

Cedar Grove Road Natural Area Site Management Guidelines

November 2004



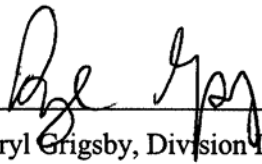
King County

Department of Natural Resources and Parks

Water and Land Resources Division

Cedar Grove Road Natural Area Site Management Guidelines

November 2004



Daryl Grigsby, Division Director

King County Water and Land Resources Division



King County

Department of Natural Resources and Parks
Water and Land Resources Division

Office of Rural and Resource Programs

201 South Jackson Street, Suite 600
Seattle, WA 98104
206-263-3723
dnr.metrokc.gov/natural-lands

Alternate formats available
296-6519 or TTY Relay: 711

Cedar Grove Road NA SMG_Final_November 2004.doc



Cedar Grove Road Natural Area Site Management Guidelines

Summary

Site Description

Cedar Grove Road Natural Area is a King County Department of Natural Resources and Parks (DNRP) Ecological Land. Ecological Lands are managed for the protection of their ecological value, with appropriate public access.

Cedar Grove Road Natural Area is 2.55 acres in size and consists of four parcels. The property is located approximately four miles southeast of Renton and three miles north of Maple Valley. The site is located at the northeast corner of the intersection of State Route 169 (Maple Valley-Black Diamond Road) and Cedar Grove Road. The Cedar River forms the north and east boundaries of the site. The Cedar River Trail runs along the western side of the property.

This reach of the Cedar River was formerly extensively braided, but the channel location is relatively stable at this time due a high number of revetments and locations where it flows against the valley wall. Cedar Grove Natural Area is located directly across the river from the right bank Rainbow Bend levee, and immediately upstream from the left bank Cedar Trail levee. Both the Cedar Grove Natural Area and the entire Rainbow Bend peninsula across the river lie completely within the 100-year floodplain; the floodway (the area of deepest and fastest flows) extends across much of these areas as well.

After this area experienced flooding during the 1995/1996 season, these two residential and two vacant parcels were bought as a joint effort by the Water and Land Resources Rivers program and the Department of Parks and Recreation. The former residential parcels are subject to specific FEMA deed restrictions limiting construction on site. The homes were removed from the site, and subsequent project work removed a levee and sought to restore natural floodplain processes such as flood storage, channel migration, and plant community succession. An interagency agreement signed in 1998 indicates that the Rivers/Flood Hazard Reduction section is responsible for maintenance of the habitat restoration project and restored area, and Parks/Natural Resource Lands program is responsible for long-term, routine management of the site.

The eastern part of the property supports typical riparian forest along the Cedar River: black cottonwood and red alder overstory, with mostly native species in the understory (thimbleberry, salmonberry, willows). A sparse conifer overstory and older bigleaf maples exist on the western portion of the site from earlier homes at the property. Japanese knotweed occurs along the riverbank. The central and western portions of the site were hydroseeded and replanted during project work.

The large gravels in this part of the river are suitable for spawning by sockeye, Chinook, and coho salmon, as well as rainbow, steelhead, and cutthroat trout.

Public Use

Passive recreational uses at the site include walking, picnicking, and nature observation. The eastern portion of the Cedar Grove Road Natural Area is used by rafters during weekends as a pull-out. An informal trail that leads from Cedar Grove Road east to the Cedar River is regularly used by visitors. Smaller informal trails allow users more occasional access to other portions of the site. In the central portion of the site is a grassy clearing in which trees have been re-planted, and woody debris has been installed for wildlife habitat. This grassy part of the site can provide an appropriate area for public use as long as that use does not impact the tree plantings in this area. In other portions of the site, dense shrub vegetation may limit access.

Seasonal access to the river can present a problem depending on its intensity, its location, litter associated with site use, or the timing of its impacts on the salmonid populations in the river. Signage has been posted to discourage entrance into the river during the fall spawning season. Parks staff monitor the site to

note access routes and levels of use. In areas where trail use negatively impacts ecological conditions (e.g. poorly sited trail on an erosive bank), Parks staff would work to close down that trail.

The site is readily accessible from the adjacent Cedar River Trail. The access of this site by pedestrians and other users from the Cedar River Trail, and by local residents, is the most appropriate method of access. There is no parking at the site (although parking occurs along the side of the road). It would not be appropriate to accommodate parking within the site for the following reasons: the small size and narrow dimensions of the site; the extent of habitat restoration that has occurred at the site; the stated acquisition priorities of “open space, habitat restoration, riverine habitat, and passive park use”; and the potential impacts to the ecological conditions at this small site that would be likely with higher intensity use associated with parking lot development.

Management Objectives and Recommendations

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 following are management recommendations that are designed to support these goals. Text follows each recommendation explaining how that recommendation applies at the site.

Objective: Maintain ecological integrity of the site

Recommendation: Ensure that management and public access support the regional ecological value of site

Decisions about site management and public access should consider the site’s contribution to forested floodplain habitat along the Cedar River, and the priorities of the restoration project to restore natural floodplain processes such as flood storage, channel migration, and plant community succession. Public use at the site may be most supportable in the grassy area in the central portion of the site and the main trail leading east along Cedar Grove Road to access the water. This overarching recommendation is carried out through the various recommendations below.

Objective: Restore native vegetation

Recommendation: Monitor and control invasive vegetation

Park staff should monitor and control the spread of the noxious and non-native, invasive plant species present at Cedar Grove Road Natural Area. The extent of work will depend on staff and budget. A priority for control is in the areas where planting and weed control projects have already occurred.

Flood Hazard Reduction Services and Parks staff may coordinate their control work depending on available staff and budget. Given the extent of Japanese knotweed on the site, the best approach to weed control may be a project with continued maintenance with the Small Habitat Restoration Project, other small project effort, or work with the Noxious Weed Control Program.

Objective: Allocate site management tasks to responsible agents

Recommendation: Monitor restoration project

King County WLR/Rivers staff will perform monitoring through 2005 for permit conditions, to ensure 80% survival of plants. Plantings will be observed for plant survival, and re-planted where die-off has occurred. WLR/Rivers staff have responsibility for monitoring and maintenance of the habitat project.

Parks staff shall perform day-to-day maintenance on the site. Parks staff are not responsible for habitat project maintenance.

Recommendation: Ensure maintenance agreement promotes ecological stewardship of site

In the event that the maintenance agreement prevents or hinders management for the benefit of ecological features and processes across all four parcels, the agreement should be modified to allow management of the four parcels as one site by one entity, or to alter the stated responsibilities for restoration project maintenance vs. routine maintenance.

Objective: Allow current level of passive recreation opportunities at Cedar Grove Road

Recommendation: Monitor public access

Park staff should note changes in visitor numbers and types of recreational activities at Cedar Grove Road and observe noticeable visitor impacts on the ecological values of the site. This information should be reported to King County Natural Resource Lands Management Staff responsible for updating site management guidelines.

Objective: Protect the site from inappropriate public uses

Recommendation: Control litter/dumping and encroachment activities

Park staff should monitor the site for encroachment, dumping, and other trash and respond as necessary to maintain a clean and safe property. Monitoring should occur at least twice a month. Park staff should consider installing litter/dumping policy signs on the property if litter activity increases.

Recommendation: Address problem trails as they occur

Particularly during the summer season, Park staff should identify whether trails to the water are opening up which are poorly sited and degrade the ecological conditions of the site. Park staff should close down these trails as they occur. The main trail leading east to the river along Cedar Grove Road provides the most appropriate area for access.

Objective: Develop long term ecologically based protection and restoration actions

Recommendation: Evaluate recommendations for site restoration as they are developed

When proposals are put forward for habitat enhancement projects (whether developed by the Natural Resource Lands group, other King County groups, or others outside the County) evaluate the proposals for their impacts on the ecological processes, structure, and functions at the site. An ecological assessment of this site may precede project proposals. Projects on the Natural Area should be in keeping with the goals and objectives for this site.

The Cedar River Basin Plan, Flood Hazard Reduction Plan (FHRP), and WRIA 8 Chinook Salmon Conservation Plan contain a number of recommendations for this area that can be considered for future recommendations. These general proposals are aimed at the multiple objectives of the basin plan (flood hazard reduction, habitat quality and salmonid health, and water quality and quantity) and FHRP and have not as yet been prioritized or funded. Recommendations include buyout of frequently flooded properties, levee removal, and habitat enhancement projects in the vicinity; the plans include no recommendations for Cedar Grove Natural Area.

As projects on the Natural Area are prioritized and funded by King County agencies outside of the Natural Resource Lands group (or by other implementing agencies), projects should be reviewed by NRL through the "Application to Alter Parks Division and NRL Managed Properties" process to coordinate site management with project work.

Table of Contents

Summary	i
Table of Contents	iv
Acknowledgements	vi
Introduction	1
Part 1. General Property Information	1
Part 2. Acquisition History, Funding Source and Deed Restrictions	2
Part 3. Ecological and Physical Setting	8
Topography and Soils	8
Hydrology and Channel Morphology	8
Vegetation	10
Fish and Wildlife.....	11
Part 4. Public Use and Infrastructure	11
Public Use	11
Access	12
Trails and Roads.....	12
Maintenance Agreement	12
Flood facility maintenance.....	13
Part 5. Site Management Chronology	13
Part 6. Analysis	14
Information Gaps and Development of Management Recommendations	14
Species of Concern.....	14
Restoring Process.....	14
Restoring Structure and Function	15
Public Use	15
Part 7. Management Goals, Objectives, and Recommendations	15
Goals for Ecological Lands.....	15
Management Objectives and Recommendations	16
Implementation	17
References	19

List of Tables

Table 1. Cedar Grove Road Natural Area General Information.	1
Table 2. Cedar Grove Road Natural Area Parcel Information.	2
Table 3. Matrix of Management Recommendations.....	18

List of Figures

Figure 1. Vicinity Map.....	4
Figure 2. Identification of Parcels and Surrounding River Reaches	5
Figure 3. Site Features (Vicinity).....	6
Figure 4. Site Features	7
Figure 5. View of site from across Cedar Grove Road.	10
Figure 6. Restoration area in central portion of site.....	11
Figure 7. Eastern edge of site along Cedar River.....	11

Acknowledgements

Contributors:

Ingrid Lundin, Natural Resource Lands Management Program, King County DNRP

Anne Bikle, Cedar River Basin Steward, Land and Water Stewardship Services, King County DNRP

Don Harig, Resource Coordinator, Parks and Recreation Division, King County DNRP

Report produced by:

Natural Resource Lands Management Program

Office of Rural and Resource Programs

King County Department of Natural Resources and Parks

201 South Jackson Street, Suite 600

Seattle, WA 98104-3855

(206) 263-3723

Suggested citation for this report:

King County. 2004. Cedar Grove Road Natural Area Site Management Guidelines. King County Department of Natural Resources and Parks, Water and Land Resources Division. Seattle, Washington.

Cedar Grove Road Natural Area

Site Management Guidelines

Introduction

Cedar Grove Road 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 Cedar Grove Road 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

Cedar Grove Road Natural Area is 2.55 acres in size, and consists of four parcels. The Natural Area is located on the left bank (facing downstream) of the Cedar River between River Mile (RM) 11.25 and 11.4. The Natural Area is located in unincorporated King County, approximately four miles southeast of Renton and three miles north of Maple Valley. See Figure 1 for a vicinity map and Figure 2 for a site map depicting river miles. Table 1 provides general information about the location of the Natural Area. Table 2 provides specific information for the parcels.

The Natural Area lies on the east side of SR 169, at the northeast corner of the junction of SR 169 and Cedar Grove Road SE. The site is comprised of four parcels, bounded by the Cedar River to the north and east, Cedar Grove Road to the south, and the Cedar River Trail to the west. Directly across the river from Cedar Grove Road is Rainbow Bend Natural Area, another King County Ecological Land. Rainbow Bend Natural Area is located on an area of land approximately 50 acres in size which is surrounded on three sides by the Cedar River, which makes sharp meander bends around the land. This area of land surrounded on three sides by the river will be referred to as the “Rainbow Bend peninsula” in this document.

The vicinity is characterized by low-density housing zoned at one house per five or ten acres (although houses around Rainbow Bend Natural Area are built on lots approximately $\frac{3}{4}$ acre in size). Just east of the site, on both sides of Cedar Grove Road, are a number of parcels zoned for mineral extraction. To the east of these parcels lies the King County Cedar Hills Landfill.

Table 1. Cedar Grove Road Natural Area General Information.

Best Available Address	NE corner of SR 169/Cedar Grove Road junction
Thomas Guide Map Location	687 G1
Legal Description	Section 32, Township 23, Range 6
Acreage	2.55 Acres
Drainage Basin	Lower Cedar River Basin
WRIA	WRIA 8
Council District	12
King County Sensitive Areas	Stream, FEMA 100-year floodplain and floodway, and seismic

Table 2. Cedar Grove Road Natural Area Parcel Information.

Parcel Number	Name used in document*	Acreage**	Purchase Date**	Ownership type/price	Previous Names	Zoning	Funding Source	
7120400060	Cedar Grove-0060	0.56 Ac	6/26/1997	Owned in Fee; \$200,000	Sipin	RA-5	FEMA or State Flood Control Funds; KC River Improvement Funds	Deed: 199706300936 Covenant: 199712220138
7120400065	Cedar Grove-0065	0.53 Ac	2/23/1998	Owned in Fee; \$25,000	Sipin; Parks Flood-Sipin	RA-5	1998 Cedar River Flood Partnership/Flood Hazard Parks Partnership Fund	
7120400070	Cedar Grove-0070	0.64 Ac	5/27/1997	Owned in Fee; \$166,00	Barchi/Shirley	RA-5	FEMA or State Flood Control Funds; KC River Improvement Funds	Deed: 199705281428 Covenants: 199712220136
7120400075	Cedar Grove-0075	0.82 Ac	10/9/1998	Owned in Fee; \$22,000	Parks Flood-Shirley	RA-5	1998 Cedar River Flood Partnership/Flood Hazard Parks Partnership Fund	

*Parcels are referred to by the site name plus the last four digits of the ten digit parcel number.

**Acreage, purchase date, and sale price taken from King County Assessor's data. Funding source information from Holecek, L. email comm 2003; Faegenburg, N. pers. comm. 2003.

Part 2. Acquisition History, Funding Source and Deed Restrictions

The following is a description of purchase purpose and funding sources (King County n.d.(a)):

“After the 1995-1996 floods, federal and state grants became available to purchase [the two flood-prone residential parcels Cedar Grove-0060 and -0070] and WLR Rivers Section applied for and was awarded federal and state grant funds to purchase the properties in 1997. Due to the proximity of the parcels to the Cedar River Trail, the Rivers Section notified Parks of the grants to determine mutual goals and opportunities for working together. The federal and state grants did not include purchase of vacant land [parcels Cedar Grove-0065 and -0075], so Rivers was interested in opportunities for a joint purchase with Parks.

Goals of the project: Purchase the flood-prone properties by leveraging FEMA and state flood grants; Coordination with Parks to fund purchase of adjacent parcels towards a contiguous reach for purposes of floodplain management and restoration; Parks benefits from a significant block of waterfront land directly adjacent to their trail; Future opportunities for floodplain and habitat restoration, and passive recreation.

Funding/Agencies Involved:

- One improved property was purchased using FEMA grant funds, with KC River Improvement Funds paying the 12.5% local match.
- One improved property was purchased using the State of Washington Department of Ecological Flood Control Account Assistance Program funds, with KC River Improvement Funds paying the 50% local match.
- The Office of Open Space negotiated purchase of the [two] remaining vacant parcels needed to provide a contiguous reach of County ownership, with funding provided by Parks.

Use of FEMA funds requires that deed restrictions be placed on the parcels, limiting their future use to open space and floodplain management, limiting the types of structures that can be placed on the property, and prohibiting the use of federal funds towards repair of flood damages in the future...”

The “Interdepartmental Agreement between Department of Natural Resources and Department of Parks and Recreation” (King County 1998) indicates that “The intended uses of the parcels are for open space, habitat restoration, riverine habitat, and passive park use.”

WLRD records are unclear as to the exact funding sources. For the two residential parcels (Cedar Grove-0060 and -0070), the Acquisitions section of WLRD is unable to identify which parcel FEMA and which parcel State flood hazard reduction funds were used (Holecek pers. comm. 2003 and Faegenburg pers. comm. 2003). The Interdepartmental Agreement (King County 1998) indicates that FEMA and State Hazard Mitigation Grant Funds were used.

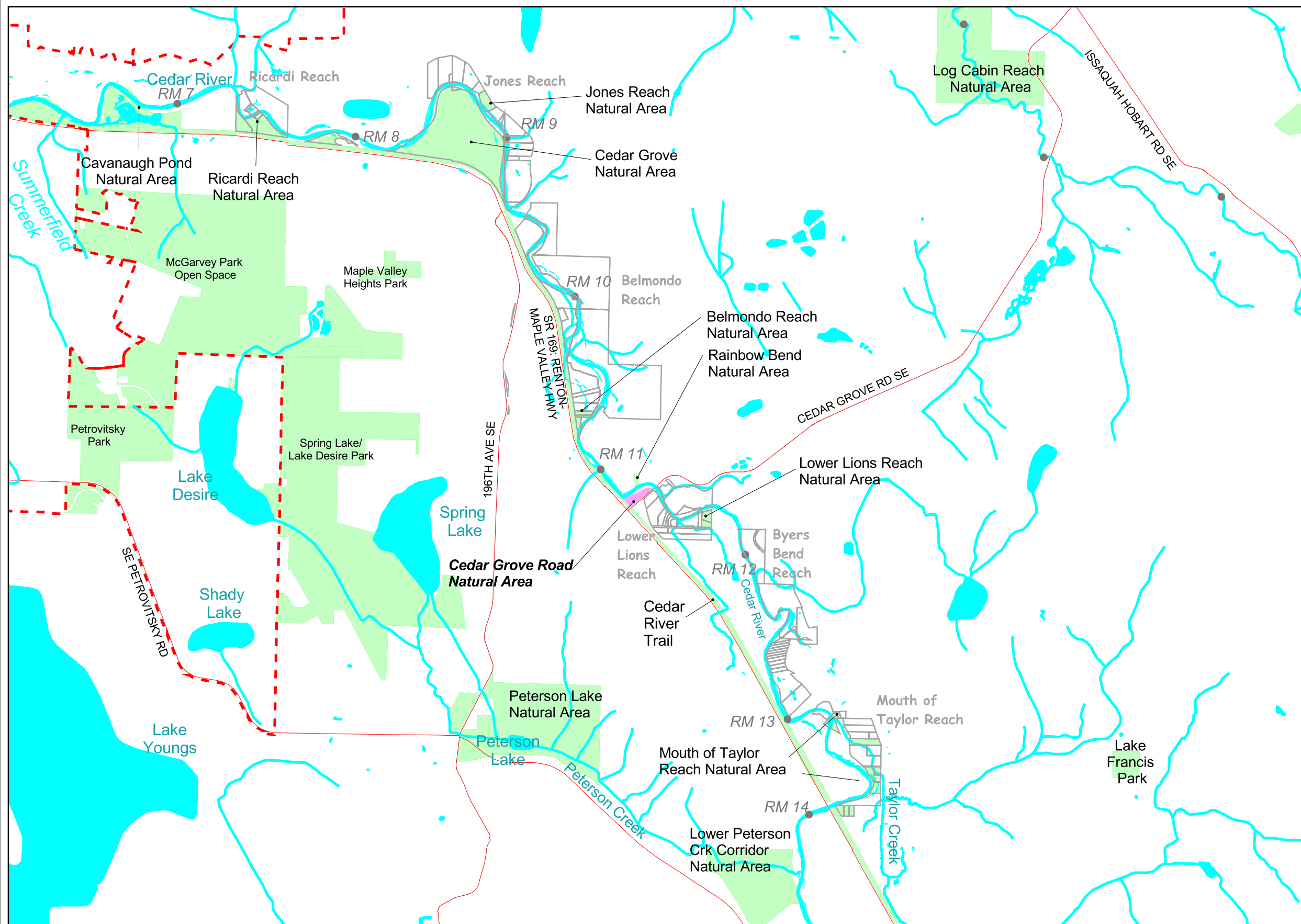
For the two non-residential parcels (Cedar Grove-0065 and -0075), the “Cedar River Flood Partnership” (also called the “Flood Hazard Parks Partnership Fund”) was the funding source for acquisition. There is no record of what funds were used for this partnership (Holecek pers. comm 2003; Bikle pers. comm. 2004).

Parcel 0070 contains deed language indicating that “the property herein conveyed is subject to open space use restrictions and restrictions on alienations as specified in RCW 84.34.200, et seq.” RCW 84.34.200 refers to Conservation Futures tax levy and restrictions associated with this funding source are described as follows:

- *Conservation Futures Tax Levy:* Conservation Futures Tax (CFT) levy is authorized by state statute RCW 84.34.230. A county may place this levy upon all taxable property in its jurisdiction. Revenues may be placed in a Conservation Futures Fund for jurisdictions or nonprofit nature conservancy corporations to acquire open space land or rights to future development within that county (these development rights are termed “conservation futures” in RCW 84.34.220). Open space is defined in RCW 84.34.020 generally as land contributing to natural resources, streams, water supply, public land network, historic sites, visual quality, or as certain agricultural conservation lands. Acquisition criteria identified by King County include: wildlife, salmonid, or rare plant habitat value; scenic resource, community separator, greenbelt, or general park and open space value; or historic and cultural resources. Additional consideration is given to passive recreation opportunity, interpretive opportunity, threat of loss, complexity of acquisition, public-private partnership, regional significance, relationship of proposed acquisition to existing parks, trails, or greenway systems or plans, and short-term and long-term stewardship commitment at the site (KCC 26.12.025). Purchases made with Conservation Futures funds are to be used for low-impact, passive-use recreation. Motorized use is limited to parking/staging/maintenance areas. “Non-vegetative impervious surfaces” should cover less than 15% of the site (CFT 2002). Conservation futures interests shall not be transferred except with agreement that land interests shall be preserved in accordance with the intent and language of RCW 84.34.230; uses of lands shall not be altered unless equivalent lands within the geographic jurisdiction are provided (KC Ordinance 10750, p. 10).

Parcel 0075 was subject to a King County river protection easement along the bank of the Cedar River dating to August 3, 1965 (recording # 5910592). The other three parcels were not subject to a river protection easement. The King County river protection easement no longer exists once King County purchases the property. If the property is transferred to another King County Division or Department for management, WLRD management will need to ensure that a similar policy decision is made to secure FHRS’ right of access, or that this right is formalized in an interagency agreement. If the parcel were to be surplus in the future, King County would need to make sure it retains a river protection easement. Further information about policy on FHRS access and maintenance of their flood facility is provided in Part 4.

The Cedar Grove-0065 and -0075 parcels contain no additional applicable deed restrictions; the two parcels acquired by Rivers (-0060 and -0070) have the following covenant restrictions (recorded “Declaration of Restrictive Covenants” # 199712220136 and 199712220138):



Legend

- River Mile Markers
- Cedar Grove Road N. A.
- Selected Public Lands
- River Reach Boundaries
Lower Cedar River reach extents are designated by Cedar River Legacy Program
- Rivers and Lakes
- Streams
- KC Urban Growth Area
- Streets



June 7, 2004

800 0 800 1600 2400 3200 4000 Feet

The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.



File Name: IL:\wint5\rios\NR Land Mgmt\Ingrid ArcView Projects\smg parkview projects\co road\co road fig 1.apr

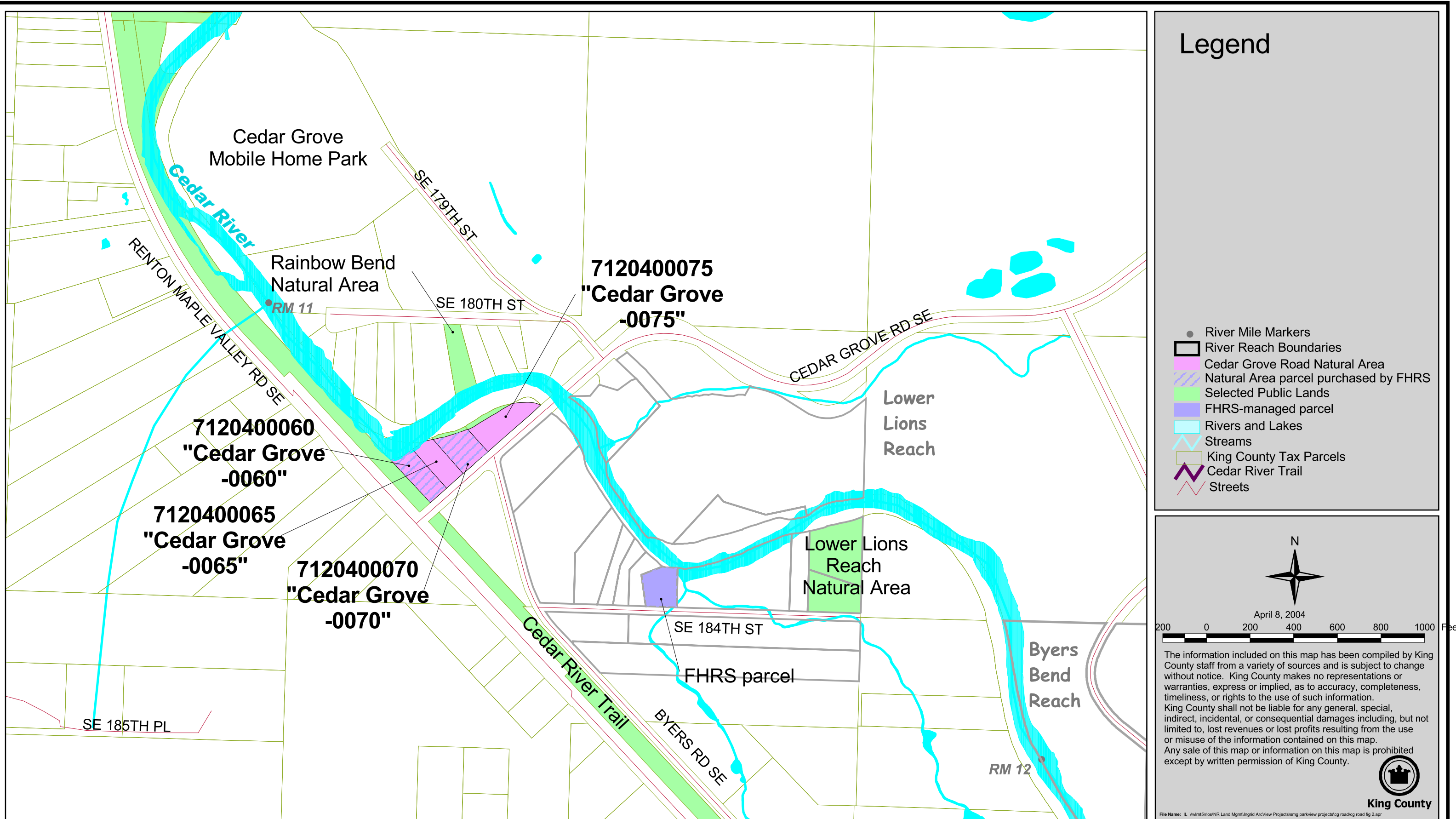
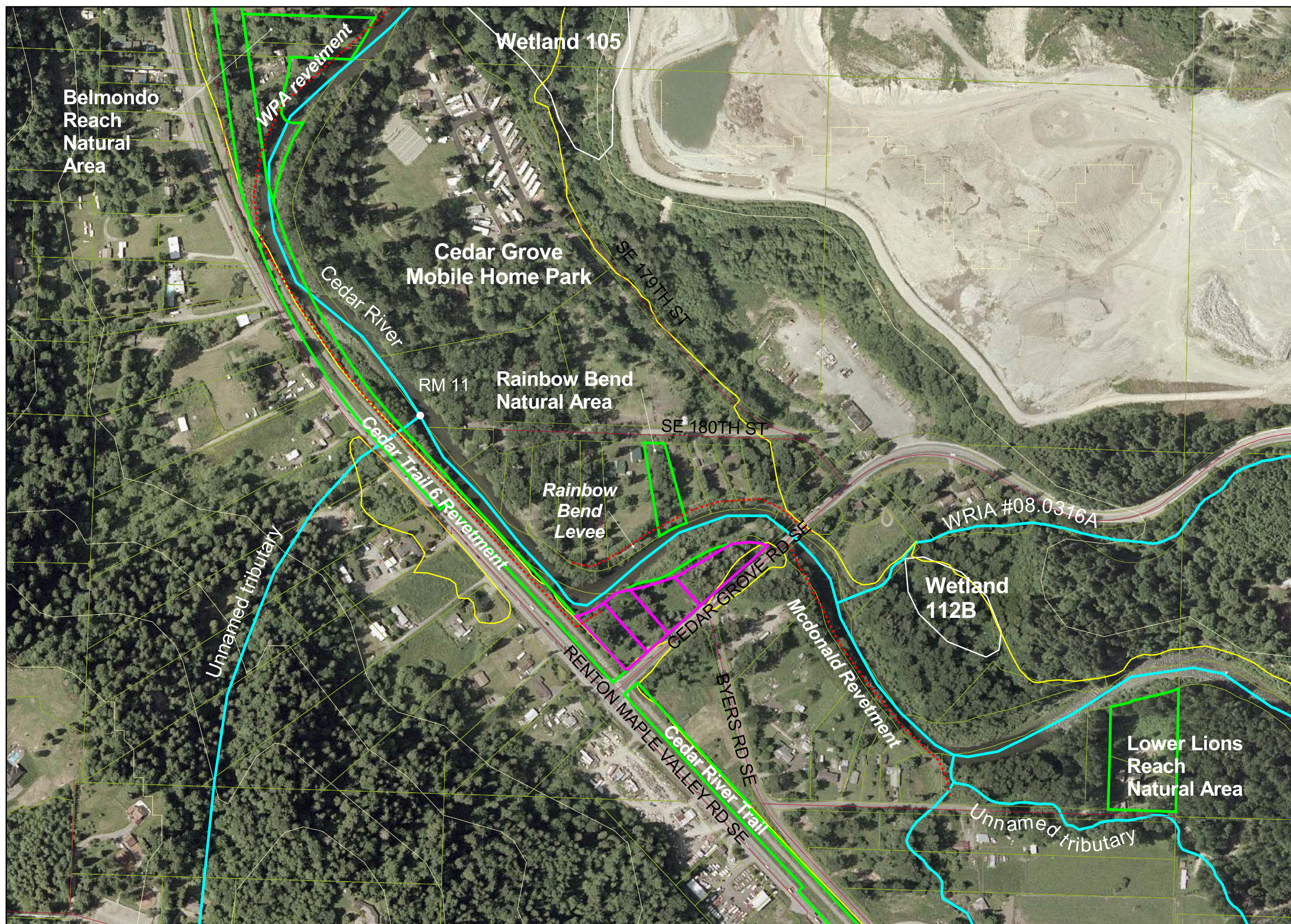


Figure 2

Cedar Grove Road Natural Area: Identification of Parcels and Surrounding River Reaches



Legend

Aerial photo date: 2002

- Levees and Revetments
- Cedar Grove Road Natural Area
- Parks
- River Mile Markers
- Streets
- Floodplains - 100 year
- Streams
- Wetlands
- King County Tax Parcels
- 100 ft Contour lines
- 20 ft Contour Lines



April 8, 2004
100 0 100 200 300 400 500 Feet

The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

Note: Wetland, Stream, Floodplain, and Topographic layers are approximate. Date of aerial photography is 2000.

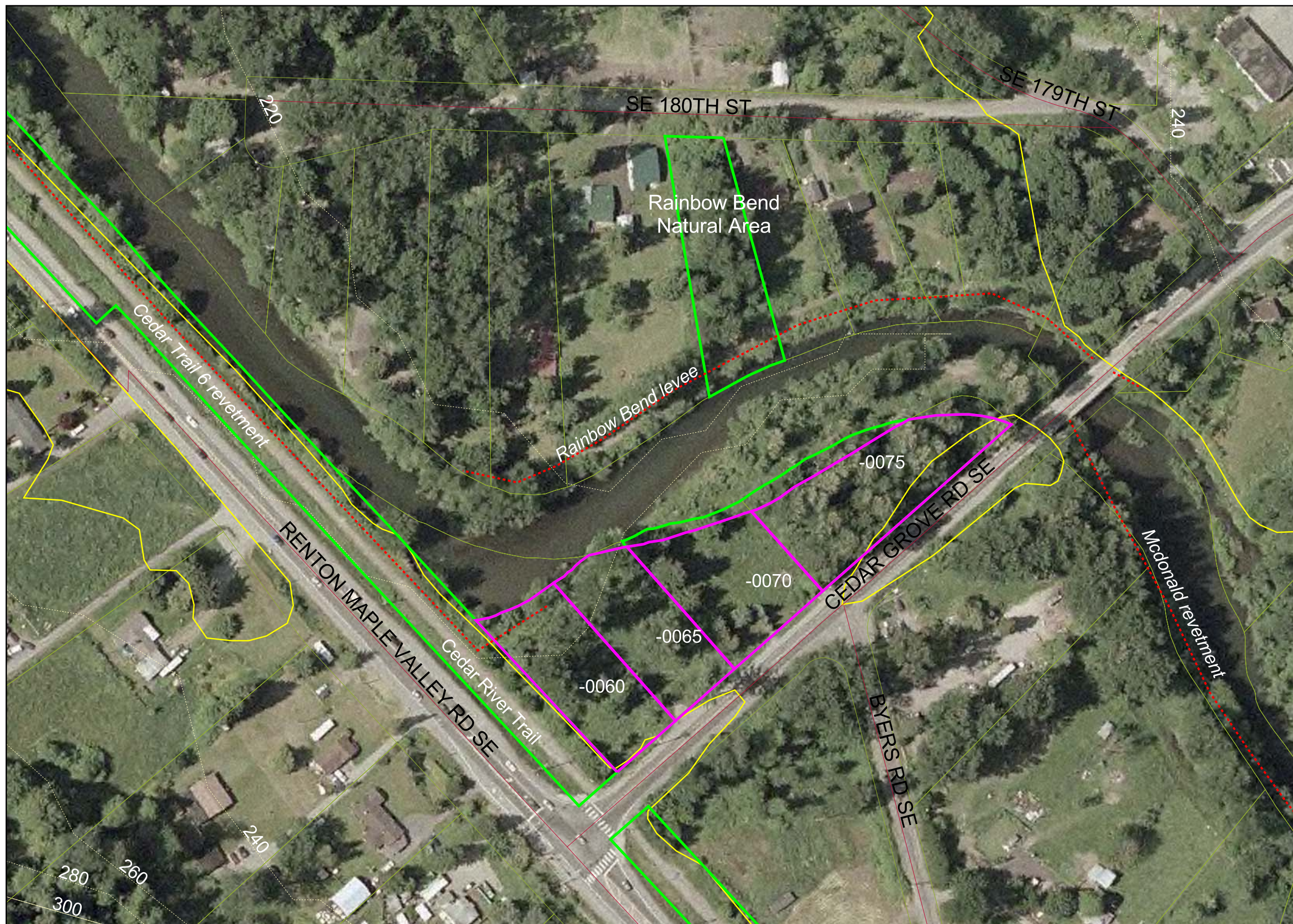


King County

File Name: IL:\w\m\5\5\5\NR Land Mgmt\Grid ArcView Projects\amp parkview projects\log road\fig 3.apr

Figure 3

Cedar Grove Road Natural Area: Site Features in Vicinity



Legend

- Levees and Revetments
- Cedar Grove Road Natural Area
- Parks
- Streets
- Floodplains - 100 year
- King County Tax Parcels
- 100 ft Contour lines
- 20 ft Contour Lines



November 11, 2004
 50 0 50 100 150 200 250 Feet

The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.



King County

File Name: IL:\w\m\5\10\5\10\land mgmt\kingd\arcview projects\smg parkview projects\cgr road\cgr road fig 3.apr

Figure 4
Cedar Grove Road Natural Area: Site Features

“...The property shall be dedicated and maintained in perpetuity for uses compatible with open space, recreational, or wetlands management practices, including, but not limited to parks for outdoor recreational activities, nature preserves, cultivation, grazing, and unimproved pervious surface parking areas. No new structures will be erected on the property other than a public facility that is open on all sides, or is a restroom and is functionally related to open space or recreational activities. Any structure built on the property will be floodproofed or elevated to the base flood elevation plus one foot of freeboard, and must obtain pre-approval by the FEMA Regional Director and State Grantee Agency. The owner must obtain the approval of the Regional Director before conveying ownership of the property to another public entity. Transfer of property or development rights to private citizens and corporations is forbidden.”

All four parcels have reserved mineral, oil, and gas rights held by the Federal Land Bank of Spokane, from a 1943 recorded document.

Part 3. Ecological and Physical Setting

This section describes the existing natural resources and ecological processes associated with the Cedar Grove Road Natural Area. Additional analysis is presented in Part 6 below. Figure 3 provides information on site features including topography, streams, wetlands, and floodplains for the vicinity; Figure 4 provides this information for the site.

Topography and Soils

The Cedar River valley in the vicinity of Cedar Grove Road Natural Area is approximately 1/3 mile wide. The valley is bounded by steep slopes abutting residential parcels along SR 169 to the west, and steep undeveloped slopes on the east side of the Cedar River. The river meanders across the flat valley bottom through this reach, the western extent of the meanders limited by the Cedar River Trail and SR 169. In the vicinity of the Natural Area, the river course is located in the central portion of the valley. The site itself is bounded by topographic high points resulting from fill placement for Cedar Grove Road to the south, and the Cedar River Trail and SR 169 to the west.

The King County soil survey maps this site as Pilchuck fine loamy sand (Snyder et al 1973). Pilchuck loamy fine sand is located on terraces adjacent to streams, found at low elevation, with 0-2% slopes and rapid permeability. Common inclusions are high amounts of riverwash, Puyallup, and other soil types.

Hydrology and Channel Morphology

Cedar River

Cedar Grove Road Natural Area is located at approximately River Mile ~11.25-11.4. Using maps and aerial photographs, Perkins (1994, cited in King County 1993a p. 5-22) describes historic changes in channel characteristics between RM 10 (note that Perkins uses RM 9.4) and RM 13.8. This reach was identified based on channel morphology and slope. The Cedar River Current and Future Conditions Report describes this reach as follows:

“[The reach] was extensively braided in 1865, with braided zones ranging in width from 800 to 1300 feet so that the river occupied almost the entire width of the valley floor. By 1936, the river had abandoned many of its channels but still had an obvious meander belt between 300 and 600 feet wide... Most bends in this reach are constrained by revetments or the valley wall, leading to a relatively stable channel in the past two decades.” (King County 1993a, p. 5-29)

Perkins noted that the 1895 active channel width was 460 feet, and in 1989 the active channel width was only 120 feet. She also characterized the natural degree of confinement as “unconfined,” but characterized the current level of hydrological modifications as “high.” The wetted channel width has decreased from a maximum of 299 feet and minimum of 161 feet in 1895 to a maximum of 108 feet and minimum of 90

feet in 1989. During this same time period the historic pool frequency has decreased from “high” in 1895 to “low” in 1989. (Perkins 1994, Blair 2003)

A Stream and Wetland Special Study (King County 2000a) was prepared for a restoration project at the Natural Area that was completed in 2000 (see Part 5 below). The study indicated that at Cedar Grove Road Natural Area the Cedar River supports a pool on the right bank from scour against the riprap Rainbow Bend levee, and deposition along the left bank along Cedar Grove Road Natural Area. At the west end of the Natural Area, there is a deep pool on the left bank where the river turns north against the nearly vertical and heavily armored bank against the Cedar River Trail and SR 169. The opposite side of the river here supports a depositional area.

There are no mapped side channels at the site.

FEMA 100-year floodplain and floodway

The mapped FEMA 100-year floodplain for the Cedar River depicts areas predicted to be inundated by a flood event of a severity that has a 1% chance of occurring in any given year (Faegenburg pers. comm. 2004) (see Figure 3). The mapped FEMA 100-year floodplain through the reach includes most of the valley bottom between the eastern valley slopes and the Cedar River Trail. The 100-year floodplain is mapped at approximately 1/3 mile wide within 1/2 mile upstream of Cedar Grove Road Natural Area. At the site the mapped floodplain is approximately 1/4 mile wide and encompasses the entire Cedar Grove Road Natural Area on the left bank, extending across to the west side of SR 169, and on the right bank it includes the entire Rainbow Bend peninsula. In less than a mile downstream through Belmondo Reach the mapped floodplain narrows to 1/10 mile wide. The Rainbow Bend levee across the river, and the Cedar River Trail embankment just downstream, maintain the course of the river at the site during normal flows.

The FEMA floodway is the area within and adjacent to the channel that is subject to the deepest and fastest flood flows. The floodway is not mapped on Figure 3, but is contained entirely within the mapped 100-year floodplain. The floodway extends across most of Cedar Grove Natural Area, and along the riverward side of the Rainbow Bend peninsula. The 100-year floodplain and floodway maps for this reach of the Cedar River have been recently updated and are considered best available data, but are awaiting adoption by FEMA (Faegenburg, pers. comm. 2004).

Levees and Revetments

Upon acquisition, there was a levee at Cedar Grove Road Natural Area that was 450 feet long and ranged from 1-4 feet above grade. Much of the above ground, out of channel portion of the levee was abandoned and removed. The toe of the levee still remains as does the section of the levee at the far western end of the property, just before the river changes from flowing westerly to flowing northerly (Bikle pers. comm. 2004).

The Rainbow Bend levee extends along the right bank (facing downstream) of the Cedar River in this vicinity. The Cedar River Trail 6 revetment extends from the western Cedar Grove-0060 parcel downstream along the Trail (Koon pers. comm. 2003). (See Figure 3) Further information about maintenance of this flood facility is provided in Part 4.

Tributaries

There are no tributaries within Cedar Grove Road Natural Area. The Catalog of Washington Streams maps the 0.35-mile right bank tributary WRIA #08.0316 on the downstream end of the Rainbow Bend peninsula, in the vicinity of Wetland 105 (see Figure 3) (Williams et al 1975). The Cedar River Current and Future Conditions Report indicates that deep pool habitat is lacking in this tributary (King County 1993a p. 7-30).

Another tributary (WRIA #08.0316A) is located at approximately River Mile 11.5, 0.1 miles upstream of Cedar Grove Road SE. The Cedar River Current and Future Conditions Report indicates that the tributary

basin is largely undeveloped, with no record of any flooding problems and no future problems expected (King County 1993a p. 4-23). The report indicates that deep pool habitat is lacking in this tributary (King County 1993a p. 7-30).

Two unnamed, unnumbered tributaries are not documented in the Current and Future Conditions Report or Catalog of Washington Streams, but are mapped by King County Stream GIS data layers (see Figure 3; King County 1993a and Williams et al. 1975). One tributary is in the vicinity of Lower Lions Reach Natural Area, at RM 11.6, evident in Figure 3. This tributary is mapped as receiving drainage from a wetland on the east side of SR 169 and steep slopes on the west side of SR 169. The other tributary is mapped as drainage from steep slopes on the west side of SR 169, passing under SR 169 and entering the Cedar River at RM 11.1. No information is available on either of these tributaries.

Wetlands

Neither the King County Wetlands Inventory nor the National Wetlands inventory map wetlands at the site. The Stream and Wetland Special Study notes a palustrine scrub-shrub wetland on site (King County 2000a). This is a small 0.09 acre wetland in a topographic depression between Cedar Grove Road and the abandoned levee on the upstream portion of the site. Water sources were identified as seasonally high water table, road runoff, and rainwater (ibid.). While levee removal may have affected this wetland, this area may still support seasonally wet conditions.

The King County Wetland Inventory maps Wetland 105 on both sides of the river on the downstream end of the Rainbow Bend peninsula. This 9.2-acre, Class 2 wetland supports palustrine forested deciduous and evergreen stands (King County 1991).

Wetland 112B is identified just upstream of the site, but this wetland was not inventoried in the King County Wetland Inventory.

Vegetation

The predominant plant community on the eastern part of the property is typical riparian forest along the Cedar River: black cottonwood and red alder overstory, with mostly native species in the understory (thimbleberry, salmonberry, willows). A sparse conifer overstory and older bigleaf maples exist on the western portion of the site from earlier homes at the property (see photos in Figure 5). Japanese knotweed occurs along the riverbank. On the central and western portions of the site, extensive restoration work removed more than 1,500 cubic feet of fill, amended the soil with compost, hydroseeded, and replanted the site with 1,600 plants (see Figure 6 for photos of project work). Ongoing Japanese knotweed control work includes plywood mulching.

Figure 5. View of site from across Cedar Grove Road.

Photo is taken facing north. Conifers and open canopy are visible on western (left) side, and deciduous forest on east (right) side. Photos taken March 2003.



Figure 6. Restoration area in central portion of site.

Photo taken March 2003.



Figure 7. Eastern edge of site along Cedar River.

Photo taken March 2003.



The undeveloped portions of lots in this vicinity are characterized by typical riparian vegetation dominated by red alder and black cottonwood.

Fish and Wildlife

The Stream and Wetland Study indicated that the Cedar River substrate in the vicinity is large gravels, with smaller gravels and sand in depositional areas. Gravels are of a size suitable for spawning by sockeye, Chinook, and coho salmon, as well as rainbow, steelhead, and cutthroat trout. The report documented adult Chinook and sockeye spawning in the mainstem, and presence of Chinook, coho, and trout fry in the immediate vicinity (King County 2000a). The study notes that depositional areas along the left bank provide good rearing habitat for juvenile salmonids, along the portion of the bank with willow cover.

No further inventory of fish or wildlife use has been performed at the site.

Part 4. Public Use and Infrastructure

This section describes public use, access points, site infrastructure, and the maintenance agreement at Cedar Grove Road Natural Area.

Public Use

The eastern portion of the Cedar Grove Road Natural Area is regularly used by rafters during weekends as a downstream pull-out. Other passive recreational uses include walking, picnicking, and nature observation at the site. The site experiences the highest level of use in the summertime, and littering is a frequent problem at the site. Litter may come not only from site users, but also from dump trucks and other vehicles headed to the landfill on Cedar Grove Road and using Highway 169.

The Cedar River is the primary landscape attractor at the site. An informal trail leads from Cedar Grove Road east to the Cedar River, regularly used by boaters (see Figure 7). Smaller informal trails allow users access to other portions of the site.

Signage within the site, at the location of a knotweed control project, notifies boaters of sensitive fish species presence in the river at certain times of the year.

There are no facilities at the site to support public use (e.g. trash cans, picnic areas, or signage except as noted above).

Access

The site is readily accessible from the adjacent Cedar River Trail. The access of this site by pedestrians and other users from the Cedar River Trail, and by local residents is the most appropriate method of access.

There is no parking at the site. Visitors do use roadside parking along Cedar Grove Road SE and Byers Road. The lack of parking may limit more extensive use on this site by rafters, but there is little space to install adequate parking (given the narrow dimensions of the site and the extent of earlier restoration projects at the site).

The site may be accessed at a number of points along the Cedar Grove Road frontage. The central and eastern portions of the site support little understory and no fencing along the road, and therefore present no barrier to public access along their extent.

Trails and Roads

Only informal trails exist at the site, unmaintained by Parks staff. The most frequently used trail on the eastern part of the site provides direct access from Cedar Grove Road to the river (shown at Figure 7).

Maintenance Agreement

The King County Department of Natural Resources and the Department of Parks and Recreation each acquired two of the parcels in this site. The Flood Hazard Reduction Services program of King County Department of Natural Resources was the proponent and designer of a restoration project in 2000, with Parks performing the work on the project.

The Department of Natural Resource and the Department of Parks and Recreation developed an interagency agreement for long-term management of the site (“Interdepartmental agreement between Department of Natural Resources and Department of Parks and Recreation” effective 1/13/98 (King County 1998)). The agreement sets out the following terms for management of the site. With the reorganization of the two departments in 2001, in the following context “DNR” may be interpreted to refer to Water and Land Resources Division Flood Hazard Reduction Services program. “Parks” may be interpreted to refer to Parks and Recreation Division Resource Section staff and WLRD Natural Resource Lands Program staff.

The Interagency Agreement (King County 1998) provides the official guidance on management responsibilities. A “Cedar Grove Road Buyout” project report (King County n.d. (a)) also provides explanation of these roles.

WLRD Flood Hazard Reduction Services Responsibility:

“DNR [Flood Hazard Reduction Services] will be responsible for maintenance of the restored habitat area and related habitat features....DNR [Flood Hazard Reduction Services] shall be responsible for all regular maintenance and repairs to the [restoration project and] related habitat features...” (King County 1998).

“Any floodplain or habitat restoration projects, or future maintenance of those projects, will be the responsibility of WLR.” (King County n.d.(a)).

Parks Resource Section Responsibility:

“Parks will be responsible for maintenance of passive recreational features and use... [Parks will] carry out all routine, long-term maintenance of the three parcels. This does not include maintenance of the [restoration project] and related habitat features.” (King County 1998).

“Parks is responsible for day-to-day management of the property, at Parks’ expense.” (King County n.d. (a))

Flood facility maintenance

Although King County FHRS’ river protection easement is no longer in existence, it is the policy of the Water and Land Resources Division that FHRS has the same rights and responsibilities for the river protection easement as when the property was under private ownership. Rights include the right to access and to ensure that the flood facility is maintained; responsibilities include notification of property owner (NRL) when work is required on the facility, and obtaining applicable permits. Work that is outside of the scope of standard inspection of river protection facility (e.g. revegetation project or facility repair) would require notification of NRL and completion and approval of the “Application to alter Parks/NRL-Managed Property.”

The river protection facility on the property is maintained by FHRS as part of their river protection facility inventory. FHRS performs both routine and post-flood inspections and maintenance on all such facilities. Routine maintenance activities on these facilities typically include vegetation management, such as removal of blackberries, in order to ensure adequate access and visibility for inspection of the facilities’ structural integrity (Koon pers. comm. 2003).

In addition to the routine maintenance and repair of these flood hazard reduction facilities, the FHRS Section performs mapping and other flood-related studies and projects on lands adjacent to King County’s large rivers, including the Cedar River. FHRS and/or its contracted surveyors may have placed permanent stakes or rebar along the levee/revetment or riverbanks to mark sites at which river cross-sections are measured (Koon pers. comm. 2003).

Part 5. Site Management Chronology

The levees in this vicinity were installed as part of the King County “River Improvement Program” in the 1960s.

Upon acquisition, Park staff installed a willow staking project in an area unaffected by the project described below.

The Cedar Grove Restoration Project installed in the year 2000 was designed to restore “natural floodplain processes such as flood storage, channel migration, and plant community succession.” (King County 2000b) Specific goals included allowing natural river movement and floodplain conditions; contributing to rearing habitat for juvenile salmon and upland habitat for wildlife; allowing potential for gravel recruitment; ensuring rigid boundary at roads; and consistency with potential future restoration projects (e.g. Rainbow Bend buyouts) (King County n.d.(b)). The project involved:

- Abandoning and removing the existing 450-foot long levee;
- Removing fill and excavating the site “to restore the pre-existing floodplain topography and create greater landscape diversity. The excavation of fill will create a topography that is terraced from the river, but that retains beneficial mature vegetation on the site.” (King County 2000b)
- Removing invasive and non-native plants; replanting native vegetation.
- Placing terrestrial woody debris for wildlife habitat.

“The project was funded by State grant funds, local match funds provided by Rivers and Watershed unit of King County. Both Parks and Rivers jointly managed the floodplain restoration project with work being performed by Parks Ground Crews.” (King County n.d. (b))

The restoration work is being monitored by the Rivers maintenance staff to meet permit monitoring requirements (Koon pers. comm. 2003). Planting plan permit conditions require monitoring in 2001, 2003, and 2005 with 80% vegetation survival. The grading permit requires 80% survival of planted

material by year 3 (2003). Under the interagency agreement made between Parks and WLR, WLR has responsibility for monitoring and maintenance of the restoration project.

Additional recent work has included invasive removal at the site, and knotweed control. This work has been performed by both the Parks Resource staff and WLRD/FHRS staff.

Part 6. Analysis

The purpose of this section is to provide a context and foundation for developing recommendations that meet the NRL program mission of protecting the ecological value of land in Cedar Grove Road Natural Area. Site-specific information, public access considerations, and the larger landscape considerations described in the conservation principles section of the *Ecological Lands Handbook* will be used to help meet this purpose.

Information Gaps and Development of Management Recommendations

This site has been the subject of study by various sections of King County's Department of Natural Resources and Parks in association with the recent restoration work at the site. It is not likely that additional large-scale capital project work will occur at this site. If large-scale capital project work is to occur on this site, project proponents should determine whether adequate information on the site exists. It may be necessary and desirable to conduct a site inventory and assessment that is focused, at a minimum, on the conditions and processes that the management activities will affect. The site inventory, assessment, or evaluations of proposed actions should be conducted by those staff with appropriate expertise (e.g. Watershed and Ecological Assessment group). Inventory and assessment information may be available in the Current and Future Condition Report, Habitat Limiting Factors Analysis, Lower Cedar Basin Plan, and Ecosystem Diagnosis and Treatment study of the Cedar River (being conducted at the time of writing), as well as past and future work by King County Ecological and Flood Hazard Reductions Services staff.

Prior to further habitat enhancement activities at this site, the proposed activity should be evaluated to determine whether or not the activity could do harm to existing or future desired ecological processes and conditions. An assessment of current ecological conditions at the site may be required in support of this project. If the evaluation of the project indicates that the likely outcome is harm, then the activity should not be undertaken.

Species of Concern

Because of the lack of a comprehensive biological inventory at the site, the species identified in this document do not account for all species that use the site for one or more stages of their lifecycles. However, documented evidence of Chinook salmon, and probable use by bald eagles, both listed as threatened under the Endangered Species Act, make habitat preservation and restoration necessary management priorities at the site.

Restoring Process

The Cedar Grove Road restoration project was designed to accommodate channel migration and floodplain storage in the area. There are no specific recommendations in the Flood Hazard Reduction Plan, the Basin Action plan, or the Near Term Action Agenda for this site.

Recommendations have been made for property acquisition and levee modification along Rainbow Bend across the river from Cedar Grove Road. This may alter river flows at the Cedar Grove site in the long term if the project is pursued. Installation of the Rainbow Bend levee setback across the Cedar River may allow further restoration of hydrologic processes at this site as a more historic pattern of river meander is restored. The restoration of processes must work within the constraints of the built environment, however, limited by the need to protect Cedar Grove Road and SR 169, and the retention of the Rainbow Bend

levee across the river. More) in-depth analysis of historic river conditions, hydraulics, and hydrology would be needed to determine the best approach for improving the channel-floodplain connection and ensuring that the project does not result in adverse flood impacts.

Restoring Structure and Function

The restoration at this site continues to contribute to the development of riparian vegetation structure, and to riparian functions such as habitat provision, shading, and input of vegetative debris to the Cedar River (King County 2000b).

In order to restore riparian habitat conditions, it may be necessary to control invasive, non-native species, and actively promote establishment and growth of a native riparian plant community, where possible, given site and budgetary constraints. Plantings should represent the historic vegetative communities commonly associated with forested riparian areas in western Washington and at this site in particular. Inherent in the restoration should be efforts to maintain structural complexity, historic levels of plant diversity and multiple canopy layers in order to provide a variety of vegetative and physical features that would provide a number of niches for wildlife.

Public Use

This site experiences regular usage during the summer months. In addition to the main trail to the east, other small trails may develop that lead directly to the river. The river banks are used for boating, fishing, and walking.

Seasonal use of the river can present a problem depending on its intensity, its location, litter associated with site use, or the timing of its impacts on the salmonid populations in the river. Signage has been posted to discourage entrance into the river during the fall spawning season. Parks staff monitor the site to note access routes and levels of use. In areas where trail use negatively impacts ecological conditions (e.g. poorly sited trail on an erosive bank), Parks staff would work to close down that trail.

In the central portion of the site is a grassy clearing in which trees have been re-planted and woody debris has been deposited for wildlife habitat. This grassy part of the site may provide an appropriate area for public use as long as that use does not impact the tree plantings in this area. In other portions of the site, dense shrub vegetation may limit access.

The site is readily accessible from the adjacent Cedar River Trail. The access of this site by pedestrians and other users from the Cedar River Trail, and by local residents is most appropriate method of access.

Parking is unavailable at the site (although parking occurs along the side of the road). It would not be appropriate to accommodate parking within the site for following reasons: the small size and narrow dimensions of the site; the extent of habitat restoration that has occurred at the site; the stated acquisition priorities of “open space, habitat restoration, riverine habitat, and passive park use”; and the potential impacts to the ecological conditions at this small site that would be likely with higher intensity use associated with parking lot development.

Part 7. Management Goals, Objectives, and Recommendations

The objectives and recommendations in this section are derived from the standard practices for most NRL sites. Office of Rural and Resource Programs staff will revise the recommendations for Cedar Grove Road Natural Area as new information from baseline inventory, assessment, and site monitoring programs and other initiatives becomes available for use in land management decisions.

Goals for Ecological Lands

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 at this site.

Management Objectives and Recommendations

Objective: Maintain ecological integrity of the site

Recommendation: Ensure that management and public access support the regional ecological value of site

Decisions about site management and public access should consider the site's contribution to forested floodplain habitat along the Cedar River, and the priorities of the restoration project to restore natural floodplain processes such as flood storage, channel migration, and plant community succession.

Public use at the site may be most supportable in the grassy area in the central portion of the site and the main trail leading east along Cedar Grove Road to access the water. This overarching recommendation is carried out through the various recommendations below.

Objective: Restore native vegetation

Recommendation: Monitor and control invasive vegetation

Park staff should monitor and control the spread of the noxious and non-native, invasive plant species present at Cedar Grove Road Natural Area. The extent of work will depend on staff and budget. A priority for control is in the areas where planting and weed control projects have already occurred.

Flood Hazard Reduction Services and Parks staff may coordinate their control work depending on available staff and budget. Given the extent of Japanese knotweed on the site, the best approach to weed control may be a project with continued maintenance with the Small Habitat Restoration Project, other small project effort, or work with the Noxious Weed Control Program.

Objective: Allocate site management tasks to responsible agents

Recommendation: Monitor restoration project

King County WLR/Rivers staff will perform monitoring through 2005 for permit conditions, to ensure 80% survival of plants. Plantings should be observed for plant survival, and re-planted where die-off has occurred. WLR/Rivers staff have responsibility for monitoring and maintenance of the habitat project.

Parks staff shall perform day-to-day maintenance on the site. Parks staff are not responsible for habitat project maintenance.

Recommendation: Ensure maintenance agreement promotes ecological stewardship of site

In the event that the maintenance agreement prevents or hinders management for the benefit of ecological features and processes across all four parcels, the agreement should be modified to allow management of the four parcels as one site by one entity, or to alter the stated responsibilities for restoration project maintenance vs. routine maintenance.

Objective: Allow current level of passive recreation opportunities at Cedar Grove Road

Recommendation: Monitor public access

Park staff should note changes in visitor numbers and types of recreational activities at Cedar Grove Road and observe noticeable visitor impacts on the ecological values of the site. This information should be reported to King County Natural Resource Lands Management Staff responsible for updating site management guidelines.

Objective: Protect the site from inappropriate public uses

Recommendation: Control litter/dumping and encroachment activities

Park staff should monitor the site for encroachment, dumping, and other trash and respond as necessary to maintain a clean and safe property. Monitoring should occur at least twice a month. Park staff should consider installing litter/dumping policy signs on the property if litter activity increases.

Recommendation: Address problem trails as they occur

Particularly during the summer season, Park staff should identify whether trails to the water are opening up which are poorly sited and degrade the ecological conditions of the site. Park staff should close down these trails as they occur. The main trail leading east to the river along Cedar Grove Road provides the most appropriate area for access.

Objective: Develop long term ecologically based protection and restoration actions

Recommendation: Evaluate recommendations for site restoration as they are developed

When proposals are put forward for habitat enhancement projects (whether developed by the Natural Resource Lands group, other King County groups, or others outside the County) evaluate the proposals for their impacts on the ecological processes, structure, and functions at the site. An ecological assessment of this site may precede project proposals. Projects should meet the purpose and goals of sites identified as King County Ecological Lands.

The WRIA 8 Chinook Salmon Conservation Plan Draft Work Plan (WRIA 8 Service Provider Team 2004) made several flood control and habitat enhancement recommendations for this vicinity (Appendix F, p. 8, Reach 10 (RM 10.2 to 12.7).

- *Lions Club Side Channel Restoration* involves restoration of a left-bank side channel at approx. RM 11.7.
- *Cedar Grove Road Mobile Home Park Flood Buyout and Levee Removal* as described above.
- *Cedar Grove Road Junkyard Buyout* and *Buyouts near McDonald Levee* purchase left bank parcels near RM 11.5 for levee removal and restoration. This would occur just upstream of Cedar Grove Road Natural Area.
- *Byers Reach Side Channel* involves left bank levee removal and floodplain restoration at approx. RM 12.9 (Byer's Curve revetment is left bank at approximately RM 12.7-12.8).

These proposals though are not prioritized or scheduled for implementation in the near term.

As projects on the Natural Area are prioritized and funded by King County agencies outside of the Natural Resource Lands group (or by other implementing agencies), projects should be reviewed by NRL through the "Application to Alter Parks Division and NRL Managed Properties" process to coordinate site management with project work.

Implementation

Many of these recommendations pertain to ongoing site maintenance and short-term management. These short-term recommendations are currently being implemented through actions by the Parks Resource Coordinator. Table 3 presents the time frame and sections responsible for recommendations.

Recommendations that address long-term management will need to be developed when funded and prioritized by DNRP management (within the work programs of NRL, Science, Basin Stewards, CPOSA, and FHRS). As new information is gathered for the site, restoration plans may be developed following adoption of these site management guidelines. Projects should be consistent with management objectives and approaches described above and in the Ecological Lands Handbook. Funding for restoration projects

may be available through Surface Water Management CIP funding or salmon conservation planning funds.

Table 3. Matrix of Management Recommendations

Recommendations	year	Park Resource Staff	Basin Steward	WRIA Project Coord.	CPOSA	WEAT	FHRS	NRL staff
Priority One								
Monitor and control invasive vegetation	At least monthly	X						
Monitor public access	At least monthly	X						
Address problem trails as they occur	As necessary	X						
Priority Two								
FHRS monitor and maintain project	Annually, or by permit conditions						X	
Evaluate recommendations for site restoration as they are developed	Upon future consideration of projects	X	X	X	X	X	X	X
Ensure maintenance agreement promotes ecological stewardship of site	As necessary	X	X				X	X
Update Site Management Guidelines	Within at least five years	X	X				X	X

References

- Blair, G. R. 2003. "Cedar Calculation Wetted Channel Width from Active Channel Width_Perkins 1994." Produced as part of the 2003 Ecosystem Diagnosis and Treatment analysis for WRIA 8. Available on internal King County drives at: WLRNT4\WRIA8_Science\WRIA 8 EDT\EDT 1st draft results and ratings.
- CFT. 2002. Conservation Futures Tax Levy. 2002 Annual Collections Application for Funds: Instructions and Conditions.
- King County. 2003. King County Ecological Lands Handbook. King County Department of Natural Resources and Parks, Water and Land Resources Division. Seattle, Washington.
- King County. 2000a. Cedar Grove Floodplain Restoration: Stream and Wetland Special Study. King County DNRP, WLR, Rivers Section. Produced by K. Bauman and L. O'Rollins. July 2000.
- King County 2000b. Cedar Grove Restoration Project Description. Nancy Faegenburg, 8/7/00. In Cedar Grove Project file, N. Faegenburg.
- King County 1998. Interdepartmental Agreement Between Department of Natural Resources and Department of Parks and Recreation. Dated January 13, 1998. In Parks Acquisition file.
- King County. 1993a. Current and Future Conditions Report. King County Department of Public Works, Surface Water Management Division. November 1993 printing. Seattle, WA.
- King County. 1993b. King County Flood Hazard Reduction Plan. King County Surface Water Management. January 1993 printing. Seattle, WA. Includes Appendix B: Problem Sites and Project Recommendations.
- King County. 1991. King County Wetlands Inventory. Volume 2: East. King County Environmental Division: Parks, Planning and Resources Department. March, 1991 Edition; 1990 original date.
- King County. N.d.(b). Cedar Grove Restoration Project: Goals and Objectives. In Cedar Grove Project file, N. Faegenburg.
- King County. N.d. (a). Cedar Grove Road Buyout. No author, in Cedar Grove Project File, N. Faegenburg.
- King County Council. 1993. Ordinance 10750: "An Ordinance authorizing the Regional Conservation Futures 1993 Bond Acquisition Program...". March 8, 1993.
- Perkins, S. J. 1994. The Shrinking Cedar River. American Water Resources Association 1994 Annual Summer Symposium. p. 649-658. Available online at <http://geopacific.com/Perkins/links.htm>
- Snyder et al. 1973. Soil Survey of King County, Washington. USDA.
- Williams, R. W., R. M. Laramie, and J. J. Ames. 1975. A Catalog of Washington Streams and Salmon Utilization: Volume 1, Puget Sound Region. Washington Department of Fisheries, Olympia, WA.
- WMC (Watershed Management Committee). 1998. Lower Cedar River Basin Plan and Nonpoint Pollution Action Plan. Produced by King County DNR and the Cedar River Watershed Management Committee. July 1998 Printing. Seattle, WA.
- WRIA 8 Service Provider Team. 2003. WRIA 8 Draft Plan Framework and Preliminary Actions List 2003. Draft published 12/31/03.
- Personal Communication
- Bikle, A. 2004. Basin Steward, Land and Water Stewardship Services, DNRP. Personal communication with Ingrid Lundin 4/8/04
- Clark, D. 2004. Section Manager, Flood Hazard Reduction Services, DNRP. Pers. comm. with Ingrid Lundin. 4/9/04.
- Faegenburg, N. 2004. King County DNRP Flood Hazard Reduction Services Engineer. Personal Communication with Ingrid Lundin, as comments on Mouth of Taylor Reach NA SMG. August 17, 2004.
- Harig, D. 2003. Parks Resource Coordinator, DNRP. Personal Communication with Ingrid Lundin. Various dates, 2003.

Holecek, L. 2003. Acquisitions Agent, Capital Projects and Open Space Acquisitions Section, DNRP. Email Communication with Ingrid Lundin 9/15/03

Koon, J. 2003. Engineer, Flood Hazard Reduction Services, DNRP. Personal communication with Ingrid Lundin. June 26, 2003.