



April 23, 2012

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Re: Hawk Creek Analysis

Following is my analysis and assessment of the forestlands within the District's Hawk Creek Watershed. I focused my assessment in 1,146 acres owned by Nestucca Forests LLC in the headwaters of the watershed. Other owners including Siuslaw National Forest and private individuals owning approximately 390 acres were not included in the assessment at this time.

See the attached spreadsheet and maps for ownership, watershed, topography, and forest type information.

Summary

The Hawk Creek watershed contains a variety of different forest conditions and ownerships. Water quality and habitat conditions are most affected by that of the Nestucca Forests LLC ownership (NF), which comprises a single large block in the heart of the watershed, and includes most headwaters streams. Most of the NF ownership is comprised of even-aged stands dominated by western hemlock, managed in large blocks. Most NF lands have either been harvested in the last 10-30 years, have been recently clearcut, or are mature and ready for cutting. Enhanced markets for mid-sized hemlock and spruce increase the likelihood that these remaining older stands will be harvested soon. Provisions to protect water quality appear to have been limited to following minimum requirements of the Oregon State Forest Practices Act (FPA), and few headwaters streams have forested buffers exceeding FPA minimums. Increased harvest pressures on the NF ownership will likely lead to increased sedimentation, elevated water temperatures, and more dynamic flow regimes for the Hawk Creek water system.

Forest Condition

For my analysis I began with a review of aerial photography, which was ground truthed for stand age and composition. I stratified the area into 4 broad age classes:

Mature	≥50 years	100 ac (8.7%)
Merchantable	30-49 years	289 ac (25.2%)
Pre-merch	15-29 years	321 ac (28.0 %)
Plantation	1-14 years	435 ac (38.0%)



One-third of the NF ownership is comprised of stands greater than 30 years old, with 28 percent of the acreage in younger pre-merchantable stands, and 38 percent in recent plantations. The forest is predominantly hemlock, with smaller amounts of spruce, Douglas-fir, and red alder.

This is a very productive growing site, well suited to a mixed forest of native Western hemlock, Sitka spruce, Douglas-fir, and red alder. I determined average site productivity as Site Index 130 (DF Site II+) based on the NRCS Web Soil Survey.

Most forest stands are well stocked with healthy, vigorously growing trees. The property is gated to prevent access. Roads are in generally good condition, except some ditches are plugged from recent harvesting and/or winter storm damage and in need of maintenance. Some isolated landslides are evident in recent clearcuts.

Protected Resources

Based on information provided from Oregon Department of Forestry (ODF), Hawk Creek is classified as a Large fish-bearing stream, with a mandated 100' (slope distance) Riparian Management Area (RMA). Other streams are classed as Medium fish-bearing, Small fish-bearing, Small domestic water source, or Small non-fish bearing streams. Legally mandated RMA, amount to approximately 20 acres, or 1.7% of the ownership.

Based on ODF records there are no known spotted owl or marbled murrelets nests on the watershed. However, USFS considers most of its old growth forest stands as potentially occupied marbled murrelets habitat.

Typical Management Scenario

The likely scenario under current NF ownership and management is that most of the remaining mature and merchantable stands will be clearcut in the next few years. Under conventional timber-focused management, practices typically include:

- Even-aged management, using a single clearcut harvest at age 40-45
- Minimum stream buffers as per Oregon Forest Practices Act — smaller perennial and intermittent headwaters streams have no tree retention requirement
- Little or no retention of snags, habitat trees, and biological legacies
- Routine aerial site-preparation herbicide application before reforestation
- Hand planting in single-species plantations of 350-450 trees per acre
- Release spray to control competing vegetation
- Possible pre-commercial thinning at age 8-15

An Alternative Management Scenario



If the Water District or another conservation buyer acquired the property, a conservation-based management approach might be more effective in protecting water quality and promoting habitat diversity. Practices might include:

- Even or multi-aged management, using thinning to extend stand age
- Trees grown to age 70-100 or more
- Harvest using variable retention, or smaller patch cut techniques
- Expanded riparian buffers
- Reserve Area designation for sensitive sites
- Limited, targeted herbicide as necessary for seedling survival and growth
- Mixed species plantings
- Habitat enhancements like snag and woody debris creation, in-stream wood placement, etc

Such practices could result in higher harvesting costs and lower harvest returns, but with trade-offs of less frequent need for replanting, reduced water treatment costs, and better water flow regimes. A conservation-based approach would bring multiple partners to the table to assist with property stewardship and habitat enhancement, could yield a price premium through Sustainable product certification, and bring enhanced opportunities to participate in ecosystem services markets.

State of the Industry

The coastal forest region has been actively harvested and managed for most of the 20th Century. There are numerous sawmills within the working circle of the ownership – at Tillamook, Toledo, Garibaldi, Astoria, Sheridan/Willamina, and other Willamette Valley locations. Some smaller mills closed during the recent recession, but most still operate, though often at less than full capacity.

Much of the Coast Range region contain steep slopes that require costly cable logging, which reduces the feasibility for thinning harvests, especially for lower valued hemlock and spruce. Other risks in thinning spruce/hemlock forests include wind-throw (especially near the coast) and these species' greater susceptibility to logging damage.

Most of the northern Oregon coastal forest is in timber industry ownership. Many coastal communities secure their water from largely industry-owned forests. Major public forest ownerships include Tillamook State Forest near Tillamook, Siuslaw National Forest near Hebo and between Waldport and Marys Peak, and scattered smaller BLM, US Fish and Wildlife Service, and State Parks tracts. Most timber harvests occur on private forestland.

In the late 1990s and 2000s most ownership of timber industry lands has shifted from large integrated forest products corporations to institutional investors such as pension funds, insurance companies, and high net-worth individuals. These new business forms, known as TIMOs (Timber Investment Management Organizations) and REITs (Real



Estate Investment Trusts), have a decidedly shorter-term investment horizon than the former owners, often 10 to 15 years, and are driven by produce annual (or even quarterly) returns. Concerned over costs, these new owners often make less investment in conservation, research, roads, and property infrastructure.

Hemlock and spruce are typically lower valued compared to Douglas-fir and alder. The last wave of heavy harvesting occurred across the coastal hemlock/spruce forests in the 1960s and 70s, after which these forests been largely left to grow. In 2009 a new China export market emerged, buying lower valued spruce and hemlock at same price as Douglas-fir, and taking logs — down to 8” diameter. This has led to a new wave of heavy harvesting, especially of timber industry hemlock/spruce coastal forests.

What Other Communities are Doing:

- **Corvallis** – After 20 years of community gridlock over endangered species, Corvallis adopted a sustainability policy and drafted new stewardship plan that balances restoration and income. New fish ladders were installed on water system diversions, road culverts were replaced to provide fish passage, and wildlife habitats were enhanced through cost-sharing agreements that leveraged city funds.
- **Cannon Beach** – With minimal city-owned land, Cannon Beach recently acquired 800 acres of industrial land to help safeguard its watershed. It uses a restoration-based approach to enhance old-forest habitats, and encourages recreation and community connection with its watershed
- **Forest Grove** – Controlling nearly its entire 4,500-acre watershed, Forest Grove uses harvesting income to pay off a water system bond. It uses a balanced approach of reserves, special management areas, general management lands that emphasizes water quality protection while harvesting almost 1 million board feet of timber each year.

Valuation

Based on my analysis the 1,146 acres of NF lands are worth on average \$3,979 per acre, for a total of \$4.56 million.

For valuation I applied an estimate of average timber volume for each age class, as no stand individual data were available. I made assumptions of logging and management costs, which are detailed on the following Valuation Worksheet.

Acquisition Costs

If the property were able to be purchased from a willing seller, in addition to the negotiated purchase price of the property the following transaction costs must be considered. Following are rough ball-park estimates:

- Timber cruise and appraisal - \$20-30,000
- Surveying - \$5-10,000



- Environmental review - \$5-10,000
- Legal – \$20-50,000
- Stewardship management plan – \$10-\$15,000
- Project administration and sales commission – 5% of sales price
- Additional timberland – ?? (The owners would typically sell enough land to make up a easily managed block, which may include more than the 1,146 acres in the watershed. Such lands could be traded, sold, or retained)

Total project cost would likely be \$4.75–\$5.0 million.

Operating Cost Estimate

Most operating costs such as harvest planning, reforestation, and monitoring can be included in timber management fees. Fees typically range from 5-10% of gross timber value. No new roads are needed. Road maintenance can be timed to coincide with timber operations, requiring minimal out-of pocket expenses. Grants or cost-sharing agreements are available to subsidize habitat enhancement through a variety of Federal and State agencies.

Potential Project Partners

- The Nature Conservancy
- North Coast Land Conservancy
- Oregon Watershed Enhancement Board
- US Forest Service, Forest Legacy Program
- Siuslaw National Forest, Hebo Stewardship Group
- US Fish and Wildlife Service
- Oregon Department of Fish and Wildlife
- Nestucca-Neskowin Watersheds Council
- Trout Mountain Forestry

Next steps

More accurate property information should be gathered, including more precise forest typing. Timber inventory data will allow accurate appraisal of property values, as well as modeling of financial performance and long-term stand structure development. A new timber cruise may not be needed if NF managers have recent cruise information they are willing to share.

Should the District decide to further pursue acquisition of these NF tracts I recommend assembling a set of project partners, including Siuslaw National Forest, Agency personnel, land conservation NGOs, and potential funders, and begin talks to identify project goals, timelines, and partner responsibilities.



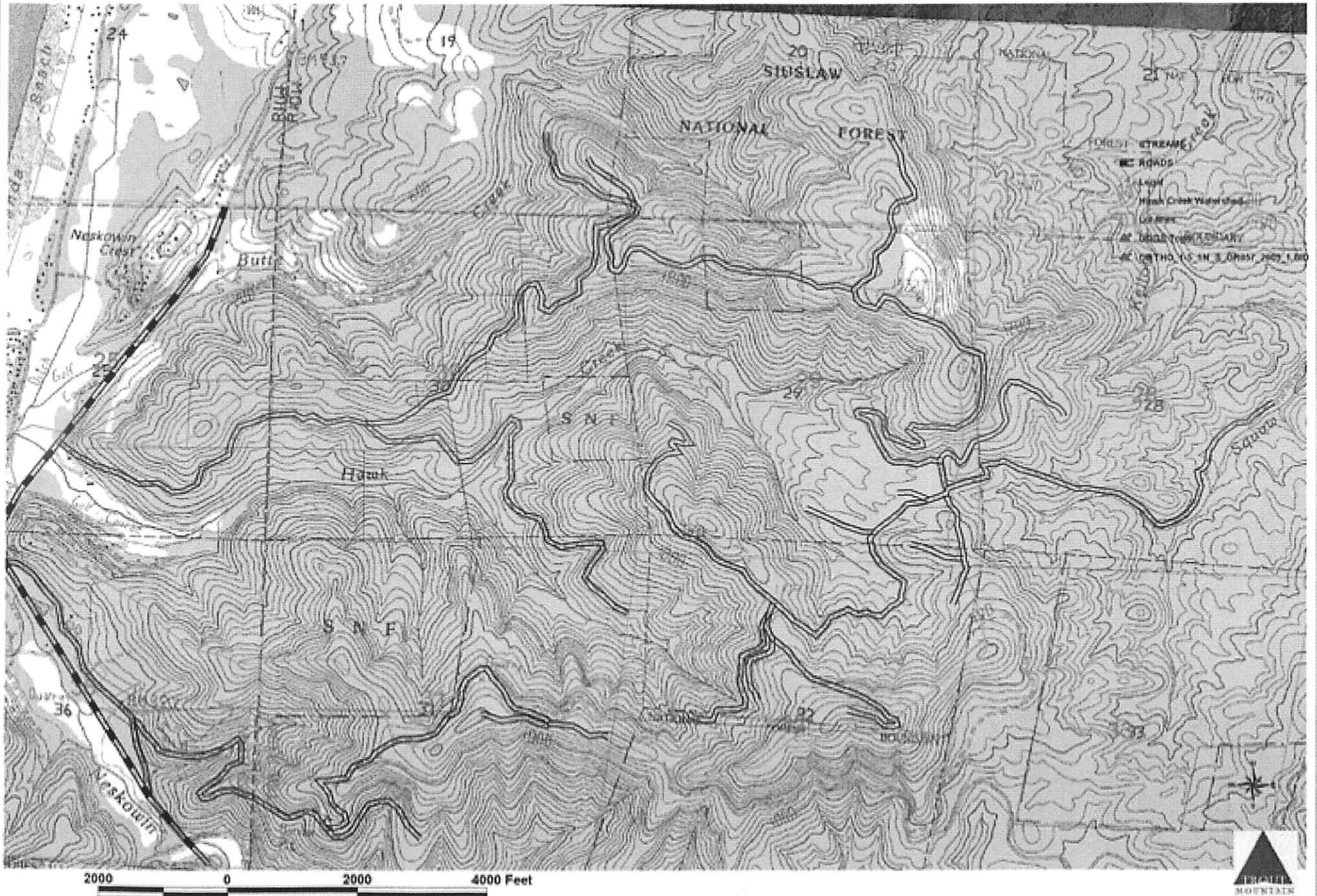
Discussions with the property owners should be initiated after preliminary contact with project partners. This is a particularly sensitive part of the process, which should be preceded by thorough strategic planning.

I would be pleased to present proposals for these projects. We have helped facilitate land acquisition partnerships, and provide leadership in inventory, appraisal, project management, and fundraising.

Sincerely,

Mark Miller, Trout Mountain Forestry

Hawk Creek Watershed



Scale = 1 : 2000.00 (In : Feet)

03-08-2012

Type	Age	Acres	Percent	Avg MBF/ac	Total MBF	Net value/mbf	Total Timber \$	Timber \$/ac	Premerch \$/ac	Land \$/ac	Total \$/ac	Total Value
Mature	50+	100	8.7%	35	3,500	\$193	\$675,500	\$6,755	\$0	\$750	\$7,505	\$750,500
Merchantable	30-49	289	25.2%	32	9,248	\$193	\$1,784,864	\$6,176	\$0	\$750	\$6,926	\$2,001,614
Pre-merch	15-29	322	28.1%	0	0	\$0	\$0	\$0	\$2,500	\$750	\$3,250	\$1,046,500
Plantation	1-14	435	38.0%	0	0	\$0	\$0	\$0	\$1,000	\$750	\$1,750	\$761,250
Total		1,146	100.0%		12,748		\$2,460,364					\$4,559,864 Total Value \$3,978.94 Avg Value/ac

Asumptions:

Cable logging is required for 90% of the merchantable and mature acres

No new roads are needed

No timber inventory data is available; volume is assumed to be 70% hemlock, 15% spruce, 10% Douglas-fir, and 5% red alder

Average log value is \$475 for merchantable and mature stands

Average logging cost is \$180/mbf

Net average log value is \$193/mbf (after logging, trucking, management, and reforestation costs)

Premerchantable stands are by definition not currently profitable to log

Highest and best use for all land is timber production (no development potential)

Log value/logging cost matrix

Type	Avg log value	Cable log cost	Ground log cost	Avg log cost	Trucking cost	Mgmt cost	Regen cost	Total cost	Net avg log value
Mature, merch	\$475	\$190	\$90	\$180	\$70	\$24	\$8	\$282	\$193

Hawk Creek Watershed

Streams
Roads

NESTUCCA LANDS (by Age Class)

- Mature
- Merch'
- Pre-merch'
- Plantation

Hawk Creek Watershed

Lot lines

2009 Orthophoto



1325 0 1325 Feet
Scale = 1 : 1325.00 (In : Feet)

04-06-2012

