternate stock water source. Add and/or preserve large woody debris.