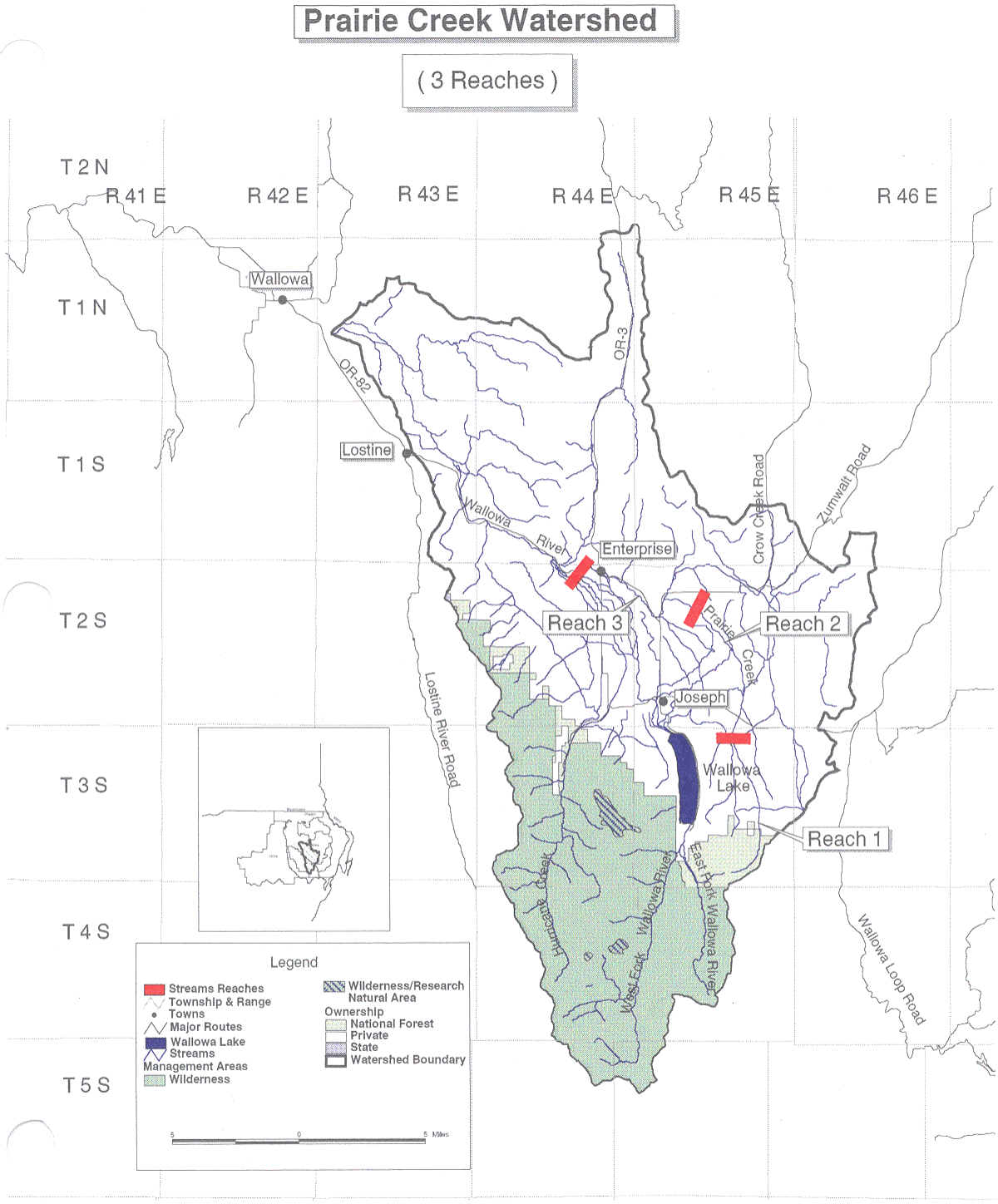
Prairie Creek Watershed
(3 Reaches)
T2N
T1N
T1S
T2S
T3S
T4S
T5S
R41E
R42E
R43E
R44E
R45E
R46E
Wallowa
Lostine
OR-82
OR-3
Wallowa River
Enterprise
Crow Creek Road
Zumwalt Road
Reach 3
Prairie Creek
Reach 2
Joseph
Lostine River Road
Wallowa Lake
Reach 1
East Fork Wallowa River
Hurricane Creek
West Fork Wallowa River
Wallowa Loop Road
Legend
Streams Reaches
Township & Range
Towns
Major Routes
Wallowa Lake
Streams
Management Areas
Wilderness
Wilderness/Research Natural Area
Ownership
National Forest
Private
State
Watershed Boundary
5 0 5 Miles

PRAIRIE CREEK[12]

Prairie Creek was analyzed in three reaches:

1. Headwaters to elk fence
2. Elk fence to Hays Fork
3. Hays Fork to Wallowa River

Prairie Creek rises in the Eagle Cap Wilderness and flows north and west to join the Wallowa River near Enterprise. There has been no long term flow monitoring on Prairie Creek. A fairly extensive flow study that measured diversions into the watershed and irrigation return flows was made in the summer of 1992 by the SCS and Reclamation. Water quality, including levels of turbidity and coliform bacteria, was monitored at 10 locations in the drainage. It should be noted that there has been a significant visual increase in turbidity since the 1989 Canal Fire.

Resource use in the uppermost reach includes logging and grazing. Agriculture and grazing are resource uses in the middle reach. Irrigation diversions from other basins (Big Sheep Creek and the Wallowa River) into the Prairie Creek drainage are a concern as they reduce flows needed for fishery habitat in the other drainages. Return flows from stock water and irrigation result in season-long flows that are higher than normal and in many cases contribute to water quality problems. Water quality measurements taken on the lower reaches of Prairie Creek often do not meet state water quality guidelines for fecal coliform bacteria and other factors.

Spring/summer chinook spawn in the lowest reach, but long term data on redd counts is not available.

Prairie Creek--Headwaters to Elk Fence

Water Quantity

Tree Density (Medium Priority).--*Dense thickets of trees resulting, in part, from past fire suppression prevents much of the rain and snow from reaching the ground, and consequently the moisture is lost to the drainage through evaporation or sublimation.*

Tree density is increasing due to Douglas-fir bark beetle and fir engraver beetle along with the eastside screen prohibiting the removal of trees greater then 21 inches in diameter on national forest land.

Maintenance of healthy watershed conditions, by reducing fuel loads as mentioned below under fuel density, will provide an optimal, sustainable supply of water. Healthy watershed and forest conditions will also supply the water at the optimal times for salmon through snowpack and groundwater release and recharge.

[12]See also Watershed Management - Approaches to Implementing Solutions

Future Demand (Study).--*Future development in this area may place increased demands on water.*

Use zoning and land use planning to limit possible future demands for water which would adversely impact the salmon.

Water Quality

Excess Fine Sediment (High Priority).--*Excess fine sediment in this reach creates water quality and other problems for the salmon.*

Work on road design and maintenance to avoid quick surface runoff. Limit dust from roads with lignosulfonate, water, chip seal, or asphalt. Relocate roads to better sites if sediment input to river cannot be mitigated by road maintenance. Avoid using roads or ground skidding when the soil is wet. Use of roads when dry or frozen avoids soil and vegetation disturbance. Water bar and/or revegetate skid trails. Educate fishermen and campers about effects of riparian erosion and compaction. Limit recreational use of roads and trails which results in sediment input to river. Prevent bank erosion and destruction by livestock by fencing riparian area and providing water corridors or alternate water sources. Protect water corridors with rock of appropriate size. Avoid devegetation in the upper watershed to the extent that it would result in extreme peak flows and cause bank erosion.

Fuel Density (High Priority).--*Excessive fuel density in this watershed is presently a high risk for a catastrophic fire, such as the Tanner Gulch Fire, that would probably result in severe water quality problems. Past fire suppression practices have contributed to the risk of catastrophic fire.*

Thinning trees, both pre-commercially and commercially, can improve watershed health and reduce the risk of catastrophic fire. In some cases, especially in riparian areas, fuel rearrangement (piling or putting the fuels near the ground to facilitate rotting, judiciously placing fuels to protect streambank, or placing large woody debris in stream to add to stream structure) may be preferable to burning (as slash or in a wildfire) in order to keep the organic material as part of the ecosystem, preserve shade, and prevent sedimentation. Well managed grazing may also help to reduce light "flash" fuels.

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

Excess Nutrients (Study).--*Excess nutrients can contribute to poor water quality, primarily by feeding excessive algal growth and resulting in dissolved oxygen problems.*

Fence (physical or electric) livestock from riparian area and provide watering corridor or alternate water source. Provide wetlands and/or filter strips to improve quality of feedlot runoff. Limit overland return flows, especially from fertilized fields. Improve septic systems if they are contributing to excess nutrient loading in the creek (check with the ODEQ for ways to improve the systems).

Stream Structure

No problems were identified.

Substrate

No problems were identified.

Habitat Requirements

No problems were identified.

Prairie Creek--Elk Fence to Hays Fork

Water Quantity

Irrigation Diversions (Low Priority).--*Irrigation diversions from the Imnaha (Big Sheep and Little Sheep) and Wallowa River drainages add large quantities of water to the Prairie Creek drainage. Most of this water is used for irrigation, but irrigation and stock water return flows into Prairie Creek provide higher than natural flows year round.*

Work on limiting excess diversions from other watersheds which result in irrigation return flows. Protect watershed vegetative cover to avoid quick runoff and promote infiltration and aquifer recharge. In dense areas of the watershed, limit precipitation intercept and evaporation by increasing tree spacing to allow more precipitation to reach the ground. Do not remove enough trees to decrease shade from snowpack. Since the problem is too much water, use any additional water produced by tree spacing to help replace diversions brought in from outside the basin. Improve irrigation efficiency. Study adding impoundments to supply irrigation needs and keep the natural flows in the stream.

Future Demands (Study).--*Future development in this area may place increased demands on water.*

Utilize zoning and land use planning to limit possible future demands for water which would adversely impact the salmon.

Water Quality

Temperature (Study).--*Study to see if there are temperature problems on this reach. Most of this reach is lacking riparian shade, and there are irrigation return flows which could contribute to increased temperatures.*

Use zoning/land use planning to limit possible future demand for agricultural or domestic uses along the stream which could result in the loss of riparian vegetation. Provide riparian shading to preserve cool temperatures.

Plant and/or protect conifers, along with deciduous trees and shrubs, in riparian area to provide thermal cover in winter. Increased flow quantities in the upper portions of the reach could limit temperature increases. Protect and/or increase spring flow, keeping enough watershed vegetation to reduce rapid surface runoff and promote infiltration and aquifer recharge.

Excess Fine Sediments (High Priority).--*Excess fine sediment in this reach creates water quality and other problems for the salmon.*

Work on road design and maintenance to avoid quick surface runoff. Limit dust from roads with lignosulfonate, water, chip seal, or asphalt. Relocate roads to better sites if sediment input to river cannot be mitigated by road maintenance. Educate fishermen about effects of riparian erosion and compaction. Prevent bank erosion and destruction by livestock by fencing riparian area and providing water corridors or alternate water sources. Protect water corridors with rock of appropriate size. Avoid devegetation in the upper watershed to the extent that it would result in extreme peak flows and cause bank erosion. Do not over divert water from other watersheds into this one that results in excess irrigation return flows and bank erosion. Provide wetlands and/or filter strips to improve quality of feedlot runoff. Relocate feedlots and develop alternate water sources to improve water quality. Do not impound or divert needed flushing flow.

Irrigation Return Flows (High Priority Study).--*Water returned to the creek through irrigation return flows creates water quality problems by contributing to excess sediment, nutrients, and temperature.*

Irrigation return flows could be mitigated by diverting less water and improving irrigation efficiency. Evaluate and analyze return flows relative to temperature and overall quality (seasonal impacts). Wetlands and/or filter strips could be used to improve water quality before it is returned to the creek. Overland return flows from fields should be minimized to avoid input of excess nutrients and possible input of agricultural chemicals (fertilizer, herbicides, etc.). Irrigation returns of water from Big Sheep Creek and the Wallowa River contribute to sustained high water levels in Prairie Creek and possibly bank erosion throughout the irrigation season.

Septic (Study).--*Leakage from septic systems may contribute to excess nutrient loading in Prairie Creek.*

Study to see if there is a problem. Improve current systems if there is a problem with nutrient loading (work with ODEQ). Install pump or self composting toilets. Limit future development and installation of septic systems using the county's comprehensive land use plan.

Feedlots (High Priority).--*Runoff from feedlots contributes to poor water quality. Feedlots in riparian areas lead to loss of riparian vegetation.*

Fence riparian areas, physical or electric, to prevent bank erosion and sedimentation and provide water corridor. Relocate feedlots and provide alternate water source. Plant thorn bushes in riparian areas. Provide wetlands and/or filter strips for feedlot runoff.

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

Excess Nutrients (High Priority).--*Excess nutrients contribute to poor water quality, primarily by feeding excessive algal growth which cause dissolved oxygen problems.*

Fence, physical or electric, livestock from riparian area and provide watering corridor. Relocate feedlots away from riparian area and provide an alternate water source. Provide wetlands and/or filter strips to improve quality of feedlot runoff. Limit overland return flows (especially over fertilized fields). Improve septic systems if they are contributing to excess nutrient loading in the creek (check with the ODEQ for ways to improve the systems).

Stream Structure

Woody Debris (High Priority).--*This reach lacks large woody debris to provide the diversity of habitat (pools and riffles) necessary for the different life stages of the salmon.*

Add large woody debris. Provide healthy riparian vegetation community to supply future large woody debris.

Pool/Riffle Ratio (Low Priority).--*The pool/riffle ratio on this reach should be improved to enhance salmon habitat.*

See "Woody Debris" above. Look at providing other permanent structures such as boulders or concrete to form pools.

Channelization (Low Priority).--*Channelization limits diversity of stream structure and salmon habitat.*

Preserve riparian vegetation (and plant where necessary) to provide streambank stability and avoid the need for channelization. Avoid excess peak flows and bank erosion that result from excessive upland devegetation. Fence riparian area and provide watering corridor or alternate water source to prevent bank erosion and devegetation by livestock. Do not permit more channelization, but if channelization is necessary, develop mitigation strategies for necessary channelization. Utilize land use planning to avoid building structures on the floodplain that will eventually require channelization for protection.

Bank Form (Low Priority).--*Bank form of the creek has deteriorated over much of this reach due to devegetation, excess flows, channelization, and livestock use.*

See "Excess Fine Sediment" and "Channelization" above.

Ice Flows (Low Priority).--*Ice jams in irrigation systems cause bank and streambed erosion.*

Provide thermal cover in winter by planting conifers, in addition to other riparian vegetation. Establishing large trees on the bank may help to break up ice flows and prevent major ice jams that back up water and lead to erosion when they give way.

Substrate

Cobble Embeddedness (High Priority).--*The Nez Perce Tribe did freeze core sampling on this reach in 1992 and found that about the top 4 inches of the substrate were highly embedde, with cleaner unembedded gravel below that. Cobble embeddedness makes it difficult or impossible for the salmon to build their redd and also reduces hiding places (cover) for juvenile salmon.*

See "Water Quality" in this section. Work on providing flushing flow, possibly through the release of impounded water.

Excess Fine Sediment (High Priority).--*Excessive fine sediment in the substrate or on the surface of the streambed contributes to cobble embeddedness.*

See "Water Quality and Substrate" in this section.

Physical Barriers (Study).--*Diversion structures can provide physical barriers to fish passage.*

Modify diversion structures that are barriers to provide for fish passage.

Habitat Requirements

Riparian Vegetation (High Priority).--*Riparian vegetation on much of this reach should be improved to contribute to fish habitat.*

Riparian shading should be provided to preserve cooler water temperatures, contribute to habitat diversity, and provide a supply of future large woody debris.

Predation and competition (Low Priority).--*Predators and competitors may eat juvenile salmon or deprive them of their food source.*

Do not stock trout, as they may eat juvenile salmon and compete with them for food sources. Blue Heron fish on this reach; look into providing them with an alternate food source, but no other action is warranted at this time. Seasonally close sport fishing.

Diversion Screening (Study).--*Irrigation diversions may result in the loss of fish.*

Make sure diversions and irrigation returns are screened, monitored, and maintained.

Prairie Creek--Hays Fork to Wallowa River

Water Quantity

Irrigation Diversions (Low Priority).--*Irrigation diversions from the Imnaha (Big Sheep and Little Sheep) and Wallowa River drainages add large quantities of water to the Prairie Creek drainage. Most of this water is used for irrigation, but irrigation and stock water return flows into Prairie Creek provide higher than natural flows year round.*

See "Prairie Creek--Elk Fence to Hays Fork."

Future Development (Study).--*Future development in this area may place increased demands on water.*

Utilize zoning and land use planning to limit possible future demands for water which would adversely impact the salmon. Utilize land use planning to avoid building on floodplains.

Water Quality

Temperature (High Priority Study).--*Study to see if there are temperature problems on this reach. Most of this reach is lacking riparian shade, and there are irrigation return flows which could contribute to increased temperatures.*

Provide riparian shading to preserve cool temperatures. Plant and/or protect conifers, along with deciduous trees and shrubs, in riparian area to provide thermal cover in winter. Protect and/or increase spring flow by keeping enough watershed vegetation to reduce rapid surface runoff and promote infiltration and aquifer recharge.
NOTE: Since the original plan was completed in 1993, several landowners have planted various types of vegetation next to Prairie Creek.

Excess Fine Sediment (High Priority).--*Excess fine sediment in this reach creates water quality and other problems for the salmon.*

See "Prairie Creek--Elk Fence to Hays Fork."
NOTE: Since the original plan was completed in 1993, several landowners in this reach have installed exclosure fences along Prairie Creek.

Irrigation Return Flows (High Priority).--*Water returned to the creek through irrigation return flows creates water quality problems by contributing to excess sediment, nutrients, and temperature.*

See "Prairie Creek--Elk Fence to Hays Fork."

Septic (Study).--*Leakage from septic systems may contribute to excess nutrient loading in Prairie Creek.*

See "Prairie Creek--Elk Fence to Hays Fork."

Feedlots (High Priority).--*Runoff from feedlots can contribute to poor water quality. Feedlots in riparian areas lead to loss of riparian vegetation.*

See "Prairie Creek--Elk Fence to Hays Fork."

Other Chemicals (Low Priority).--*A variety of chemicals are used and/or stored along this reach, including in the town of Enterprise.*

Storage of industrial chemicals and fuels should be monitored for safety from spillage. Possible contamination from backyard chemicals in urban areas should be monitored, and educational programs provided to help avoid accidental contamination that would be harmful to the salmon or their food sources. Avoid farmland fertilizer runoff.

Excess Nutrients (High Priority).--*Excess nutrients contribute to poor water quality, primarily by feeding excessive algal growth which cause dissolved oxygen problems.*

See "Prairie Creek--Elk Fence to Hays Fork."

Stream Structure

Woody Debris (High Priority).--*This reach lacks large woody debris to provide the diversity of habitat (pools and riffles) necessary for the different life stages of the salmon.*

Add/preserve large woody debris. Provide healthy riparian vegetation community to supply future large woody debris. Utilize local land use planning to prohibit future development in the riparian area which would result in the loss of riparian vegetation.

Pool/Riffle Ratio (Low Priority).--*The pool/riffle ratio on this reach should be improved to provide additional and better salmon habitat.*

See "Woody Debris" above. Look at providing other permanent structures such as boulders or concrete to form pools.

Channelization (Low Priority).--*Channelization limits diversity of stream structure and habitat.*

See "Prairie Creek--Elk Fence to Hays Fork."

Bank Form (Low Priority).--*Bank form of the creek has deteriorated over much of this reach.*

See "Prairie Creek--Elk Fence to Hays Fork."

Substrate

Cobble Embeddedness (High Priority).--*Cobble embeddedness makes it difficult or impossible for the salmon to build their redd and also reduces hiding places (cover) for juvenile salmon.*

See "Prairie Creek--Elk Fence to Hays Fork."

Excess Fine Sediment (High Priority).--*Excessive fine sediment in the substrate or on the surface of the streambed contributes to cobble embeddedness.*

See "Prairie Creek--Elk Fence to Hays Fork."

Dredging (Low Priority).--*Portions of this creek were dredged and channelized due to flooding in the late 1980's.*

Develop mitigation strategies for necessary channelization. Limit dredging to times when there is no spawning or eggs in the gravel (July 1 - August 15).

Habitat Requirements

Riparian Vegetation (High Priority).--*Riparian vegetation on much of this reach should be improved to contribute to fish habitat.*

Riparian shading should be provided to preserve cooler water temperatures, contribute to habitat diversity, and provide a supply of future large woody debris.

Harassment (Low Priority).--*Harassment of holding and spawning adults adds to their stress level and may result in failure to spawn.*

Discourage recreational fishery by discontinuing trout stocking. Seasonal closure of sport fishery during holding and spawning times may offer further protection.

Predation and competition (Low Priority).--*Predators and competitors eat juvenile salmon or deprive them of their food source.*

Do not stock trout, as they may eat juvenile salmon and compete with them for food sources. Blue Heron fish are on this reach. Look into providing them with an alternate food source, but no other action is warranted at this time. Seasonally close sport fishing.

Diversion Screens (Study).--*Irrigation diversions may result in the loss of fish.*

Make sure diversions and irrigation returns are screened, monitored, and maintained.