FOREST PLAN

Property Location

Abbreviated Legal Description

Portion of NE 1/4 of Section 2, Township 25 North, Range 7 East of Willamette Meridian, King County, Washington

Parcel Identification Number

20 acre parcel; 19 acres managed forest and 1 acre homesite

Plan Prepared By

For Stewardship guidance & tax incentive

Prepared

August 16, 2007

<u>Stewardship Vision</u>: To provide for the health of the forest (including the wildlife that may use it), and inasmuch as activities of an aesthetic nature are compatible with a healthy forest, to provide for our enjoyment of the property, visually and recreationally. Ideally, the forest management plan will provide guidance not only during our ownership of the property (fifty years, give or take), but also to those who may own the property in the future.

TABLE OF CONTENTS:

Forest Stewardship Goals	Page 4
General Property Description	Page 4
Resource Descriptions and Recommendations:	
Forest Health	Page 5
Timber and Wood Products	Page 6
Soils and Slope Stability	Page 7
Water Quality, Riparian and Wetland Areas	Page 8
Fish and Wildlife Habitat Including Sensitive, Threatened and Endangered Species	Page 8
Cultural Resources	Page 9
Aesthetics and Recreation	Page 9
Agro-forestry/Special Forest Products	Page 10
Timeline for Management Practices	Page 11
Maps & Amendments	Appendix
Site Map	Page i
Inventory Survey Plot Locations	Page ii
Aerial Photo of Property	Page iii
Aerial Photo of Property and Vicinity	Page iv
USDA Soil Survey	Page v
King County Sensitive Areas (all categories)	Page vi
King County Sensitive Areas (seismic and erosion hazards)	Page vii

King County Sensitive Areas (water resources)	Page viii
King County Sensitive Areas (wildlife resources)	Page ix
King County Sensitive Areas (flood hazards)	Page x
2007 Amendment for Salvage Harvest	Page xi

FOREST STEWARDSHIP GOALS and OBJECTIVES

- In priority order (highest to lowest):
 - Provide for the health of the forest, to ensure that it survives our ownership, including improving fire safety
 - > Provide conditions to encourage the use of the forest by a wide variety of wildlife
 - > Build and maintain trails, allowing recreational use of the property
 - Engage in forestry activities that will provide for a variety of aesthetic characteristics, from shaded, fern-heavy areas to more open forested meadows
 - Mitigate costs of various forest practices through sale of timber, and through recycling and reuse of forest waste
- Immediate objectives to help us achieve our stewardship goals:
 - > Restore health of southern portion of forest through thinning, which will:
 - Reduce competition, allowing residual trees to become more vigorous
 - Allow crown ratios to gradually increase back to a healthy size
 - o Reduce chance of mortality from root rot or other diseases
 - > Increase forest diversity by planting native species not currently present, or under-represented
 - > Preserve snags where possible, for wildlife
 - > Grind or chip slash left from thinning, to provide for covering trails

GENERAL PROPERTY DESCRIPTION

The property is 20 acres, and is part of the Tolt River Highlands, north of Carnation, WA near Lake Joy. There currently are no roads into the property itself, but there is a gravel access road along the southern border of the property. There are entrances to the Tolt River Highlands to the north at Lake Joy, and to the south from Tolt River Road in Carnation. The property sits on a hill above the Tolt River, but is itself relatively flat with a high point near the middle, sloping gently down to the north, west, and south.

The property is known to have been Weyerhaeuser forestland. It is believed to have been last logged during the 1970's, after which most of the property was replanted with Douglas Fir. It appears that in the northeast corner of the property (approximately 3-4 acres) brush competition was not controlled and the area is dominated by red alder which out-grew and over-topped the conifer. A portion of the remainder of the property, generally the western and northern half to two-thirds appears to have been thinned some time ago, with the remaining southern third or so left un-maintained.

Other than being in need of thinning, the forest appears to be in good condition. There was significant tree-fall during the ice storm of January 2004, primarily affecting the stand of Alder. The only non-native growth identified so far is along the access road. Within the forest, there is a variety of other plant life, including fern, salmon berry, and vine maple. Trees other than Douglas Fir and Alder include Hemlock, Maple, and Cedar.

Neighboring properties currently are undeveloped, for the most part. Across the road to the south, one house has been built and the property around that house has been cleared, perhaps as much as five to ten acres. The property immediately to the west has been thinned but remains forested, as do the un-thinned properties to the north and east. Long term, it is expected that each of the neighboring 20 acre lots will eventually be developed with at least one residence. In the worst case, under current rules, the neighboring properties could be eventually subdivided into 5 acre lots, with up to 50% of each lot being cleared for development.

RESOURCE DESCRIPTIONS and RECOMMENDATIONS

Forest Health

There are three basic stands on the property:

- Stand #1: comprising the southern quarter to third of the property, with an average density of about 300 trees per acre. The trees are primarily Douglas Fir, with a small number of other species throughout (Hemlock, Bitter Cherry, Red Alder, Cottonwood, Vine Maple).
- Stand #2: an area of between three and four acres in the northeast corner of the property, comprising mainly Red Alder and Cottonwood.
- Stand #3: the remainder of the property, comprising a mix of the previously mentioned trees, with less Douglas Fir and more of the other species, especially the hardwoods. Some Bigleaf Maple is also in this stand.

Within each of the stands, the understory is almost entirely common, native species: ferns, mosses, Salmon Berry, Huckleberry, native Bleeding Heart, and Trillium. In areas with more light, the Salmon Berry in particular has dominated. Along the road, some invasive species are trying to establish themselves, primarily Blackberry (Evergreen and Himalayan). Otherwise, the only invasive noted within the forest has been some small Holly seedlings (easily removed when they are found).

There is some evidence of stress, in the form of white sap on some of the trees. At least one conk has been found at the root of a tree within stand #1. Other than that, the trees are in good health, considering how densely spaced they are. No apparent insect infestations or animal damage has been noted. In all areas, as a result of recent wind storms, there has been some wind-throw. Stand #2 has been particularly affected, with much of the Red Alder on the ground now.

<u>Recommendations</u>: The most urgent need is to thin stand #1. Increasing the space between the trees will allow the crown ratio of each remaining tree to slowly recover over time to a healthier level, provide for reduced chances of any root rot present to spread, and will alleviate general stress on the trees that may be hindering their ability to deal with other specific stresses.

Brush control along the road will be important to provide for fire prevention, as well as to remove the invasive species present there. Elsewhere on the property, an activity that may prove helpful is to chip or grind fallen trees and debris left from logging operations, or to at least break up the debris so that it is lying flat on the ground, to aid in decomposition. Some of the larger woody debris should be retained to provide habitat for wildlife, as well as sites for mushrooms and other fungi to grow.

The thinning, as well as encouraging decomposition of woody debris, should significantly reduce the fire danger within the property. The decomposition will help reduce the fuel available for fire, and reduce ladder fuels as well, while the thinning will help by leaving the trees farther apart and generally providing for their health, which will improve their resistance to fire.

Thinning more heavily, and then replacing some of the removed trees with trees of different species will improve the health of the forest, especially if species are chosen that are either generally disease-resistant, or at least share few common threats with the existing Douglas Firs.

Timber and Wood Products

The primary marketable timber on the property is Douglas Fir. As the property was previously a Weyerhaeuser plantation, the Douglas Fir is of uniform age, approximately thirty-five years old as of 2005. In stand #1, where the trees are most densely populated, average diameter at breast-height is approximately 12 inches, with the dominant trees being as large as 18 inches. Tree heights vary, from 70 feet up to 90 feet. Due to repeated wind damage, resulting in broken tops at various times since planting, the quality of the timber is generally not excellent. The worst trees are likely unusable except for pulp. The notable exception to this is that most of the dominants are, of course, in very good condition. With proper management now, a commercial thinning in 15 years could yield some good quality timber from stand #1.

In stands #2 and #3, while there are some marketable trees, it does not appear that they currently exist in high enough quantity to justify a logging operation in those areas. This may change in the future, depending on timber prices, development of access to the northern portions of the property, and future growth of the existing trees. The trees in these stands also appear to be slightly younger than in stand #1, by about five years. This would be consistent with what appears to be slightly different management between the different stands; it's possible that Douglas Fir trees had been planted as densely in stand #3, and possibly even stand #2, but that competing vegetation had not been suppressed, at least not for as long a proportion of the trees' early life. If Weyerhaeuser halted management practices when they decided to sell the property, the older trees in stand #1 would have benefited from suppression practices for a longer time, explaining the generally more homogenous nature of that stand, versus the greater diversity in stands #2 and #3.

Given the apparent lack of pruning of any of the trees since planting, it's not expected that there will be much, if any, "clear" wood harvested.

There is very little in the way of competing vegetation in stand #1. A small number of Cottonwoods (two or three, certainly fewer than six) are shading a similarly small number of Douglas Fir, but those Cottonwoods will probably be removed during the next thinning operation. Even if they are retained, it's likely no Douglas Fir will be kept near enough for them to be a significant issue.

The most significant competitor in stand #3 is Bigleaf Maple, due to its broad crown. There are several Bigleaf Maples in that stand. Some will be kept for aesthetic, diversity, and wildlife reasons, but those that are hindering growth of more desirable trees will likely be removed. It remains to be seen whether this can be done in an economically beneficial manner.

The competitors in stand #2 to the dominant species are actually those that we find aesthetically desirable, mainly Hemlock and Douglas Fir. Given the current lack of economic viability from a timber sales point of view of the Red Alder and Cottonwood in that stand, the competitors will be left alone. For aesthetic reasons, the dominant species may even be removed around the competing species, since doing so would improve the aesthetics and diversity, without significantly affecting the amount of potentially marketable timber in that stand.

<u>Recommendations</u>: In addition to the benefits listed in the Forest Health section, thinning will of course reduce competition between the remaining trees, allowing them to grow more rapidly. This should result in trees of greater diameter at harvest than would otherwise be obtained. By thinning more heavily in areas and then replanting with other marketable species, the possibility of overlapped harvests may be created.

Any harvest should be of a thinning type, rather than clear-cut, so as to preserve the ecological benefits of a maturing forest. After an initial commercial thinning, it's expected that harvests will occur on tento fifteen-year intervals, as a balance between minimizing the number of times a harvest with its accompanying disruption occurs, while not removing too many trees at once (important both for reasons of aesthetics as well as the health of the trees not removed).

Non-merchantable thinned trees and salvaged dead and dying trees may occasionally be harvested for personal firewood use. Low-impact ground equipment and hand methods will be used.

While pruning may still improve the quality of the timber harvested, the trees have grown for so long without any pruning that any improvement is likely to be slight. Other than what will naturally occur during a thinning operation, no pruning is planned.

Soils and Slope Stability

According to information available from the USDA, based on their "Soil Survey report of Snoqualmie Pass Area, Parts of King and Pierce Counties, Washington" issued in 1992, the entire property consists of Tokul gravelly loam, with a slope of less than 6%. Parent material for this soil type is volcanic ash over till. Actual slope on the property ranges from a maximum of 8% down to 2% (as based on King County topographic data). The USDA survey shows the average rooting depth for this type of soil to be between 20 and 40 inches. Permeability, available water, and wind-throw potential are all medium, with high compaction potential for the soil when wet. The 50-year site index for Douglas Fir is 130, putting the property at the high end of site class II.

Erosion potential for this soil is low, but the high compaction potential suggests that low-impact logging equipment should be used. Either tracked equipment or very low-pressure tires should help avoid damaging the soil. Engaging in any significant logging activities during the dry season should also help.

According to a forest management plan prepared by a consulting forester during the feasibility study prior to our purchase of the property, the soil in stand #2 is an "inclusion of a shallower non-hydric soil with an A horizon of silt loam that has a substratum of gravelly silt loam to 20 inches".

<u>Recommendations</u>: As noted, restricting logging activities to the dry season, as well as using low-impact logging equipment, should help avoid the risk of soil compaction. There are no unstable slopes, or other specific soil issues on the property.

The shallower nature of the soil within stand #2 may restrict the types of trees that can be reliably planted there.

Water Quality, Riparian and Wetland Areas

There are no riparian or wetland areas on the property.

<u>Recommendations</u>: With no riparian or wetland areas on the property, no specific measures need to be taken during forestry activities to protect areas of those types. Forest cover provides for infiltration of water into the groundwater table helping maintain water quality and quantity. Improving the health of the forest will promote that watershed function.

Fish and Wildlife Habitat Including Sensitive, Threatened and Endangered Species

There are no known threatened or endangered species that require protection on the property. However, a primary goal of forest management will be to provide appropriate habitat for a variety of wildlife. There are currently many smaller diameter snags on the property, especially in stand #1.

The snags show signs of significant wood-boring bird activity. Few deer have actually been seen on the property, but there is ample evidence of their presence. Nearby properties do include wetlands, and it's assumed that amphibians do on occasion take advantage of wildlife resources on this property.

Other than a number of Cedar stumps and logs left from the original logging of the property, there is little in the way of coarse woody debris, nor is there much potential of creating CWD from the existing trees on the property.

<u>Recommendations</u>: Logging activities should protect snags as much as possible. Almost all of the trees on the property currently are smaller than what might be an ideal size for a snag. However, there may be a handful of Cottonwood trees large enough to warrant topping and turning into snags. Likewise, while smaller than ideal, any Douglas Fir that would otherwise be removed as part of a thinning operation, but which isn't marketable for timber, should be left standing and topped for the creation of a snag, especially where no snag that size or larger already exists in the vicinity. Nesting boxes may be installed around the property, but these will not provide all of the benefits that an actual snag will. All forestry activities should avoid damage to any of the existing coarse woody debris. Most of this CWD is in the form of very large stumps, which are unlikely to suffer any serious damage. But other CWD, large logs lying on the ground for example, should be avoided by any forestry activity, to avoid collapse or breakage of usable habitat.

In addition to preserving and creating snags, variable density thinning should be used to provide for a wider variety of habitat on the property. Most of the thinning will inherently open up the forest to provide habitat and hunting areas for avian predators (e.g. owls). Heavily thinned patches will provide warmer sites for those animals that require or prefer that, as well as increasing the amount of "edge" on the property. Retaining some of the more densely trees areas will retain that type of habitat, affording some protection from predators, as well as better supporting under-story plants that prefer shade (e.g. ferns, mosses). Generally, variable density thinning will allow the property to support a wider variety of under-story plants, and thus of wildlife that depend on those plants.

Finally, different tree species should be planted where possible. This will help improve the vertical structure by creating a more multi-aged forest, while at the same time providing diversity horizontally (see "Forest Health" and "Timber and Wood Products").

Cultural and Historic Resources

Other than possibly the old-growth Cedar stumps and logs, there are no known cultural or historic resources on the property.

<u>Recommendations</u>: All old-growth stumps and logs should be preserved. This is important for wildlife considerations anyway, but these are irreplaceable aesthetic resources. Any forestry activities or development (roads, structures, pastures, etc.) should retain these resources.

Aesthetics and Recreation

Currently, there are no specific recreational resources on the property. However, it is our desire to use the property recreationally, through the development of trails suitable for hiking, cart-pulling by dogs, and mountain bike riding.

<u>Recommendations</u>: Development of skid trails and other activities related to logging should be done with the development of recreational trails in mind. Where possible, access for logging activities should be made where recreational trails would be desired.

Trails should be surfaced with material found on-site where possible. Forestry activities will result in a large amount of slash, which should be chipped or ground into a consistency suitable for covering trails. In certain high-traffic areas, gravel may be warranted, but otherwise chipped or ground slash should be used. In the unlikely event that insufficient debris is available for the maintenance of low-traffic trails, degradable material such as recycled hazelnut shells should be used.

At strategic places along the trails, sites for resting, picnicking, reflection, etc. should be placed. These should exist in locations comprising a variety of characteristics (see "variable density thinning" under "Fish and Wildlife Habitat"), so that use of the sites can suit the mood of the user. Facilities should include, at a minimum, benches or tables and may also include cultivated plants, architectural statues, or even gardens.

Agro-forestry/Special Forest Products

There are currently no plans with respect to special forest products.

<u>Recommendations</u>: While no plans currently exist for this resource, the property does support a variety of potential special forest products, including hanging mosses, mushrooms, and native plants. It would be short-sighted to eliminate these resources, and so any forestry activities should attempt to preserve these resources as much as is feasible.

MANAGEMENT TIMELINE

YEAR	MANAGEMENT PRACTICE	PRIORITY
2005	Thin stand #1 (commercial)	High
2005-2006	Mitigate slash and other fallen wood: reduce through	High
	cutting, compression, and chipping/grinding	
2005-2006	Road-side brush control	Medium
2006-2008	Residential development	High
2006-2010	Plant under-represented tree species (Cedar, Hemlock, Mt.	High
	Ash, "true Firs", Oregon White Oak, or others) in locations	
	suitable for each species	
2006-2010	"Top" snag candidates (especially some larger	Medium
	Cottonwoods)	
2006-2010	Install nesting boxes	Medium
2006-2016	Monitor any planted seedlings, suppress competing	High
	vegetation	
2010	Road-side brush control (and on five year intervals	Medium
	hereafter)	
2010-2020	Evaluate stands #2 and #3 for commercial thinning; either	Medium
	perform commercial thin, or fell trees as necessary and use	
	on-site, depending on what is economically feasible	
2020	Thin stand #1 (commercial)	High
2035	Thin stand #1 (commercial)	High
Ongoing	Monitor tree health across property; take steps if necessary	High
	to prevent health problems from spreading	
Ongoing	Develop and maintain recreational trails	Medium
Ongoing	Monitor for non-native and/or invasive species, removing	Medium
	if necessary	

FOREST STEWARDSHIP PLAN SIGNATURE PAGE

PLAN PREPARED BY (Primary author, if more than one):

Signature	
Name	Plan Preparer Is:
Landowner Title n/a	 Private Natural Resources Professional Agency Representative Landowner who completed Coached Planning Course
Agency/Company	Landowner who is a Natural Resources Professional
Address	

Phone

List other professionals, and their affiliations, who contributed to this plan. If this was a "Coached Plan", list natural resource professionals who serve as "coaches".

LANDOWNER SIGNATURE: The contents of this plan are acceptable to me/us. I/we intend to manage this property in a manner consistent with the objectives of the Forest Stewardship Program and to implement this plan to the best of my/our ability.

Landowner signature(s)

Date

Print Landowner Name(s)

APPROVAL SIGNATURE:

I have reviewed this plan and approve it as meeting the standards for a Forest Stewardship Plan.

Signature of Agency Representative

Print Name of Agency Representative

Title

Agency

Address

Phone

Date

Date



Inventory Survey Plot Locations (approximate)

50 '

Live Tree Densities (as of June 1, 2005)

Dist	Tuess new seve
PIOT	Trees per acre
1	320
2	250
3	280
4	320
5	230
6	210
7	230
8	240
9	290
10	160
11	180



Aerial Photo of Property



Aerial Photo of Property and Vicinity



USDA Soil Survey



- 11 Barneston Gravelly Coarse Sandy Loam, 6% to 30% slopes
- 13 Barneston Gravelly Sandy Loam, 0% to 8% slopes
- 14 Barneston Gravelly Sandy Loam, 8% to 30% slopes
- 15 Barneston Gravelly Sandy Loam, 30% to 65% slopes
- 53 Edgewick Silt Loam, 0% to 3% slopes
- 140 Mukilteo Peat, 0% to 1% slopes
- 187 Pilchuck Loamy Fine Sand, 0% to 3% slopes
- 215 riverwash
- 216 Rober Loam, 0% to 30% slopes
- 217 Rober Loam, 30% to 65% slopes

- 231 Seattle Muck, 0% to 1% slopes
- 241 Snoqualmie Loamy Fine Sand, 0% to 8% slopes
- 254 Tokul Gravelly Loam, 0% to 6% slopes
- 255 Tokul Gravelly Loam, 6% to 15% slopes
- 256 Tokul Gravelly Loam, 15% to 30% slopes 257 Tokul Gravelly Loam, 30% to 65% slopes
- 257 Tokul Gravely Loan, 50% to 55% slopes 258 Tokul-Pastik Complex, Windswept, 45% to 90% slopes
- 258 local astronomy and the second states an
- 285 water

King County Sensitive Areas (all categories)



King County Sensitive Areas (seismic and erosion hazards)



King County Sensitive Areas (water resources)



King County Sensitive Areas (wildlife resources)



County Boundary

Parcels

1...*

Wildlife Network

Chinook Distribution

King County Sensitive Areas (flood hazards)



2007 Amendment for Salvage Harvest

From: "Peter Duniho" <peted@nwlink.com>

- Subject: Forest Management Plan Amendment
 - Date: February 28, 2007 9:45:30 PM PST
 - To: "Kristi Mcclelland" <Kristi.McClelland@METROKC.GOV>

Please find enclosed an amendment to the forest management plan for Peter Duniho & Debra Tan, tax lot #0225079020 (I think that's right...lot 74 of the Tolt River Highlands).

While the current plan has no further intensive management activities scheduled for roughly another decade, due to the severe windstorm of December 15th, 2006 we find a need to address the following issues:

- * Potential economic losses of timber downed in the windstorm
- * Increased fire hazard due to downed timber
- * Increased pest hazard (bark beetle) due to downed timber
- * Possibly even increased disease hazard, due to downed timber
- * Loss of forest density and excessive gaps

The first four of these issues are to be addressed by doing a salvage harvest. The salvage harvest will remove all uprooted Douglas fir trees (those on the ground as well as those leaning or hanging on other trees) that are found within the management areas of the property. We may also remove some trees from the future home site for personal use, but less than 5000 board feet in that case.

The last issue, representing the actual loss of live trees (as opposed to the presence of excessive dead trees), will be addressed through restocking. We will interplant western red cedar and hemlock as necessary to bring the tree density back to a goal of 140 trees per acre, higher as is practical in the areas where we originally targeted 200+ TPA (in those areas, density after restocking will be as high as 160 TPA).

The salvage harvest will occur as soon as possible (most likely completed by the end of April 2007), in order to ensure maximum recovery of economic losses. The restocking will occur over the next twelve to eighteen months, based on our ability to accurately inventory the remaining stock, identify exactly how much restocking needs to occur in different areas on the property, and to find an appropriate time to plant.