

Upper McKenzie Watershed Analysis Update

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Introduction

The Willamette National Forest established a "Priority Watershed Assessment Process" in 2005 to assist interdisciplinary teams in developing goals, objectives, and a list of projects for the priority watersheds on the Forest. This *WA Update* documents that process for the Upper McKenzie Watershed. Figures x and x display the geographical boundary of the Watershed and identified Landform Blocks used to stratify information for the watershed.

Priority Watershed Assessment Process

The assessment process was directed by the McKenzie River Ranger and conducted by the District interdisciplinary team. Supervisor Office program managers and technical specialists provided some assistance. Regulatory agencies (USFWS, NOAA) and the Tribes were sent a draft of the document for review.

The Process include 3 Steps which are described below.

Step 1 - Describe the desired future condition for the watershed, including goals and measurable, time-linked objectives.

This is the point where the monitoring process should begin - identifying the physical or biological processes in the watershed that are meeting the DFC or are not functioning the way we believe they should be. Changes in the watershed since the most recent analysis or assessment should be identified and determined how they affect the objectives (management actions, regulatory changes, and natural changes).

Step 2 - Identify geographic priority areas ("hotspots") within the watershed where several resource restoration/enhancement opportunities overlap or are in close proximity.

This step is essentially repeating the Forest IDT prioritization process that was done at the 5th field scale. A key difference from the Forest scale evaluation is that resource issues/interests that the IDT felt were too site-specific to be meaningful at the 5th field scale can and should be considered within the watershed such as special/unique habitats, noxious weeds/invasive species, rare species. Once the key goals and objectives are described and the priority areas within the watershed are identified it should be relatively

straightforward exercise to identify projects that are linked to a specific geographic place and linked to a achieving a specific objective.

Step 3 - Develop project opportunity lists.

Once the key goals and objectives are described and the priority areas within the watershed are identified it should be relatively straightforward exercise to identify projects that are linked to a specific geographic place and linked to a achieving a specific objective.

Step 3a - Develop a list of completed projects (last 10 years), projects currently underway (on-the-ground implementation), and projects in progress (activities that are highly likely to happen, i.e. NEPA is done, funding is available, committed, etc.) for the watershed.

The process needs to recognize that we are not starting from scratch. We need to clearly understand how the previous and ongoing actions contribute to meeting the objectives described in Step 1. Also, once this list is developed, it will provide a valuable tool to address cumulative effects in future NEPA project analysis.

Step 4 - Develop an implementation strategy for the project opportunities and a monitoring schedule/strategy.

Think through the timing and sequencing of projects. Things to consider at this stage are potential cumulative effects that could impact ESA species, opportunities to coordinate projects for funding (stewardship, KV), minimizing "redo" costs of projects (multiple road closing and opening). The monitoring strategy should consider opportunities for partnerships and cooperative efforts. The ideal would be to identify ways to measure success in restoring the watershed or movement closer to the DFC.

Step 1 - Describe the desired future condition for the watershed, including goals and measurable, time-linked objectives.

The following desired future conditions were included in Landscape Management Project documents completed for the District over the past 10 years.

From Santiam Pass EIS: "Improve forest health conditions by increasing the vitality of trees in the Santiam pass area."

From Foley EA: "Provide for landscape-level health and diversity; healthy and productive streams, improvements to fish and wildlife habitat, and timber products."

From Santiam Demo: "The desired future condition is healthy vigorous forest stands. These stands will be less susceptible to spruce budworm with greatly reduced mortality from root rot and few inoculum sources of dwarf mistletoe."

From ROSCO: "Provide for landscape-level healthy and diversity... and provide multiple use benefits...."

Step 2 - Identify geographic priority areas ("hotspots") within the watershed where several resource restoration/enhancement opportunities overlap or are in close proximity.

The Staff reviewed the recommendations from Steps 3 and 3a below, and determined that the landforms below are of the highest priority for restoration and enhancement based on the quantity of opportunities in close proximity; the potential risk to the environmental condition; and availability of existing plans for completed NEPA:

Landform Block 6 and the McKenzie River Corridor

Step 3 - Develop project opportunity lists.

The following is the result of a brainstorming session conducted by the McKenzie River IDT, February 2006. The team reviewed recommendations from management plans completed between 1995 and 2006 as well as recommendations from the 1995 UPMAKWA. The recommendations below are stratified by Landscape Area as defined in UPMAKWA.

Landform Block 1

- Develop and implement wildland-urban interface vegetation management plan focusing on the McKenzie Bridge area.

Landform Block 2a

- Reduce Permanent Road Mileage in Deer Creek and 700 Roads around Sweetwater Creek.
- Continue with stand density management, particularly in the Ballpark planning area.
- Complete inventory of invasive & noxious weeds in Deer Creek.

- Develop powerline vegetation management strategy.

Landform Block 2b

- Develop vegetation management plan for Fish Lake area.
- Improve habitat complexity in Smith Bypass & side channels below Trail Bridge Dam
- Improve fish habitat @ Fish Lake.
- Install docks @ Smith Lake
- Review road closures recommended in the Smith SIA to see if TwoBee EA can accomplish the NEPA.
- Restore landscape in Parks Creek Area. Consider historic old growth landscape composition and restore with understory harvest and fire. Activities could include huckleberry enhancement, meadow restoration, fuels reduction, road density reduction, noxious weed control (see Appendix II for more information).
- Restore Crescent Mountain meadows.
- Assess motorized boat operations on Fish Lake.
- Eradicate *Eurasian milfoil* at Beaver Marsh.
- Complete Santiam Wagon Road Plan.
- Restore Huckleberry fields with Tribes.
- Restore native vegetation at Trail Bridge flat.

Landform Block 3

- Develop and implement wildland-urban interface vegetation management plan for Big Lake area.
- Improve fish habitat @ Lost Lake.
- Develop a Vegetation Management Plan for Hoodoo Ski Area to address overstocked stands damaged by snow; diseased trees (hazard) along facilities; and fuel reduction.
- Improve safety & accessibility on Big Lake road.
- Complete Hogg Railroad Interpretation
- Create visual screens for ODOT garages.
- Monitoring salvage activity in the B&B fire area.
- Interpret B & B fire recovery.
- Establish future use for Santiam Lodge.
- Expand Hogg Rock Pit (ODOT interest)
- Complete Santiam Wagon Road Plan.

Landform Block 4

- Implement the Clear Lake SIA Vegetation Management Plan.
- Enhancing waterfowl nesting structures for Bald Eagles at Clear, Lost, and Fish Lakes
- Develop and implement wildand-urban interface vegetation management plan for Clear Lake area.
- Improve fish habitat @ Clear Lake and Carmen Reservoir.
- Remove gates on culverts in Sweet Water Creek area (720).
- Determine method to manage diver access at Clear Lake.
- Replace toilets at Coldwater Cove so they are ADA Accessable.
- Implement completed NEPA for Santiam Forest Health EIS underburning.
- Purchase private land in Santiam Pass wagon road area.
- Complete Santiam Wagon Road Plan.
- Document, monitor, and restore historic structures @ Clear Lake.

Landform Block 5

- Review Rosco units for planting needs.
- Burn Bunchgrass, Fingerboard, and Olallie as described in ROSCO EIS and Bunchgrass EA.

Landform Block 6

- Establish Land Allocation and objectives for White Branch property acquisition.
- Maintain and create scenic overlooks.
- Develop and implement wildand-urban interface vegetation management plan Highway 242.
- Develop historical interpretation for the old Hwy. 242 roadbed.
- Reduce hazards at Melakwa Boy Scout Camp (NEPA done in ROSCO, Unit 67)
- Create openings for elk in Lower Foley Orchard.
- Remove bridge in lower Foley subwatershed.
- Improve fish habitat in Melakwa Lake.
- More appropriately manage gate entering Melakwa Boy Scout Camp.

- Repair and restore road accessing Melakwa Boy Scout Camp.
- Ensure Scenic Byway Road signs are in compliance w/ Scenic Byway Plan Standards.
- Survey Sensitive plant habitat in Three Sisters Wilderness Area.
- Plant native fruit-bearing plants in Peregrine tertiary zones.
- Purchase private land near White Branch.

McKenzie River Corridor

- Synthesize final results from the Carmen/Smith Relicensing Studies.
- Develop and implement vegetation management plans for developed recreation sites.
- Maintain and create scenic overlooks.
- Develop and implement wildland-urban interface vegetation management plan for developed sites and EWEB facilities.
- Review Travelways Plan and Scenic Byways Plan and establish priorities and timelines for recommendations.
- Ensure Scenic Byway Road signs are in compliance w/ Scenic Byway Plan Standards.
- Investigate pre-commercial thinning opportunities to maintain/create visual resources.

Watershed Wide

- Develop an effective Landscape Strategy for Hazard Reduction.
- Develop seed source for high elevation native species.
- Update Crest Prescribed Natural Fire Plan; finalize Crest Study.
- Create demonstration areas to show hazard reduction techniques for interpretation/field trips.
- Develop hazard tree plan for highways, campgrounds, administrative sites, key forest roads, and summer homes.
- Reinstate environmental education interpretation programs!
- Plan for and create long-term forage areas that are appropriate for the terrain. Utilize green forage money from ODFW
- Identify fish/stream ecosystem-friendly water sources for large fire and construction projects.

- Restore water sources pump chances where needed.
- Assess Watershed for PSQ & special forest products.
- Develop a mineral removal plan for public use.
- Inventory dispersed recreation sites and determine if location allows attainment of aquatic conservation strategy.
- Monitor riparian thinning for ability to meet ACS.
- Maintain water quality (Ground water, Surface water)
 - @ high use areas
- Conduct an inventory of landform's potential response to fire.
- Work with ODFW / EWEB to provide appropriate, more effective fish regulation signage.
- Maintain uses at existing mineral sources (ODOT) & cover projected expansion with out-year NEPA.
- Establish monitoring strategies/protocols for fire & vegetation management activities.
- Review Forest insect and disease assessment from the regional program for opportunities/priorities.
- Consider ADA during facility replacement.
- Develop management ignited fire plan with Deschutes NF for Three Sisters Wilderness.
- Update Forest Road Closures.
- Ground-truth FRCC modeling.
- Continue timber stand improvement activities as much as funds allow, such as pre-commercial thinning, pruning, and aerial fertilization.

Step 3a - Develop a list of completed projects (last 10 years), projects currently underway (on-the-ground implementation), and projects in progress (activities that are highly likely to happen, i. e. NEPA is done,

funding is available, committed, etc.) for the watershed.

The Decisions made in all EA's and EIS's from the MRRD from 1995-2006 were reviewed. The IDT provided input on the status of every project described in those NEPA documents. The table below documents that process.

Table 1: Project with completed decisions on the MRRD from 1995-2006 and the status of implementation.

Large Landscape- NEPA Projects	Description	Status
Santiam Demo	<i>Acres planned</i>	
Thinning	220 acres	Done
Regeneration Harvest	37 acres	Done
New road construction	1.2 miles	Done
<u>Associated KV:</u>		
Lost Lake Toilet replacement		Done
Santiam Forest Health EIS		(note: Eno 41 not yet logged) Done
Thinning	1427 acres	Done
Shelterwood	310 acres	Done
Group selection	147 acres	Done
Seed Tree	55 acres	Done
RX Burning	871 acres	Not Done
Road Reconstruction/Maintenance	11.08 miles	Done
Road Construction	1.78 miles	Done
<u>Associated KV:</u>		
Cavity creation	88	'05-'06
Lost Lake Access mgmt & Bank stblz		Done
GGO Platforms	3	'07
Reforestation	260 acres	on-going
Weed Treatment	69 acres	on-going

Large Landscape- NEPA Projects	Description	Status
PCT Non-KV in area	173 acres	done
PCT	256 acres	done NFRI \$
Foley Ridge EA Note: unit 13 not in any sale. Units 21 & 16 not logged yet. 70 ac unit 9 Pebble in '06	<i>Acres planned</i>	NOTE: 352 ac of treatments listed here are in the McKenzie Watershed. Rest are in Horse Creek...
Moderate thinning	372 acres	Done except unit 13
Moderate thinning/	61 acres	Done
Heavy thinning	24 acres	Done
Regeneration harvest w/heavy res.	26 acres	Done
Shelterwood	65 acres	Done
Forage enhancement in plantations	62 acres	Nugget 10. 8 acres done 05
Florence Creek enhancement	culvert	Done
Road Reconstruction/Maintenance	12.63 miles	Done
Road decom/storage/gating: (All listed in EA were in Horse Cr. Watershed)	4.1 miles	n/a
<u>KV associated:</u>		
Reforestation	32 acres	on-going
Snag creation	1440	'08-'10
Road access mgmt	2	1 temp gate done '05
Forage seeding, browse cutback, planting	247 acres	8 acres '04. Rest '06-'09
Conifer release	33 acres	done
Pct	231 acres	done
	63 acres	planned
Pruning	347 acres	done
	175 acres	planned
Aerial Fert	280 acres	done
	537 acres	planned
Noxious weed removal	395 acres	on-going
Down wood creation	40 trees	'07

Large Landscape- NEPA Projects	Description	Status
Cavity and nest boxes <u>Non-KV:</u> Conifer release PCT Pruning Aerial fert	130 trees 33 acres 429 ac NFRI 245 ac PAYCO 40 NFRI 136 ac NFRI 29 ac PAYCO 102 ac NFRI	'09 done. payco done done planned done done done
Robinson-Scott EIS Light Thinning Moderate thinning Variable density thinning w/multi Heavy thinning Regeneration w/heavy reserves Regeneration w/light reserves Shelterwood removal w/heavy reserves Shelterwood removal w/light reserves Salvage of dead only Post and pole thinning Prescribed fire for meadow rehab Bunchgrass, Fingerboard, Olallie Permanent Forage enhancement Road Reconstruction/Maintenance Road Decommissioning 2600-682; 2600-704; 2600-711;	<i>Acres planned</i> 76 acres 1293 acres 494 acres 12 acres 62 acres 40 acres 232 acres 229 acres 98 acres 700 acres 321 acres 60 acres 51.99 miles 4.1 miles	Note: mostly logged....also dropped 61, 33, 58, 59, 12, 62 Done Dropped #1, 48 acres Done Done Done Done Dropped #48 - 48 acres Done Dropped #11,12,21,23 -- 12 ac. Dropped #10, 11, 15, 2 - 166 ac. 25 ac of Bunchgrass burned 1999. Fingerboard and Olallie not done. Not done Done In-progress: 2600-720

Large Landscape- NEPA Projects	Description	Status
2600-720 (last 200'); 2600-721; 2600-723; 2600-724; 2600-725; 2657-822; 2657-861; 2649-754; 2657-839.		(last 200'); 2600-724; 2600-725. Rest will occur as funding available.
Large wood augmentation in Boulder and Scott creeks <u>Associated KV projects:</u>	542 pieces	Dropped.
Reforestation Snag Creation Road access management	134 acres 4287 trees 30 replacement or new structures	on-going '07-'10 '07-'10
Fence removal @ evaluation plantations Forage seeding Conifer release	EP's 380 acres 396 acres 44 acres	Done done planned done
PCT Aerial Fert	2223 acres 1122 acres 2171 acres 1883 acres	planned done planned
Trail construction/reconstruction Dispersed Rec Site rehab Noxious weed treatment Cavity Creation Down wood creation Guzzler Maintenance	2 miles 2 425 acres 69 trees 676 trees 2	Done Done on-going '08-'10 '07-'10 Done
<u>Non-KV</u> Conifer Release	113 ac NFRI 59 ac payco	Done done
PCT Conifer pruning	1038 ac NFRI 329 ac payco 408 ac NFRI 387 ac NFRI	Done Done planned Done

Large Landscape- NEPA Projects	Description	Status
Aerial fert	142 ac payco 177 ac NFIR	done Done
<p>Two Bee EA</p> <p>Moderate Partial Cut Salvage Commercial thin Light Partial cut/salvage Moderate Partial Cut for multistory Development</p> <p>Road Reconstruction/Maintenance Passage restoration at Ikenick Creek (2672 & 2672-675) Road closures w/gates, berms (2000-150, 155, 156, 157; 2600-726, 786; 2655-505, 515, 517, 535) Road Decommissioning (2672-637, 640, 642, 643, 647, 667,681, 682, 657)</p> <p><u>Associated KV projects:</u></p> <p>Aerial fert PCT Pruning Noxious weeds Browse cutback Diversity Thinning Forage seeding Pond habitat improvement Snags and down wood Native seeding Water source 1724 reveg</p>	<p><i>Acres Planned</i></p> <p>684 acres 26 acres 87 acres 98 acres 121 acres</p> <p>31.1 miles culvert 7.1 miles 3.1 miles</p> <p>1350 acres 834 acres 65 acres all units 60 acres 139 acres 70 acres 2 all units all units 1</p>	<p>EA in prep. For all listed</p>

Vegetation Management Projects	Description	Status
Pocket Salvage (to increase sunlight to hwy 20)	1.5	Done
Spot Salvage	205 hazard trees along Hwy 125/242	Done
Potato Fire Salvage	80 acres	Done
Road Reconstruction/Maintenance	5.94 miles	Done
<u>Associated KV projects:</u>		
Reforestation	76 acres	On-going
Noxious weed treatment	6 acres	On-going
Boulder Commercial thinning	45 acres	Planning starting spring 2006
Santiam Hazard Tree Removal	Hazard trees and decked logs from B&B fire	Done
Santiam Wagon Road Salvage	Blowdown along road	Done
Smith Reservoir log salvage	floaters	Done
B&B BAER Work Noxious Weeds	20 acres	Done. Monitoring.
Bunchgrass Meadow Restoration		Sale implemented winter 2006; Burn fall 2007
Noxious Weed treatment	lots	On-going
Obsidian Campsite restoration	2 acres; 5 sites	On-going w/partners
McKenzie Airstrip Improvements		Done
Mechanical removal of weeds at McKenzie Transfer site		Done
Triple Scoop EA (Olallie Timber sale) weed treatment	50 acres	On-going
Appropriated Reforestation 1994-2006	356 acres	On-going
Diversity Thinning	34 acres	planned
Forage enhancement Areas	22 acres	planned
Smith Ridge area: Seeding	137 acres	Done

Vegetation Management Projects	Description	Status
Snag Creation	1680 trees	Done
Conifer release	430 acres	Done
PCT	895 acres	Done
	844 acres	planned
Aerial fert	477 acres	done
	1350 acres	planned
Upper Deer Creek:		
Seeding	35 acres	Done
Snag Creation	56 trees	Done
Gates	2	Done
PCT	457 acres	Done
	26 acres	Planned
Pruning	174 acres	Done
Aerial fert	561 acres	Done
Frissell Ridge:		
Seeding	1 acre	Done
Snag Creation	16 trees	Done
PCT	531 acres	Done
	31 acres	Planned
Conifer pruning	32 acres	Done
Aerial fert	261 acres	done
Foley Ridge:		
Seeding	72 acres	Done
Snag Creation	93 trees	Done
Rosco Area:		
Seeding	24 acres	Done
Nest boxes	11	Done
Snag creation	99 trees	Done
Lava Lake Meadow Restoration		Done (SHW)

Watershed/Fisheries/Roads Management Projects	Description	Status
Upper McKenzie Wood enhancement project *		Done
Spawning channel gravel supplementation *		Done/more to do in 06

Watershed/Fisheries/Roads Management Projects	Description	Status
McKenzie River Side channel habitat improvement (below Trail Bridge) *		Planning started
Carmen air quality site improvement/stockpile trees for fish	Removal/top trees	Done
Lost Lake Restoration		Planning started
Sluice Creek ERFO	Culvert and dip	Done
Peggy Creek waste area rehab	1 acre	Planning started/PAYCO
Bull trout enhancement at Trail Bridge (brush bundles)		Done/potential for more in 06
Bull trout passage at Olallie and Sweetwater		Done/more work due to findings in ferc study
Hazard tree removal from rec residences/placement in McKenzie River		Done
New Septic system at Clear Lake Resort		Done
Road Stabilization/slide repair 242		Planning & design started
Smith Reservoir Road Paving	2.3 miles	Done
Paving Clear Lake Resort parking lot		Done
County Cr. Access Management	21 miles road reconstruction, storage, oblit	Done
Access management / dispersed site rehab on Olallie Creek		Done
New Bridge abutment at McKenzie River into Carmen Res.		Done
Frissell Road Decomissioning		Done
Gates on North Bank Rd and Foley		Done
Underground Storage tank removal	District	Done
New sanitation system at RD	District	Done
Land Acquisitions	Guistina White Branch	Done
Trailbridge Dam Emergency spillway construction		Done
Dick Creek Wetland Restoration	Frog heaven	Done
Deer Cr. Road and slide stabilization	Post-96 flood	Done

Watershed/Fisheries/Roads Management Projects	Description	Status
(includes 2.5 miles road oblith)		
Big Lake Road reconstruction (2690)	Payco	'06
Foley Waste Area Cleanup	Payco	done

Fire Management Projects	Description	Status
Roadside Hazard Reduction Santiam Jct.	130 acres	Done. Payco
Fire Suppression facilities - helibase	Hoodoo rock pit	Done. Payco
Prescribed burning associated with other projects (i.e. BD/KV/HF)	1389 acres done 1879 acres planned through 2008 on sold sales	Note: completed 3268 acres over 14 years = 233 ac/year

Recreation Management Projects	Description	Status
Santiam pass dispersed rec		Planning started
McKenzie River Trail Restoration	2.5 miles	Done
McKenzie River Trailbridge replacement following floods	3	Done
McKenzie river Trailbridge replacements	3 bridges	1 Payco project done Other 2 in progress
Lost Creek Trail bridge replacement	1	Done
Frissell Trail bridge replacement	1	Done
McKenzie River trailbridge replacement at Fish Lake Cr.	1	Done
Boat launch project		Planning started
Fish Lake Interpretive Facility		In progress
McKenzie River Trailhead		Done except interp
Wild and Scenic River Viewpoint		Done except interp
Beaver Marsh Trail and platform		Done
Toilet Replacement: Alder Springs, Lost Lake, Scott Lake, Proxy Falls, Carmen Reservoir, Santiam Snowpark, Smith Reservoir		Done

Recreation Management Projects	Description	Status
Big lake Toilet Replacement	Payco	In-progress 06
McKenzie Bridge day-use toilet replacement	2 Payco	Done
Koosah Falls Toilet replacement	Payco	In-progress 07
Portal Construction	Front office	Done
Camp Yale Heritage Restoration		Done
Fish Lake building restoration		Done
Santiam Lodge Stabilization		Done
Dee Wright Restoration		Done
Red Hill Trail Restoration		Done
Scott Lake parking lot rehabilitation		Done
EWEB Emergency Warning System	At Ollalie and TrailBridge	Done
EWEB Surge Tank Clearing		Done
EWEB Warehouse Clearing		Done
EWEB Communication Site	New access road, transmitter	In Progress
USGS Seismic Monitoring Stations		Done
Hoodoo Ski run Clearing, Tubing Hil, parking lot expansion and new lodge, snowmobile trail, road reconstruction		Done
Hoodoo zipline		In Progress
Hoodo alpine slide		EA done. Not implemented

*part of FWS/NOAA BO

Management Plans within Upper McKenzie Watershed since 1995	
Hoodoo Ski Area Master Plan	Done
Peregrine Falcon Management Plan	draft
Clear Lake Bald Eagle Management Plan	Done
Clear Lake Special Interest Area Guide	Done
Smith Ridge SWHA Plan	Done
WNF Roads Analysis	Done
McKenzie River Water Quality Management	Done

Management Plans within Upper McKenzie Watershed since 1995	
Plan	
Crest Wilderness Prescribed Natural Fire Plan	Done
Visual Resources Management Plan for Hwy. 126 and 242	Done
Camp White Branch	EA signed
Big Lake Master Plan	in progress
Carmen Smith relicensing	in progress
Fish Lake SIA	Done
McKenzie Wild and Scenic River Plan	Done
Scenic Byway Plan	Done
Santiam Wagon Road SIA	Draft
Paradise Veg Management Plan	Draft
INFMS	Done

The IDT also reviewed recommendations within the 1995 Upper McKenzie Watershed to determine implementation status. Table 2 describes those findings. **Bolded additions in Table 2 document new information to update the WA's significant findings.**

Table 2: Status of recommended actions from the 1995 Upper McKenzie Watershed Analysis.

WATERSHED-LEVEL FINDINGS

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
SOIL/WATER RESOURCES			
Western Cascades streams are high gradient, less stable, and more prone to debris slides and slumps when compared to High Cascades.	Need culvert inventories to determine and prioritize high risk areas.	INVENTORY	105 DONE
There is a significantly smaller number of acres affected by mass wasting from road-related events compared to natural events. With over 900 miles of roads, there have only been 17 failures. However, sediment delivery volumes from road surfaces is unknown.	Develop strategy to determine where to install sediment traps. Install traps at representative sites to evaluate typical surfacing and subgrade types to determine if there is a significant contribution from the road system. Use the Lowell Test Road Sediment Study as a guide.	DEVELOP STRATEGY	Not done
Natural range of variability for areas of mass wasting is around 5% (change to <1% in 2006 update) of the land mass. Clearcuts and high intensity wildfires can significantly increase this rate in areas of potentially unstable soils.	Project-level slope stability analysis should be accomplished for any regen units in areas of potentially unstable soils. In the case of wildfire, rehabilitation plans should include strategy for assessing increased mass wasting in these areas.	INFO FOR FUTURE PLANNING	Done on project by project basis
There is no apparent impact on mass wasting due to prescribed fire management activities.	Consider winter debris avalanche initiation on expected high intensity burns in draws on side slopes greater than 80%.	INFO FOR FUTURE PLANNING	NA
LWD references values based upon Western Cascade geology streams are not applicable to spring fed systems.	Develop reference values for low gradient streams.	ESTABLISH REFERENCE	Still needed. In discussion with Level 1 team

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
<p>The probability of a large subduction earthquake off the Oregon coast with a magnitude 8.0 or greater is high, but the distance from the probable focus to the watershed will provide attenuation which will reduce damage. EWEB dams have been inspected and designed to withstand any probable earthquake loads, however, local crustal generated earthquakes can be a hazard and can cause landslide and debris avalanche dams.</p>	<p>Initiate earthquake awareness program and include landslide damming effects on streams in any emergency response contingency plans.</p> <p>2006 update: really a geology, seismic and volcanic event awareness program.</p>	<p>INITIATE NEW PROGRAM</p>	<p>Done by EWEB and local community</p>
<p>The watershed had a fire return interval between 1772 and 1830 of 78 yrs. Between 1830 and 1910 it was 87 yrs. Based on our current (1910-Present) suppression program, the return interval is 587 yrs.</p>	<p>Reinitiate levels of disturbance. It may take several treatments to safely bring some stands within a historic range. Use prescribed fire (management ignited or prescribed fire) where feasible.</p>	<p>INFO FOR FUTURE PLANNING</p>	<p>On-going</p>
<p>Insects (WSBW) and disease (Mistletoe/Canker) have increased with fire suppression.</p>	<p>Investigate treatment in Pacific silver fir in Block 5 to reduce stress and Mistletoe/Canker 2A & 2B.</p>	<p>INFO FOR FUTURE PLANNING</p>	<p>Done w/ ROSCO and TwoBee EA's</p>
<p>All white pines in watershed have been significantly reduced by WP Blister Rust.</p>	<p>Emphasize planting disease resistant white pines in areas within historic range.</p>	<p>INFO FOR FUTURE PLANNING</p>	<p>On-going</p>
<p>More impact from phelinus will be seen as more stands are allowed to develop late successional characteristics.</p>	<p>Monitor progress of disease. Areas of high recreation use should consider site conversion to hardwoods and resistant conifers</p>	<p>MONITOR 2006 update: Hoodoo and Big Lake priority</p>	<p>Done w/ Paradise Veg plan</p>
<p>There is a 40 yr. return interval for WSBW</p>	<p>Expect a new outbreaks in the</p>	<p>INFO FOR</p>	<p>B&B made a</p>

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
in Pacific silver fir blocks.	watershed. Take steps to reduce stand density and proportion of highly susceptible species	FUTURE PLANNING	difference! Future Santiam Planning
Many of the stands in this block have high density conditions contributing to high levels of stress.	Emphasize stocking control through Precommercial thinning and Commercial thinning. Use Prescribed fire.	INFO FOR FUTURE PLANNING	Done w/ROSCO TwoBee, Foley, Diversity thinning, PCT program
Douglas-fir series abundance: Change from historic conditions: - Decrease of early seral - Increase late seral - same mid seral	Consider long-term conversion of late-seral stands to early seral conditions	INFO FOR FUTURE PLANNING	Done w/TwoBee
Grand fir series abundance:- Change from historic conditions: - Decrease early seral - very little now - Increase mid seral - significantly more now - Increase late seral - slight	Consider long-term conversion of mid-seral stands to early seral conditions	INFO FOR FUTURE PLANNING	Not done
Western hemlock series abundance: Change from historic conditions: - Increase early seral - within historic range - Decrease mid seral - outside historic range - Increase late seral - outside historic	Use management techniques to encourage mid-seral stands to develop late seral attributes. Maintain a steady level of early seral conditions.	INFO FOR FUTURE PLANNING	Not done

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
range 1900			
Vegetation Resources Pacific silver fir series abundance: - Change from historic conditions: - Increase early seral - mostly harvest - Decrease mid seral - Increase late seral - outside historic range from 1900	Use management techniques to encourage early-seral stands to develop mid-seral attributes. Maintain a steady level of early seral conditions.	INFO FOR FUTURE PLANNING	On-going
Mountain hemlock- Change from historic conditions: - Decrease early seral - outside historic range 1900 - Decrease mid seral - Increase late seral	Consider long-term conversion of late-seral stands to early seral conditions	INFO FOR FUTURE PLANNING	On-going
There has been a loss of old growth system function from edge effect in leave blocks.	Opportunity for large block minimum fragmentation strategies in these areas.	INFO FOR FUTURE PLANNING	On-going
Stand replacement fires in all blocks resulted in maintenance of some Old Growth structure. Blocks 3 (some),6,5 lower maintenance compared to blocks 1,2A/B,4 and some 3,6.	Blocks 1, 2A, 2B, 4, and 6 are best areas for long-term maintenance and development of late successional forests in varying sizes and species.	INFO FOR FUTURE PLANNING	On-going
Shorter fire return interval occur on South aspects, with longer intervals in the valley bottoms.	Areas with longer return intervals would be more suitable for late successional management.	INFO FOR FUTURE PLANNING	On-going
Fires driven by east winds have had most significant affect on landscape diversity historically.	This orientation could be used as a guide for shape of larger stands in blocks 2B, 3, 5, and 6	INFO FOR FUTURE PLANNING	On-going

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
Fire is critical for maintenance of meadow vegetation and subalpine habitat.	Prescribe low intensity surface burns in dry meadows and subalpine areas. Particularly Fingerboard & Bunchgrass meadows. Monitor for species composition changes.	RESTORATION	In progress
Historic air quality levels were at PM 10-13. They are now at PM 5-10. The lowest air quality in 1994 was 6 times less than the "limit" or allowable levels measured at THSI.	Historic air quality conditions are not legally acceptable. Continue to meet State of Oregon standards.	INFO FOR FUTURE PLANNING	On-going
Documented in the watershed are:6 R-6 sensitive plants; 18 plants on Forest watch/concern/review list; 18 ROD S&M species (10 species are strategy 1).	Continue to inventory and monitor sensitive populations. Known sites managed for protection in 1995 include six spp in 4 sites on SWH and and 4 spp in 19 sites on MCK.	MONITOR AND INVENTORY	On-going
Habitat for 242 ROD C-3 PLANT species occur in the watershed, including 8 vascular plants, 12 bryophytes,166 fungi, and 56 lichens. An additional 19 species are suspected to occur.	Identify potential areas for survey where species are at risk. Retain a diversity of tree species at PCT & CT treatments. Leave clumps of diverse species of different sizes. Leave all hardwoods. 10-40 ac patched of LS/OG forest well distributed across the watershed.	INFO FOR FUTURE PLANNING	
16 Allotropia virgata sites occur in forested stands in 2A, 2B, 3, 4, 5,& 6.	Survey and manage 16 ALVI sites on MK.	SURVEY	n/a
Hwys 20/22/126 are main corridors for noxious weeds and non-native plant dispersal & establishment. ODOT	Monitor highways for noxious weed & non-native presence and expansion. Continue to work with ODOT to	MONITOR	On-going

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
practices may encourage noxious weeds & non-native plant establishment.	prevent further weed expansion.		
Construction & maintenance of roads introduces & spreads noxious weeds & other non-native plants.	Implement FSM 2080 direction in all proposed timber sales & road maintenance programs. Use weed free fill material for road work projects. Clean soil from road equipment prior to use.	INFO FOR FUTURE PLANNING	
Watershed contains 7 rare forested plant associations. Eleven forested PAs listed as common for the District are rare in the watershed.	Inventory stands to determine rarity of plant association. Rare forested PAs need to be analyzed and ranked by watershed.	INVENTORY	Not done
WILDLIFE RESOURCES			
W.Footed Vole: Unknown population levels in watershed.	Riparian reserve buffers in low elevation streams that are wide enough to capture riparian veg and a portion of the transition zone will be needed to adequately protect this species.	INFO FOR FUTURE PLANNING	
Red Tree Vole: 2 records of occurrence in the WA. Research shows they do not occupy stands over 3000' elevation, but this may not be correct. (NOTE from 2006 update, this is not correct) . Concerns for this species include low mobility and need for late successional forest.	Conduct surveys in all series where Douglas-fir occurs. Provide patches of late successional habitat at least 20 acres in size interconnected throughout the landscape by riparian reserve network or mid-seral stands to facilitate movement for many species.	SURVEY, INFO FOR FUTURE PLANNING	Done as needed
Snag levels for all landform blocks are currently above 40%, though some are approaching this benchmark.	High priority to conduct snag inventories in unmanaged stands to validate assumptions used in analysis.	INVENTORY	On-going modeling with ecology group

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
<p>Early Seral Habitat: 14% of species in watershed dependent on it. This habitat was historically produced from fire disturbance. Snags and large woody debris were present post-disturbance. Early seral wildlife species evolved with these structures. Currently available habitat is not effective for these species because of a lack of structural elements. Creation of early seral habitat will decrease by 50% in the next decade.</p>	<p>Use techniques in forest management to mimic past fire effects by considering size, shape, and complexity of structure that would have occurred post-disturbance in the different series. Leave snags and LWD at ROD levels or greater. Evaluate viability of early seral species into the future to determine minimum amounts and pattern of effective early seral required on the landscape.</p>	<p>INFO FOR FUTURE PLANNING</p>	
<p>Mid Seral Habitat: No wildlife species rely on this habitat for breeding. However, 4% of the species in the WA can use early and mid or mid and late. Mid seral habitat historically succeeded from early seral stands with greater structure, and species that use it have greater probability of success if structural elements are present. 50 years of cutting without leaving structure has resulted in a decrease in the potential species richness in the WA.</p>	<p>Manage early seral habitat to provide structure in future mid seral stands. Create snags and LWD in existing mid seral stands where of appropriate diameters are available to increase potential species' richness..</p>	<p>INFO FOR FUTURE PLANNING</p>	
<p>Late Seral Habitat: 4% of the wildlife species in the watershed breed primarily in LS habitat. Concern for low mobility species such as the red tree vole still exist. None of these species require large</p>	<p>Provide for blocks of LS habitat within the matrix interconnected with corridors, stepping stones, or permeable mid seral habitat. Maintain existing high quality blocks until</p>	<p>INFO FOR FUTURE PLANNING</p>	

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
contiguous blocks of LS habitat (>40 acres).	additional blocks develop into LS. Prioritize regeneration cutting to occur in small, non-effective blocks.		
WILDLIFE RESOURCES			
Riparian Habitat: 25% of species in WA associated with riparian areas. Riparian buffers that protect the integrity of the riparian vegetation and water quality will be critical to maintain these species, especially in class I-III streams. Class IV riparian areas contain minimal riparian vegetation	Maintain protective riparian buffers on class I-III streams that include the riparian vegetation and a portion of the transition zone. Class IV buffer widths may be altered to reflect the range of natural variability of natural disturbances. However, 50-11-40 guidelines should be met and there should be no net loss of existing LS habitat in riparian reserves designs. If portions of buffers are narrowed, other areas will need to be increased.	INFO FOR FUTURE PLANNING	
RECREATION/VISUAL RESOURCES			
Detailed analysis of visual resources has not been conducted.	Conduct more detailed visual analysis for projects in visual allocations.	INFO FOR FUTURE PLANNING	
Forty out of forty-five developed sites in WA fall partly inside a riparian reserve. Several others are totally within riparian reserves. Eight Special Use Permit rec areas are within reserves.	For sites within riparian reserves, document the location of the riparian reserve within the site complex, and review proposed projects & current actions for consistency with the ROD. Develop site-plans as needed to mitigate impacts.	EVALUATE ROD CONSISTENCY	Inventory done. Plan not done.
All developed fee campgrounds are near water. Most campgrounds are at capacity	Initiate a future use/needs study to determine demand projections. Focus	FUTURE NEEDS STUDY	Done as part of FERC relicens-

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
for weekend use, July through early September. No current plans propose how to address future capacity expansion needs.	on potential development of Reservoirs (vs. Rivers, Lakes) for water based recreation expansion.		ing
RECREATION/VISUAL RESOURCES			
The very high percentage of Recreation Development occurring in riparian reserves (88%) reflects human desire for water access.	Recognize that existing facilities often mitigate human impacts to buffers by controlling access, while still allowing enjoyment of water based recreation.	INVENTORY	Inventory done for campgrounds and boat launches
Gray water disposal sumps are lacking in most campgrounds. 44 sumps are in the watershed. Proper gray water disposal is required by state law. 12 pit (unlined) toilets are located within the watershed. These are potential pollution sources. 2 boat ramps are in poor or replacement status, and 3 boat docks are needed. Facilities in these shore areas mitigate existing recreational use.	Develop a plan for managing riparian areas, and seek funding for high priority action items.	DEVELOP STRATEGY	On-going need
59% or 195 out of 333 total inventoried dispersed campsites were in riparian reserve.	Enter all data from 1988 LAC inventories into computer program. Re-survey dispersed sites in critical riparian reserves and compare changes. Develop mgmt strategies to minimize impacts as needed.	INFO FOR FUTURE PLANNING	
88 out of 333 dispersed sites were originally in developed, managed campgrounds.	Determine if areas such as Lost Lake are best managed as dispersed sites or if facilities are needed again as	ASSESS MGMT	Under consideration

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
	mitigation.		
At least 15% of the dispersed sites have previously had the roads closed to them.	When closing road access in future implement monitoring to determine long range changes in site impacts.	MONITORING	On-going
Of campsites in riparian reserves, 37% were accessible by foot, 63% by vehicles. Of the non-riparian sites, 10% were accessible by foot; 90% by vehicles.	Evaluate Americans with Disability Act conflicts when considering road closures to dispersed sites that are to remain open to foot travel (equal access to recreation opportunity issues).	MONITORING	On-going
It appears that campsites in riparian reserves have more barren core than non-riparian sites (58% vs 26%).	Evaluate why riparian campsites are more prone to developing barren cores: is it because unroaded dispersed sites have more tent campers who travel throughout sites more? or does more foot traffic causes more barren areas?.	DEVELOP REC PLAN FOR RIPARIAN RESERVES	Done with Paradise veg plan

LANDFORM BLOCK 1 (PORTION AMA)

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
The majority of "high" potential contributing area to rain-on-snow is located within the west and south west facing slopes north of the McKenzie River.	Utilize this informaiton in future management.	INFO FOR FUTURE PLANNING	
Fire runs uphill in this block to the ridgetop. Fires were generally large in size	Stand size and shape in future planning should reflect the "inverted	INFO FOR FUTURE	

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
and stand replacement.	teardrop" shape seen under historic disturbance patterns.	PLANNING	
Pond Turtle: 2 documented sitings in this block. Population levels are unknown, but expected to be low because of the lack of warm ponds at low elevations. Some sidechannels of the McKenzie may provide habitat.	Recommend pursuing potential of purchase or exchange wetland on adjacent private lands to protect habitat. Continue monitoring of areas with known sites. Enhance side-channels w/ loafing sites in the McKenzie River.	INFO FOR FUTURE LAND EXCHANGE	

LANDFORM BLOCK 2A (AMA)

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
Most road related slope failures are from side-cast construction on slopes greater than 70% and most occurred in Landform Blocks 2A and 2B in Western Cascade above 2,000 feet elevation.	Continue road restoration work. Prioritize work according to impact on Bull Trout population and Access and Travel Management Plan.	RESTORATION	Done w/County Carpenter EA. Revisit w/ Ballpark
Deer Cr. temps are above state standards, but the standards are unrealistic to meet.	Establish canopy closure and decrease width: depth ratios. Determine new temp standard using Budworm Cr. temps as guide.	RESTORATION	Review w/ Ballpark
Increases in water temps in Deer Cr. were seen following transmission line construction and harvest of riparian vegetation.	Increase cover and decrease width: depth ratios.	RESTORATION	Review w/ Ballpark
Downhill winds occur in this block. There	Wind will significantly influence fire	INFO FOR FUTURE	Review w/

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
are frequent, daytime, down- valley winds in upper portion of Deer Creek drainage.	behavior in this landform block.	PLANNING	Ballpark

LANDFORM BLOCK 2A (AMA)

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
Historic fires were small, stand replacement. The drainages typically burned because of a chimneying effect. Fire return intervals for stand replacement fires were long, resulting in the potential to develop small to moderate sized old growth patches.	Landscape mosaic should reflect a very diverse and complex patchy pattern of small stands with high contrast between adjacent stand conditions.	INFO FOR FUTURE PLANNING	
Deer Creek drainage landscape management has altered aquatic habitat condition by increasing peak flows and altering rates of LWD recruitment outside the historic range of variability.	Identify opportunities to restore slope, riparian vegetation and stream bank stability. Identify and treat high risk roads and culverts. Treat deficiencies in channel complexity and recruitment potential.	RESTORATION	Review w/ Ballpark
High stream temperatures in Deer Cr. have exceeded tolerances of historic spring chinook spawning populations.	Pursue means of restoring riparian vegetation in lower Deer Creek. Restore channel complexity with reintroduction of in-stream wood.	RESTORATION	Review w/ Ballpark
Passage barrier culverts on Fritz Creek isolate native cutthroat. 2006 update: drop. Historic natural barrier.	Restore passage.	RESTORATION	DROP

LANDFORM BLOCK 2B

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
Most road related slope failures are from side-cast construction on slopes greater than 70% and most occur in Landform Blocks 2A and 2B in Western Cascade volcanics above 2,000 feet elevation.	Continue road restoration work. Prioritize work according to impact on Bull Trout population and Access and Travel Management Plan.	RESTORATION	Done w/Twobee
Fires historically were stand replacement events of low to moderate intensity. Return intervals were long, however ridgetops tended to burn more often. Fires usually resulted in a mosaic of small patches. This area also experienced some of the largest fires in the watershed around 1900.	Landscape pattern should reflect a mosaic of large and small patches.	INFO FOR FUTURE PLANNING	
Historical grazing at Lava Lake and some campgrounds (Lost Prairie, & Trailbridge) facilitated the expansion of noxious weeds & other non-natives in the watershed.	Prioritize species for active control. Rehabilitate campgrounds to prevent further establishment of noxious weeds & non-native plants.	RESTORATION	On-going
Noxious weeds are encroaching sensitive plant habitat at Iron Mtn.	Eradicate noxious weeds, particularly St John's-wort at Iron Mtn.	RESTORATION	On-going
Bald Eagle: The animals at the known site have difficulties in successfully nesting. Difficult to determine impacts contributing to this. Fish Lake may be a potential area to improve habitat for nesting.	Continue monitoring of site to determine reproductive success. If no success in 1995, consider improvements to other potential nesting areas..	MONITOR RESTORATION	On-going
Sandhill Crane: One of 2 known nest sites on the WNF occurs in the WA. has been threatened w/grazing in the past.	Continue to monitor site. Maintain hydrological regime of Lava Lake to protect habitat.	MONITOR	On-going
Historical grazing at Lava and Fish Lakes	Aid recovery by planting native	RESTORATION	No longer a

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
have significantly impacted channel condition.	vegetation along stream courses within the meadows.	TION	need
Lava, Fish and Clear Lake system native cutthroat are being displaced by introduced brook trout.	Participate in brook trout management with resource management agencies.	COOPERATION	On-going. Triploid project.

LANDFORM BLOCK 3

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
Fires historically were medium to large, stand replacement events combined with small spot fires. East winds probably affect the movement of fire in this area more than others. The Airstrip fire is an example of this affect on vegetation patterns.	The pattern created by an east-wind, stand replacement event would conflict with several other objectives for this area, such as visuals, wildlife habitat, etc. Resolution will require further study.	INFO FOR FUTURE PLANNING	
Introduction of non-native trout into high mountain lakes has likely impacted native fauna.	Determine high lakes biota and water quality in managed and unmanaged lakes.	INVENTORY	On-going
Lost Lake shoreline and lake bed have high user impacts.	Reestablish native riparian hardwoods and sedges.	RESTORATION	In progress
Wolverine: Several sitings in the WA down to 3000' elevation. Majority in Santiam Pass area. Unknown current population levels, but they were historically probably always low. Loss of disturbance in the higher elevations may have reduced habitat quality for this species.	Continue monitoring in the Santiam Pass. Manage human use of wilderness areas to benefit this species. Prescribed fire in the wilderness would benefit this species through the production of early seral stage habitat.	MONITOR RESTORATION	Work done w/Cache Mt., Byerly and B&B

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
Great Gray Owls: 3 potential sites in the area. Sites do not appear to be strongly associated w/meadow complexes: foraging in clearcuts and shelterwoods.	Continue to monitor sites. Provide foraging habitat through regeneration harvest within the home range of known sites that have limited availability of natural openings.	MONITOR	Santiam Planning
Black-backed woodpecker: Very few records in the WA, primarily in the Santiam Pass area. Require 100% snag levels and prefer patches of insect-infested trees.	Leave 100% snag levels in higher elevation habitat. leave pockets of insect-infested trees on the landscape. Conduct surveys to determine extent of habitat use in higher elevations.	SURVEYS, INFO FOR FUTURE PLANNING	B&B
Flammulated Owl: Unknown if occurs in WA, but if it does, it's probably in this block. No records on the WNF, and few on the Deschutes NF., but no surveys have been done. Highly associated with pines.	Reintroduction of pine species will benefit this species. Snag levels as prescribed for Black-backed woodpecker will benefit this species. Conduct surveys to determine presence in higher elevation areas.	RESTORATION, SURVEY	B&B and pine planting
Several analysis areas are not meeting ELK HE values. Moderate emphasis area will not be able to meet Hec because of the limited capability of the vegetation to produce high quality cover.	Reevaluate emphasis area ratings based on capability of the land. Increase HEF in areas through development of permanent forage areas; wider thinning in plantations to extend early seral stage, browse cutback, short rotation patches, and seeding cutover areas with native plants where appropriate.	RE-EVALUATE MGMT	Forest Plan Revision topic
Big Lake has conflicts between motorized and non-motorized lake users, and potential conflicts between fisher persons	Study the demand vs the capacities for water skiing vs. canoe or row boat use. Determine potential increase in	STUDY DEMAND VS USE	Not Done

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
and water-skiers if fishing pressure is increased.	conflicts if hatchery stocking of fish was increased. Prioritize repairs/expansion of facilities in Big Lake vs. reservoir potentials.		
Campground users who can't tolerate noise from motorized boats and nearby OHV's in the Big lake area are displaced; but there are ample other opportunities for other recreational experiences. This is the only high elevation lake where motorized travel is allowed in the watershed.	Through demand studies, determine if need for quiet lake setting would be greater than demand/acceptance for motorized recreation use of Big Lake. Study opportunities to lessen noise conflicts with regulation or education to enhance sharing of Big Lake. Evaluate riparian impacts of motorized lake use.	STUDY DEMAND VS USE, EVALUATE IMPACTS	Not done
Road and trail users may have conflicts with sharing between hikers, horses, OHV's and mountain bikes in the Big Lake area.	Develop an ATM plan.	DEVELOP ATM PLAN	Being done w/Santiam Planning
Motorized vehicles are illegally entering wilderness and using Pacific Crest Trail in the Santiam Pass area.	Post boundaries clearly, sign Pacific Crest Trail , publish brochures and maps that give clear information on legal travel routes. Develop ATM plan.	DEVELOP ATM PLAN	Being done with Santiam Planning

LANDFORM BLOCK 4

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
Because of the extensive lava and pumice and high levels of lightning strikes, historic fires were frequent, low intensity, and usually small.	Base future landscape planning on this type of pattern.	INFO FOR FUTURE PLANNING	
The only known occupied Townsend's Big-eared bat hibernaculum occurs here. The cave receives heavy human use, and bat numbers appear to be declining. Additional areas with potential for caves have been mapped, but use is unknown.	Develop a cave management plan for Sawyers that limits human use during hibernation. Continue to monitor the site.	DEVELOP CAVE MGMT PLAN	Not needed. ODOT closing access to site

LANDFORM BLOCK 5

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
The majority of "high" potential contributing area to rain-on-snow is located within the west-facing, gently sloping terrain of the "flat country".	Use this information during future planning.	INFO FOR FUTURE PLANNING	DROP! No correct
The largest expected fire sizes occur in this block.	This landform block may be a good candidate for min-frag mgmt. However, this may conflict with big game management objectives.	INFO FOR FUTURE PLANNING	
High meadows historically burned frequently. They are currently being invaded by conifers.	Prescribed fire may be need to maintain the meadow resource.	RESTORATION	Done w/ Bunchgrass
Rearing habitat is likely a factor limiting bull	Verify with a trap on lower Anderson	MONITOR	On-going

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
trout production in Anderson Creek. 2006 update: adult and subadult habitat appears limiting per FERC studies	Creek. Enhance Anderson Cr. as needed. Enhance McKenzie R. margin and side channel habitat downstream of Anderson Cr..		
Introduction of non-native trout into high mountain lakes has likely impacted native fauna.	Determine high lakes biota and water quality in managed and unmanaged lakes.	INVENTORY	On-going
Dispersed sites occur near Olallie, Sweetwater and Boulder Creek, and they may be impacting fish resources.	Conduct survey of these dispersed sites and develop recommendations to mitigate impacts.	SURVEY	Done with ROSCO
Great Gray Owls: Highest density of GGO's on WNF in this block. Do not appear to be strongly associated w/meadow complexes.	Continue to monitor sites. Evaluate landscape level management strategies.	INFO FOR FUTURE PLANNING	
Several analysis areas are not meeting HE values for elk. High emphasis area will never meet Hec because of shorter FRI that do not promote the development of high quality optimal thermal cover	Reevaluate emphasis area ratings.	INFO FOR FUTURE PLANNING	
Stand replacement fire events may adversely affect bull trout habitat.	Management activities that will reduce potential for stand replacement events should be considered to protect bull trout habitat.	INFO FOR FUTURE PLANNING	
Hazard tree felling in campgrounds may produce an of excess woody material beyond what is minimally needed to meet minimum habitat needs for species that utilize the area.	Survey all developed recreation sites and map large woody debris. Develo LWD plan.	SURVEY DEVELOP LWD PLAN	Done by Pam Novitzky

LANDFORM BLOCK 6

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
Fires were historically low intensity, frequent events or high intensity low to moderate frequency events. These usually resulted in medium sized patches on the landscape.	Most of the block is wilderness. It would be good candidate for a prescribed natural fire program. PNF will help maintain vegetation within its natural range of variability.	INFO FOR FUTURE PLANNING	
Introduction of non-native trout into high mountain lakes has likely impacted native fauna.	Determine high lakes biota and water quality in managed and unmanaged lakes.	INVENTORY	On-gong
High quality potential habitat for peregrine falcons occurs in this block.	Continue monitoring. Develop management plan for new site.	DEVELOP MGMT PLAN	Drafts or Squash and Deer
White Branch Falcon site	Assess resources and restoration opportunities		Need

MCKENZIE RIVER CORRIDOR BLOCK

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
McKenzie River has high capacity for transport, leaving large channel substrate. Substrate coarsening is potentially aggravated by Carmen Project.	Need to get historical channel X-section data at USGS gagging stations to verify assumption..	INFO NEED	Done w/FERC studies
Downcutting of McKenzie River channel below Carmen Project may have de-watered side channels.	Validate downcutting theory using X-section data of USGS stations. If true, assess improvement projects.	RESTORATION	In progress

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
McKenzie River meets or exceeds state water temp. standards.	Maintain cool water temps.	INFO FOR FUTURE PLANNING	
Summer low flows have decreased following Carmen Project (1965). 2006 update: true in bypass reach only.		RESTORATION	In progress
Of all the landform blocks, the mainstem McKenzie River has the highest percentage of roads and recreation sites (3% and 5%, respectively)	Evaluate impact of this development in context of entire system	EVALUATION NEED	Done w/ Pilot roads analysis and FERC studies
At-risk native fish species coexist in the Upper McKenzie River. The Upper McKenzie provides a significant portion of Willamette Basin spring chinook and bull trout habitat. Due to the Upper McKenzie's position and condition in the basin, it is providing refuge for those species.	Maintain or enhance habitat necessary to both species. Restoration of predator species (bull trout) requires restoration of prey species (spring chinook).	RESTORATION	On-going
The life history requirements of spring chinook and bull trout require greater lower McKenzie and Willamette River channel complexity.	Participate in lower basin restoration with other resource management agencies and private landowners.	COORD. NEED	Done w/ water-shed council partnership
Previous studies suggest interception of large woody debris and sediment by dams has resulted in upper McKenzie channel coarsening and downcutting.	Verify comparing past and present channel cross sections.	INFO NEED	Done w/ FERC studies
Salvage and river-user removal of in-stream wood has reduced an essential source of McKenzie River channel complexity. Interception of LWD by dams and at road	Develop an instream LWD plan for this landform block.	DEVELOP LWD PLAN	Done w/ FERC studies to Deer Creek. Still need below.

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
crossings (ie Fish Lake Cr.) continues to reduce channel and lower basin complexity.			
Coarsening of the Upper McKenzie bedload and reduced summer low flows may have combined to reduce spring chinook spawning habitat.	Determine available spawning habitat area and composition. If found a limiting factor, restore.	RESTORATION	On-going w/FERC studies
Historic mainstem rearing area was greater than is currently available.	Restore side channel habitat as mainstem complexity is restored.	RESTORATION	On-going w/FERC studies
The un-screened turbine intake at Trail Bridge Dam may represent a risk to bull trout residing above the dam.	Determine risk to bull trout population.	RISK ASSESSMENT NEED	Done
Mainstem and Trail Bridge bull trout population size may not be sufficient to maintain viability.	Monitor spawning population size. Provide for genetic interchange between South Fork, McKenzie and Trail Bridge populations. Determine population need of passage at Trail Bridge Dam.	MONITOR, INFO NEED	On-going
Habitat critical to mainstem bull trout spawning and rearing is found within a 1 mile radius and is subject to risks from wildfire, highway chemical spill, poaching, and sedimentation from land management activity.	Design and apply risk reductions.	RISK REDUCTION NEED	Need. Can install EWEB application to help.
Bull trout spawning, rearing and foraging habitat upstream of Trail Bridge has had its wood recruitment and adult salmon migration interrupted by dams.	Restore bull trout habitat with addition of LWD in lower Smith River and McKenzie below Tamolitch Falls. Transport adult spring chinook above Trail Bridge to spawn and	RESTORATION	All done except Smith

SIGNIFICANT FINDING	RECOMMENDATION	ACTION REQUIRED	ACCOMPLISHMENT
	<i>approach</i> native community prey base (similar to ODFW trials in SF McKenzie).		
Brook trout are a risk to the Trail Bridge bull trout population.	Monitor spawning and rearing population. Participate in management of brook trout with resource management agencies.	MONITOR	On-going
The extent of hatchery origin spring chinook influence upon the wild chinook and wild rainbow populations is unknown.	Assist resource management agencies monitoring upper river spring chinook salmon.	COOPERATION NEED	On-going
13 potential harlequin duck nest sites occur on McKenzie. They do not appear to be disturbed by boaters. Loafing sites in the McKenzie may have been diminished through the removal of instream LWD.	Continue monitoring river. Maintain riparian reserve that protect riparian vegetation and part of the transition zone. Enhance availability of instream woody debris and protect existing loafing islands/rocks/logs.	MONITOR, RESTORATION	One project done. Part of FERC study.

Step 4 - Develop an implementation strategy for the project opportunities and a monitoring schedule/strategy.

Additional Watershed Analysis Update Material

Appendix I.

Through the relicensing process for the Carmen-Smith Hydroelectric project, numerous studies were completed with invaluable information on the Upper McKenzie Watershed. Those reports can be found at the district office in their entirety. They include:

Aquatics Sub-group

1. Fish Passage
2. Flow Fluctuations and Stranding
3. Aquatic Protection, Mitigation, and Enhance Opportunities
4. Large Woody Debris Dynamics
5. Fish Entrainment
6. Fish Population Distribution and Abundance
7. Hydrologic Regimes
8. Sediment Budget
9. Aquatic Habitats and Instream Flows
10. Water Quality
11. Fluvial Geomorphic Processes and Channel Morphology
12. Aquatic Habitat Connectivity
13. Population Dynamics of Bull Trout and Spring Chinook Salmon

Terrestrial Sub-group

1. Wildlife Distribution
2. Wildlife Analysis
3. Botanical Field Surveys and Evaluation of Project Effects
4. Vegetation and Wetland Mapping and Characterization

Social Sciences Sub-group

1. Whitewater Boating Feasibility
2. Existing Recreational Uses
3. Recreation Suitability
4. Archeological Investigations
5. Land Use and Management
6. Aesthetics

Existing Information Analyses

Because the relicensing technical reports contain recommendations not necessarily supported by the USFS, they are not included as an addendum to this WA. However, the information contained within them has been summarized in "Existing Information Analyses" placed in Appendix I of this WA update.

Appendix II.

The Sweet Home Ranger District has put considerable thought into a Stewardship project in the Parks area. The following appendix summarizes their work to date.

Parks/Lava Lake Stewardship Proposal

This area has a wide variety of wildlife habitat features and is in close proximity to the B&B Fire Complex with a similar potential for catastrophic wildfire. Fire suppression has had a negative impact on meadows and forest health in this area. There are also a wide variety of publics that use this area at all times of the year with some use causing undesirable impacts. There are several historic and prehistoric features of interest in the area. There are 3 sno-parks that access the area.

Potential Stewardship Partners

Rocky Mountain Elk Foundation
Oregon Hunters Association
Cascade Timber Consultants
McKenzie Watershed Council
Confederated Tribes of the Grand Ronde
Confederated Tribes of the Siletz
Confederated Tribes of the Warm Springs
Oregon Natural Resources Council
Sierra Club/Santiam Wilderness Committee
Oregon Department of Fish and Wildlife
Oregon Department of Forestry
Oregon Equestrian Trails - Brownsville Chapter

Willamette Chapter of the Oregon Nordic Club
Santiam 4 Wheel Drive Association
Snowmobile Clubs

Potential Projects

Huckleberry Enhancement
Meadow Restoration
Fuels Reduction
Density Reduction
Noxious Weeds

Current Land Allocations

General Forest (Matrix)
Special Wildlife Habitat
100-acre Late-Successional Reserves
Semi-primitive Non-motorized Dispersed Recreation
Scenic - Partial Retention
Scenic - Retention
Three Pyramids Special Interest Area

Other Potential Funding Sources

National Forest Foundation thru RMF
Regional Challenge Cost Share
Payments to Counties Title II

**Parks/Lava Lake
Potential Stewardship Area**

