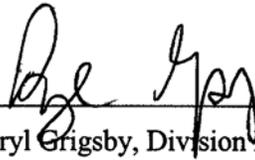


# Kathryn C. Lewis Natural Area Site Management Guidelines

*April 2005*



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**King County**

Department of Natural Resources and Parks

**Water and Land Resources Division**

# Kathryn C. Lewis Natural Area Site Management Guidelines

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# Executive Summary

Kathryn C. Lewis Natural Area is a King County Department of Natural Resources and Parks Ecological Land managed for the protection of ecological values and, where appropriate, public access. Kathryn C. Lewis Natural Area is located approximately four miles east of the city of Redmond off of NE Union Hill Road in unincorporated King County. The predominantly forested 10-acre site lies in the Bear Creek Basin just north of Evans Creek. Kathryn C. Lewis Natural Area is bordered by private property characterized by rural residential development. The site was donated to King County in 1986 with the agreement that the property will remain as natural open space.

Approximately 95% of Kathryn C. Lewis Natural Area is comprised of 45-55 year-old conifer. There are no sensitive areas on the site, but Evans Creek, a tributary of Bear Creek, flows nearby and contains Chinook, coho and sockeye salmon. The site provides habitat and refuge for a variety of birds and mammals.

Current public use of the Kathryn C. Lewis Natural Area is minimal due to its relatively limited access, generally undeveloped character and lack of trails. Some informal recreational activities such as nature observation and bird watching occur, especially on the edges of the site.

The goals for the Kathryn C. Lewis Natural Area are 1) to conserve and enhance the ecological value, and 2) to accommodate appropriate public uses that do not harm ecological resources. The following are planning and management recommendations that are designed to support these goals.

- Implement preserve and protect measures to limit inappropriate public use.
- Monitor public use, types of use and impacts to ecological systems to inform management decisions.
- Control noxious, invasive and non-native plant species.
- As required in the statutory warranty deed, identify trees, plants and shrubs with interpretive placards.
- Survey property boundary to ensure that neighboring landowners are not encroaching on the site.
- Create a limited, legal access for King County vehicles to allow for maintenance activities.

# Kathryn C. Lewis Natural Area Site Management Guidelines

## Introduction

Kathryn C. Lewis Natural Area is a King County Department of Natural Resources and Parks (DNRP) Ecological Land. Ecological Lands are a category of Water and Land Resources Division (WLRD) properties managed for the protection of their ecological value. Appropriate public access and interpretive opportunities are accommodated on these sites where they do not harm the ecological value of the site.

This document provides general property and acquisition information, a description of existing site conditions, a chronology of recent events and management actions, and a list of management objectives and recommendations for Kathryn C. Lewis Natural Area. These site management guidelines were developed using guidance established in the King County Water and Land Resources Division Ecological Lands Handbook (King County, 2003).

## Part 1. General Property Information

Kathryn C. Lewis Natural Area is located approximately four miles east of the city of Redmond off of NE Union Hill Road in unincorporated King County. The predominantly forested 10-acre site lies in the Bear Creek Basin just north of Evans Creek and provides one of the few substantial blocks of contiguous forested habitat in the area. Kathryn C. Lewis Natural Area is bordered by private property characterized by rural residential development.

Kathryn C. Lewis Natural Area is zoned RA-5 in accordance with the King County Comprehensive Plan (2004). The zoning designation refers to the rural land use where the predominant lot pattern is five acres or greater but less than ten acres in size. The purpose of the rural area zone (RA) is to provide for the long-term rural character and to minimize land use conflicts with nearby agricultural and forest production districts or mineral extraction sites (King County Code 21A.04.060). The purposes are accomplished by: 1) limiting residential development; 2) allowing small scale farming and forestry activities and tourism and recreation uses compatible with rural character; 3) increasing required setbacks to minimize conflicts with agriculture, forest and mineral zones; and 4) requiring tracks of cluster development designated as permanent open space.

Land use in the Bear Creek Basin is largely rural in character, especially in the eastern portion of the basin where it connects with the sparsely developed agricultural setting of the Snoqualmie Valley. The communities in the Bear Creek Basin have historically supported rural land uses such as agricultural and timber production but both urban land use and population are rapidly increasing. Urban land uses including residential and commercial development as well as industrial activities are primarily concentrated in the southern part of the basin near the City of Redmond but are advancing north and east into unincorporated parts of King County (King County, 1990a). Since 1990, the population of Redmond and the surrounding region has increased by more than 26% and it is predicted that further increases of approximately 20% will occur over the next 20 years (Puget Sound Regional Council, 2001).

**Table 1. Kathryn C. Lewis General Information.**

Best Available Address	23320 Union Hill Road, Redmond
Thomas Guide Map Location	Page 537
Legal Description	Section 10, Township 25 N, Range 6 E
Acreage	10.01
Drainage Basin	Evans Creek
WRIA	8
Council District	3
King County Sensitive Areas	None mapped

**Table 2. Kathryn C. Lewis Natural Area Parcel Information.**

Parcel Number	Acreage*	Purchase Date	Ownership type/price	Previous Names	Zoning	Funding Source	Recording Number
1025069027	10.01	10/07/1985	Owned in Fee; Donation	Kathryn C. Adams Lewis Park	RA-5	Donation	8510080909

\*Acreage from King County Assessor's data.

## Part 2. Acquisition, Funding Source and Deed Restrictions

The Kathryn C. Lewis Natural Area, formally referred to as Kathryn C. Lewis Park, was donated to King County “for and in consideration of acceptance of open space and recreation” in 1986.

According to the statutory warranty deed, dated January 5, 1985, the donation was agreed to on the condition that:

- The County of King covenants and agrees that the use of subject property shall be restricted to open space and as a natural, wildlife sanctuary with foot and bridle trails established for the educational observance of the botanical make-up of our northwest forests;
- Trees, plants and shrubs will be identified with interpretive placards;
- King County will not use, nor will King County authorize the use of subject property for any use except open space and natural wildlife uses;
- The County may place improvements and impose regulations on said property consistent with the proper maintenance and preservation of the public health, safety, morals and general welfare in keeping with the intended use of the property;
- King County recognizes the right of “Mr. Chester M. Lewis” to salvage trees blown down by the wind.

Further, the statutory warranty deed states the “a departure from this stated usage for any reason within fifty years of the signing, would cause the property to revert” to the property’s heirs.

## Part 3. Ecological Resources

This section describes the natural resources and ecological processes present at Kathryn C. Lewis Natural Area.

### Topography and Soils

The Kathryn C. Lewis Natural Area contains gently sloping topography, which increases in elevation in a northwestern direction. The maximum elevation in the northwest portion of the property is approximately 535 feet above sea level and the minimum is approximately 503 feet above sea level.

The soil survey, King County Area, Washington, maps soils within the property boundaries as almost exclusively of the Alderwood gravelly sandy loam (Snyder et al., 1975). The Alderwood series is made up of moderately well drained soils located mostly on rolling uplands and formed under conifer species and in glacial deposits. This soil type is common on slopes of 6–15%. To a much lesser extent, the eastern boundary of the natural area may contain traces of Everett gravelly sandy loam, which occurs on slopes of 5-15% and has a slight to moderate erosion hazard.

According to the Sensitive Areas Map Folio, there are no sensitive areas on the site (King County, 1990b).

## **Bear Creek Basin Hydrology**

Bear Creek Basin is part of the larger Lake Washington/Cedar/Sammamish Watershed (Watershed Resource Inventory Area [WRIA] 8). The Lake Washington/Cedar/Sammamish Watershed is composed of an eastern portion that lies in the Cascade Range and a western portion, which occupies the Puget Sound lowlands.

The Bear Creek Basin covers approximately 32,100 acres (50 square miles) and includes 30 tributaries in southern Snohomish county and northern King County (King County, 2002). Bear Creek Basin has three main tributaries: Bear Creek, Cottage Lake Creek and Evans Creek. Large sections of the Basin have undergone development and residential growth which has fundamentally altered the dynamic flooding processes of the Bear Creek Basin in terms of its in-channel and riparian habitat, sediment load, channel migration and interaction with its floodplain.

Bear Creek originates in Paradise Valley immediately north of Paradise Lake and flows a total of 12.4 miles to the confluence with the Sammamish River at R.M. 12.2 near Redmond (Williams et al, 1975). Cottage Lake Creek originates from Little Lake and Crystal Lake about 1.5 miles north of the Woodinville-Duvall Road.

Evans Creek, which is 8.2 miles in length and has 15 small tributaries, originates from a network of wetlands 5 miles east of Redmond on Union Hill. The lower 2.5 miles of Evans Creek lies in the Sammamish Valley. On the valley floor the creek abruptly turns northwest until it joins Bear Creek at R.M. 2 (Williams et al, 1975). In this lower section, Evans Creek has a gentle gradient, good riffle-pool stability and bottom gravels with stream widths between 13 and 20 feet (Williams et al, 1975).

Evans Creek, which is located just south of Kathryn C. Lewis Park Natural Area, flows south from forested hillsides through a narrow canyon (from R.M. 7.0 to 5.4) with steep gradients of 200 feet per mile. In the upstream canyon of Evans Creek cascades, rapids and small falls with boulders, rubble and fallen trees predominate (Williams et al, 1975). North of Kathryn C. Lewis Park Natural Area a small intermittent tributary flows off the hillside and into Evans Creek.

## **Wetlands**

No wetlands have been identified on the Kathryn C. Lewis Natural Area (King County, 1990b).

## **Vegetation**

The Kathryn C. Lewis Natural Area is composed predominantly of forest cover and provides one of the few substantial blocks of contiguous forested habitat in the area. Approximately 95% of the natural area is composed of a relatively homogeneous second growth conifer stand. The stand is dominated by even-aged western hemlock (*Tsuga heterophylla*) and Douglas fir (*Pseudotsuga menziesii*) ranging between 45-55 years of age. The stand appears healthy although it is susceptible to blow-down due to its exposed position on the hillside. A few large deciduous trees, including red alder (*Alnus rubra*) and big-leaf maple (*Acer macrophyllum*) are present in the south part of the natural area.

The understory layer of the Kathryn C. Lewis Natural Area is well developed. The forest floor is thickly populated with 5-10 year old western red cedar (*Thuja plicata*), western hemlock and Sitka spruce (*Picea*

*sitchensis*). The shrub layer is dominated by salal (*Gaultheria shallon*), sword fern (*Polystichum munitum*), Indian plum (*Oemleria cerasiformis*), cascara (*Rhamnus purshiana*), trailing blackberry (*Rubus ursinus*) and snowberry (*Symphoricarpos albus*).

Residential development around the Kathryn C. Lewis Natural Area has acted to propagate non-native plant species, especially along the natural area boundaries. At present, Scot's broom (*Cytisus scopaius*), English ivy (*Hedera helix*), English holly (*Ilex aquifolium*) and Himalayan blackberry (*Rubus discolor*) populate the site.

## **Fish and Wildlife**

The Bear Creek Basin sustains the North Lake Washington population of chinook salmon. Chinook salmon (*O. tshawytscha*) are listed as threatened under the federal Endanger Species Act and are part of the larger Puget Sound chinook salmon evolutionary significant unit. Bear Creek represents a “core” area for chinook salmon production (King County, 2002). A core area designates chinook populations that are present on an annual basis and represent high abundance for spawning, rearing and migration areas. The chinook stocks are native with wild production. Several other salmonid species use Bear Creek for spawning or rearing purposes. These include sockeye (*O. nerka*), coho (*O. kisutch*), steelhead/rainbow (*O. mykiss*) and coastal cutthroat (*O. clarki*).

Evans Creek, which is a sub area of Bear Creek Basin and is in close proximity to Kathryn C. Lewis Parks Natural Area, is considered a satellite area for chinook salmon in which chinook are present most years but are less abundant than in core areas. Evans Creek is home to substantial populations of coho and sockeye salmon. Evans Creek has one of the largest populations of coho salmon in the entire Bear Creek Basin (King County, 1990a).

The Kathryn C. Lewis Natural Area provides habitat and refuge for a variety of wildlife species that likely migrate through the area. Deer, coyotes and other small mammals such as shrews, mice, voles, squirrels and weasels are likely the most common species on site. However, it is probable that bears and cougars travel through the natural area on occasion. The site may also provide habitat for a variety of resident and migratory bird species.

## **Part 4. Site Use and Infrastructure**

This section describes public use, access points, and site infrastructure such as trails and roads at Kathryn C. Lewis Natural Area.

### **Public Use**

Public use of the Kathryn C. Lewis Natural Area is minimal since it has no history of public visitation, lacks public access and contains no formal trails. A majority of the site's public use comes from adjacent landowners and nearby residents that have easy access to the site from their property. Informal passive recreational activities include walking and nature observation.

### **Access**

There is no vehicular public access to the Kathryn C. Lewis Natural Area. Since a majority of the visitors to the site are adjacent landowners and nearby residents, access is predominantly from neighboring backyards.

King County staff currently uses a private driveway off of NE Union Hill Road to access the natural area for maintenance and inspection purposes.

## **Trails and Roads**

Kathryn C. Lewis Natural offers no official King County sanctioned trails, although adjacent property owners maintain a network of informal paths throughout the property. These informal paths are used almost exclusively by nearby residents.

## **King County Stewardship Activities**

On going maintenance and stewardship of the Kathryn C. Lewis Natural Area is provided by the King County Parks Resource Program staff and documented in the annual Site Maintenance Plan (SMP). The SMP's document on-site tasks including but not limited to: litter and garbage pickup, park inspections, trail maintenance, and signage.

## **Part 5. Analysis**

This section is intended to integrate site-specific information, public access considerations, and the larger landscape considerations described in the conservation principles section of the King County Ecological Lands Handbook (2003). This section presents the analysis from which site management recommendations will be made.

### **Species of Concern**

Due to the possibility that information gaps exist, the species identified in this document very likely do not account for all species that use Kathryn C. Lewis Natural Area for one or more stages of their lifecycle.

Although there is no documented evidence that threatened species utilize the Kathryn C. Lewis Natural Area, the presence of chinook salmon, a species listed as threatened under the ESA, in close proximity make habitat preservation and enhancement a priority. In addition, the existence of chinook and other anadromous salmon in Evans Creek and the greater Bear Creek Basin makes it essential to protect and restore the system, including the area around Kathryn C. Lewis Natural Area. Although, Kathryn C. Lewis Natural Area is small in relation to the overall basin and landscape, maintaining its ecological integrity is important to the overall health of the system.

### **Ecological Processes**

Ecological processes must be maintained for ecosystems and habitats to be sustained. Current conservation theory suggests that where ecological processes are intact, systems are likely to recover – or be recovered - more easily from disturbances or inappropriate actions (if the actions themselves are not permanent). Conversely, the more interference there has been with the basic ecological processes, the greater the severity and longevity of the effects (King County, 2003). If systems are not functioning properly, management activities should focus on system-wide processes instead of affected elements. Ultimately, management actions that do not consider the processes are less sustainable.

Bearing this concept in mind, management decisions within the Kathryn C. Lewis Natural Area should strive to maintain or if possible enhance basic ecological processes. A current assessment seems to indicate that the site's ecological processes, including water, sediment, nutrients and energy are relatively intact. However, accelerating development has substantially degraded the ecological processes at the landscape level (King County, 1990a).

At this point Kathryn C. Lewis Natural Area has no immediate need for enhancement or restoration projects to improve ecological processes on site. The management of the site should be geared towards allowing natural processes to occur unencumbered. Monitoring of ecological processes should occur on a regular basis to ensure existing processes remain intact and functioning.

## **Ecological Structure and Function**

Conservation principles suggest that by addressing ecological processes on site, structure and function will follow. However, since the ecological processes are relatively intact at the Kathryn C. Lewis Natural Area, the next level of intervention would address ecological structure and function. An ecologically diverse and functioning Kathryn C. Lewis Natural Area provides numerous ecological benefits such as creating a canopy and contributing to biological diversity.

Limited opportunities exist to enhance the structure and function of Kathryn C. Lewis Natural Area. However, opportunities exist to enhance the structural component of the natural area through conifer plantings in the understory of the homogenous second growth conifer stand. More practical opportunities exist to remove and control noxious, invasive and non-native plant species, especially along borders of the natural area where the vegetation has been disturbed by development. Control strategies should include the periodic removal of unwanted plant species to ensure they do not get established. Both plantings and noxious, invasive and non-native plant removal would enhance and maintain the site's structural complexity and plant diversity.

Although opportunities for enhancement projects exist in the Kathryn C. Lewis Natural Area, they are not a high priority because the structure and function of the site will improve naturally over time. The benefits and effectiveness of such restoration and enhancement opportunities in relation to the cost may make any projects unaffordable. Management of the site should be geared toward maintaining the site's structure and function by controlling noxious, invasive and non-native plant species and allowing natural succession to occur.

## **Monitoring**

There are two types of monitoring: 1) monitoring of management actions to determine if they are succeeding in their objectives; and 2) monitoring processes on lands where no management action is taking place and to determine if management action is needed (King County, 2003). Since natural and social systems are uncertain, dynamic and in a constant state of flux, monitoring information is used to manage adaptively.

While long-term monitoring of Kathryn C. Lewis Natural Area would provide an early warning of ecological change on the site, it is not needed at this time. If future projects are initiated on site or if public use increases substantially, an appropriate monitoring framework should be administered. However, King County Department of Natural Resources and Parks staff should monitor public use and ecological impacts to the site as much as possible. Photographic evidence should be kept in order to visualize short and long-term changes.

Since the Kathryn C. Lewis Natural Area contains large trees that are susceptible to blow-down and in close proximity to residential properties, King County Department of Natural Resources and Parks should also monitor for hazard trees.

## **Public Use**

Currently, public use of the Kathryn C. Lewis Natural Area is minimal due to its lack of access, formal trails and history of public use. Since there is no public access, a majority of the site's public use comes from adjacent landowners and nearby residents. The informal recreational activities on site include walking and nature observation on a network of informal paths. The current level of public use appears to have no adverse effect on the ecological resources.

Since the Kathryn C. Lewis Natural Area is used almost exclusively by adjacent landowners, King County should inform them as to the purpose and goals of the site. In addition, adjacent landowners who are aware and informed as the purpose and maintenance needs of the natural area can assist and support current and future stewardship and monitoring of the property.

The lack of access to the site, especially for King County staff should be addressed. Currently, maintenance vehicles can only access the site through private property. A small area for parking one or two maintenance vehicles should be considered. The location of this area would be restricted to the location where a narrow strip of the Kathryn C. Lewis Natural Area intersects Union Hill Road. The access should be limited to King County vehicles.

At this point in time no revenue generating opportunities are foreseeable at Kathryn C. Lewis Natural Area.

## Part 6. Management Goals, Objectives, and Recommendations

The objectives and recommendations in this section are derived from the analysis in the previous section. Office of Rural and Resource Programs staff will revise the recommendations for Kathryn C. Lewis Natural Area within five years, or more frequently when new information from site monitoring programs and other initiatives indicates a need for a change in management strategies.

### Goals for Kathryn C. Lewis Natural Area

The goals for all King County Ecological Lands are to:

- conserve and enhance ecological value, and
- accommodate appropriate public use that does not harm the ecological resources on site

The objectives and recommendations that follow are designed to support these goals when practicable at Kathryn C. Lewis Natural Area. The corresponding matrix (Table 3) designates the King County Department of Natural Resources and Parks staff involved in implementing the specific recommendations.

### Management Objectives and Recommendations

*Objective: Maintain and enhance ecological processes, structure and function*

➤ *Recommendation: Control noxious, invasive and non-native plant species*

King County Department of Natural Resources and Parks staff should manage noxious, invasive and non-native plant species in the Kathryn C. Lewis Natural Area. These efforts will aid in maintaining the ecological structure of the site.

Priority areas for control strategies should be along the borders of the natural area where the vegetation has been disturbed by development. Control strategies should include the periodic removal of unwanted plant species to ensure they do not get established.

➤ *Recommendation: Monitor for enhancement and restoration opportunities*

King County Department of Natural Resources and Parks should continue to manage the Kathryn C. Lewis Natural Area to protect and enhance its ecological resources and floodplain conditions. While there is no immediate need to initiate enhancement or restoration projects, King County staff should monitor regularly for opportunities to enhance the site's ecological processes, structures and function.

*Objective: Allow levels of public use that do not impact ecological resources*

➤ *Recommendation: Implement preserve and protect measures*

The Kathryn C. Lewis Natural Area receives only limited public use, predominately from adjacent landowners. Limited low-impact public use is compatible with the site goals provided that the ecological

resources are not impacted. King County Park staff should recommend, install, and maintain any necessary improvements to protect the site from inappropriate uses.

King County Park staff should regularly monitor Kathryn C. Lewis Natural Area for hazard trees. The natural area contains large trees that are susceptible to blow-down and in close proximity to residential properties. If hazard trees are identified, King County Department of Natural Resources and Parks staff should make it a high priority to reduce the hazard.

The statutory warranty deed established at the time of acquisition explicitly recognizes as a condition for the donation that King County will identify with interpretive placards, trees, plants and shrubs at the Kathryn C. Lewis Natural Area. Currently, the site lacks any interpretive placards. King County Natural Resources and Parks staff should meet this condition by creating basic placards and identifying important tree, plant and shrubs species within the natural area.

➤ *Recommendation: Monitor public use*

King County Park staff should note and record changes in visitor numbers and types of public use activities during site inspections of the Kathryn C. Lewis Natural Area. Noticeable visitor impacts from public use on the ecological resources should be addressed.

King County Park staff should monitor possible encroachment from adjacent landowners.

The monitoring information should be reported annually to the King County Natural Resource Lands Program for updating and adapting site management guidelines.

➤ *Recommendation: Survey property boundary*

King County Department of Natural Resources and Parks staff should survey the perimeter of the Kathryn C. Lewis Natural Area to identify the property boundary. King County staff should, if necessary, contract with an outside consultant to carry out the work. The survey is needed to ensure that adjacent landowners are not encroaching on the natural area.

➤ *Recommendation: Create limited access for King County staff*

King County Department of Natural Resources and Parks should consider creating limited access for King County vehicles, which will allow for the maintenance of Kathryn C. Lewis Natural Area. Currently, maintenance vehicles can only access the site through private property. The location of this primitive parking area would be restricted to the location where a narrow strip of the Kathryn C. Lewis Natural Area intersects Union Hill Road. The access should be limited to King County vehicles only.

*Objective: Implement site management guideline recommendations*

➤ *Recommendation: Site maintenance plan creation*

King County Park staff should prepare a site maintenance plan for Kathryn C. Lewis Natural Area that incorporates these site management plan recommendations. King County Natural Resources Lands staff and the Bear Creek Basin Steward should collaborate on this effort.

➤ *Recommendation: Coordinate implementation of site management guideline recommendations*

King County Natural Resource Land staff should monitor the recommendations in the site management guidelines and coordinate with the various programs responsible for implementing these recommendations to facilitate their timely accomplishment.

King County Natural Resource Lands staff should coordinate with the Bear Creek Basin Steward and King County Park staff to revise the site management guidelines as needed.

**Table 3. Kathryn C. Lewis Natural Area Management Recommendations**

<b>Recommendations</b>	Cost	year	Park Resource Staff	Basin Steward	WRIA Project Coord.	CPOSA /Contract	WEA T	GIS	NRL staff
<b>Priority One</b>									
Monitor public use		On-going	X						X
Implement preserve and protect measures		On-going	X						X
Survey property boundary		2005-2006	X	X					X
Site maintenance plan creation		Annual	X	X					X
<b>Priority Two</b>									
Control noxious, invasive and non-native plant species		On-going	X	X		X			X
Create limited access for King County staff		2005-2008	X	X					X
Monitor for enhancement and restoration opportunities		On-going	X	X					X
Coordinate implementation of site management guideline recommendations		On-going	X	X					X

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