

# Taylor Mountain Forest

## Forest Stewardship Plan

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## **Executive Summary**

The purpose of the Taylor Mountain Forest Stewardship Plan is to provide guidance for the stewardship of the Taylor Mountain Forest. The Taylor Mountain Forest is located on the southwest flank of Taylor Mountain, near the community of Hobart in eastern King County. The 1822-acre site was acquired to be a working forest managed to conserve, protect and restore the resources of the area. In addition, the site provides opportunities for passive recreation.

### **Purpose**

The purpose of the Taylor Mountain Forest is to:

- Conserve, protect and restore the natural resources inherent in the land and water;
- Restore the health and diversity of the forest, and to demonstrate environmentally-sound forest management and the importance of conservation of the county's forestland;
- Provide educational and passive recreational opportunities for the public, while preserving the site's ecological, wildlife and water quality values.

### **Summary of Natural Resources**

#### **Aquatic Resources**

Two major tributaries, Holder and Carey Creeks of Issaquah Creek, are located within Taylor Mountain Forest. These streams provide over 5 miles of high quality spawning and rearing habitat for six species of salmonids, most of which are anadromous. The site includes more than 75 wetlands, which provide not only high quality habitat but also important flood storage. Taylor Mountain Forest provides high quality habitat for fish and wildlife and is an ecosystem of significance due to its variety of key habitat types. This includes its role as a refuge for a variety of wildlife populations and as a migratory corridor for birds and larger mobile species.

#### **Forest Resources**

Taylor Mountain Forest is almost entirely forested with a mosaic of forest stands. Nineteen forest cover types were stratified based on age, species, stocking, and size. The majority of the stands are less than 60 years old, with scattered small patches of residual trees approaching 100 years in age. Sixty-four percent of the Taylor Mountain Forest is dominated by red alder stands, 23% is covered in mixed forest, and 7% is dominated by conifer stands. The red alder stands in the Holder Creek watershed are approaching 50-60 years of age. The red alder sapling stands in the Carey Creek watershed are approximately 25 years of age and have stocking levels of 500 to 1,000 trees per acre. There are approximately 10 miles of roads throughout the property. These roads require maintenance and upgrading under the Forest Practices Act.

#### **Public Use**

There are 33 trails covering approximately 10 miles identified on the site. Recreation also occurs on the 10 miles of existing roads. Trail conditions vary, with trail tread varying from 18 inches to eight feet. Many trails traverse wet areas and have muddy sections. Several cross-streams

without having culverts or bridges. Recreational use of the site is by equestrians, hikers, runners, and mountain bikers. Equestrians ride throughout the area, both on short trips and all day outings. Trips can occur just on Taylor Mountain Forest lands or through the site to adjacent properties. Hikers and joggers mostly use the existing roads because the trail system is so muddy. Trails were closed seasonally in 2003 to support the ecological goals for the site.

## **Management Goals and Recommendations**

The management goals are:

- Protect, enhance and restore ecological systems
- Restore the health and diversity of the forest
- Demonstrate environmentally sound forest management through sustainable timber production
- Maintain forest roads to state requirements
- Provide passive recreational opportunities for the public
- Enhance opportunities for environmental education

The primarily recommendations are:

### **Site Maintenance Plan (SMP)**

Continue yearly on-going maintenance provided by the Parks Resource Program and grounds crews includes site inventory, park inspection, natural area trail maintenance, noxious weed removal, litter and garbage pick-up, complaint resolution, drainage maintenance and repair, and road maintenance and repair. The 2003 budget for these activities is estimated at \$22,142 for the resource coordinator and equipment operators. For the next 15 years land management is estimated to cost \$332,000.

### **Forestry Recommendations**

Use silviculture to create diversity of tree species, size and age classes, and forest structure. Variable retention harvesting will be used to assist in providing diversity of structure and function. The Stewardship Plan recommends commercial treatments in Stands 3, 12, 15, and 19 over the next 5 years (2003-2008). This amounts to approximately 360 acres of commercial treatment. The net revenue from these activities will be approximately \$730,000 over the next 15 years.

### **Road Maintenance and Abandonment Recommendations**

Complete Road Maintenance and Abandonment Planning (RMAP) in 2003 and submit to Washington Department of Natural Resources (WDNR) for approval. Upgrade and maintain essential roads to prevent erosion and protect ecological systems. Replace culverts where necessary to facilitate fish passage. Unnecessary roads, roads that are failing and roads that contain poorly functioning culverts should be abandoned or inactivated and the land restored. The cost to implement the RMAP for the next 15 years is estimated to be \$500,000 based on closing over half of the existing roads. Recent amendments to RMAP for small forest landowners will potentially reduce the legally required work. King County will continue to evaluate options and assure that public resources are protected in the most cost-effective way.

### **Ecological Recommendations**

Conduct site inventory and monitoring of critical fish habitat, riparian and wildlife corridors, priority habitats, diversity and populations of wildlife and areas of sensitive vegetation. Work to restore and enhance these systems. Inactivate or abandon non-essential roads and trails to reduce ecological impacts from sedimentation. Establish formal and informal management agreements with adjacent landowners to protect and enhance habitat connectivity. Apply for grants and establish cooperative partnerships to fund inventory, research, and monitoring.

### **Public Use Recommendations**

Complete a Public Use Plan and Trails Assessment jointly with WDNR and the City of Seattle with grant funding in 2003-4. The public use plan and trails assessment will analyze the existing trail system and propose a trail system that better protects the environment. Conduct trails maintenance by upgrading, relocating and/or maintaining selected trails. Abandon or close trails that contribute to ecological damage. Continue seasonal closure of trails that cause damage to resources during the rainy season. Encourage volunteer trail work parties starting in late 2003. Plan to construct a trailhead facility, new trails and interpretive trails with CIP and grant funding sources. Estimated cost is \$300,000.

### **Adaptive Management**

As additional funding becomes available from timber revenues and grant sources, monitor the effectiveness of the management recommendations in meeting the goals and objectives of this plan. The Forest Stewardship Plan should be reviewed in five years and updated in ten as part of using adaptive management for the site.



# Taylor Mountain Forest – Forest Stewardship Plan

## Part I. Introduction

The Taylor Mountain Forest sits on the southwest flank of Taylor Mountain, near the community of Hobart in eastern King County (see Figure 1). Located at the headwaters of Issaquah Creek basin, the forested site drains into two main tributary streams, Holder Creek and Carey Creek. The 1822-acre site provides a critical link between the City of Seattle's Cedar River Watershed and Tiger Mountain State Forest.

King County acquired the Taylor Mountain Forest property to be a working forest managed to conserve, protect and restore this regionally significant resource area. Taylor Mountain offers exceptional opportunities to demonstrate environmentally sound forest management. The relatively undeveloped character is also excellent for passive recreation, providing opportunities for the establishment of a local trail system with regional trail connections and interpretative programs.

### Purpose

King County acquired the Taylor Mountain Forest property in 1997. The purpose of the Taylor Mountain Forest is to:

- Conserve, protect and restore the natural resources inherent in the land and water;
- Restore the health and diversity of the forest, and to demonstrate environmentally-sound forest management and the importance of conservation of the county's forestland;
- Provide educational and passive recreational opportunities for the public, while preserving the site's ecological, wildlife and water quality values.

The purpose of the Taylor Mountain Forest Stewardship Plan is to provide guidance for the stewardship of the Taylor Mountain Forest. The plan reflects the opportunities, constraints and conditions of the Taylor Mountain Forest, both within its borders and within the regional landscape. The plan balances sustainable timber production with conservation and restoration of resources and public use.

The Taylor Mountain Forest Stewardship Plan is intended to be a flexible and dynamic document. Natural and social systems are uncertain and in a constant state of flux. Therefore, the plan recognizes the likelihood that management goals, objectives, and recommendations will be revised. The plan will be adapted to accommodate changes in conditions, forest practice regulations and scientific knowledge.

# Figure 1

## Contributing Reports and Planning Documents

The Taylor Mountain Forest's Forest Stewardship Plan has been developed using a variety of resources. In particular two plans provided the comprehensive background information needed for preparing this document:

- Jones and Jones (1999) Taylor Mountain Forest - *Existing Conditions, Opportunities and Constraints Report*.
- King County Department of Natural Resources and Parks (2000) *Taylor Mountain Forest Stewardship Plan*.

The forest stewardship plan also used the following documents:

- King County Department of Natural Resources (1996) *Issaquah Creek Basin and Nonpoint Action Plan*.
- King County Department of Natural Resources and Parks (2002) *Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Near Term Action Agenda for Salmon Habitat Conservation*.
- *King County Comprehensive Plan* (2000).
- King County Department of Natural Resources and Parks (2002) *Draft Programmatic Plan for the Management of King County-owned Working Forest Properties*.
- King County Department of Natural Resources and Parks (2002) *Draft Ecological Lands Handbook*
- King County Department of Natural Resources and Parks (2002) *Draft Interpretative Master Plan*.
- King County Executive Order (2002) *Implementation of Forestry Policies*.
- City of Seattle Public Utilities (2000) *Cedar River Habitat Conservation Plan*.
- Washington State Department of Natural Resources (1997) *Habitat Conservation Plan*.

This report was prepared by King County Department of Natural Resources and Parks staff. Information has been collected through collaboration with county, state and local agencies, and with some public participation.

## The Taylor Mountain Forest

The 1822-acre Taylor Mountain Forest lies approximately 33 miles southeast of Seattle and borders Highway 18 to the east. There are several privately owned parcels in the center portion of Taylor Mountain Forest.

Historically, Taylor Mountain Forest was managed for the production of timber and forest products. Two-thirds of the site was clear-cut harvested approximately 25 years ago. In the 1990's the owners planned to develop a large-scale housing development and subdivision on the site. In response to citizen requests to conserve the site, King County purchased the property for its multiple public benefits such as recreation, wildlife and fish habitat, forest management opportunities, flood protection for the City of Issaquah, and water quality improvement.

Since Taylor Mountain Forest is heavily forested and is adjacent to large blocks of public land, it provides important habitat connections. With the existing forest cover and road infrastructure, the site presents opportunities to demonstrate environmentally sound forest management, and, where appropriate, provide revenue from timber harvests for the management of the site. The forested site also includes a variety of riparian and wetland areas that provide flood control, water quality functions and high wildlife value.

Taylor Mountain is located at the headwaters of Issaquah Creek basin making up almost 15% of the Upper Issaquah Creek sub-basin. The high quality habitat and abundant populations of salmon distinguish the Issaquah Creek basin as one of the three most significant basins in King County in terms of fisheries resources (Issaquah Creek Basin Plan ESA Review, 1999). Taylor Mountain Forest drains into two main tributary streams, Holder Creek and Carey Creek, which represent abundant and relatively undamaged habitat for six species of salmonids. The WRIA 8 Near Term Action Plan Agenda (2002) states that the riparian areas of Holder and Carey Creeks should receive priority protection to preserve habitat-forming processes.

## **Acquisition**

Taylor Mountain Forest was purchased in 1997, with part of the purchase price covered at that time and the remainder to be paid in a subsequent payment. In 2002, Forest Legacy funds were used to pay the balance. The US Forest Service's Forest Legacy Program seeks to protect environmentally important forest lands that are threatened by present or future conversion to non-forest uses. The Forest Legacy Program requires King County to grant a forestry conservation easement to WDNR. The easement covers 1,592 acres, a majority of the site (See Figure 1). The legal description and conservation easement is presented in Appendix A. The areas near the two entrances to the site are excluded from the easement. These are approximately 68-acres adjacent to Issaquah-Hobart Road SE and 84-acres adjacent to 298<sup>th</sup> Ave. SE.

Four additional parcels (97 acres) have been included in Taylor Mountain Forest for land management purposes, but were purchased specifically through the Waterways Program for ecological protection (Figure 1). These parcels will predominantly be managed for ecological values and to provide enhanced salmon and trout habitat. Timber practices to generate revenue will not occur on these four salmon recovery parcels.

This plan will be submitted to the Washington State Department of Natural Resources to comply with the requirements of the US Forest Service Forest Legacy Program. Any revisions of the Taylor Mountain Forest Stewardship Plan must be consistent with the easement.

## **Property Classification and Zoning**

In January of 2002, King County merged its Departments of Parks and Natural Resources into a joint Department of Natural Resources and Parks. With this reorganization, King County-owned lands were classified into one of four categories: active recreation, multi-use, ecological and working resource. The working resource category includes working forests and farms. Taylor Mountain Forest is categorized as a working forest, defined as a King County property that balances "timber production, conservation and restoration of resources, and public use" (King County Executive Order, Implementation of Forestry Policies, 2002).

A majority of the Taylor Mountain Forest (1200-acres) is in the rural area zone (RA), which is intended to provide for long-term rural character and to minimize land use conflicts with nearby agriculture and forest production districts. Originally, the entire site was zoned for forestry (FR). However, the Tahoma-Raven Heights Community Plan re-zoned approximately 1,200-acres to G-5 to accommodate future development. The 1995 zoning update for the King County Comprehensive Plan retained the Forestry zone on approximately 600-acres to the east and rezoned the 1200-acres from G-5 to RA-10.

## **Adjacent Lands**

The Taylor Mountain Forest is surrounded by public and privately-owned forest lands. These areas provide for timber production, contiguous habitat for fish and wildlife and recreational opportunities. Directly adjacent to Taylor Mountain Forest are the City of Seattle's Cedar River Watershed (90,546-acres), WDNR's Tiger Mountain State Forest (15,000-acres) and forest land formerly owned by Weyerhaeuser (4,000-acres) that is being held by the Cascade Land Conservancy. United Fruit Growers owns approximately 7,000 acres north of Taylor Mountain Forest.

The City of Seattle Cedar River Watershed, managed by Seattle Public Utilities, operates water supply facilities to provide two-thirds of the drinking water for 1.3 million people in the Seattle metropolitan area. The watershed supports important habitat for fisheries and wildlife. Public access to the watershed is restricted to protect water quality. However, the City of Seattle is willing to consider public access to the portion adjacent to Taylor Mountain Forest since it is outside the hydrologic boundary designated for water intake.

The Tiger Mountain State Forest is managed by the WDNR. The lands are categorized as "working forest" managed for multiple public benefits of forestry, protection of ecological resources and recreation. Approximately 75 miles of hiking trails support public use. The former Weyerhaeuser property is in the process of being transferred to WDNR and will be managed similarly. The United Fruit Growers manage their lands for timber production.

Two privately owned inholdings totaling 81-acres are located in the center of Taylor Mountain Forest (See Figure 1). The parcels are residential and contain built structures.

## **Site Management Planning Process**

This forest stewardship plan is the culmination of the following planning processes. Following acquisition in 1997, King County began soliciting opinions, ideas and concerns about the management of Taylor Mountain Forest. The process involved the distribution of questionnaires and conducting public meetings with individuals and groups who had expressed an interest in Taylor Mountain. In conjunction with the public participation process, the Friends of Taylor Mountain was formed to promote dialogue and encourage stewardship on the site.

King County began gathering site specific information by contracting with Jones and Jones Associates to produce an existing conditions report. In December of 1999 the *Existing Conditions, Opportunities and Constraints Report* was completed. It laid the foundation for

development of a Master Site Plan. The report presented a summary of the existing site conditions and the inherent opportunities and constraints to the desired management of the property.

In 2000, King County staff prepared an initial *Taylor Mountain Forest Stewardship Plan*. The stewardship plan provided a forest stewardship vision with a set of short and long-term forest management goals. This plan is a revised and more comprehensive Forest Stewardship Plan and replaces the 2000 version.

King County is in the process of completing a Road Maintenance and Abandonment Plan (RMAP). This State of Washington regulation (WAC 222-24-050) directs forest landowners to include all their forest roads in an approved road plan. King County is obligated to develop a RMAP to ensure that all of Taylor Mountain Forest's ten miles of roads are improved and maintained to Washington Forest Practice Rules standards or abandoned.

Interagency discussions, including representatives from King County, City of Seattle Public Utilities and Washington DNR, were convened in 2002 to discuss Taylor Mountain Forest management and how this would affect adjacent lands. These discussions highlighted the need for a multi-jurisdictional Taylor Mountain Public Use Plan, which would address public use and access concerns, trail conditions and damage to natural resources across the entire 4,000-acres and across jurisdictional boundaries. A public use plan will address existing trail conditions and needed trail improvements, trail circulation issues and ecological impacts of recreation uses.

The Natural Resource Lands (NRL) Program of the Water and Land Resources Division of King County is responsible for planning and custodial management of Taylor Mountain Forest. The NRL contracts with the Park Division for the on-the-ground maintenance described annually in the Site Maintenance Plan (SMP). In 2003 the plan includes GIS mapping, site inventory, project planning, natural area trail maintenance, litter and garbage pickup, complaint resolution, drainage maintenance and repair, and park site inspection. In addition, Parks Division crews are planning to maintain the roads.

## **Part II. Natural Resource Analysis**

This section summarizes the existing conditions of the site including soils and topography, aquatic resources, and fish and wildlife. For more comprehensive and detailed information see the *Existing Conditions, Opportunities and Constraints Report* (Jones and Jones, 1999).

### **Soils and Topography**

Elevations on the Taylor Mountain Forest range from 500 feet to 2120 feet (See Figure 2). Topography on site varies widely, from relatively flat to slopes over 45%. Steep areas occur along hilltops and ravines. Where the ground is relatively flat, either wetlands or streams and floodplains tend to occur. Most of the site is composed of steep tertiary bedrock (including coal-bearing Puget Group rocks) protruding from glacial till.

**Figure 2**

Erosion is a concern throughout the Taylor Mountain Forest. The glacial-ice contact soils on steep slopes throughout the property are highly susceptible to erosion if excessively disturbed. A large portion of Taylor Mountain Forest is classified as an Erosion Hazard Area according to King County Sensitive Areas Folio (1990) (See Figure 2). The King County's Sensitive Areas Folio mapping is based on slopes greater than 15%, soil type, and underlying geology. Figure 2 is included in this document as baseline information. All forest practices will follow WDNR regulations regarding unstable slopes. The erosion prone soils can limit the options for natural resource management and public use.

Five soil types compose a majority of Taylor Mountain Forest: Chuckanut, Tokul, Beausite, Rangnar and Everett. Soil types present to a lesser degree include the Blethen, Elwell, Tokul-Pastik, Ragner-Indianola, Puyallup, and Pilchuck. These soil types are good to excellent tree growing soils. A soils map and Washington State forest soil keys for the major soil groups are presented in Appendix B.

One area of Taylor Mountain is recognized as a Coal Mine Hazard Area (King County Sensitive Areas Folio, 1990). The area is located in the northwest part of the site and is characterized by abandoned coal mine workings such as tunnels and air shafts (See Figure 2).

## **Aquatic Resources**

### **Hydrology, Streams and Water Quality**

Taylor Mountain Forest is located within the headwaters of the Issaquah Creek drainage basin. The Issaquah Creek basin encompasses about 61 square miles starting from steep headwaters in the southern basin that drain north into Lake Sammamish. Two major tributaries, Holder and Carey Creeks, are located within Taylor Mountain Forest (See Figure 3). Run-off in the basin is higher than average for the southeastern Puget Sound as the topography is steeper, soils are shallow over bedrock and local precipitation rates are high (Hugh G. Goldsmith and Associates, Inc, 1992). More than 80 percent of the basin was forested in 1990, with the remainder in wetlands, pastures, urban and cleared areas (Issaquah Creek Basin Plan, 1996).

Holder Creek originates nearly three miles north of the Taylor Mountain Forest property line on Tiger Mountain State Forest. Holder Creek enters the northwest corner of the site, flowing under Highway 18 in a southwesterly direction. It flows through a steep ravine and leaves the site at the Issaquah-Hobart Road. Holder Creek is approximately seven miles in length and flows into Carey Creek about one-half mile downstream (off-site) to become Issaquah Creek.

In many places along Holder creek, the stream has cut into the banks, resulting in erosion and sedimentation of the streambed. Due to the effects of deposition and related bank failures, Holder Creek has shifted its course in some areas, resulting in some erosion and downstream deposition. In addition, past intensive forestry operations and artificial channelization associated with road building have increased sediment deposition. During relatively dry weather, the waters of Holder Creek are generally clear. However, during wet periods, the waters carry large amounts of sediments from erosion that occurs throughout the drainage. Twice in the past ten years, flood damage has been recorded due to beaver dam blow-outs on lower Holder Creek North tributary, resulting in massive erosion in a section of Holder Creek (See Figure 3). The general water quality for Holder Creek is high.



**Figure 3**

### Holder Creek

(Source: *Current / Future Conditions Report for Issaquah Creek Basin* (1991) and modified for WRIA 8 Technical Committee Habitat Workshop in 2000)

Basin Condition	Current Status	Trend	Basin Goal	Comments
Flood Protection	High	Improving	High	Maturing forest will increase hydrologic stability
Habitat Quality	Medium/High	Improving	High	Good quality pools, but low frequency, good spawning gravels, good large woody debris except in lower reach, excellent riparian corridor, except for lower reach
Stream Stability	Medium	Improving	Medium	Significant signs of sediment imbalance from logging practices, less than 80% stable banks
Water Quality	Medium/High	Improving	High	Does not exceed temp, dissolved oxygen, fecal coliforms, pesticides, metals standards. High turbidity in storms
Regional Partnerships	High	Improving	High	Tier 1 of Waterways Program with funding from Forum, Mountains to Sound efforts
Existing Beneficial Uses	High	Improving	High	Taylor Mountain Forest, Regionally Significant Reach, Wildlife Network, Tiger Mountain State Forest
Local Community Involvement	High	Improving	High	Good support from many groups: Save Lake Sammamish, Friends of Issaquah Salmon Hatchery, Mountains To Sound, Hobart Rural Association, Trout Unlimited, Backcountry Horseman

Carey Creek originates from the southern slopes of Taylor Mountain and flows through the site for nearly five miles. It becomes Issaquah Creek at its confluence with Holder Creek (off-site). The perennial headwaters of the creek are located within a beaver pond complex, which straddles the north property boundary of Taylor Mountain Forest. There is a 40 foot tall cascades located in the Cedar River Watershed, that limits anadromous fish use in the upper Taylor Forest portion of the site.

Carey Creek’s water and habitat quality is high with good bank stability and good streambed structure. However, three flood events in the past 15 years has resulted in the Taylor Diversion Ditch, also known as Hotel Creek, allowing flows of Webster Creek into Carey Creek. This has resulted in increased stream flows causing major erosion and flooding. In addition, past logging operations and artificial channelization associated with road building have increased sediment deposition. The earthquake in 2000 resulted in a slide along Carey Creek, which was repaired. Overall, the system is recovering from these depositional, flooding and erosional events.

## Carey Creek

(Source: *Current / Future Conditions Report for Issaquah Creek Basin* (1991) and modified for WRIA 8 Technical Committee Habitat Workshop in 2000)

Basin Condition	Current Status	Trend	Basin Goal	Comments
Flood Protection	High	Improving	High	Large wetland and floodplain available. Proposed CIP will divert Webster Creek floodwaters away from stream
Habitat Quality	High	Improving	High	Excellent quality pools, excellent spawning gravels, abundant large woody debris, excellent riparian corridor
Stream Stability	Medium	Improving	High	Approximately 80 to 90% of banks are stable. Diversion of Webster Creek, and maturing forest helps
Water Quality	High	No change	High	Does not exceed temp, dissolved oxygen, fecal coliforms, pesticides, metals standards. Some turbidity in storms
Regional Partnerships	High	Improving	High	Tier 1 of Waterways Program with funding from Forum, Mountains to Sound efforts
Existing Beneficial Uses	High	Improving	High	Taylor Mountain Forest, Regionally Significant Reach, Wildlife Network
Local Community Involvement	High	Improving	High	Good support from many groups: Save Lake Sammamish, Friends of Issaquah Salmon Hatchery, Mountains To Sound, Hobart Rural Association, Trout Unlimited, Backcountry Horseman

### Wetlands

Taylor Mountain Forest includes more than 75 wetlands, which provide not only high quality fish habitat but also important flood storage and discharge capacity (See Figure 3). Past forestry operations, causing soil compaction and excavation, have disturbed a majority of the wetlands on site, altering water flow and leading to the enlargement or reduction of wetland size.

Most of the wetlands of Taylor Mountain Forest are shrub-scrub wetlands dominated by salmonberry, red-osier dogwood, red elderberry, vine maple and red alder. The forested wetlands on site are typically vegetated by red alder, black cottonwood, and western red cedar. Emergent wetlands on-site consist of sedges, grasses, lady fern, waterleaf and skunk cabbage.

Within the Holder Creek drainage, two wetlands, in particular possess unique attributes and are of high quality. Wetland L, in the headwaters of Holder and Creek, is rated by Washington State Department of Ecology's (WA ecology) rating system as a Category 2 and by King County as Class 1 (See Figure 4). Wetland L is identified on the U.S. Fish and Wildlife Services National Wetland Inventory as Wetland 98b (King County Department of Parks, Planning and Resources, 1990). Wetland G is rated by WA ecology as Category 3 and by King County Class 2. Wetland G was part of wetland L before road fill separated the two and disrupted the hydrology. Both wetland L and G provide key functions of flood storage and sediment filtration to lower Holder Creek (See Figure 4).

In the Carey Creek basin, drainage seeps and steep slopes have created many locally wet areas. Two wetlands of particular interest are present. Wetland R, in the headwaters of Carey Creek, is rated by WA ecology's rating system as a Category 2 and by King County as Class 2.

**Figure 4**

Wetland R is identified on the U.S. Fish and Wildlife Services National Wetland Inventory as Wetland 97b (King County Department of Parks, Planning and Resources, 1990). This wetland is the only one within the Taylor Mountain Forest containing a sizable cattail marsh. Wetland M, a bog, is rated by WA ecology as a Category 1 and by King County as a Class 1. This wetland, is part of an important series of wetlands hydrologically connected to Carey Creek and the only one onsite that contains sphagnum moss (See Figure 4). Wetland M is partially located in the private inholding.

## **Fish and Wildlife**

Large tracts of undeveloped land provide habitat for fish and wildlife. Such habitats are key to maintaining biological diversity and protecting native fish and wildlife populations. Because of its large size Taylor Mountain Forest provides this high quality habitat function and is an ecosystem of significance due to its variety of key habitat types.

### **Fish**

The decline of Chinook and bull trout in the Puget Sound has caused these species of salmonids to be listed as threatened under the Endangered Species Act in 1999. The listing has brought additional focus on the need to conserve habitat for these and other salmonid species.

The abundant populations of salmon and trout distinguish Issaquah Creek as one of the most significant basins in King County (Issaquah Creek Basin Plan ESA Review, 1999). The Issaquah Creek Basin and Nonpoint Action Plan (1995) stated that the protection of existing habitat is critical to the survival of remaining fish populations and that without stringent regulation, mitigation and enhancement, the basin will be unsuitable for salmon (King County Department of Natural Resources, 1996).

Both Holder and Carey Creeks provide high quality spawning and rearing habitat for six species of salmonids ( steelhead, coho, chinook, sockeye, sea run and resident cutthroat trout, and char) (King County Department of Natural Resources, 1996). The Taylor Mountain Forest represents one of the most abundant and relatively undamaged habitats for salmon and trout in the entire Issaquah Creek basin (King County Department of Natural Resources, 1996). Within Taylor Mountain Forest deteriorating forest roads, unimproved trails, stream bed and bank damage and culvert failures are the most serious causes of fisheries habitat decline.

Holder Creek is considered a Class 2 stream with salmonids, as defined in the King County Sensitive Areas Ordinance (King County Code Chapter 21.54). The creek is dominated by boulders and cobble with some patches of gravel present. Carey Creek is an excellent salmon stream for most of its length and is considered a Class 2 stream with salmonids. The creek is characterized by gravel, large woody debris and deep pools within extensive pool and riffle complexes. Upstream of the cascades to the headwaters, only resident cutthroat trout are found.

### **Wildlife**

Taylor Mountain Forest provides a variety of habitat functions, including its role as a refuge for a variety of wildlife populations and as a migratory corridor for birds and larger mobile species. Other wildlife species that are generally absent from developed areas are present at Taylor

Mountain Forest. Black bear and cougar are known to inhabit and den on the site and surrounding lands. Both use the site as part of a large foraging territory. Taylor Mountain Forest also supports medium and small mammals such as raccoons, coyotes, long-tailed weasels, foxes, skunks, voles, chipmunks, rabbits, squirrels, and opossums.

The mature coniferous stands provide habitat conditions for cavity nesting birds such as hairy woodpeckers, pileated woodpeckers, brown creepers and western screech owls. These habitats are not available in the recently harvested areas where suitable nesting trees have been removed.

The bald eagle is the only terrestrial wildlife species listed as threatened under the Endangered Species Act known to occur on Taylor Mountain Forest. While no bald eagles are known to nest or winter roost on the property, they are observed overhead. It is unlikely that other listed wildlife species such as the marbled murrelet, northern spotted owl and peregrine falcons will be found on site due to the lack of adequate habitat. Several priority species of local importance, as identified in the King County Comprehensive Plan (2000), are present on the property, including the red-tailed hawk, pileated woodpecker, band-tailed pigeon, beaver, Columbia black-tailed deer and elk.

The diversity of wetlands, seeps and streams on the site, together with forested upland habitat, provide for a variety of amphibian species, including salamanders, frogs and toads. Eight species have been observed on the site. Present on the site is the rare western toad (*Bufo boreas*), which is listed as a species of concern by the U.S. Department of Fish and Wildlife (Jones and Stokes, 1999).

### **Corridors and Habitat Connectivity**

Wildlife corridors are used by animals to move through the landscape. King County has addressed the need for habitat networks in the King County Comprehensive Plan (2000). The Taylor Mountain Forest provides an obvious and crucial connection between the City of Seattle Cedar River Watershed, Tiger Mountain State Forest, and the neighboring forest lands. Both the Holder and Carey Creek corridors have been identified as part of the wildlife habitat network in the comprehensive plan.

Wildlife are expected to move across the Taylor Mountain Forest relatively freely, with no apparent barriers or constrictions. The network of trails and forest roads is likely to be used extensively by wildlife, with movements concentrated along streams and wetland complexes. The primary barrier constricting wildlife movement is State Route 18, just west of the site. Large mammals and other highly mobile species are expected to be able to cross the roadway relatively easily although some individuals may avoid crossing. The crossing does increase wildlife mortality.

## **Landscape Perspective**

All natural resource analysis occurs within an ecological context. Management should consider more than the immediate site, with the recognition that what surrounds it, influences it, and is influenced by it. Identifying the landscape elements that drive the structure and process of an ecosystem and the interaction between the terrestrial and aquatic components of the area, then

drives the functions of the habitats and species it can support. Examples of processes include the movement of water, nutrients, and sedimentation. Structural components include vegetation, food webs, and water chemistry. Effective conservation planning often requires cooperation and collaboration across jurisdiction lines and land use designations.

This section discusses the status of the forests from a landscape perspective and how this information can be used for making future land management decisions. Taylor Mountain Forest sits between the Issaquah Alps Area that includes Cougar Mountain, Squak Mountain, Tiger Mountain, Grandridge, Taylor Mountain and Rattlesnake Mountain and the City of Seattle's Cedar River Watershed. All of this area is part of the Western Hemlock Forest Zone that covers extensive regions of the Puget Sound Area and Western Washington. This zone typically supports a Douglas Fir subclimax forest and Western Hemlock/Western Red Cedar as the climax forest community. At the time of the first European settlers, mature dense conifer stands with trees typically 500 years in age blanketed this region. A varied mosaic was created by infrequent and irregular disturbances such as fire, severe drought, ice storms, and devastating wind. Today, only a few patches of old growth remain in the Cedar River Watershed. As the human population increased the forest was altered for timber production, agricultural use, mining, and housing. Approximately 822,500 acres of forested land remain in King County today, in the forest production district. The low elevation forests, such as the Issaquah Alps, are commonly dominated by Douglas fir and harvested on a 50 to 80 year rotation. Most of the land is in its second or third rotation of trees.

This analysis is focused on Taylor Mountain Forest (1,800 acres) and the lands adjacent to Taylor Mountain, approximately 122,000 acres of public lands and 7,000 acres of private lands (Issaquah Alps to the west, north and northeast and the Cedar River Watershed to the east and southeast). About 80% of the land base has been taken out of timber production in the past 5 to 30 years. This presents 93,000 acres east of Taylor Mountain (Cedar River Watershed and Rattlesnake Ridge) and 12,500 acres to the west of Taylor Mt (Tiger Mountain Natural Resources Conservation Area, Squak Mt, and Cougar Mountain). These forests currently have stands from 20 years of age to 120 years of age, mostly covered by Douglas fir with patches of red alder, western red cedar and western hemlock. The Cedar River Watershed will still be producing timber during thinnings to achieve habitat conservation management goals. These forest reserves will assist in the long-term restoration of processes and sustain recovery of structure and function of mature forests.

On Taylor Mt Forest (1,800 acres), 1000 acres of land was harvested approximately 25 years ago and is currently dominated by red alder, the remaining 800 acres is a mix of mature red alder and young conifer stands (See Appendix D for details regarding the forest types on Taylor Mountain). To the north of Taylor Mountain to Hwy 18, and east to Rattlesnake Ridge, most of the 11,000 acres of conifer forest has been clear-cut over the past 30 years. Current Forest Practices regulations have required riparian corridors, wetlands, and unstable slopes to remain forested. The 9,000 acres of Tiger Mountain State Forest is managed in a 60-year rotation, where the harvest plan is for approximately 90 acres per year. In addition to the disturbance of forest practices, two major highways have altered the area, I-90 to the north and Hwy 18 between Tiger and Taylor Mountains. Rural residential development lies to the southwest of Taylor Mountain that also affects the ecosystems of Taylor Mountain. Public use is allowed throughout the area, with over 100 miles of trails providing access for hikers, equestrians and mountain bikers.

This area provides an opportunity for the different land managers, (City of Seattle, King County, and Washington State Department of Natural Resources), to plan together to manage on a landscape level. This landscape is big enough that it sustains the fish and wildlife species commonly found in the northwest, including the large ranging animals such as bears, cougars, deer and elk. However, forest practices have limited the type of wildlife using the area to species tolerant of early successional stages of red alder forest, or young even-aged stands (20 to 60 years of age) of Douglas fir or other conifer tree species. Wildlife species dependent on old-growth structure, such as spotted owls, lynx, wolverine, fisher, and flying squirrels, are not present in most of the area and are unlikely to move into the existing young or immature forest for at least the next 100 years.

Based on the current management of these forested stands, land managers can start to consider the larger context and how the action of harvesting timber will affect the adjacent landscapes. To manage on a landscape perspective will help to ensure wildlife corridors remain intact. Salmon, particularly Chinook and bull trout, which are listed as threatened species, are the target species in this area. Management of riparian corridors from a landscape perspective will involve all of the managers protecting the structure of the streams so natural processes can occur. Riparian corridors will play a major role in helping to keep the pieces of forested reserve habitat functionally connected. Management of Taylor Mountain timber will include asking adjacent property owners for their harvest plans and making sure that forested corridors are intact for movement of large animal species. Over the next 100 years, timber practices on the forested corridors will be for restoration of the ecosystem to benefit targeted fish and wildlife species.

## **Part III. Forest Resources and Roads**

The forest stands on Taylor Mountain Forest are primarily young second and third growth forests. Red alder is the primary species found on Taylor Mountain, and is a direct result of past land management practices. Former landowners harvested the coniferous timber without implementing adequate reforestation measures for coniferous species. This has resulted in approximately 1,140 acres of deciduous stands (red alder primarily, but also some black cottonwood and bigleaf maple). This is approximately 64 percent of the property. These deciduous stands generally fall into 2 age classes. Stand 3 is approaching 55 years old and Stands 7, 10, 12 and 18 are approaching 25 years old (See Figures 5 and 6). Mixed conifer/deciduous stands comprise 413 acres (23% of the site), with coniferous stands at 126 acres (7%). There are 114 acres of riparian stands (Stand 4 along Holder Creek and Stand 8 along Carey Creek).

### **Forest Health**

The health of Taylor Mountain Forest varies, depending on current stocking level, past logging practices, soil type and condition, soil hydrology, and other site conditions. Figure 5 is an aerial photograph of the site. The conifer stands (7% of the site) are generally in fair to good condition, with some incidence of wind throw and mortality due to overstocking and disease problems. In the upper Holder Creek watershed, there is one old western hemlock stand (Type 20), which is beginning to exhibit some characteristics of an old growth stand. This stand is



**Figure 5**

**Figure 6**

just over 100 years old. No other forest types are considered to be old growth or exhibiting the structure associated with old growth stands.

The red alder stands in the Holder Creek watershed are approaching 50-60 years of age. Significant mortality is occurring in this mature stand, and storm damage has resulted in many trees losing portions of their crowns. Overall stand mortality is approximately 16% in the past 5-8 years, based on the inventory of snags. The cause of mortality is generally senescence of the stand. There is only minor scattered western hemlock and western red cedar in the understory.

The red alder sapling stands in the Carey Creek watershed are approximately 25 years of age and have stocking levels of 500 to 1,043 trees per acre. Tree mortality is occurring due to the lack of growing space for many trees. This is natural mortality, which occurs when stands are in this stem-exclusion phase. At this time stocking, not insects or disease, is the primary impact on stand vigor in this type.

### **Forest Health Concerns**

Forest Health is depended on the following list of concerns. The concern level is stated, followed by the reason why at Taylor Mountain Forest.

- *Fire*: Level - low. High humidity during most of the year, and alder represents a poor fuel source. Action: Education and user awareness.
- *Wood Borers and Bark Beetles*: Level - light. Attacking trees weakened by root rot or by overstocking (typical forest condition). Action: None is needed, as these are part of the normal decomposition process.
- *Root Diseases*: Level – light laminated root rot (*Phellinus weirii*) in pockets. Pathogen present in existing stand. Action: Reforest with species resistant to existing pathogen. Retain approximately 25% deciduous component in all stands, as it is a natural limiting factor to most root rot pathogens.
- *Noxious Weeds*: Level - light. Variety of transport vectors. Action: Remove as found. Alert the county land noxious weed specialist and Resource Coordinators to the presence of Scot's broom, Robert's Herb and other noxious weeds on the property.
- *Biodiversity*: Level - limited. Result of past forest management activities. Action: Manage for a variety of species and ages specifically suited to the site

## Forest Structure

Taylor Mountain is almost entirely forested with a mosaic of forest stands. Nineteen forest cover types were stratified based on age, species, stocking, and size (See Figures 5 and 6). Detailed descriptions of each forest type are found in Appendix C. The majority of the stands are less than 60 years old, with scattered small patches of residual trees approaching 100 years in age.

All of the stands were influenced at varying levels by human disturbance—the older residual stands by logging of the old growth near the turn of the century, followed by periodic harvesting on other portions of the site.

The majority of the upper Carey Creek watershed was heavily cut around 1980 and is now dominated by sapling-sized red alder stands. Many of the stands have residual conifers intermixed into the red alder regeneration. These conifers were probably lower quality or smaller trees, so were left out of the 1980's harvesting. In most of these stands, the previous landowner did not replant after the harvest, hence the domination by young red alder. There were only scattered areas where evidence of planting was noticeable, and these planted Douglas fir trees are currently stagnated beyond possible release from taller deciduous trees.

The lower Carey Creek watershed has many areas of wet soil due to topography and seasonal perched water tables. Because of the seasonally wet conditions, the sapling red alder stands in these areas have a significant component of black cottonwood, intermixed with scattered conifers.

### Forest Structure

#### List of Concerns:

- Due to the timing and spatial extent of disturbance regimes in Taylor Mountain Forest, there are some areas of the property lacking diversity in forest structure. Large areas of the property were clear-cut at the same time. As a result, many of the stands are the same age. These single-species, unmanaged stands are susceptible to stagnation followed by mortality and the emergence of salmonberry and other non-tree species. The forest and associated watershed and wildlife functions would greatly benefit from management practices, which move the forest toward greater diversity of tree species, age and structure.
- There is a lack of coniferous species in most of the larger red alder stands.
- As is the case with many forests harvested in the past half century, there are not sufficient snags or dead trees on the forest floor. Large woody material contains very significant stores of carbon and energy and is the foundation of an important forest food web. The dead wood component adds a significant amount of organic matter to the soil; provides habitat for decomposer organisms; retains moisture through dry periods; represents a pool of nutrients for the ecosystem; and provides a site for the regeneration of conifers. The prescribed forest treatment will result in a higher percentage of dead wood.

## **Timber Management**

Of the 1822-acre land base, the only non-forested areas are wetlands and streams, two small gravel pits, and the road network. A timber cruise was conducted by Washington Forestry Consultants in 1998 and found 20,361,799 board feet of merchantable timber. Nineteen separate forest cover types are described in detail in Appendix C.

The overall strategy for forestry on King County lands is to maintain long-term productivity and improve the biological integrity of forest ecosystems. This is the emphasis of management for Taylor Mountain Forest. The desired future forest will feature mixed tree species of older, larger trees, with sufficient harvesting and regeneration to assure adequate younger stands to diversify the age of the forest. The short term harvesting schedule will focus on the conversion of over mature hardwood stands with reforestation of conifer to create a conifer component that is lacking in the current forest. As the new forest grows into the stem exclusion stage a series of thinnings will provide some income while accelerating the growth of the forest into desired older forest conditions.

Harvest timing and methods will be based on forest health, silvicultural, and ecological goals. Lands on which ecological and habitat values exceed timber values will be removed from the timber management base, or receive substantially modified practices. Logging methods will use low ground pressure tracked vehicles, or aerial systems, such as cable or helicopter systems.

## **Forest Roads**

There are approximately 10 miles of roads throughout the Taylor Mountain Forest that require upgrading under the Forest Practices Act. Road Maintenance and Abandonment Planning (RMAP) as directed by WAC 222-24-050. This requires that all industrial forest land roads be improved and maintained to the standards within 15 years, with actual work accomplished relatively evenly over the entire period. In response to this need, we have evaluated the roads throughout the site. Based on the conditions of the roads estimates to repair, maintain, inactive, or abandon have been completed and are presented in Appendix D. Through the process of developing this document, we have developed recommendations for the RMAP report, which will be prepared in 2003. Recently, Second Substitute House Bill 1095 enacted in April 2003 amends the requirements for small forest landowners. This may reduce the costs presented in Appendix D. A majority of the site is currently, in a young forested age stand, and therefore inactivating most of the roads on the site is the best option both ecologically and economically (See Figure 7).

## **Part IV. Public Use Analysis**

This section summarizes the historic and existing public use of the site including the cultural resources. It includes a discussion of the scenic landscapes. For more comprehensive and detailed information see the *Existing Conditions, Opportunities and Constraints Report* (Jones and Jones, 1999).

**Figure 7**

## Historic Use and Cultural Resources

Taylor Mountain Forest is part of the history of Hobart and other interesting former communities located nearby. The most visible remnants from the past are the railroad grades, and large first-growth stumps with springboard notches.

The site was likely used by the Snoqualmie, Duwamish and Muckleshoot Indians for fishing, hunting and gathering and as a major transportation link from Lake Sammamish to the Cedar River and across the Cascades.

Government Land Survey notes from 1891 and 1892 describe the area as "...covered with heavy Fir, Hemlock, Cedar and Spruce timber of good quality... A very dense undergrowth throughout..." Also noted were numerous brooks, creeks and "branch springs". The Taylor Mountain Forest was also the location of at least one home-site, most likely the Knott family farm, and a large dairy farm. More than 60 settlers homesteaded in the vicinity at this time, many clustered around nearby Walsh Lake.

Logging was extensive throughout the area since the late 1880's. Logging was first accomplished with oxen, horses and steam donkeys. Construction of a railroad allowed for more intensive harvest. Eventually 15 miles of standard-gauge rail passed through the forests and to the top of Tiger Mountain. Several sawmills operated in the area. The Sherwood mill, was located on upper Carey Creek in the 1930s, probably milling cedar bolts cut from the large cedar stumps left standing in wet areas after the initial harvest. A 1930's stump house, created inside a hollow cedar stump with a sheet metal roof and equipped with pots, pans and dishes on the table, was discovered on the property in 1969. The artifacts were subsequently removed.

There were many forest fires in the vicinity in the early 1900s. In 1910, a big fire started in Kerriston and, spreading to Taylor, Walsh Lake and Hobart, which consumed the railroad trestles at Taylor and Sherwood. The community at Walsh Lake was destroyed and two trains were marooned. Many of the large stumps on Taylor Mountain Forest bear evidence of the fires.

The town of Taylor was thriving up until 1946. Contaminants in sewage and runoff from the town were a concern to the City of Seattle, whose drinking water intake is immediately downstream from the Taylor area. In 1909, a drainage ditch was constructed from the Taylor area to Carey Creek with the intention of diverting Taylor's "treated" sewage into the Issaquah basin. The ditch never worked completely and in 1946 the City of Seattle condemned the property and dismantled the town.

Taylor Mountain Forest continued to be harvested throughout the 1940s. An aerial photo from 1944 shows the Holder Creek drainage recently logged and much of the Carey Creek drainage logged or maintained as open grazing land.

The most recent logging operations by the Manke Lumber Company began in the 1970's, when they clear-cut approximately 60% of the site. The Manke Company constructed roads in the western portion of the site in the 1990's to prepare the site for the development of 20-acre housing lots.

## Scenic Landscapes

Taylor Mountain Forest is part of the “Issaquah Alps”, a valuable scenic resource visible from public highways, open spaces and a large number of residences in surrounding towns and unincorporated King County. The vegetation, topography and creek drainages create a natural appearance. The nature of the forest creates an environment with a high probability of experiencing solitude, closeness to nature, tranquility, self-reliance and challenge.

The rise in elevation from Carey and Holder Creeks afford spectacular views to the south and the west. Southern views from the Carey Creek hill slopes take in the Enumclaw Plateau, buttes, cascade foothills and Mount Rainier. Views to the west from the Carey Creek hillslopes look over the Cedar River valley toward Puget Sound.

## Public Use

Recreational use of the site is predominately by equestrians, with some use by hikers, runners, and mountain bikers. There is some illegal use by motorcycles or all-terrain vehicles (ATV)'s. Information on recreation use of the site was collected in 1999 by Jones and Jones Associates and reported in *Existing Conditions, Opportunities and Constraints Report*. Additional information has been collected in 2002 by meeting with user groups in the area, including the Friends of Taylor Mountain, Tahoma Chapter of the Backcountry Horseman, Backcountry Bicycle Trails Club, Issaquah Alps Trail Club, and local users. A trails committee has been formed to help develop a public use plan for the Taylor Mountain Forest, and adjacent lands to the north managed by WDNR and the City of Seattle's Cedar River Watershed lands to the southeast, an area outside the hydrologic boundary of the Cedar River.

Equestrians ride throughout the area year around, both on short trips and all day outings. Trips can occur just on Taylor Mountain Forest or through the site to other properties. Riders travel through the WDNR lands (previous Weyerhaeuser lands to the north) and illegally through the United Fruit Growers and the Cedar River Watershed properties to the north and east. A Public Use Plan, addressing 4,000 acres of contiguous public ownership, which would connect the Cedar River Watershed with Tiger Mountain State Forest should help to direct recreation onto legal sites where public access is allowed. The Public Use Plan will also address conflicts between user groups and identify areas for each use.

Hikers and joggers mostly use the existing roads because the trail system is so muddy. Running clubs and cross-country teams work out on the site running from 5 to 10 miles of roads. Most hikers are on informal hikes, but the Issaquah Alps Trail Club leads some hikes in the area. Mountain biking is also mainly on the road due to the existing conditions of the trails. Several individuals use the site for more than one activity.

## Trail Conditions

There are 33 trails identified on the site, and recreation also occurs on the existing roads (See Figure 1). There are approximately 10 miles of roads and 10 miles of trails on the site. Trail conditions vary, with trail tread varying from 18 inches to eight feet. Many trails traverse wet areas and have muddy sections. Several trails cross streams without culverts or bridges.



Volunteers have been working hard over the past several years to improve the trail system. The Tahoma Chapter of the Backcountry Horseman has adopted the Taylor Mountain Forest site and provides a minimum of four volunteer trail work parties a year. Water bars have been constructed to direct water from the trail, and gravel has been brought in to help stabilize the soils. Trails have also been rerouted around wet areas. However, trail work has only occurred on a few trails. Because most of the trail system was established in relationship to existing forest harvesting needs, a Public Use Plan and Trails Assessment will be completed in 2003-4, using funding from a Interagency Committee for Outdoor Recreation – Nonhighway and Off-Road Vehicles Activities Program (IAC-NOVA Grant). This study would walk the site and locate better sites for trails that will not require as much maintenance and reduce the ecological impacts.

### **Seasonal Trail Closure**

Recreational use occurs year around, however recently trails were closed seasonally between October 15<sup>th</sup> and April 15<sup>th</sup> to support the ecological goals for the Taylor Mountain Forest. Trail closure provides for protection of fish and wildlife habitat and forest health from soil erosion due to trail use during the winter rains. Seasonal trail closures will also improve water quality by reducing sediment in the runoff helping to protect salmon spawning in the streams during the winter

King County hopes to work with the user groups to find grant sources, which would allow construction, improvement and maintenance of year-round trails. Public outreach will be to the Friends of Taylor Mountain, Issaquah Alps Trail Club, Washington Trails Association, Backcountry Horseman, Backcountry Bicycle Club, and the local users.

An Interagency Committee of Outdoor Recreation (IAC) NOVA grant for completing a Public Use Plan in the area has been submitted by Washington State Department of Natural Resources, City of Seattle's Cedar River Watershed, and King County. In addition, the recently formed public trail user committee will help with the Taylor Mountain trails planning effort. The planning study would determine the best trail locations and propose trail and parking lot construction projects, connecting the Cedar River Watershed to Tiger Mountain Forest, through Taylor Mountain Forest.

### **Access**

Most equestrians with horse trailers park and access the site at the Cedar River Watershed gate on SE 208<sup>th</sup> Street, called the Watershed Gate. Up to 14 trailers have been observed in this area, with an occasional hiker or biker leaving from this point. The other major access is at the intersection of Hwy 18 and the Issaquah-Hobart Road, at 276<sup>th</sup> SE Avenue, called the Hobart Gate. Hikers, mountain bikers and equestrians use an informal parking lot, just outside the gate. Up to 10 vehicles have been observed at this location. Local hikers, equestrians, and bikers access the site at various entry points, including the old railroad grade on the western boundary off of SE 208<sup>th</sup> Street and through the gate at 298<sup>th</sup> Ave. SE

The private in-holdings use both gates of Taylor Mountain Forest as well as the City of Seattle's access road off of 208<sup>th</sup> Ave. SE, identified as the Watershed Gate. No access easements through the property to the inholding or to other residents in the area are on record.

## **Environmental Education**

The current level of environmental education occurring at Taylor Mountain Forest is limited. Occasionally Mountains To Sound Greenway Trust and the University of Washington Forestry Department have brought classes out to the site to study the streams and forests. The site has also been used for wetland monitoring by the Sammamish Basin Community Link Project. This group of volunteers was educated about wetlands then monitored wetland L. With a formal trailhead and interpretive trails, environmental education opportunities will be increased.

## **Part V: Stewardship Recommendations**

### **Goals of the Working Forest Program**

The Office of Rural and Resource Programs is in the process of preparing a “Programmatic Plan for Management of King County-owned Working Forest Properties”. The programmatic plan is intended to define the management goals of King County-owned working forests and outline key policies to guide the development and implementation of forest stewardship plans. The programmatic plan implements the Executive Order on Forestry Policies (2002). The programmatic plan provides a conceptual framework and a preferred future for all County-owned forest properties. The goals of the Working Forest Program are:

*King County will manage its working forest resource properties to sustain and enhance environmental benefits, demonstrate progressive forest management and research, and provide revenue for the maintenance, management and further conservation of forestland. King County management plans will balance sustainable timber production with conservation and restoration of resources and public use (Draft Programmatic Plan for Management of King County-owned Working Forest Properties, 2002).*

In addition to the Executive Order and the Forest Programmatic Plan, the Taylor Mountain Forest Site Management Plan is guided by the Washington State Growth Management Act, King County Comprehensive Plan, King County Open Space Plan and the King County Ecological Lands Handbook. Through collaboration with other agencies and public stakeholders reviewing the priorities, policies, and sound ecological practices, King County has established the management vision and goals.

### **Management Goals, Objectives and Recommendations**

The following sections outline the plan’s management goals, objectives and recommendations for Taylor Mountain. The *management goals*, derived from the Working Forest Programmatic Plan, are intended to provide broad guidance and direction for the present and future management and stewardship of Taylor Mountain Forest. Goals are intended to be general and long-term. The management goals are:

- Protect, enhance and restore ecological systems
- Restore the health and diversity of the forest

- Demonstrate environmentally sound forest management through sustainable timber production
- Maintain forest roads to state requirements
- Reduce unneeded roads and limit roads to the minimum needed to manage the land
- Provide passive recreational opportunities for the public
- Enhance opportunities for environmental education

Specific management objectives and recommendations follow each management goal. The *management objectives* are intended to be general site-specific strategies, which include criteria for achieving the goals. Likewise, the *management recommendations* represent general and specific-steps for implementing the management objectives and are intended to identify specific and detailed management actions needed for forestry, aquatic resources, fish and wildlife and passive recreation over the next 15 years.

The reader is referred to Appendix C. Forest Stand Analysis and Recommended Treatments for site specific forest stand recommendations. The forestry management goals, objectives, and recommendations presented in this section are the more overall site planning strategies and management activities.

## **Goal: Protect, enhance and restore ecological systems**

### **Management Objective**

Identify, protect, enhance and restore anadromous and resident fish habitats and habitat-forming processes to contribute to life-cycle requirements.

#### ➤ **Management Recommendations**

- Conduct site inventory of critical fish habitat.
- Perform anadromous and resident fish population surveys.
- Define minimum habitat requirements for anadromous and resident fish and limits of acceptable change for populations within Taylor Mountain Forest and surrounding landscape.
- Document anadromous and resident fish habitat change and impacts.
- Restore and enhance fish habitat.

### **Management Objective**

Identify, protect, enhance and restore riparian and wildlife corridors, priority habitats, diversity and populations of wildlife and areas of sensitive vegetation.

#### ➤ **Management Recommendations**

- Maintain contiguous habitat to create refuges for wildlife while minimizing habitat fragmentation.

- Conduct site inventory of riparian and wildlife corridors, priority habitats, diversity and populations of wildlife and areas of sensitive vegetation.
- Document habitat change and impacts.
- Restore and enhance riparian and wildlife corridors: priority habitats and areas of sensitive vegetation.
- Allow natural disturbances to occur, except in cases where there is imminent threat to public safety, neighboring properties or long-term ecological integrity.
- Enhance native habitat and biological diversity by creating late-successional features such as species and structural diversity.
- Identify priority areas for noxious, invasive and non-native weed control. Remove noxious, invasive and non-native weeds.
- Management of Taylor Mountain timber will include asking adjacent property owners for their harvest plans and making sure that forested corridors are intact for movement of wildlife.

### **Management Objective**

Protect, restore and enhance hydrologic processes and complexity, enhance water quality and floodwater storage.

#### ➤ **Management Recommendations**

- Restore and enhance integrity and diversity of wetlands especially where hydrologic connectivity has been disturbed.
- Protect high erosion areas, stream banks and unstable slopes.

### **Management Objective**

Inactivate or abandon non-essential roads and trails to reduce ecological impacts.

#### ➤ **Management Recommendations**

- Where roads are essential for access, forest management and/or recreation activities, maintain and improve to minimize ecological impacts.
- Evaluate passive recreation use for conflicts with ecological goals. When use levels interfere with ecological systems or enhancement and improvements, close and remove trails and increase trail maintenance and enforcement activities

### **Management Objective**

Establish formal and informal management agreements with adjacent landowners to protect and enhance habitat connectivity.

➤ **Management Recommendations**

- Acquire inholdings and adjacent land through fee simple acquisitions by willing sellers, conservation easements and/or development rights acquisition.
- Maintain habitat connections with City of Seattle Cedar River Watershed, Tiger Mountain State Forest and adjacent forest lands.
- Coordinate with Washington State Department of Transportation to improve fish passage as improvements and upgrading occur along State Route 18.
- Support efforts to improve wildlife crossings under State Route 18. Coordinate with state and local planning agencies to construct functional and effective wildlife crossings with highway improvements.

**Management Objective**

Conduct further studies, research, surveys and monitoring to determine key gaps in ecological information including threatened and endangered species, indicator plant and animal species, priority fish and wildlife habitats, forest structure, habitat and understory vegetation and aquatic systems.

➤ **Management Recommendations**

- Actively search out and submit grants to establish funding source for further studies, research, surveys and monitoring.
- Establish cooperative partnerships with academic institutions to provide research and monitoring opportunities.
- Establish monitoring regime to measure change and gauge the success and failure of management goals.

**Goal: Restore the health and diversity of the forest**

**Management Objective**

Maintain soil structure and productivity.

➤ **Management Recommendations**

- Maintain nutrient cycles by retaining sufficient organic material to decompose on the forest floor.
- Promote multi-species stands appropriate to site specific growing conditions.
- Utilize appropriate logging equipment and methods, which retain soil structure and productivity, minimize soil erosion, water quality, and maintains viable understory plant communities.

- Harvest only during appropriate weather and seasons.
- Promote the retention of sufficient population levels of hardwood species to provide a variety of ecological inputs.

**Management Objective**

Maintain native plants indigenous to the site.

➤ **Management Recommendations**

- Utilize seedlings from as local a seed source as possible.
- When reforesting the harvest areas, plant trees which are best suited to soil type and local hydrology. Avoid planting non-native or inappropriate species for the elevation and forest type
- Utilize silviculture to create diversity of species, size and age classes and forest structures. Variability in thinning and harvesting procedures will promote the development of stands with a higher degree of complexity.

**Management Objective**

Maintain a level of insect and disease activity consistent with natural processes.

➤ **Management Recommendations**

- Strive to control insect and disease populations through maintaining healthy stocking levels through thinnings.
- Allow minor natural disturbances to occur and avoid over zealous salvage operations.
- Where unacceptable amounts of root rot occurs, non-susceptible species (red alder or western red cedar) should be selected as leave trees or planted.

**Management Objective**

Strive to eliminate and prevent the spread of noxious and invasive plants.

➤ **Management Recommendations**

- Attempt to remove invasive plants before initiating harvesting or thinning practices.
- Limit disturbance and maintain adequately dense understory and overstory to discourage invasive plants.
- Have logging and road construction equipment washed prior to moving on to the site.

## **Goal: Demonstrate environmentally sound forest management through sustainable timber management**

### **Management Objective**

Manage property as a sustainable unit supporting forest, recreational and ecological management activities through revenues derived from the site.

### **➤ Management Recommendations**

- Incorporate variable retention of all stand structures to ensure that the entire range of naturally occurring forest structures (i.e., retained organic material, snags and snag replacements, mycorrhizal fungi and other forest components) are present in the forest.
- Do not harvest all the poor quality decayed trees. Retain standing above ground as both live and dead trees. Extract only those portions of the stem that have true economic value. The remaining biomass should remain on the site.
- Design timber harvests to make effective use of existing access and minimize the impacts of new and existing roads.
- In coniferous stands utilize 100-year rotations, allowing trees to grow closer to biological maturity than economic maturity.
- Retain the relatively small forest types of maturing conifers for biological legacies. Retain aggregated and dispersed red alder for ecological value.
- Before commercial harvest or thinning, analyze the costs and benefits. The pre-treatment analysis should include maps (stand delineation, cutting boundaries and locations of landings and major skid trails) and brief silvicultural prescriptions for each stand (using basal area cruise information). The cost-benefit analysis should include volume and value estimates by species, the extraction costs, including logging, trucking, permits, erosion control measures, and reforestation. The analysis should also determine if the timing is appropriate for the market value.
- Evaluate and apply principles of Washington's Department of Natural Resources Habitat Conservation Plan when appropriate.
- Develop an efficient mechanism for contracting forest practices and harvests.

### **Management Objective**

Meet or exceed Washington State Forest Practice standards to protect water quality, riparian habitat, steep slopes and other non-timber values of the forest.

➤ **Management Recommendations**

- As part of harvest planning, evaluate each treatment unit to protect riparian habitat, wetland, and unstable slopes and soils.
- Communicate with adjacent property owners regarding their proposed harvest plans to make sure that forested corridors are intact for wildlife movement.

**Management Objective**

Meet Issaquah Creek Basin Plan standards by keeping 65% of the site covered by trees over twenty-five years in age to help hydrologic stability of the streams.

➤ **Management Recommendations**

- This objective will be met in 2005 when young alder stands reach the age of 25 years.
- Proposed timber management plan will ensure that 65% of the site is covered by trees over 25 trees in age.

**Goal: Maintain Forest Roads to State Requirements**

**Management Objective**

A Road Maintenance and Abandonment Plan (RMAP) will be provided for Taylor Mountain Forest as directed by WAC 222-24-050. This plan will ensure remaining forest roads are improved and maintained to forest practice standards, and all other roads are abandoned or inactivated within 15 years. Second Substitute House Bill 1095 enacted in April 2003 amends the requirements for the small forest landowner. These amendments potentially reduce the legally required scope of work to complete the RMAP. Management Recommendations and Objectives are based on industrial forestland RMAP standards. These potentially will be reduced at Taylor Mt. Forest by the amendments.

➤ **Management Recommendations**

- Taylor Mountain Forest has approximately ten miles of roads that require upgrading and maintenance under RMAP obligations. In 2003, complete Road Maintenance and Abandonment Planning (RMAP) and submit to WDNR for approval.
- If all roads on the site are kept open over the entire 15-year period to industrial forestland RMAP standards, the total estimated cost is approximately \$940,000 (See Appendix D). Due to economic and natural resource considerations abandoning or inactivating approximately half of the roads on the site is recommended to reduce the roads standards costs to an estimated \$500,000.
- King County will continue to evaluate options and assure that public resources are protected in the most cost-effective way based on recent amendments to RMAP for small forest landowners. This could reduce the road costs.



### **Management Objective**

Roads that are essential for access, forest management and/or recreation will be maintained to prevent impacts on the ecological systems of Taylor Mountain Forest. Roads that are nonessential will be inactivated or abandoned so as to reduce impacts on ecological systems and habitat fragmentation.

### **➤ Management Recommendations**

- Keep Roads A, E, G, and half of H open. Road A runs from the west gate to the north property line and will remain the main access through Taylor Mountain. A major culvert on Road A across Carey Creek needs to be replaced at a cost of approximately \$100,000. Road E provides access to the inholding properties. Road G provides access to the City of Seattle's Watershed property to the southwest. Keeping half of Road H open will allow access to the upper portion of Taylor Mountain Forest. To upgrade and maintain essential roads to industrial forest owner standards to prevent erosion and protect ecological systems will cost an estimated \$143,000, with an annual road maintenance cost of \$6,000.
- The plan calls for placing the following roads in an inactive status, Roads D, half of F, Half of H, K, M, N, O, P, and Q, and Trails 2, 25 and 26. because they are not needed for timber management over the next 25 years. Several roads (D, K, Trail 2, and unidentified road below Road K will be used to harvest trees over the next 5 to 10 years and then will be inactivated. The cost of abandoning or inactivating all of these roads is estimated at \$20,000, with an annual maintenance cost of \$5,000 per year.
- Roads I, L, and half of F will be abandoned. This cost is estimated at approximately \$170,000. The culvert removal project on Road F will be submitted to several grant sources to reduce the cost of funding.
- Replace culverts where necessary to facilitate fish passage, this includes Carey Creek crossings on Road A and Road F.

## **Goal: Provide Passive Recreational Opportunities for the Public**

### **Management Objective**

Develop a Public Use Plan and trail assessment jointly with the Washington State Department of Natural Resources (WDNR) and City of Seattle's Cedar River Watershed for approximately 4,000 acres of lands, which includes 1,800 acres of Taylor Mountain Forest.

### **➤ Management Recommendations**

- Complete a Public Use Plan and Trails Assessment jointly with WDNR and the City of Seattle with grant funding in 2003-4. The public use plan and trails

assessment will facilitate analysis of the existing trail system and propose to create a more environmental protective trail system. The plan will try to provide approximately 20 miles of trails in 4 or 5 connecting loops over the 4,000-acre area.

- Coordinate with the City of Seattle's Cedar River Watershed to allow public access from the 208<sup>th</sup> SE Street gate to the southeast portion of Taylor Mountain Forest. The area that is outside the Cedar River Watershed's hydrologic boundary.
- Coordinate with the Cascade Land Conservancy, United Fruit Growers, and Washington Department of Natural Resources to allow public access across previously owned Weyerhaeuser lands to connect to Tiger Mountain at the Summit parking lot.
- Work with the Washington State of Transportation regarding construction of a pedestrian underpass or overpass when Hwy 18 is improved.

### **Management Objective**

Establish a trails committee of mixed user groups (i.e. property managers, hikers, horseback riders, and mountain bikers) to discuss single and mixed use of trails. This group will provide input to the public use plan.

### **➤ Management Recommendations**

- Compatibility of mountain bikes, horses and hikers are a safety issue that will be discussed in the trails committee.
- The group will address conflicts in user groups while planning for development of recreational opportunities for horseback riders, hikers, and mountain bikers.

### **Management Objective**

Accommodate passive recreational opportunities for the public, while preserving the sites ecological, fish and wildlife, forestry and water quality values.

### **➤ Management Recommendations**

- Allow only trail activities that are consistent with the goals, regulations and policies to protect the ecological and working forest elements from degradation.
- Constraints to recreational development and public use are primarily environmental; the site contains steep slopes, highly erosive soils, streams, and wetlands that all combine to limit the suitability of the site for trails.
- Many existing trails are in very poor condition. It is recommended that a detailed trails assessment of the site be completed in 2003-4 to properly place

and design a trail network with low impacts on the ecological features (see above objective).

- For any trails identified as staying open, conduct trails maintenance by upgrading, relocating and/or maintaining selected trails. Abandon or close trails that contribute to ecological damage. Continue seasonal closure of trails that do not protect landscape elements from degradation.
- Encourage volunteer trail work parties starting in late 2003.
- Apply for Grant Funding in 2003-4 to build new trails that protect the ecological elements from degradation and replace damaging trails.
- Continue to work with the Friends of Taylor Mountain, Tahoma Chapter of the Backcountry Horsemen, Issaquah Alps Trail Club, Backcountry Bicycle Trails Club, and the Washington Trails Association regarding public use issues and helping with volunteer trail maintenance work for the protection of ecological processes on the site.

### **Management Objective**

Develop a plan to construct a trailhead off of 276<sup>th</sup> Ave. SE, near the intersection of Hwy 18 and the Issaquah-Hobart Road.

#### ➤ **Management Recommendations**

- A gravel trailhead facility off of 276<sup>th</sup> Ave. SE will be designed and constructed. This will support from 20 to 40 cars with parking for up to 10 horse trailers and several school buses, restrooms, an educational kiosk, and accessible interpretive loop trails.
- The intent is to keep this facility minimal and build it in an environmentally sensitive way.
- The trailhead will provide information on the trail system and environmental education.
- Plan to construct the trailhead facility and interpretive trails with CIP and Grant funding in 2005-7.

### **Management Objective**

Public uses will need to accommodate forest management practices.

#### ➤ **Management Recommendations**

- To accommodate forest management practices, temporary trail closures will be required for public safety during harvest practices.
- Trail segments damaged by forestry operations will need to be restored.

- A notification system and educational materials will be provided to the recreational users.

### **Management Objective**

Coordinate with surrounding landowners to establish trail connections to the Rattlesnake Mountain Scenic Area and other regional trails.

### ➤ **Management Recommendations**

- Opportunities for regional trail connections should be considered in the future. Development of a link between Taylor Mountain, Tiger Mountain State Forest, and Rattlesnake Mountain Scenic Area are being discussed.
- A link between the Cedar River Trail at Landsburg with the John Wayne Pioneer Trails at Rattlesnake Lake and the Snoqualmie Valley trail is proposed in the future. Trail work at Taylor Mountain will provide connections to this future regional trail.

### **Management Objective**

Recreational opportunities will provide places from which to view the surrounding scenic landscape.

### ➤ **Management Recommendations**

- During the trails assessment, existing trails with views will be documented and others locations investigated for valuable views of Mount. Rainier, Tiger Mountain, and the Olympic Mountains.
- Having trails with views will be a recommendation in the public use plan.

### **Management Objective**

Some barrier-free outdoor recreational opportunities will be provided.

### ➤ **Management Recommendation**

- A barrier free interpretative trail will be developed off on the new parking lot at 276<sup>th</sup> Ave. SE, at the Hobart Gate. The slope and substrate will accommodate wheel chairs and meet ADA requirements.

## **Goal: Enhance Opportunities for Environmental Education**

### **Management Objective**

To interpret the land's cultural history and natural history, including natural systems and the restoration processes initiated on the site. In addition, the land's long-term goals and practices for forest stewardship will be interpreted.

➤ **Management Recommendations**

- Several important interpretive messages will be displayed in a relatively compact area within the trailhead facility off of 276<sup>th</sup> Ave. SE.
- Themes will be developed based on information discussed in the Draft King County Parks and Recreation Division Interpretative Master Plan (2002). Interpretive messages will be directed to forest health and forest management, historic use, salmon habitat awareness, and watershed awareness.
- Two interpretive trail loops will be developed near the parking facility. One concentrating on forest practices and management and the other towards Holder Creek to focus on streams, salmon, wetlands, and watersheds.

**Management Objective**

To provide a place where groups can conduct environmental education field activities.

➤ **Management Recommendation**

- Provide an educational kiosk and interpretative trail at the western portion of the site near the trailhead to be developed off 276<sup>th</sup> Ave. SE, at the Hobart Gate.

## **Part VI. Management Implementation**

The implementation of the management actions is dependent on the phasing restrictions, management priorities, available funding and staffing. Implementation of the actions requires extensive cooperation among the King County Department of Natural Resources and Parks staff. Funding and staffing are all critical to effective implementation as is setting site-specific priorities and phasing them in over time. In addition, effective implementation also relies on King County and its departmental priorities, funding, and coordination among King County Department of Natural Resources and Parks staff and public participation.

### **Site Maintenance Plan (SMP)**

The yearly on-going maintenance provided by the Parks Resource Coordinators and grounds crew programs includes site inventory, park inspection, natural area trail maintenance, noxious weed removal, litter and garbage pick-up, public and complaint resolution, drainage maintenance and repair, and road maintenance and repair. The SMP is presented in Appendix E. The 2003 budget for these activities is estimated at \$22,142 per year for resource coordinator and equipment operators.

## Implementation Matrix

<b>Implementation</b>		<b>0-2 years</b>	<b>2-5 years</b>	<b>5-10 years</b>	<b>10 + years</b>	<b>Estimated Cost one time/annual</b>	<b>Estimated Net Benefit One time</b>
<b>Site Maintenance Plan</b>	Costs are listed under Forest Resources, Aquatic Resources & Wildlife, Roads, and Public Use Resources					<b>Yearly cost: \$22,000 (break down by tasks is below)</b>	
<b>Forest Resources</b>	Forest Type 3: Regeneration treatments. 71 acres.	<b>2003</b>				<b>\$204,480 (Logging &amp; Hauling)</b>	<b>\$306,720</b>
	Forest Type 15: Regeneration treatments. 46 acres	<b>2005</b>				<b>\$50,000 (Logging &amp; Hauling)</b>	<b>\$50,000</b>
	Forest Type 19: Thinning to improve forest health. Follow with the planting of root rot tolerant species. 8 acres.	<b>2004</b>				<b>\$37,080 (Logging &amp; Hauling)</b>	<b>\$37,080</b>
	Forest Type 3 Regeneration treatments. 43 acres.	<b>2004</b>				<b>\$86,688 (Logging &amp; Hauling)</b>	<b>\$130,032</b>
	Forest Type 3: Regeneration treatments. 45 acres.		<b>2005</b>			<b>\$90,720 (Logging &amp; Hauling)</b>	<b>\$136,080</b>
	Forest Type 2: Thinning of 23 acre portion of stand to accelerate forest succession		<b>2007</b>			<b>\$54,337</b>	<b>\$54,337</b>
	Forest Type 8: Monitor the seedling survival of 1998 conifer under planting. Replant if necessary.	<b>2003</b>				<b>\$700</b>	
	Forest Type 4: Monitor the seedling survival of 1999 conifer under planting. Replant if necessary.	<b>2004</b>				<b>\$700</b>	
	Forest Type 5: Monitor the seedling survival of 1999 conifer under planting. Replant if necessary.	<b>2004</b>				<b>\$ 700</b>	
	Forest Type 10: Monitor cottonwood markets for improvement. If they improve significantly, harvest merchantable black cottonwood.	<b>On- going</b>				<b>NA</b>	
	Forest Type 12: Commercial thinning of cottonwood in overstory if cottonwood markets improve.		<b>2006- 2011</b>			<b>\$18,641 (Logging &amp; Hauling)</b>	<b>\$18,641</b>

	Forest Type 17: Thinning to lessen competition and promote forest health.			2011		\$100,985 (Logging & Hauling)	\$100,985
	Forest Type 18: Re-evaluate stand to determine if stand and market conditions warrant harvest and initiation of new stand.			2012		NA	NA
	Forest Type 7: Initiate stand regeneration to a stand containing a higher percentage of coniferous species.				2017-2022	NA	NA
	Forest Type 1: Re-evaluate for thinning to perpetuate coniferous forest cover.				2030	NA	NA
	Forest Type 9: Re-evaluate for thinning to perpetuate coniferous forest cover.				2030	NA	NA
	Forest Type 11: Re-evaluate for thinning to perpetuate coniferous forest cover.				2030	NA	NA
	Forest Type 13: Re-evaluate for thinning to perpetuate coniferous forest cover.				2030	NA	NA
	Forest Type 20: Re-evaluate for treatment to perpetuate a coniferous stand.				2030	NA	NA
<b>Roads Maintenance</b>	PMP's road maintenance cost	2003 2004	2005-7			\$8,359 yearly	
	On-going maintenance cost for Roads A,E,G, and half of H Upgrade costs		2006	2008-13	2014-19	\$6,000 yearly \$143,000 once	
	See costs in Appendix D Costs to inactivate Roads O,P, Q, and half H and to abandon half of F, and I		2003-5			8177,133 once	
	Costs to inactivate Roads D, ,K, M,N trail 2,25,26, and unidentified road			2008-13		\$13,869 once	
	On-going maintenance costs for inactivated roads			2008-13	2014-19	\$5,000 yearly	
<b>Aquatic Resources and Wildlife</b>	Conduct native tree and shrub plantings	On going				1,114 yearly	
	Noxious, invasive and non-native weed control	On going				1,060 yearly	

	<b>Site Inventory / Monitoring</b>	<b>On going</b>				<b>318 yearly</b>	
	<b>Further ecological studies, research and surveys</b>					<b>Not-funded</b>	
	<b>State Route 18 Wildlife Crossing</b>					<b>Not-funded</b>	
	<b>Grant Submissions and Academic Partnerships for ecological projects and programs</b>	<b>On going</b>				<b>NA</b>	
<b>Public Use Resources</b>	<b>Public Use Plan and Trails Assessment</b>	<b>2003</b>				<b>IAC Nova Grant/ 30,000</b>	
	<b>Trail maintenance and new trail construction</b>	<b>2003</b>	<b>2004-7</b>			<b>3,156 IAC NOVA grant</b>	
	<b>Park inspection, complaints response</b>	<b>On-going</b>				<b>2,546 yearly</b>	
	<b>Access issues, litter and garbage control</b>					<b>1,803 yearly</b>	

## **Part VII. Monitoring and Adaptive Management**

There are two types of monitoring that will occur: 1) monitoring of our actions to determine if they are succeeding and meeting our goals, objectives and recommendations; and 2) monitoring of processes where we are not taking any action to determine if we need to take action.

Monitoring information will be used to adaptively manage the site. Monitoring tasks will be prioritized to help decide which monitoring activities should be emphasized based on funding and staffing limitations. King County Department of Natural Resources and Parks staff will actively seek out applying commercial harvest treatment funds for site management actions and monitoring costs. In addition, grants to cover monitoring costs will be presuded. Cooperative partnerships with educational institutions could provide the County with additional expanded monitoring capabilities.

### *1. First priority monitoring*

Monitoring of sensitive and ecologically significant natural areas, particularly critical fish and wildlife habitat.



## 2. *Second priority monitoring*

Monitoring of public use and resource impacts in non-sensitive areas such as trails, roads, trailheads, and access points.

Monitoring indicators should be selected to address monitoring objectives, to provide an early warning of change, be cost-effective and relatively easy to implement. The following are perspective monitoring activities that could be used to track ecological systems and public use on the Taylor Mountain Forest.

### **Ecological Systems**

- Repeat baseline streams surveys every ten years to track stream processes.
- Record and track relative abundance and location of anadromous and resident fish species according to life cycle requirements.
- Track and document habitat fragmentation within Taylor Mountain Forest and on adjacent properties every ten years.
- Use photographic recording of fixed points to measure change of extent and amount of plant community and habitat types.
- Maintain records of wildlife sightings.
- Document type, relative abundance and location of noxious, invasive and non-native weeds.
- Incorporate breeding bird surveys every five years.
- Use amphibian species monitoring every five years to determine changing populations.

### **Forestry**

- Monitor conifer understory plantings in Forest Type 4, 5, and 8.
- Monitor forest management activities to determine native species recruitment, soil preservation, and impacts to ecological systems.
- Set up a permanent plot system to monitor for individual changes in forest health, growth, and species composition over time.
- Monitor for non-native and invasive species after forest management activities.

## **Public Use**

- Access changes in trail width, number of “bootleg” trails and rates of erosion through field checks and photographic recording measurements.
- Meet with City of Seattle, Washington Department of Natural Resources and other adjacent landowners and interest groups to monitor public use activities and establish public use patterns.
- Document frequency of reports of non-compliance and user conflicts and enforcement actions.
- Document frequency, type of damage and vandalism to structures and vegetation.

## **Monitoring Implementation for Adaptive Management**

During 2003, very limited funding is available for monitoring. Tasks will be limited to those outlined in the Site Maintenance Plan, which includes inspection, natural area inventory, noxious weed removal, litter and garbage pick up, drainage maintenance and repair, and trail maintenance.

As additional funding becomes available from timber revenues and grant sources, monitoring of the Taylor Mountain Forest should take place at regular intervals to determine the effectiveness of the goals, objectives, and management recommendations in this forest stewardship plan. A systematic method for recording and storing monitoring data is essential to any functioning monitoring program and should be developed. Bi-annual reports and work plans should reflect monitoring activities and an analysis of results.

The Forest Stewardship Plan should be reviewed in five years and updated in ten as part of using adaptive management for the site. This review will allow reevaluating of the objectives, recommendations, and monitoring strategies in light of any new information obtained over time. Hopefully, monitoring will provide information about how our actions are affecting these lands.

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