

RAGING RIVER NATURAL AREA

(Leong Property)

FOREST STEWARDSHIP PLAN

Property Location

52.5 acres on the east side of Raging River, 2.3 miles south of the Snoqualmie River Bridge in Fall City.

Legal Description

King County, WA

Portion NW¼ Sec. 27, T24N, R7E and Portion E½ Sec. 28, T24N, R7E

Additional legal(s) on: Assessor's Tax Parcel ID#: 272407-9024-07, 272407-9028-03, 282407-9025-08, 282407-9032-06 (See Also Attachment A)

Plan Prepared By

King County Resource Professionals:

Bill Loeber, Forester

Kirk Anderson, WRIA 7 Basin Steward

Tom Eksten, Trails Coordinator

Chuck Lennox, Interpretive Programs Coordinator

March 2001

Forest Legacy Program Acquisition

This Forest Stewardship Plan is being prepared to comply with the grant requirements of the US Forest Service Forest Legacy Program. Forest Legacy funds were used to purchase the development rights from the portion of the property referred to as the “Forest Conservation Easement ” in the legal description and on the property map. However, in order to develop appropriate resource management strategies, King County felt the plan should cover all parcels within the site. Consistent with the requirements of the Forest Legacy Program, a conservation easement is recorded on the property concurrent with the acquisition of the development rights.

Any revision to the Forest Stewardship Plan would need to be consistent with the purposes and requirements of the Forest Legacy Program and approved by the Washington State Department of Natural Resources.

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Forest Stewardship Vision Statement

This property was targeted for public acquisition based on its ecological value as riparian habitat for fish and wildlife. The primary intention in managing this property is to maintain and improve the prime habitat along the east side of the Raging River. Any resource management activities undertaken within the riparian area or the forested uplands will restore, enhance, or protect the habitat values of the riparian area. Resource management activities will be designed to conserve and encourage intrinsic natural cycles and biodiversity.

DESCRIPTION OF LANDOWNER OBJECTIVES

- ◆ Manage for natural river-floodplain interactions on site.
- ◆ Encourage the development of a mature riparian area dominated by native vegetation, extending at least 300 feet from the river's edge.
- ◆ Retain wetland characteristics and functions.
- ◆ Maintain and improve terrestrial and aquatic wildlife habitat across the site.
- ◆ Maintain and improve forest health.
- ◆ Identify, map and delineate sensitive areas on-site prior to any management activities.
- ◆ Retain as a forested environment to ensure that water quantity and quality are protected.
- ◆ Undertake management practices that will accelerate the development of forest structure, and biodiversity, and increase the coniferous component of the forest stand.
- ◆ Provide trail access into the site with connections to adjacent public lands

HISTORY OF THE PROPERTY

The historic land use of the property has been timber production. The property has been logged approximately three times in the past 100 years. The initial harvesting of the old growth timber was not a clear-cut based on today's definition. Early logging efforts removed just the most economically valuable stems based on markets of that era. Deciduous species, Western red cedar (*Thuja plicata*) and Western hemlock (*Tsuga heterophylla*) were not harvested. Based on increment cores, there was subsequent harvesting of second-growth timber in the central and southern parts of the property during the mid 1940s or early 1950s. The most recent cutting occurred approximately 25 years ago (1975). That operation removed mostly Douglas fir (*Pseudotsuga menziesii*), and a small amount of Western red cedar (*T. plicata*). All of these operations used ground based skidding methods as evidenced by the network of old skid trails. These cutting practices have resulted in generally two different vegetation types (See Forest Resources). Management activities will be differentiated by those occurring in the riparian zone and the upland forests.

There are some signs of past fire on the site, but this is probably the result of slash burning, and not a result of wildfire.

In the past few years there have been quite a few new residences built on the slopes upland from the parcel. If land clearing for development accelerates, and residential density increases, there may be a negative impact on slope stability due to changes in hydrology. Land clearing and changes to natural drainage patterns may have a negative impact on the unstable slopes of the Natural Area.

TOPOGRAPHY

The topography on the ownership varies from gentle slopes along the Raging River to moderately steep slopes in the Southern and Eastern areas of the property. The elevations vary from +/- 260 feet to +/- 600 feet above sea level. The highest elevations are found on the south end of the parcel and the lower elevations are found in the north end along the Raging River. There are areas of forested wetland in the northwest area of the property. These wet lowland soils quickly transition into more upland sites as the topography rises onto steeper and slightly better drained soils. These upland sites contain unstable slopes as described under the section on Sensitive Areas. From the north end of the property to the south, the terrain is fairly undulating due to the presence of at least four drainages.

The primary surface water resource is approximately 3500 feet of frontage on the Raging River. There are 4 class II streams draining the property from east to west. A wetlands reconnaissance report indicates that there are three class two wetlands on the property. In addition to these forested wetlands, there are abundant seeps and springs throughout the property. In the southern regions of the property these seeps are so abundant that they limit travel on foot. The steeper slopes in combination with the hydrology and geology are a major impediment to forest management and recreational development.

SURROUNDING LAND USE / ADJACENT OWNERSHIP

This property is zoned RA-10 and is located in the Mitchell Hill/ Preston Rural Forest Focus Area as designated by the 2000 King County Comprehensive Plan. To the south and northeast is forestland owned and managed by Washington Department of Natural Resources (WADNR). The adjacency of this State forestland provides a cohesiveness that will help maintain the hydrologic and biologic functions of the area consistent with the larger landscape vision of forest production and rural forest districts. To the west are numerous small residential parcels on the west side of the Raging River. Directly adjacent to the north are a couple of small residential parcels and a 10-acre, privately owned parcel managed for forestry or supporting forest cover. There is a 30 acre forested parcel abutting along on the southeast boundary along with 3 other small residential lots of approximately five acres. Access to these properties is from the Lake Alice Road.

The primary access to the property is from SE 68th Street. There is an old skid trail, which was used, in previous logging operations. It is unsuited for use in its current state, and given the presence of wetlands and the unstable slopes, it should be permanently decommissioned. With some improvements and minor realignment, it could serve well as the basis for a foot trail.

RESOURCE DESCRIPTIONS

Wildlife

The property is adjacent to one of King Counties designated wildlife habitat corridors. This corridor, which follows the Raging River, applies to 150 feet of the property. The suggested activities in this plan will not negatively impact wildlife habitat. Conversely, the property is being purchased to protect aquatic habitat and protect water quality. The acquisition of this parcel helps provide a wildlife corridor between larger forested parcels in the South such as Tiger Mountain and the upper Raging River Basin and the East Side of the Snoqualmie Valley watershed to the north.

Aquatic Habitat

The Raging River is an important subbasin within the Snohomish Basin. Historically, the Raging River provided high quality spawning habitat for large populations of five anadromous Pacific Northwest salmonid species (chinook salmon, steelhead, coho salmon, pink salmon, and chum salmon). The lower six miles of the Raging River is one of four primary spawning areas for Snohomish Fall Chinook, one of the stocks included in the Puget Sound Chinook Salmon Ecologically Significant Unit listed as threatened by the National Marine Fisheries Service. Little undisturbed habitat remains in this significant segment of the basin, or in the basin as whole, as a result of residential development and resource extraction. Unmodified streambanks and densely vegetated stream corridors, such as those present on the Raging River Natural Area, play an important role in maintaining the ecological processes that create and maintain healthy habitat.

Retaining a high percentage of forest cover on the property is important for the protection of aquatic resources. Forests play a major role in stabilizing steep slopes and regulating the delivery of water to streams. A goal of no less than 90% effective forest coverage at all times would be a good management approach on this particular site. Retaining this 90% cover standard would minimize any alterations to the hydrological maturity of the site. Current conditions appear to meet this standard and should be monitored and maintained by no substantial clearing of more than six acres at any given time.

The Class II wetlands on the site provide prime habitat for species such as waterfowl amphibians, and mollusks. The maturing forest cover in the riparian zone is critically important to salmonid populations at this time.

Terrestrial Habitats

Elk and deer migrate east and west through the property. In addition, evidence of squirrels, bear mountain beaver and numerous birds were observed on site.

The forest habitat is fairly characteristic of an unmanaged, naturally reproduced, second growth stand. Though even-aged alder (*A. rubra*) dominates the site, there is some canopy layer differentiation due to the presence of conifers. The primary concentration of conifers is in the Northeastern quadrant of the parcel. This area of advanced second growth timber will soon begin to provide some of the ecological functions of old growth forests.

The ground vegetation contains the following desirable plant species, which are beneficial to a variety of wildlife species. Sword fern (*Polystichum munitum*) provides cover for ground-dwelling mammals, and browse for deer and elk. Salmonberry (*Rubus spectabilis*) provides food and cover for deer, elk, bear, birds (especially hummingbirds), bees, butterflies, and small mammals. Red-flowering currant (*Ribes sanguineum*) berries provide a food source for birds, small mammals, deer and elk. Red elderberry (*Sambucus racemosa*) provides browse for deer and elk and the berries are eaten by numerous birds and mammals. Vine maple (*Acer circinatum*) provides browse for deer and elk, and cover for deer, elk, birds, and small mammals. Oregon grape (*Berberis nervosa*) fruits are eaten by many birds and mammals.

There is a shortage of snags especially in the areas of young alder (*A. rubra*). Alder (*A. rubra*), maple (*Acer macrophyllum*) and cottonwood (*P. trichocarpa*) have rapid rates of decay, which makes them less desirable as snags. There are some scattered cedar (*T. plicata*) snags in the northeastern areas of the property, but it would be desirable to supplement them in the future.

Sensitive Areas

The King County Sensitive Area Folio maps all of the property as an erosion hazard area as well as a landslide hazard area. The erosion hazard area is based on soil survey types and slope classifications. Field observations validate this for most of the property. There is ample evidence of soil movement in the form of soil slumping, soil cracks (deep seated slide), and abundant seeps. The slopes uphill of the wetland areas are the most susceptible to slide or slumping activity. Given the unstable slopes, natural resource management activities could impact the soil resources of the site.

A wetlands reconnaissance report indicates that there are three class two wetlands on the property. These are forested wetlands with the exception of a couple of very small areas of open standing water. These wetlands are located at the toe of the slope on a bench just above the river. They are fed by both surface and ground water. The major tree species that occur here are Red alder (*A. rubra*), Black cottonwood (*P. trichocarpa*), Western red cedar (*T. plicata*), and Willow (*Salix spp.*) Wetland plants present include horsetails (*Equisetum spp.*), skunk cabbage (*Lysichitum americanum*), and devils club (*Oplonanex horridum*). These wetlands limit the feasibility of forestry and recreational activities.

Forest Resources

Current forest cover on the property is mostly even-aged resulting from natural regeneration. These conditions are a direct result of the past logging practices that are described under **History**. The predominant tree species present in order of occurrence are Red alder (*A. rubra*), Big Leaf maple

(*A. macrophyllum*), Western Red cedar (*T. plicata*), Western hemlock (*T. heterophylla*), and Black cottonwood (*P. trichocarpa*). The percent of these various species present varies depending on hydrology, soils, and extent of past logging practices. The ownership's site quality is good for the growth of Western red cedar (*T. plicata*), Sitka spruce (*Picea sitchensis*), and Red alder (*A. rubra*) and fair for Douglas fir (*P. menziessii*). This site quality is lessened on those areas of saturated soils.

The timing and type of harvesting has resulted in 2 different types of stands. Harvesting done about 100 years ago was based solely on an economic decision model. In other words, trees harvested were selected based on their marketability. At that time there was no market for Western red cedar (*T. plicata*) or maple (*A. macrophyllum*) and alder (*A. rubra*). There are approximately 5-10 acres of residual stands from these initial harvests located in the Northeast quadrant of the property. The main residual stems are scattered, maturing Western Red cedar (*T. plicata*). Given their large diameters it was not possible to obtain age information from increment borings. This area was cut again about 55-60 years ago (1940). The mature Big Leaf maple (*A. macrophyllum*), and Red alder (*A. rubra*) present regenerated as a result of these second stands. This area of the property is uneven aged as there are at least 3 age classes present. This stand is atypical of the rest of the property as it is entering a late successional stage. This stand provides a diverse ecological contrast to the alder areas described below. The conifer stems present are healthy based upon external indicators. There are a low number of coniferous snags.

The other two thirds of the property is occupied by red alder (*A. rubra*), which is approximately 25 years old (based on increment borings). This stand is a result of an economic clear-cut that means all marketable trees were harvested. There was not any replanting done following this cutting. This has resulted in mostly pure stands of red alder (*A. rubra*). There are some patches of approximately 60-year-old hemlock (*T. heterophylla*), Western Red cedar (*T. plicata*), and Big Leaf maple (*A.*

macrophyllum) that were not considered merchantable in previous harvesting operations. The mean stand diameter is approximately 9 inches at D.B.H. This area includes areas of upland forest as well as forested wetlands and the riparian zone along the Raging River. Even on the upper slopes of the alder (*A. rubra*) areas, there are many seeps that prohibit the use of ground based forestry equipment. Red alder (*A. rubra*) has a very rapid juvenile growth rate, but if unmanaged past the age of 15 years old rapidly reaches a suppressed rate of growth. The alder has reached this state on the property, and will remain in a stagnant state unless efforts are under taken to accelerate natural succession.

The forest cover composition in the riparian area is quite variable, and the stocking/density differs based on the hydrological events. Some areas contain Black cottonwood and Red alder (*A. rubra*). Other areas have these same deciduous species but also have Western hemlock (*Tsuga heterophylla*), Western Red cedar (*T. plicata*) and Sitka spruce (*Picea sitchensis*).

Recreational Resources

The subject property is located immediately adjacent to a section of the Preston-Snoqualmie Regional Trail while also lying adjacent to other parcels of public land. As such, this site could offer an adjunct trail system and connection to the regional trail. Many of the resources described above are the source or reason that many people may wish to walk such a site. Besides walking for the physical exercise, trail users have a wish to explore, learn, and be connected to the resource, not to mention the simple pleasure of “walking in the woods”. This site is attractive for all of those reasons as well as having an existing base of old grades and skid roads that could be converted to trail use.

RESOURCE MANAGEMENT RECOMMENDATIONS

Wildlife Habitat Recommendations

Aquatic

Past harvesting has resulted in a higher percentage of Red Alder (*A. rubra*) over the property than historically present. The primary forestry activity that will improve the habitat of the riparian zone is under planting to increase the coniferous component. The establishment of Red Cedar (*T. plicata*) or Sitka spruce (*Picea sitchensis*) within the riparian zone will also provide for future recruitment of large woody debris which contributes to habitat structure in fish bearing waters as well as mitigating and metering silt movement through stream systems. It may be necessary to remove some of the alder (*A. rubra*) or other competing vegetation to successfully establish Red Cedar (*T. plicata*) or Sitka spruce (*Picea sitchensis*). Given the water and wildlife related objectives of this plan, accelerating the succession of native conifers is a desirable goal.

There are areas in the north end of the property (along the old access road) that provide an example of where Western red cedar (*T. plicata*) has naturally regenerated in partial shade. This area of the property illustrates the natural stand conditions we strive to mimic through Cedar (*T. plicata*) under planting.

Terrestrial

Most animal species present or utilizing the property will benefit from a more diverse stand structure. Stand structure refers to the distribution of live and dead trees in both the vertical and horizontal communities. Most upland areas of Red alder (*A. rubra*) are currently too young to consider under planting unless some of the alder (*A. rubra*) is cut. Under planting is most successful when the alder (*A. rubra*) overstory is beginning to die naturally. Under planting with conifer species at this age would result in a high rate of mortality of the planted stems. It would be beneficial to convert these alder (*A. rubra*) stands to conifer in stages over time. Using a staged management approach such as this has the benefit of establishing a diverse, multi-age stand with multi-layered canopy cover. Obviously this approach will incur more cost than letting natural succession processes take their course.

The crown condition and natural mortality of the alder (*A. rubra*) stems should be monitored. Normally this species lives to about 70 years, but given the presence of seeps, the alder (*A. rubra*) will probably begin declining at age of 45-50 years (approximately 15 years). At that time the site should be evaluated for the under planting of upland areas of the property. The existing east-west wildlife habitat travel lanes should be maintained across the site. Deer and elk use these routes as a local connector between upland forest habitat and the riparian habitat of the Raging River. Any activities discussed in this forest stewardship plan should include appropriate mitigation for potential impacts to the wildlife habitat network.

Forest Recommendations

Recommendations for specific silvicultural activities are described under the Wildlife Habitat Recommendations above.

Passive Recreational Recommendations

Because this site is primarily a resource-based site, recommendations for recreation use should not unduly impact that resource. Therefore, this site should be limited to improved hiking trails with no greater than a 3 foot wide tread base, and clearing limits of 8 feet in height and 3 feet in width on either side of the trail centerline.

Although minimal in scope, the site has an existing network of skid roads and grades that could serve as the base alignment for the trails. . They extend from the northwest corner of the property to the SE corner, with an extension to the south central portion of the site. In doing so, it makes a direct connection with the public lands to the south. The existing grade's alignment is such that it takes trail users away from the river without depriving them of the view and sounds of the river. By subtly channeling users away from the river, that resource will be better protected from undue encroachment by hikers. The existing grades may serve well as trails with little more than minor clearing of encroaching vegetation. Small sections of the grades may need to be realigned due to erosive drainage that has seriously degraded sections of the grade. Interpretive signage or features (self-guided nature trail) along these trails might be considered for future.

The primary means of access for trail users will be the Preston-Snoqualmie Trail. However, some provision could be made for limited drive-to access. The shoulder of SE 68th Street could be widened to provide parking for three to five vehicles. It is likely that most of the parking would be within the road right-of-way, minimally affecting the property itself. Appropriate barriers should be placed in the parking area to prevent any vehicular access to the site. This area currently experiences minor dumping and any parking should be designed to help eliminate this activity. Signs could be installed identifying the site, describing site's resources, purpose of acquisition and establishing rules regarding public use of the site.

Appendix A

LEGAL DESCRIPTION

PARCEL A:

The North half of the West half of the West half of the Southwest quarter of the Northwest quarter of Section 27, Township 24 North, Range 7 East, W.M., in King County, Washington;

EXCEPT that portion lying West of the Raging River;

AND that portion of the North half of the East half of the East half of the Southeast quarter of the Northeast quarter of Section 28, Township 24 North, Range 7 East, W.M., in King County, Washington, lying East of Raging River;

EXCEPT County roads;

AND EXCEPT Sunset Highway.

PARCEL B:

The North half of the South half of the West one-quarter of the Southwest quarter of the Northwest quarter of Section 27;

AND that portion of the North half of the South half of the East half of the East half of the Southeast quarter of the Northeast quarter of Section 28, lying East of the Raging River; in Township 24 North, Range 7 East, W.M., in King County, Washington.

PARCEL C:

Portion of the South half of the South half of the Southeast quarter of the Northeast quarter, lying East of the Raging River;

AND that portion of the Northeast quarter of the Southeast quarter, lying East of the Raging River;

EXCEPT the east 456.94 feet of the South 1000 feet of said Northeast quarter of the Southeast quarter;

ALL in Section 28, Township 24 North, Range 7 East, W.M., in King County, Washington.

PARCEL D:

An easement for road purposes over a strip of land 60.0 feet wide, the centerline described as follows:

Beginning at a point 60.00 feet North and 245 37 feet East of the Northwest corner of the Southwest quarter of the Northwest quarter of Section 27, Township 24 North, Range 7 East, W.M., in King County, Washington;

Thence on a deflection angle to the right of $108^{\circ}24'00''$ a distance of 224.80 feet to the beginning of a tangent curve to the left, having a radius of 125.37 feet;

Thence Southerly through a central angle of $43^{\circ}16'00''$ an arc distance of 94.82 feet.

Appendix B

MANAGEMENT TIMETABLE

YEAR	MANAGEMENT ACTIVITY	PRIORITY
2002-2007	Initiate the under planting of Western Red Cedar (<i>T. plicata</i>) and Sitka Spruce (<i>P. sitchensis</i>) in the riparian zone to provide a future source of large woody debris.	1
2006	Evaluate the economic resources available for conversion of Red Alder areas to Western Red Cedar (<i>T. plicata</i>) and Douglas Fir (<i>P. menziessii</i>). This treatment will be an expense as the unstable slopes limit the feasibility of extracting timber products. If deemed feasible initiate the under planting of Western Red Cedar (<i>T. plicata</i>) in wet areas to be followed by the partial removal of Alder overstory 5-10 years after successful regeneration of Cedar. On the drier upland soils, small patch cuts of 1/20 th to 1/10 th of an acre should be made in order to provide sufficient light to establish desirable conditions for planting Douglas Fir.	2
2006	Evaluate the property with King County Wildlife Biologist. Determine the adequacy of snags and down dead logs. If biologist deems necessary, initiate efforts to create these important wildlife habitat structures. It will be necessary to secure a funding source for these treatments.	3
2002	Develop a trail location map which delineates desired trail network, including old trails to be abandoned. This will include the location of necessary re-routes. and relocation plan	4
2003	Develop a trail maintenance plan based on the above map. Implement to the standards stipulated in this plan.	5

Appendix C

SITE MAP AND PHOTOS



Riparian zone along Raging River.



Alder snags in riparian zone.



Advanced second growth conifer in northeastern area of property.



Hemlock, Cedar and Douglas fir snag.



Young alder in northwest area of the property.