

# Forest Stewardship Management Plan

December 8, 2012 revised

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**Landowner:**

WA

**Property Location and Legal Description:**

Total Plot: 8 Acres  
Forest Plan: 6 Acres

Parcel:  
Section , Township , Range

**Plan Preparer:**

Landowner

**Assisted by:**

Kristi McClelland, Forester  
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<http://www.kingcount.gov/environment/waterandland/forstry.aspx>

## **II. TABLE OF CONTENTS**

- I. COVER PAGE**
- II. TABLE OF CONTENTS**
- III. LANDOWNERS OBJECTIVES**
- IV. INTRODUCTORY OVERVIEW OF THE PROPERTY**
- V. RESOURCE DESCRIPTIONS AND MANAGEMENT PRACTICES**
  - 1. Forest Health/Wildfire/Invasive Species
  - 2. Soils
  - 3. Water Quality/Riparian and Fish Habitat/Wetlands
  - 4. Forest Inventory/Timber/Wood Products
  - 5. Property Access/Roads and Trails
  - 6. Wildlife
  - 7. Protection of Special Resources
  - 8. Aesthetics and Recreation
- VI. MANAGEMENT PLAN IMPLEMENTATION TIMETABLE**
- VII. AERIAL PHOTO(S)/PROPERTY MAP(S)**
- VIII. LANDOWNER SIGNATURE**



# Forest Stewardship Management Plan

December 8, 2012 revised

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## III. LANDOWNER OBJECTIVES

The overall vision for this property is to restore the forests, wetlands and prairie meadowlands to sustainable native species for their aesthetic values, wildlife habitat, passive recreational use and education.

### **Long term objectives in order of priority:**

- Manage property to ensure long-term forest, wetland and meadow health.
- Promote biodiversity of forest, including understory, wetlands and meadows emphasizing native plants.
- Maintain and encourage a healthy and diverse wildlife habitat.
- Restore logged and grazed areas to mixed forest, native meadows and non-timber wild edibles.
- Restore ponds and streambed or soil, water and amphibian health
- Create trails through the property for forest monitoring, personal enjoyment and education.

### **Near-term objectives: (<10 years) in order of priority**

- Restore forest health and diversity by removal, control, and monitoring of invasive species, including broom, holly, ivy, tansy ragwort and blackberries in Stand 2.
- Increase forest diversity by re-planting conifers, including western red cedar, western white pine and shoreline pine, in stand 2 plus hardwoods such as big leaf maple, vine maple, and garry oak.
- Encourage and plant a diversity of native understory shrubs in Stand 2 for invasive species control, wildlife use, edible special forest products, privacy screen, and aesthetics.
- Add hedgerow along \_\_\_\_\_ between stands 1 and 2 as transition to forests to provide wildlife habitat and privacy screen
- Restore forest health and diversity by removal, control, and monitoring of invasive species, including broom, holly, ivy, tansy ragwort and blackberries in Stand 1.
- Increase forest diversity by re-planting conifers, including western red cedar, western white pine and shoreline pine, in stand 1 plus hardwoods such as big leaf maple, vine maple, and garry oak.
- Encourage and plant a diversity of native understory shrubs in Stand 1 for invasive species control, wildlife use, edible special forest products, privacy screen, and aesthetics
- Add hedgerow along western and northwest border between neighbor and our property bordering stand 2 as transition to forests to provide wildlife habitat and privacy screen.

## Forest Stewardship Management Plan

December 8, 2012 revised

---

- Improve and maintain wetlands, seasonal stream channel, and pond areas through control and removal of invasive species and restorative native plantings such as red osier dogwood, beaked hazel, Oregon grape, huckleberries and trailing blackberries.
- Establish trails for monitoring forest health and personal enjoyment of forest and meadows as well as to aid educational tours
- Add hedgerow transition from west side of ponds to forest stands to provide wildlife habitat and privacy screen
- Control, remove and monitor invasive species including broom, holly, tansy ragwort in pasture.
- Convert pasture to native plants and grasses including addition of camas.
- Attract a diversity of birdlife to the property, especially raptors, owls, woodpeckers, ducks, game and songbirds. Possibly introduce game birds as meadowland is renewed.
- Remove and control invasives and replant conifers and some hardwoods and understory in Stand 3 for diversity.
- Selectively harvest both timber and non-timber forest products for personal use.

### IV. INTRODUCTORY OVERVIEW OF THE PROPERTY

This property is located about \_\_\_\_\_ miles northwest of the town of \_\_\_\_\_. It is accessed from paved \_\_\_\_\_ on the north via a graveled driveway which runs south along the eastern property line. The forest stands and mostly same age Douglas fir and western red alder with some hemlock and madrone. The forest is generally healthy but has pockets of root rot.

The property abutting the drive on the east is residential with a single row of Douglas fir and mixed underbrush with a 6 foot berm further east with open space and a few alder. Resident landowners to the south have a timber management plan for their mixed forests of alder, hemlock, madrone and fir bordering our shared property line. Furthest west property is bordered at the south end by a Douglas fir stand with open space further west. The remaining western property is a mixed forest predominately Douglas fir about one acre in size abutting a residential back yard with an ATV dirt course throughout.

Our home sits on the highest elevation of the eight acres along the east boundary, which gently slopes toward a small seasonal pond on the south of the property which is fed by a larger man-made seasonal pond in the

## Forest Stewardship Management Plan

December 8, 2012 revised

---

northwest portion of the property via a seasonal stream bed which connects the two. The land rises slightly on the west which comprises the largest forest stand of mostly Douglas fir mixed with some, alder and hemlock.

The land, prior to our purchase in 1986, had been harvested of all cedar and most of the fir, then fenced and used for cattle grazing. Since purchase, we have maintained the pasture lands on occasion for horses and goats, and allowed the forests to develop naturally unhampered and unmaintained.

The topography is primarily gently west sloping from the eastern border and a lesser east sloping from the west, into the two ponds and stream bed.

The region, including this property is primarily glacial till with some glacial outwash.

## V. RESOURCE DESCRIPTIONS AND MANAGEMENT PRACTICES

### CATEGORY I – FOREST HEALTH/WILDFIRE/INVASIVE SPECIES

#### Stand 1 – Mixed Douglas Fir

##### Conditions

Stand is predominately Douglas fir mixed with some hemlock and red alder. Doug fir diameters are 14-30 inches with variable spacing. Large trees have good spacing between them while smaller diameters are more closely clustered. This naturally seeded stand holds 70-90 trees per acre.

The stand is on a flat rise west of a seasonal Ns stream with a seasonal man-made pond and wetland south of it and a larger man-made seasonal pond to the north. The stand can be accessed over pasture land by circumventing the north pond or across the stream bed to the south when dry, during summer and fall.

This stand has suffered from past bark beetle invasions. Downed trees show evidence of laminated root rot. There are 3-4 Douglas fir standing trees with broken tops from a common event, possibly wind damage, occurring about 25 years ago. There is a circle of about six standing snags which appear to have died from a common event, possibly bark beetle invasion. This brush pocket allows light into the stand and has created a dense understory including invasive ivy, holly, some broom, Himalayan blackberry and spurge laurel. Salal and some broom occupy the edges.

##### Management Practices

This stand needs invasive removal, control and ongoing monitoring. Following that, analysis of amount of filtered light will dictate replanting with red cedar, western white pine and a few hardwoods. Reforestation



## Forest Stewardship Management Plan

December 8, 2012 revised

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with diverse resistant species will reduce chances of pine beetle and root rot. Annual monitoring for new infestations should be undertaken. Old barbed wire fencing surrounds the area which is a hazard to wildlife and humans and needs to be rolled and removed.

The south end of this stand opens onto a pasture sloping south into a seasonal pond and stands open to the neighbors who use their property for recreational motorized vehicles. This area would benefit from restoration of forest including western red cedar and white and shore pine. In addition, a hedgerow buffer will be planted to feather into a conversion of the existing pastureland to a traditional native meadow of camas (a cultural artifact) and native grasses, a few garry oak, and wildlife forage crops. Since historical native control by fire is not practical, a once per year mowing and ongoing scotch broom removal will help maintain the area. The pond area will be planted with native plants and shrubs, such as beaked hazel, osier berry, and evergreen huckleberry to protect water quality and benefit wildlife by providing food, water and shelter. Large woody debris will be placed in this wetland area as well.

### **Wildfire Control**

The absence of ground fuels and existence of pastureland surrounding this stand make fires an unlikely hazard.

### **Stand 2 – East Red Alder**

#### **Conditions**

This stand is a declining forest of red alder with some Douglas fir and madrone of same age 40-50 year old trees with a few sapling western red cedar. Approximately six or more alder per year fall or break off providing some woody debris along with brush piles from collected downed limbs. These provide habitat for newts, tree frogs, salamanders and other wildlife. This stand sits on the NE section of the property and is the highest elevation on the property with a slight slope to the west draining into the north pond area. It is exposed to a county road on the north and access road/driveway on the east.

The understory is comprised of sword fern, trailing blackberries, Indian plumb, vine maple, evergreen huckleberries, as well as invasives of Himalayan blackberries, ivy and holly.

#### **Management Practices**

This stand needs invasive removal, control and monitoring. Restoration to a sustainable mixed forest can be accomplished by switching out the alders to conifers by patch cuts, planting red cedar, a few Doug fir with big leaf maple, western white pine and shore pine. Understory could benefit from addition of evergreen huckleberries and other native shrubs. Addition of brush piles will aid wildlife and invasive control.

The creation of a hedgerow along the north property line would provide wildlife habitat as well as buffer the forest from the road and provide a privacy screen. This stand could feather into another native meadow leading down to the pond by converting the existing pasture to a traditional native camas and native species meadow. The area around the pond and streambed could be replanted with native shrubs and plants to enhance water quality, provide food and shelter for wildlife, and provide a corridor transition to the forest.

# Forest Stewardship Management Plan

December 8, 2012 revised

---

## Wildfire

There is little ground fuel. The stand is bordered on two sides by roads, the west a pasture, and the south by over 30 feet of defensible permeable driveway between the forest and home. Wildfire danger is low.

## Stand 3 – South Mixed Alder and Douglas fir

### Conditions

This is an open stand of same age alder, Doug fir, some hemlock and madrone. It receives a lot of light and has 90% ground cover, mostly sword fern with some Himalayan blackberries. It borders the southern neighbor's mixed stand of alder, Doug fir and cedar. The southwest corner of this stand is a forested wetland. The stand straddles some slightly higher elevation and gently north sloping land down to the seasonal pond.

### Management Practices

This stand will need some invasive control and monitoring. It can be converted from mostly alder to a sustainable mixed conifer and hardwood stand by replanting. Alders will be removed for firewood over time and left to naturally decay creating large woody debris which can benefit wildlife. Downed trees will be left in place. Understory and edges of this stand will be planted with a diversity of shrubs and other native plants that can provide food and shelter for wildlife.

## Wildfire

Two sides of this stand are bordered by open pastureland while the other two sides meet the neighbor's forest stands of mostly Douglas fir. This is a damp area for most of the year and wildfire risk appears low.

## **CATEGORY II – SOILS**

### Conditions

Our property sits at 405 feet elevation on an island that receives 35-45 inches of rain per year. Soil consists of Alderwood gravelly sandy loam, the parent material being glacial till, with slope average of 6-15 percent. This soil type exists throughout the property. Site Index: Douglas fir is 108.

The Alderwood soils consist of very dark grayish brown gravelly sandy loam underlying top soil of very dark grayish brown gravelly sandy loam with soil depth averaging 20 to 40 inches. They are moderately well drained with moderately rapid permeability down to the till layer and then very slow permeability. This can lead to the soils becoming saturated in the substratum during the rainy season. Available water capacity is low which creates draught potential in the dry months.

Alderwood is relatively stable with low to moderate surface erosion potential. The main considerations for this soil type are its medium to high compaction and puddling potential and the tendency for severe plant

# Forest Stewardship Management Plan

December 8, 2012 revised

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competition. There is medium potential for windthrow of exposed trees due to the rooting depth restricted by the till layer.

## Management Practices

The soils are very compatible with the objectives of this plan. Alderwood is a productive forest soil that remains stable under appropriate forest management practices. Ground based equipment operations should avoid the rainy season to avoid causing compaction (which can then lead to surface erosion and puddling). Competing vegetation can be severe so monitor for signs of stress to regeneration trees caused by other vegetation or invasive species.

Should timber be harvested, we will avoid soil compaction and tree growth loss by limiting logging activity during the wet season, and using low pressure ground equipment. Keeping ample coarse woody debris, duff, and organic soil matter scattered over the surface instead of windrow or piling it will also help.

## **CATEGORY III – WATER QUALITY/RIPARIAN AND FISH HABITAT/WETLANDS**

### Conditions

There are two seasonal man-made ponds on the property with a seasonal class Ns stream bed connecting them. See attached map. The southwest corner of the property acts as a small, shallow seasonal wetland for overflow from the southern pond. Green tree frogs are the primary inhabitants of these ponds and wetlands. In addition they provide habitat for amphibians and are a water source for wildlife. There are no known fish that have access to or use these waters from 26 years of observation. There currently are no riparian plantings as these ponds are surrounded by pastureland which has been grazed and/or mowed for several decades.

### Management Practices

Protection measures will be taken to prevent soil erosion and disturbances adjacent to the wetlands by placing pathways or trails away from the areas. We will encourage growth of native shrubs in the pond areas. Habitat can be restored by replanting native herbs and shrubs near the ponds and stream bed to enhance water quality, provide wildlife food and shelter, and improve the aesthetic value of the ponds and wetlands. Placement of large woody debris would also enhance these areas. We will manage against invasive species. The whole property aids in infiltration of water into the water table and helps contribute to water quality and quantity which is particularly important for this sole source aquifer.

## **CATEGORY IV – FOREST INVENTORY/TIMBER/WOOD PRODUCTS**

### Conditions

The property of roughly 6 acres is divided into three separate forest stands-- one east, one west-northwest, and one south of open pasture land.

#### Forest Stand 1

Consists of mixed conifer, predominantly Douglas fir (143), with a couple of Western Hemlock, Western Red Alder (19) and one big leaf maple. There is a stand of 46 quaking aspen to the north. Average DBH for Douglas



## Forest Stewardship Management Plan

December 8, 2012 revised

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Fir in the stand is 22.3 inches with a variable range of 14-30 inches, with average height of 115 feet. Stand is even aged at 50-60 years with density running about 70-90 trees per acre.

The understory is 30-40% mixed shrubs and forb including salal, sword fern, huckleberry, and salmonberry with 90% ground cover.

### Forest Stand 2

This is a same age (40-50 year) declining alder forest containing 124 trees with 8 Douglas Fir, 4 Madrone and 4 Western red cedar saplings. Average DBH is--alder 9.8 inches, fir 19.5 and madrone 11. Height averages are 80 feet alder, 105 fir and 95 madrone. Crowns are 75% alder, 85% fir and 65% madrone. Density is 50-60 trees per acre.

The understory includes salmonberry, trailing blackberry, sword fern, Indian plum, vine maple, evergreen huckleberry and elderberry along with Himalayan blackberry, holly and some broom.

### Forest Stand3

This stand consists of same age (30-40 years) declining alder forest mixed with some conifer. Tree count is about 140 alder with average height of 75 feet, 17 fir of 130 feet average height, 7 madrone, 3 hemlock, and one hawthorn. There are 50-60 trees per acre.

Understory is mostly sword fern and salmonberry with some holly and Himalayan blackberry providing 90% coverage.

### Management Practices

No commercial harvesting of timber is currently planned on the property, only minor thinning for opening up pockets of light, harvesting for fire wood, removing any hazard trees, or maintaining our view from the home. The stands will be managed for forest health, wildlife, aesthetics and non-timber products.

The three forest stand's value and sustainability will benefit from replanting a more diversified mix of conifers, mainly western red cedar, and hardwoods, mainly maples. Planting of understories will include mostly native berry producing bushes for wildlife and non-timber produce. Additions of hedgerows will provide a screen from neighbors and county road, corridors between forest stands, as well as shelter, food and nesting sites for wildlife. Planting around the ponds and stream bed with native plants will protect water quality as well as provide food and shelter for wildlife. Converting the pasture to native plants and grasses with addition of forage mix will attract new species by providing additional food sources.

# Forest Stewardship Management Plan

December 8, 2012 revised

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## **CATEGORY V – PROPERTY ACCESS/ROADS AND TRAILS**

### **Conditions**

Property is accessed by a gravel road/driveway/county easement entering the property from the north off of paved county road, Road, and runs south along the east border of the property. There are no other roads currently on the property or planned as timber harvesting is not an objective. However, during dry seasons, light equipment can be accommodated from the driveway, 324 feet south of Road running due west for approximately 250 feet over the pastureland, to aid in occasional removal of timber for firewood.

Currently there is one pathway through Alder Stand 2 running north-south just inside the western edge. Most of the property is accessed on foot via the pastureland so no trails/paths currently exist in those areas. Planned pathways/trails through the property are shown on the map. These are for personal enjoyment of the forest and meadowlands, observation of wildlife, and monitoring of the property. These will avoid wetlands and be created for minimal impact to the property. It is anticipated these will be used only by property owner and extended family. If more than occasional educational tours are planned in the future, they will be re-evaluated to insure personal safety as well as protection of the forest, wetlands and wildlife.

### **Management Practices**

Paths for general enjoyment of the property, including viewing wildlife, will be created and maintained through all three stands and to observation points for each pond. They will circumnavigate each pond outside a buffer area for viewing as well as monitoring forest, wetland, and meadow health and control of invasive species.

## **RESOURCE CATEGORY VI - WILDLIFE**

### **Conditions**

Many species of wildlife have been seen on this property despite being located on an island and being a small lot. See list attached for common area species. The property contains many features attractive to wildlife including the two seasonal ponds connected by a seasonal stream bed surrounded by open pastureland. There are at least three distinct stands on the property which contain an average of 4-6 snags per acre, as well as downed logs. These can provide perches for raptors and nesting cavities. There are many brush piles around the property, particularly under and near the two alder stands. The mostly conifer stand #1 and alder stand 2 provide food from various berry bushes as well as nesting trees and understory cover for protection from predators.

No fish bearing streams exist on the property nor would any activity proposed in the next ten years likely effect fish habitat.



# Forest Stewardship Management Plan

December 8, 2012 revised

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Personal sightings of wildlife on the property have included:

Amphibians

- Salamander
- Western toad
- Pacific tree frog

Reptiles

- Garter snake

Ducks

- Mallard
- Bufflehead
- Widgen

Birds

- Great blue heron
- Bald eagle
- Sharp-shinned hawk
- Cooper's hawk
- California quail
- Great horned owl
- Rufous hummingbird
- Hairy woodpecker
- Pileated woodpecker
- Northern flicker
- Violet-green swallow
- Steller's jay
- American crow
- Black-capped chickadee
- Chestnut-backed chickadee
- Nuthatch
- Brown creeper
- Winter wren
- American robin
- Varied thrush
- Cedar waxwing
- Grosbeak
- Rufous-sided towhee
- Sparrow
- Dark-eyed junco
- Purple finch

## Forest Stewardship Management Plan

December 8, 2012 revised

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Pine siskin  
American goldfinch  
Evening grosbeak  
Downy woodpecker  
Western tanager  
Golden and ruby crowned kinglet

### Mammals

Mole  
Shrew  
Bat  
Raccoon  
Black tailed deer  
Western gray squirrel  
vole

### Management Practices

Restoration and enhancement of wildlife habitat will be made to the seasonal ponds and stream bed by replanting native bushes and grasses, providing a corridor to the hedgerow plantings which will lead into the conifer stand #1 and alder stand 2.

Diversity of hard and soft woods will be accomplished by planting the stands with cedar, western white pine, shore pine, big leaf maple and vine maple. Garry oak will be planted on the southern edge of stand 1. Addition to the understories of native soft mast bushes such as huckleberry, Oregon grape, osier berry, beaked hazel, and Indian plum will provide food for wildlife.

Natural processes of decay in the alder stands will continue to provide woody debris and nesting and food sources for wildlife. Replanting with conifers and mixed hardwoods will help sustain the alder stands and bring diversity which will in turn attract more diverse wildlife.

Areas of the pasture will be converted to forage for wildlife and game birds by planting of wildlife mixed seed forage.

At present there is no need to control wildlife damage as none is present but following planting, seedlings will be protected from browsing black tail deer by mesh net protectors until they reach a height of 4-5 feet.

## Forest Stewardship Management Plan

December 8, 2012 revised

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A description of some essential components of wildlife habitat and their presence on the property is described below. Recommendations for protection or enhancement projects are in bold type.

### Snags

Snags (dead and dying trees) are home to more than 60 species of wildlife in western Washington, including bird species which we desire. Snag use by wildlife includes the primary cavity excavators- woodpeckers, and the secondary cavity nesters that include more than 50 bird and mammal species in western Washington.

Several snags presently exist on the property. A few dead and defective trees can be found in each stand.

**Selected trees with broken tops, large broken branches, and other defect will be cultivated and maintained as snags, wildlife trees, and as coarse woody debris.**

### Coarse Woody Debris

There is a supply of coarse woody debris present on the property, including a good distribution of both hard and soft logs in the larger sizes. **Leaving occasional blowdown trees will help to maintain this important wildlife habitat component of the forest.**

### Understory Vegetation

A very important wildlife habitat component includes hardwood trees and shrubs that produce mast (berries and nuts), as well as grasses and forbs. These vegetative components often require increased amounts of sunlight to survive and produce fruits and seeds (such as alder and red elderberry). However, several understory species such as Pacific dogwood and salal are quite tolerant of low sunlight levels common to closed-canopy forest stands.

Almost all native hardwoods and understory shrubs produce fruits, seeds, or nuts, and thus, are quite valuable. In addition, the branches, twigs, leaves, and bark of most of these species are eaten by some wildlife species and all supply cover, shelter, and nesting habitat.

**All of the stands have some limited presence of these species. Any thinning or patch cuts would help our forest experience a regrowth of many of them.**

### Openings

Small openings within the forest enhance most wildlife. **As the young trees mature, and the amount of brush becomes reduced, creating limited openings by removing overstory vegetation and allowing native grasses, forbs, and shrubs to reinvade. Some of the naturally occurring openings will be maintained, even with further management of the area.** A number of bird species require grass-forb and shrub stands for feeding.

# Forest Stewardship Management Plan

December 8, 2012 revised

## RESOURCE CATEGORY VII – PROTECTION OF SPECIAL RESOURCES

An analysis completed by the Washington Department of Natural Resources (DNR) in November 2012 using the Forest Practices Application Review System (FPARS) has determined that no special resources are known to exist on the property.

## CATEGORY VIII – AESTHETICS AND RECREATION

### Resources

The territorial view of our mixed forests and ponds is a primary reason we purchased this property. Bird watching, pond exploration and walks through the forests and meadows have been major past times. We have also hosted educational events and the children and grandchildren have tent-camped in the meadow on occasion.

### Management Practices

Tree and hedgerow planting is planned to create aesthetic buffers on the north from the county road, east from neighbor and driveway, and west and northwest from neighbor's ATV run. Conversion of pasture land to native plants, including camas and grasses will enhance picnicking, bird watching and special products gathering.

Restoration of wetland areas with native shrubs for food and shelter will enhance the viewing of wildlife and enjoyment of the meadowland.

Replanting the forest stands to mixed forests and more diverse understory will enhance the enjoyment of the forest and its products.

## VI – MANAGEMENT PLAN IMPLEMENTATION TIMETABLE

For the next 20 years, the following are the planned management practices and anticipated year of implementation.

YEAR	MANAGEMENT PRACTICE	LOCATION
2013	Invasive Removal – pull or cut ivy, holly, Hym. Blackberry and salmonberry	Stand 2
	Open pockets in alders for mixed forest plantings	Stand 2
	Prepare site for tree planting and hedgerow (mechanical weed removal)	Stand 2
	Placement of woody debris to reduce invasives	Stand 2
	Control invasives and weeds with annual mowing	Pastures
2014	Plant red cedar, white and shore pine, maples	Stand 2
	Plant understory with evergreen huckleberry, black cap and trailing blackberries, etc	Stand 2
	Plant hedgerow	Stand 2
	Establish trail	Stand 2
	Monitor/control invasive species (spring and fall)	Stand 2





## Forest Stewardship Management Plan

December 8, 2012 revised

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### VII AERIAL PHOTO(S) PROPERTY MAP(S)

Location of property within Section

Property boundaries

Forest stand types

Soil types

Location of water bodies

Location of roads and trails

Topography

### VIII - LANDOWNER SIGNATURE

I/we approve of the contents of this plan and intend to implement the described management activities to best of my/our ability.

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Landowner Signature

8 December 2012  
Date Signed



**King County**

Department of Natural Resources and Parks  
Water and Land Resources Division

**Office of Rural and Resource Lands**  
King Street Center  
201 So. Jackson St., Suite 600  
Seattle, WA 98104-3855

Phone 206.296.7820 FAX 206.296.0516  
TTY Relay 711  
www.kingcounty.gov

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**FOREST STEWARDSHIP PLAN ACCEPTANCE FORM**

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**OWNERS:**

**MAILING ADDRESS:**

**TAX PARCEL NUMBER:**


**LANDOWNER SIGNATURE:** I intend to manage this property in a manner consistent with the objectives specified in the Forest Stewardship Plan, and to implement this plan to the best of my ability.

If there is any conflict between this Forest Stewardship Plan and any development regulation applicable to the Property, the most restrictive provision shall apply. Nothing in this Forest Stewardship Plan shall exempt the landowner from obtaining any required permit or approval from King County for any activity or use on the Property. Property owner shall comply with all federal, state or local laws while performing any of the activities or uses on the Property authorized herein.

\_\_\_\_\_  
Landowner: December 8, 2012  
Date

\_\_\_\_\_  
Landowner: December 8, 2012  
Date

**KING COUNTY FORESTER SIGNATURE:** I have reviewed the Forest Stewardship Plan submitted for long-term management of forestland. This Forest Stewardship Plan adequately describes the natural resources of the site and how they will be managed while conserving forest functions and health.

  
\_\_\_\_\_  
Kristi N. McClelland December 8, 2012  
Date  
King County Forester





## 2012 Aerial Photograph

Parcel Number






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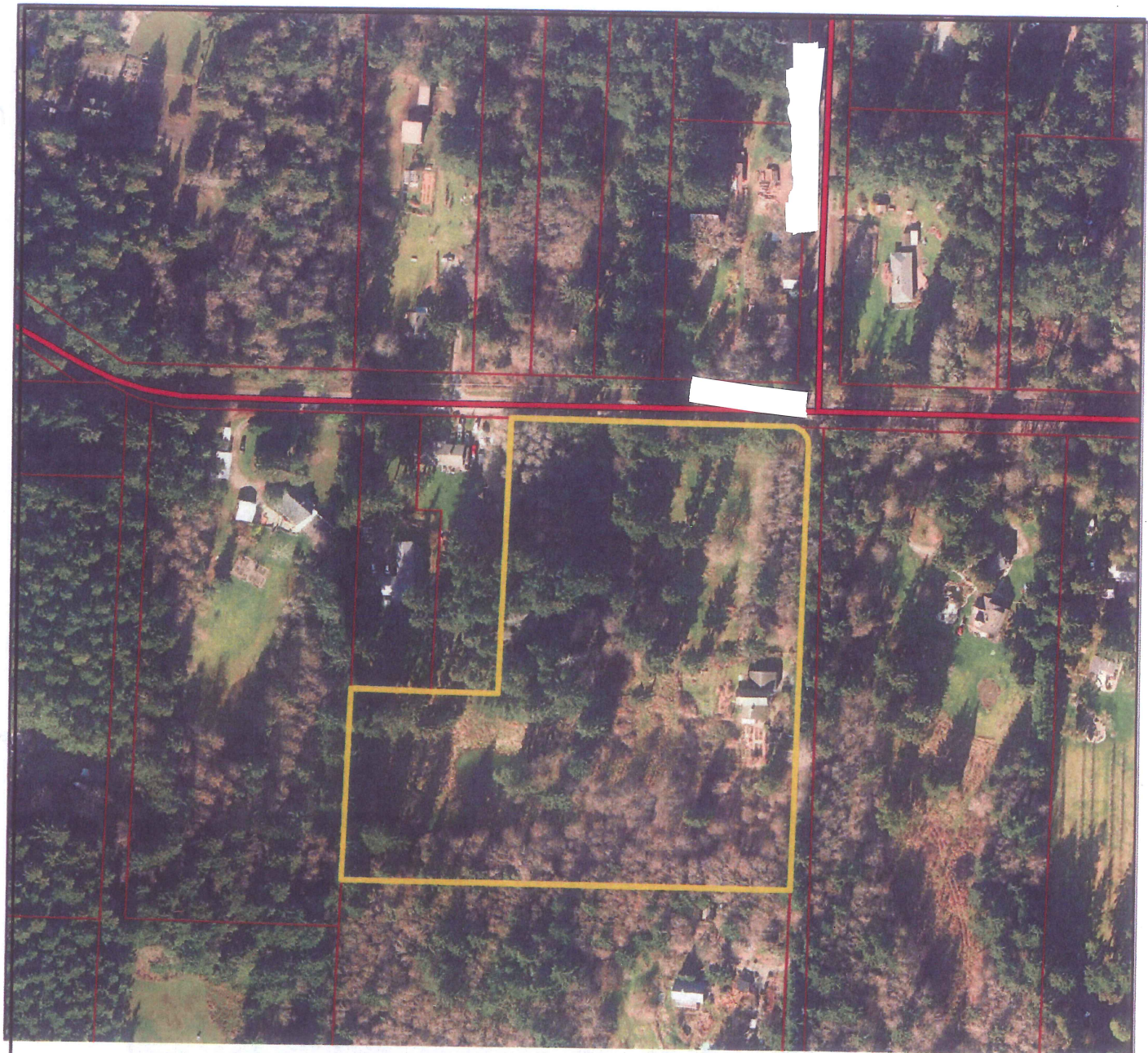
100 50 0 100 200 300 Feet



### Legend

-  iProperty
-  King County Parcels
-  King County Roads



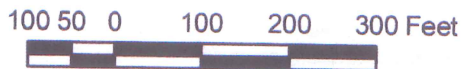





**Property**  
**2010 Orthophotograph**

Parcel Number: \_\_\_\_\_



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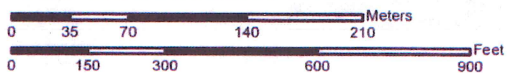
Legend	
	Property
	King County Parcels
	King County Roads



Soil Map—King County Area, Washington









































Map Scale: 1:3,960 if printed on A size (8.5" x 11") sheet.



Soil Map—King County Area, Washington

**MAP LEGEND**

<b>Area of Interest (AOI)</b>	 Area of Interest (AOI)	 Very Stony Spot
<b>Soils</b>	 Soil Map Units	 Wet Spot
<b>Special Point Features</b>	 Blowout	 Other
 Borrow Pit	 Clay Spot	<b>Special Line Features</b>
 Closed Depression	 Gravel Pit	 Gully
 Gravelly Spot	 Landfill	 Short Steep Slope
 Lava Flow	 Marsh or swamp	 Other
 Mine or Quarry	 Miscellaneous Water	<b>Political Features</b>
 Perennial Water	 Rock Outcrop	 Cities
 Saline Spot	 Sandy Spot	 PLSS Township and Range
 Severely Eroded Spot	 Sinkhole	 PLSS Section
 Slide or Slip	 Sodic Spot	<b>Water Features</b>
 Spoil Area	 Stony Spot	 Streams and Canals
		<b>Transportation</b>
		 Rails
		 Interstate Highways
		 US Routes
		 Major Roads
		 Local Roads

**MAP INFORMATION**

Map Scale: 1:3,960 if printed on A size (8.5" × 11") sheet.  
 The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.  
 Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: UTM Zone 10N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: King County Area, Washington  
 Survey Area Data: Version 7, Jul 2, 2012

Date(s) aerial images were photographed: 7/21/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

**FOREST SOIL MANAGEMENT INTERPRETATIONS**

SOIL NAME	Alderwood, All Phases		
SLOPE PHASE	0-30%	30-70%	Stony Phases
STATE SOIL SYMBOLS	0041-0052 0054-0064 0071-0073	0053, 0065, 0066, 0067	0068, 0069, 0070
<b>SLOPE STABILITY</b>			
Natural	Stable	Stable	Stable
Disturbed	Stable	Unstable	Stable
<b>ROAD CONSTRUCTION</b>			
Cut Slope, Fill & Sidecast Hazard	Moderate	Moderate	Moderate
Ballast Requirement	Low	Low	Low
Ballast Suitability	Poor	Poor	Poor
<b>TIMBER HARVEST</b>			
Logging System Limitation	Moderate	Moderate	Severe
Compaction Potential (Moist)	Medium	Medium	Medium
Displacement Potential (Dry/Moist)	Low	Medium	Low
Puddling Potential (Wet)	Medium	Medium	Medium
Erosion Potential	Low	Medium	Low
Rockiness Limitation	N/A	N/A	Severe
<b>SITE PREPARATION</b>			
Scarification Damage	Severe	N/A	Severe
Prescribed Burning Damage Potential	High	High	High
<b>REGENERATION</b>			
Drought Potential	High	High	High
Plant Competition	Severe	Severe	Severe
Water Table & Flooding Hazard	N/A	N/A	N/A
Frost Action Damage Potential	N/A	N/A	N/A
Windthrow Potential	Medium	Medium	Medium



**FOREST SOIL MANAGEMENT INTERPRETATIONS**

<b>SOIL NAME</b>	Alderwood, All Phases		
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State of Washington  
DEPARTMENT OF NATURAL RESOURCES

Forest Soil Summary Sheet

SOIL AND ENVIRONMENTAL CHARACTERISTICS

SOIL NAME Alderwood, A11 Phases

SLOPE PHASE 0-30% 30-70%

STATE SOIL SYMBOLS 0041-0052 0053, 0065, 0066, 0067  
0054-0064  
0068-0073

Major Tree Species Douglas-fir and Red Alder

Site Index DF=108

% Stocking (East. Washington)

Landform	Till Plains	Till Plain Escarpments and Hill-sides
Slope Shape	Concave-Convex	
Parent Material	Glacial Till	
Elevation Range	50-800 feet	
Precipitation Range	35-45 inches	
Organic Layer Thickness	1-3 inches	
Top Soil (Typical)	Very dark grayish brown gravelly sandy loam	
Underlying Soil Layers (Average)	Dark brown very gravelly sandy loam	
% Rock Fragments (Average)	30% hard gravels	
Restrictive Layer	Indurated till	
Soil Depth (Average)	20-40 inches	
Drainage	Moderately well drained	
Permeability	Moderately rapid over very slow	
Available Water Capacity	Low	
Rooting Depth	20-40 inches	
Depth to Water Table	18-36 inches January-March	
Incidence of Flooding	N/A	

**FOREST SOIL MANAGEMENT INTERPRETATIONS**

<b>SOIL NAME</b>	Alderwood, A11 Phases		
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DEPARTMENT OF NATURAL RESOURCES

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Incidence of Flooding	N/A	



## Map Unit Legend

King County Area, Washington (WA633)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AgC	Alderwood gravelly sandy loam, 6 to 15 percent slopes	9.2	100.0%
<b>Totals for Area of Interest</b>		<b>9.2</b>	<b>100.0%</b>

State of Washington  
DEPARTMENT OF NATURAL RESOURCES

Forest Soil Summary Sheet

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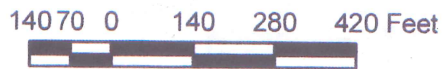
## Property

### King County Critical Areas Map

Parcel Number



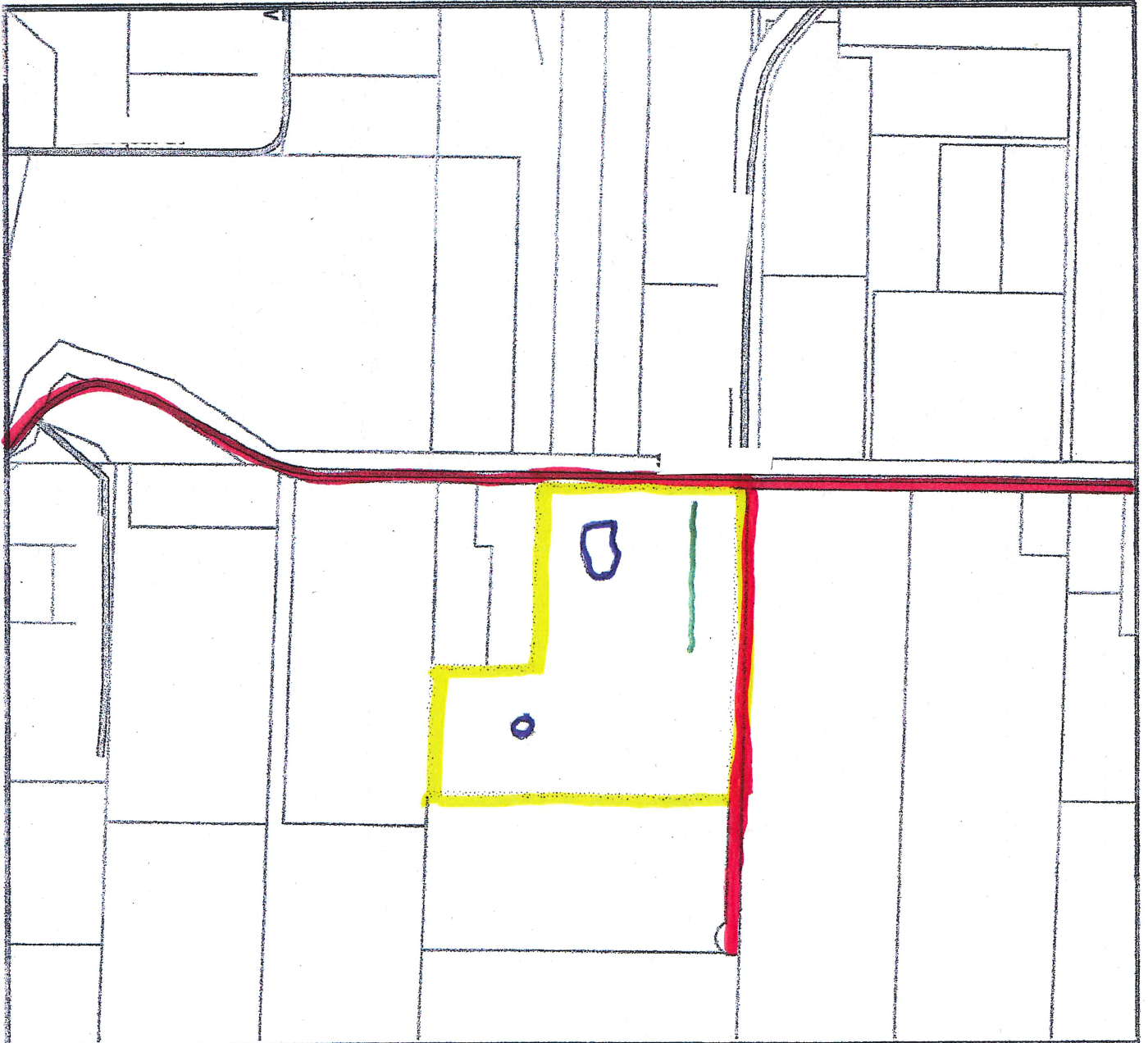
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### Legend

-  King County Parcels
-  King County Roads
-  WADNR Rivers and Streams
-  Wildlife Habitat Network
-  Wetlands
-  Landslide Hazard Areas
-  Erosion Hazards
-  Coal mine hazards

October 04, 2012



Property

Trails

**King County Critical Areas Map**

Parcel Number :



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140 70 0 140 280 420 Feet



**Legend**

-  Trails
-  King County Parcels
-  King County Roads
-  WADNR Rivers and Streams
-  Wildlife Habitat Network
-  Wetlands
-  Landslide Hazard Areas
-  Erosion Hazards
-  Coal mine hazards

October 04, 2012



Table 3: Wildlife found in the various successional stages of the Douglas-fir type.

*Slightly modified from Brown (1985).*

Wildlife Species	Grass-sorb Stand	Shrub Stand	Sapling Stand	Pole Stand	Sawlog Stand	Old-Growth Stand	Red Alder Stand	Riparian Habitat
<b>F = Feed Only; R = Reproduce Only; X = Both Feed and Reproduce</b>								
<b>Amphibians</b>								
long-toed salamander	F	F	F	F			X	X
Pacific giant salamander				F	F	F	X	X
western redback salamander		X	X	X	X	X	X	X
roughskin newt	F	F	F	F	F	F	F	F
western toad	F	F	F	F	F	F	F	X
pacific tree frog	F	F	F	F	F	F	F	F
red-legged frog	F	F	F	F	F	F	F	F
<b>Reptiles</b>								
western pond turtle 2/	R	R	R				R	X
northern alligator lizard	X	X	X	X	X	X	X	
western fence lizard	X	X	X	X			X	
gopher snake	X	X						
northwest garter snake	X	X						X
common garter snake	X	X	X				X	X
<b>Birds</b>								
American billern								X
great blue heron								X
turkey vulture	X	X			R	R	R	X
wood duck					X	X	X	X
osprey 2/					R	R		R
bald eagle 2/	F				R	R		X
sharp-skinned hawk 2/			X	X	X	X	X	X
Cooper's hawk 2/	F	F	F	X	X	X	X	X
American kestrel 2/	F	F			R	R		
peregrine falcon 2/	F	F	F	F	F	F		F
blue grouse	F	X	X	F	F	F		X
ruffed grouse	F	X	X	X	X	X	X	X
mountian quail	X	X	X					
marbled murrelet					R	R		
band-tailed pigeon	F	F	F	F	F	F	X	X
western screech-owl 2/	F	F	F	F	X	X	F	X
great horned owl 2/	F	F	F		X	X	F	X
northern pygmy-owl 2/	F	F	F	X	X	X	X	X
northern spotted owl 2/				F	X	X		
common nighthawk	X	X	F	F	F	F	X	X
rulous hummingbird	F	X	X	R	X	X	X	X
red-breasted sapsucker			F	X	X	X	X	X
hairy woodpecker			F	X	X	X	X	X
pileated woodpecker			F	F	X	X	F	X
olivesided flycatcher			F		X	X		X
northern flicker	F	F	F	F	X	X	F	X
Pacific slope flycatcher					X	X	X	X
tree swallow	X	X	F	F	X	X	F	X
violet-green swallow	X	X	F	F	X	X	F	F
Steller's jay		F	X	X	X	X	F	X
American crow	F	F	X	X	X	X	X	X
black-capped chickadee		X	X	X	X	X	X	X
common raven	F	F	F	F	X	X	X	X
chestnut-backed chickadee		X	X	X	X	X	X	X
red breasted nuthatch			F	X	X	X		X
brown creeper				X	X	X		X
winter wren			F	X	X	X	X	X

1/ Known species: 460. This table represents those most likely to be found on the lower elevation NIP lands.

2/ Species requiring special habitat consideration.

**Woodland Fish and Wildlife**

**(Table 3 Continued)**

Wildlife Species	Grass-sorb Stand	Shrub Stand	Sapling Stand	Pole Stand	Sawlog Stand	Old-Growth Stand	Red Alder Stand	Riparian Habitat
hermit thrush		X	X	X	X	X	F	X
American robin	F	X	X	R	X	X	X	X
varied thrush		F	F	X	X	X	X	X
cedar waxwing		X	F	F	F	F	X	F
Bohemian waxwing		F	F		F	F	F	F
warbling vireo			X				X	X
Nashville warbler		X	X		X	X		F
yellow-rumped warbler		X	X	X	F	F	F	X
black-throated gray warbler		F	X	X	X	X	X	X
Wilson's warbler		X	X	X	X	X	X	X
black-headed grosbeak		X	X	X	X	X	X	X
rufous-sided towhee	F	X	X		X	X	X	X
chipping sparrow	F	X	X		X	X	X	X
fox sparrow		X	X				X	X
dark-eyed junco	F	X	X	R	X	X	X	X
white crowned sparrow	X	X	X				X	X
brown-headed cowbird	F	X	X	R	R	R	X	X
purple finch	F	F	X	X	X	X	X	X
pine siskin	F	F	X	X	X	X	X	X
American goldfinch	F	X	X				X	X
evening grosbeak		F	F	X	X		X	X
Vaux's swift	F	F	F	F	F	X	F	F
Downy woodpecker			F	X	X	X	X	X
western tanager			F	X	X	X	X	X
<b>Mammals</b>								
Pacific shrew	X	X	X	X	X	X	X	X
Virginia Opossum	X	X	X	X	X		X	X
vagrant shrew	X	X	X	X	X	X	X	X
Townsend's mole	X	X	X				X	X
broad-footed mole	X	X	X	X	X	X	X	X
coast mole	X	X	X	X	X	X	X	X
big brown bat	F		F		X	R	F	X
silver haired bat	F		F	F	X	R	F	X
coyote	X	X	X	X	X	X	X	X
red fox	X	X	X	X			X	X
black bear	F	F	X	X	X	X	X	X
raccoon	X	X	X	X	X	X	X	X
river otter 2/	X	X	X	X	X	X	X	X
striped skunk	X	X					X	X
long-tailed weasel	X	X	X	X	X	X	X	X
mink 2/	X	X	X	X	X	X	X	X
mountain lion 2/	F	X	X	X	X	X	X	F
bobcat 2/	F	X	X	X	X	X	X	X
elk	F	X	X	X	X	X	X	X
mule deer	F	X	X	X	X	X	X	X
black tailed deer	F	X	X	X	X	X	X	X
mountain beaver	F	F	X	X	X	X	X	X
northern flying squirrel				X	X	X		X
western gray squirrel			F	X	X	X		
Townsend's chipmunk	X	X	X	X	X	X	X	X
Douglas' squirrel			X	X	X	X		X
western pocket gopher	X	X						
beaver 2/		X	X	X	X	X	X	X
bushy-tailed woodrat	F	X	X	X	X	X	X	X
deer mouse	X	X	X	X			X	X
long-tailed vole	X	X	X				X	X
Townsend's vole	X	X	X				X	X
Pacific jumping mouse	X	X	X	X	X		X	X
porcupine			X	X	X			X
snowshoe hare	F	X	X	X	X	X	X	X

# ArcIMS Viewer Map



- Section Lines
- Priority Habitat
- Tribal Cultural Resource Contacts - All
- Northern Spotted Owl other occurrences
- Bald Eagle Areas of Concern
- Marbled Murrelet Detection Areas
- NSO Core Circles (0.7 mile)
- Highly Unstable Soils
- Watershed Analysis
- Roads (DNR)
- Highly unstable
- Never Initiated
- Abandoned Road
- Hydric Soils
- Incomplete
- Orphaned Road
- Hydric Soils
- Approved
- Paved Road
- Statewide Parcel Boundaries 2009
- Unpaved Road
- PHCP Bull Trout Populations of Concern
- Water Courses - Typed (DNR)
- Historic Sites
- Type F
- Type N
- Type S
- Type U, unknown
- Type X, non-typed per WAC 222.16
- Priority Species
- Type A Wetland
- Type B Wetland
- Other Wetland
- Forested Wetland
- WRRIAs
- Current WAUs
- Fire Shutdown Zones

Approximate Scale 1:12000 NAD 83 Lambert Conformal Conic 11/7/2012 1:09:13 PM

Extreme care was used during the compilation of this map to ensure accuracy. However, due to changes in data and the need to rely on outside information, the Department of Natural Resources cannot accept responsibility for errors or omissions, and therefore, there are no warranties which accompany this material.



DNR Admin

