

Landsburg Reach

Site Management Guidelines:

- Big Bend Natural Area
- Landsburg Reach Natural Area

May 2005



King County

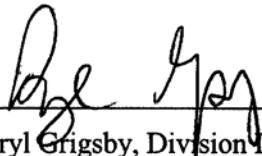
Department of Natural Resources and Parks
Water and Land Resources Division

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Daryl Grigsby, Division Director

King County Water and Land Resources Division



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Department of Natural Resources and Parks
Water and Land Resources Division

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Landsburg Reach Site Management Guidelines: Big Bend and Landsburg Reach Natural Areas

Summary

Site Description

Big Bend and Landsburg Reach Natural Areas are two King County Department of Natural Resources and Parks (DNRP) Ecological Lands. Ecological Lands are managed for the protection of their ecological value, with appropriate public access.

These two Natural Areas are located within the 'Landsburg Reach' of the Cedar River, approximately River Mile 19.6 to 21.2 as defined by the Cedar River Legacy Program. Due to their proximity and location within this river reach these two Natural Areas are discussed together in this document.

Big Bend consists of three parcels (96 acres) and Landsburg Reach Natural Area consists of nine parcels (24 acres). The sites are located slightly more than a mile east of Maple Valley, near the Cedar River Watershed's western boundary at Landsburg Road SE. Portions of the sites are adjacent to the King County Cedar River Regional Trail, as well as to City of Seattle's Cedar River Pipeline Road which is also used as a trail.

The sites span both sides of the Cedar River. The Walsh Lake Diversion Ditch flows through Big Bend Natural Area, and other side channels and valley floor wetlands occur on Big Bend Natural Area. This reach of the Cedar River contains high-bank bluffs noted for their contribution of gravel to the river. The sites support mixed coniferous/deciduous second-growth forest relatively mature in age, also including stands predominated by coniferous, deciduous, or wetland vegetation. Invasive vegetation is present particularly along disturbed portions of the Cedar River channel.

The Cedar River, side channels, and Walsh Lake Diversion Ditch support a variety of salmonids and other fish species. The site represents a large tract of forested acreage along the Cedar River riparian corridor; its location in proximity to the extensive Cedar River Watershed and nearby protected lands such as Danville/Georgetown (Maple Ridge Highlands) Open Space makes it important wildlife habitat.

Public Use

Big Bend Natural Area supports regular use by local and regional populations. Pedestrians, bicyclists, and equestrians traveling the Cedar River Trail pass through the site along the regional trail corridor. There is parking available at the Landsburg Trailhead, located on Landsburg Road SE approximately one mile east of the Natural Area by way of the Cedar River Trail. There are no other parking areas at the site.

The Natural Area itself (outside of the Cedar River Trail) is primarily used by pedestrians and equestrians, who follow the informal trails extending off from the Cedar River Trail within the site, allowing access to the riverfront and interior portions of the site. The riverfront is also used by boaters who put in upstream near Landsburg Road mostly on a seasonal basis. In 2004, seasonal use by fishermen resulted in the opening of informal trails to the water which present problems with erosion and damage to banks or native streamside vegetation. There has been occasional illegal use by motorized vehicles, though Parks staff have continued to work to prevent access.

Future purchase may acquire property providing trail connections from the SE Pipeline Road, on the south side of the river adjacent to Big Bend Natural Area.

Landsburg Reach Natural Area supports little public use, except for one parcel that provides trail connections between Danville/Georgetown trails and the Cedar River Pipeline Road. Future acquisition may bring more land supporting local trails into county ownership. There is no parking area at any of the Landsburg Reach properties.

The Backcountry Horsemen and the Friends of Rock Creek Valley are key community partners at these sites. As regular visitors, they contribute significant time and energy to observing site and trail conditions, picking up litter, and other activities related to trails at the site.

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 hydrologic and habitat value of the site, and should preserve and protect ecological integrity. Of particular significance for their ecological value are the Walsh Lake Diversion Ditch corridor, the large tracts of riparian and upland forest, the river corridor including relict site channels along meander bends, and the high bank along the Cedar River. Use should be directed to a limited number of main informal trails through the Big Bend Natural Area, to the regional Cedar River Trail that runs through Big Bend, and to the single trail through a Landsburg Reach Natural Area parcel. This overarching recommendation is carried out through the various recommendations below.

Objective: Develop long term ecologically based protection and habitat enhancement actions

Recommendation: Perform baseline inventories and assessments

Complete assessment of basic ecological conditions and physical processes. Staff with appropriate expertise (e.g., ecologists, biologists, engineers) should perform this work. The Ecosystem Diagnosis and Treatment study, and past and future work by King County Ecological and FHRS staff, may contribute substantial inventory and assessment information about the sites.

Recommendation: Develop recommendations for habitat enhancement from assessment

Use inventory and assessment information to develop projects that achieve a set of goals and objectives consistent with those identified for King County Ecological Lands. The Lower Cedar Basin Plan and WRIA 8 Chinook Salmon Conservation Plan Draft Work Plan have made a number of management recommendations in the vicinity of the site that may be considered for future recommendations (addressing flood hazard reduction, habitat quality and salmonid health, and water quality and quantity). When prioritized and funded, those projects that are planned for Ecological Lands should be evaluated for their appropriateness on the site.

Objective: Contain spread of invasive vegetation

Recommendation: Monitor and control invasive vegetation

Park staff should monitor and contain the spread of noxious and invasive plant species that are present at the sites, particularly in those areas where planting projects have occurred. Control is primarily through manual removal of plants by Park staff or organized volunteer groups.

Control of tansy ragwort and selective control of other invasive species is a priority at the site. These plants have been noted on trails through many parts of the site. Regular control of invasive species on the Big Bend 9008 peninsula and post-flood habitat enhancement work is recommended.

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 monthly.

Backcountry Horsemen are key partners in maintaining a clean property, as they collect litter during regular riding activities.

Park staff should consider installing litter/dumping policy signs on the property if litter activity increases. The 270th Ave SE area should be checked for dumping and partying regularly especially when fire risk is high.

Adjacent private property near the 270th Ave SE entrance may be posted for no trespassing if owner is willing.

Park staff should continue to monitor and try to prohibit motorized vehicle access from 270th Ave SE.

NRL and Acquisition staff should continue to investigate road easement from 270th Ave SE and determine whether road use is in accordance with easement.

Objective: Allow appropriate level of impacts of passive recreation at the sites

Recommendation: Monitor public access

Current use is primarily by pedestrians and equestrians on the main informal trails on Big Bend Natural Area. While the Cedar River Trail is maintained to support regional trail use by many users, the informal trails on Big Bend Natural Area are not intended to support the same level of use. At this time, the use of the main informal trails on the site appears, for the most part, to be at levels and in areas where it is not negatively affecting ecological resources.

Park staff should note changes in visitor impacts and types of recreational activities at these sites, and observe any noticeable visitor impacts on the ecological values of the site (at least monthly during the summer and quarterly the rest of the year). This information should be reported to King County Natural Resource Lands Management Staff responsible for updating site management guidelines, and should help to guide management actions at the site.

Recommendation: Consider development of public access plan

Public access planning can help to direct and manage access and support improvements at the site. This work could be considered at these sites, particularly if part of larger access planning on Parks and NRL lands in this vicinity.

Recommendation: Ensure trails do not negatively impact ecological resources

Areas such as those on Big Bend-9046 and Landsburg Reach-9109 where trail systems may impact streams and seeps should be monitored for level of use, and action taken to repair or re-route trails if resources are negatively impacted by public use. Informal trail systems should be periodically evaluated for appropriateness in location and condition.

Recent seasonal use by fishermen has introduced new small informal trails in areas of Big Bend Natural Area where they may present negative impacts to streambank conditions or inappropriately distribute use on the site. These trails should be observed and closed down where appropriate.

Consider installing bridge on Walsh Lake Diversion Ditch trail crossing if funding is available and prioritized.

Recommendation: Work with community partners to exchange information and focus management/maintenance work

Partnerships with the Backcountry Horsemen and the Friends of Rock Creek Valley is key in working on these issues on properties crossed by these local trail systems. The Backcountry Horsemen regularly ride and observe the site, maintain a regular presence on the site, and contribute significant amounts of time to litter collection and trail upkeep. Communication between these community partners and Park staff/NRL can help to identify and address problems as they arise.

Landsburg Reach Site Management Guidelines: Big Bend and Landsburg Reach Natural Areas

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Acknowledgements

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Suggested citation for this report:

King County. 2005. Landsburg Reach Site Management Guidelines: Big Bend and Landsburg Reach Natural Areas. King County Department of Natural Resources and Parks, Water and Land Resources Division. Seattle, Washington.

Landsburg Reach Site Management Guidelines: Big Bend and Landsburg Reach Natural Area

Introduction

The Landsburg Reach of the Cedar River is located between RM 19.6 and 21.7, the Landsburg Diversion Dam.¹ The extent of the reach was identified through the Cedar River Legacy program, which directs public conservation efforts in the Lower Cedar River. Two King County Department of Natural Resources and Parks (DNRP) Ecological Lands are located within this reach: Big Bend Natural Area (containing about 100 acres in three parcels on both sides of the river between RM 19.6 and 20.4) and Landsburg Reach Natural Area (containing about 24 acres in nine noncontiguous parcels on both sides of the river between RM 20.5 and 21.2).

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 Big Bend Natural Area and for Landsburg Reach Natural Area, placing both within the context of the entire Landsburg Reach. These site management guidelines were developed using guidance established in the King County Ecological Lands Handbook (King County 2003a). Discussion and comments received at a November 2004 meeting with members of the Friends of Rock Creek Valley and the Backcountry Horsemen-Tahoma Chapter provided guidance for this plan.

Part 1. General Property Information

Big Bend Natural Area consists of three parcels comprising 96 acres; Landsburg Reach Natural Area consists of nine parcels comprising 24 acres. Both sites contain property on both sides of the Cedar River. Future acquisitions may add acreage to both of these Natural Areas.

Landsburg Reach is located approximately 1.25 miles east of the city of Maple Valley and the King County Urban Growth Boundary, which marks the eastern extent of urban development in the vicinity at this time. Refer to Figure 1 for a vicinity map, and to Figure 2 for a site map that shows parcel names and locations (parcel numbers for every parcel in the Landsburg Reach of the river are provided in Appendix 1). Table 1 provides general information about the location of each Natural Area. Tables 2 and 3 provide specific information for each parcel in the Natural Areas.

The Landsburg Reach Natural Area properties on the south side of the Cedar River are considered to be part of the Danville/Georgetown areas by the local Friends of Rock Creek group and trail users. At least some of these properties are considered to be part of the Rock Creek Valley.

Properties in the vicinity are zoned RA-5, one dwelling unit per 5 acres, although many lots are larger and there is a high proportion of undeveloped land on each lot. Aerial photos indicate that many residential tracts near the property have been cleared of trees. While most properties in the vicinity are residential, about a mile to the northeast lies the former King County Hobart landfill.

The sites are in close proximity to publicly protected open space and public recreation facilities. The Cedar River Trail originates at King County-owned Landsburg Trailhead and extends downstream through the reach within Big Bend and Landsburg Reach Natural Areas, continuing 16 miles to the City of Renton. The SE Cedar River Pipeline Road (also called Lake Youngs Aqueduct) is used as a public trail along the south side of the Cedar River and runs through Landsburg Reach Natural Area.

¹ River miles depicted in the Lower Cedar River Basin and Nonpoint Pollution Action Plan are used in this report; actual river miles may be somewhat different due to improved technology in measurements.

Additional King County-owned lands in the area include the 600-acre Maple Ridge Highlands Open Space dedication immediately southwest of the Natural Areas. The 141-acre Rock Creek Natural Area is approximately 1 mile southwest of the Natural Areas. Approximately 1.5 miles to the south of Big Bend, the Cemetery Reach Natural Area, Ravensdale Park and Ravensdale Retreat Natural Area contain, respectively, 46 acres, 32 acres, and 100 acres of publicly owned land. Ravensdale Park supports active recreation.

Table 1. Properties General Information.

	Big Bend Natural Area	Landsburg Reach Natural Area
Best Available Address	Eastern access from junction of 270 th Ave SE/SE 247 th St	N/A (several parcels within natural area)
Thomas Guide Map Location	p. 718, E2	p. 718, F3
Legal Description	Sections 23 and 24, T 22 N, R 6 E	Section 24, T 22 N, R 6 E
Acreage	96.08 Acres	23.7 Acres
Drainage Basin	Lower Cedar River	Lower Cedar River
WRIA	8	8
Council District	12	12
King County Sensitive Areas	Wetland, Stream, FEMA 100-year Floodplain and Floodway, Seismic, Erosion and Landslide hazards.	Stream, FEMA 100-year Floodplain and Floodway, Erosion, Seismic and Coal Mine hazards.

Table 2. Big Bend Natural Area Parcel Information.

Parcel Number	Name used in this document*	Acreage**	Purchase Date	Ownership type/price	Previous Names	Zoning	Funding Source	Recording Number
2422069046	Big Bend-9046	76.15 Ac	12/1/93	Owned in Fee; \$645,000	Shaw	RA-5	Open Space Bond	199312201971
2422069008*	Big Bend-9008	11.25 Ac	6/18/98	Owned in Fee; \$180,000	Lewis/Wingert	RA-5	Open Space Non-Bond	199806180967
2422069047	Big Bend-9047	(20' access easement on western portion	6/18/98	Access Easement; part of \$180,000 Wingert purchase above				199806180967
1467400185	Big Bend-0185	8.67 Ac	4/30/97	Owned in Fee; \$80,000	Tausend/Baccus	RA-5	Waterways 2000	199704300750

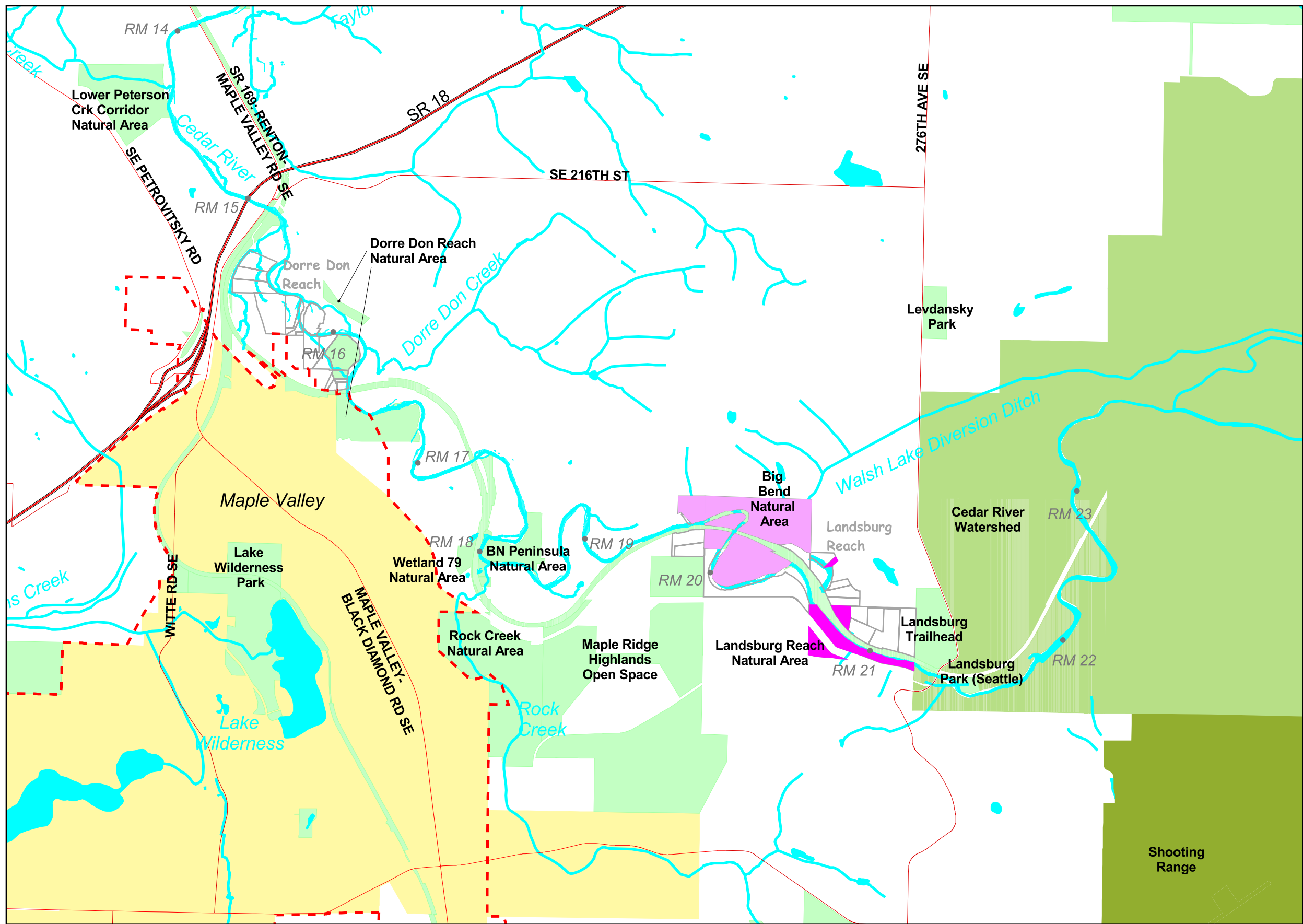
*Parcels are referred to by the reach name plus the last four digits of the ten-digit parcel number.

**Acreage taken from King County Assessor's data.

*** Purchased as two parcels 2422069051 and 2422069008, now combined as 2422069008.

Table 3. Landsburg Reach Natural Area Parcel Information.

Parcel Number	Name used in this document	Acreage	Purchase Date	Ownership type/price	Previous Names	Zoning	Funding Source	Recording Number
2422069109	Landsburg Reach-9109	6.02	6/9/99	Owned in Fee; \$200,000	Wilson	RA-5	CFT and Open Space Non-bond	199906090895
2422069113	Landsburg Reach-9113	2.90				RA-5		
2422069120	Landsburg Reach-9120	0.04				RA-5		
2422069121	Landsburg Reach-9121	4.92				RA-5		
2422069076	Landsburg Reach-9076	0.79	2/23/00	Owned in Fee; \$15,000	Valdez	RA-5	Open Space Non-Bond	20000223001400
2422069038	Landsburg Reach-9038	5.27	4/30/01	Owned in Fee	Maxwell James	RA-5	Open Space Non-Bond	20010430001936
2422069023	Landsburg Reach-9023	2.04	9/30/02	Owned in Fee; \$55,000	Palmer Parcel V	RA-5	CFT	20020930003999
2422069107	Landsburg Reach-9107	1.15			Palmer Parcel I	RA-5	CFT	
2422069116	Landsburg Reach-9116	0.44			Palmer Parcel J	RA-5	CFT	



Legend

- River Mile Markers
- Landsburg Reach Natural Area
- Big Bend Natural Area
- Selected Public Lands
- Cedar River Watershed (no access)
- Shooting Range (no access)
- River Reach Boundaries
- Lower Cedar River reach extents are designated by Cedar River Legacy Program
- Rivers and Lakes
- Streams
- KC Urban Growth Area
- Streets



October 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.

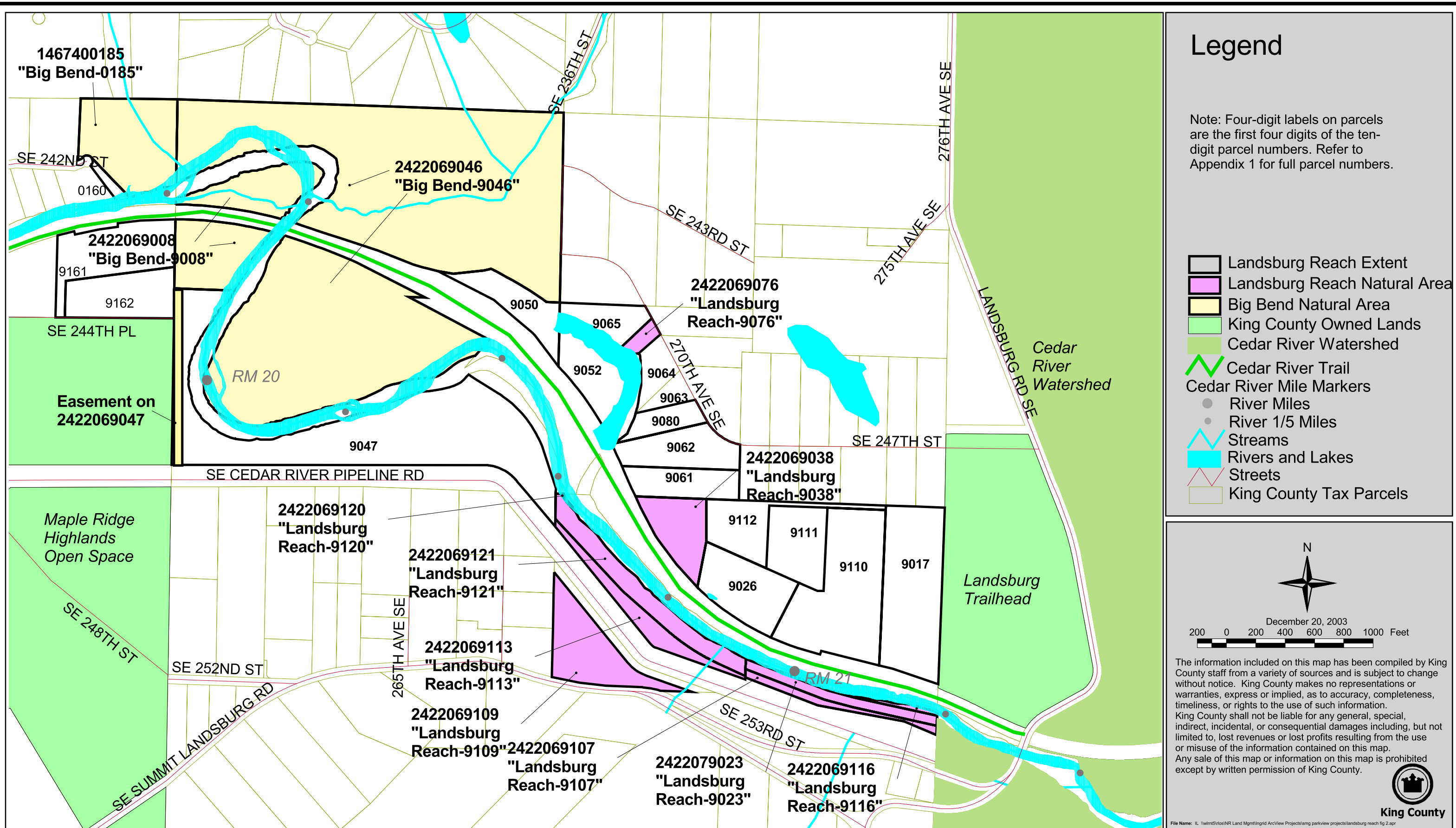


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Figure 1

Landsburg Reach: Vicinity Map



Although there is no public access to watersheds, the City of Kent's watershed contains 315 acres just south of Maple Ridge Highlands open space, and the City of Seattle's Cedar River Watershed represents more than 90,000 acres of protected land immediately to the east, on the east side of Landsburg Road SE.

Part 2. Acquisition History, Funding Source and Deed Restrictions

Big Bend Natural Area

This section provides funding source and easement/acquisition information for each parcel in Big Bend Natural Area

Big Bend-9046

Funding Source

The Big Bend-9046 parcel was purchased under the Cedar River Trail project, under the title "Maple Valley Riverside Park Replacement." 1989 Open Space Bond funding originally intended for the Maple Valley Riverside Park was redirected to this purchase in a 1992 King County Open Space Citizen Oversight Committee resolution (King County 1992). There are no deed restrictions associated with the funding source.

Open Space Bond: King County voters authorized the \$117,640,000 King County Open Space Bond initiative, described in King County Ordinance 9071, in November 1989 to provide funds for the acquisition, development, renovation and improvement of public green spaces, green belts, open space, parks and trails in King County. Specific goals included preserving wildlife, enhancing scenic vistas, providing access to the water and open space, and providing trail connections between virtually all the cities in King County to a regional trail system and trails within the suburban cities and unincorporated areas of King County (King County 1989).

King County Ordinance 9071 authorizes reclassification of bond funds in Section 8, part C. Land use restrictions associated with Open Space Bond funds are identified in Section 8, part D.

"Projects carried out by a Governmental Agency in whole or part from bond proceeds shall not be transferred or conveyed except by agreement providing that such land shall continue to be used for the purposes contemplated by this ordinance; nor shall they be converted to a different use unless other equivalent lands and facilities within the Governmental Entity shall be received in exchange therefor. The proceeds of any award in condemnation of any project shall be used for the acquisition or provision of other equivalent lands and facilities. However, nothing in this ordinance shall prevent the granting of easements, franchises, or concessions or the making of joint use agreements or other operations agreements compatible with the use of a Project as provided for in this ordinance."

Easements/Acquisition Information

Title conditions include an easement for ingress, egress, and utilities² on "the northeast quarter of the northwest quarter"; a right to the City of Seattle to discharge water from the Walsh Lake Diversion Ditch to the Cedar River; and reserved mineral rights.³

² Access/utility easement in title was granted to K. and F. Hartman for "a strip of land 45 feet wide in the northeast quarter of the northwest quarter" on 12/8/75, Recording # 197512080119. Further details about location of easement are not available. However, this may be to grant access to parcel 2422069050 based on the following chain of title: Hartmans sold a parcel to J. P. Ochsner in 1979 (part of Government Lot 2 in Section 24, Township 22N Range 6 E, parcel number not available; recording number [197905151195](#)); Ochsner sold parcel 2422069050 in 1994 (recording number [199408301505](#)).

³ Easements listed in Statutory Warranty Deed Recording # 199312201971; access/utility easement is Recording # 7512080119; City of Seattle easement is Recording # 5084180

There is a road that extends through the eastern edge of the parcel, connecting SE 247th St/270th Ave SE with SE 243rd Street to the north. The road easement listed on the title probably does not apply to this road (see footnote #3). The Appraisal Report states that “SE 247th Street provides access to the easterly boundary of the northerly portion of the subject property from Landsburg Road SE to the east... The gravel road continues on *as a private easement road* providing access to properties to the east.” (Palmer, Groth & Pietka 1993, p. 19; italics added). However, there is no information provided in title documents as to the easement agreement or its terms.

Big Bend-9008 and access easement on 2422069047

Funding Source and Deed Restrictions

King County DNRP Acquisitions staff indicate that Open Space non-bond funds were used for this purchase, and that these funds have no restrictions as to property use or management (Peterson pers. comm. 2005).

This parcel has the following restrictions on the title deeds which are typical citations for acquisitions in the Cedar River Legacy Program: “The property herein conveyed is subject to open space use restrictions and restrictions on alienation as specified in RCW 84.34.200, et seq., and King County Ordinance No. 10750, 11068, and 11713.”⁴ These restrictions refer to the following funding programs that help establish the Cedar River Legacy program:

Conservation Futures: Ordinance 10750 and 11068 (March 8 and October 3, 1993) authorized the Regional Conservation Futures 1993 Bond Acquisition Program (per regulations in RCW 84.34.200). Washington state statute RCW 84.34.230 authorizes Washington counties to place a Conservation Futures Tax (CFT) levy on all taxable property within their jurisdiction to acquire open space land or rights to future development (termed “conservation futures” in RCW 84.34.220). Open space is defined in RCW 84.34.020 as land contributing to natural resources, streams, water supply, soils, wetlands, public land network, recreation opportunities, historic sites, or visual quality. King County Code 26.12 states that there should be “demonstrable regional visibility, use, ecological, cultural, historical, or other natural resource significance” in CFT funded projects.” (King County 2003b) Properties purchased with Conservation Futures funds are to be used for low-impact, passive-use recreation. They are also limited to non-motorized use, except as necessary for maintenance or staging areas, including entrance roads and parking to provide public access. Non-vegetative impervious surfaces should cover less than 15% of the site, excluding trail systems, unless specially authorized by the King County Council. 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. (King County 1993a)

Waterways 2000: Ordinance 11713 (February 15, 1995) refers to an allocation of Waterways 2000 funds for acquisition and stewardship, in support of the Waterways 2000 program “that protects our best habitat lands, provides major [passive] recreational opportunities, safeguards critical scenic resources, preserves properties of cultural and historic importance, and helps save our major fish runs.” (King County 1993b) To fund the Waterways 2000 program, The King County Council appropriated \$14.8 million from Conservation Futures Tax (CFT) levy funds, 1989 Open Space Bond fund reallocations, Real Estate Excise Tax (REET) funds, bond funds and King County general funds (King County 1995). Deeds purchased with these funds include this statement. “The property conveyed herein is subject to open space use restrictions and restrictions on alienation as specified in RCW 84.34.200, et seq [authorizing counties to levy conservation futures], and King County Ordinance no. 9071 [authorizing the 1989 Open Space Bonds], 10757, 11068 [authorizing Conservation Futures] and 11713 [allocates funds to various Waterway 2000 projects].” Land use and sale or transfer of properties purchased with Waterways 2000 funds are restricted as described in the ordinances above.

⁴ Statutory Warranty Deed, Recording # 199806180967

Easements/Acquisition Information

The Big Bend-9008 parcel was purchased as two parcels acquired in fee (2422069008 and 2422069051), and an additional access easement. The two parcels were consolidated into a single parcel number (2422069008). The access easement is twenty feet wide, running from the Lake Youngs Aqueduct right-of-way, north along the western boundary of parcel 2422069047, to the acquired parcel. The easement is described as “an easement for ingress and egress”; no specific conditions or restrictions are attached to this easement in title or deed documents.

Big Bend-0185

Funding Source and Deed Restrictions

The Big Bend-0185 parcel was purchased using Waterways 2000 funds (see summary above under parcel Big Bend-9008). This parcel also has typical Cedar River Legacy deed language as Big Bend-9008 regarding Ordinances 10750, 11068, and 11713 (CFT and Waterways), with an additional restriction associated with King County Ordinance No. 9071. Ordinance 9071 (July 27, 1989) authorized a public vote on 1989 Open Space Bonds (see Open Space Bond information under Big Bend-9046 above).

Easements/Acquisition Information

The Big Bend-0185 parcel was previously enrolled in the Public Benefit Rating System for its natural resources including aquifer protection area, surface water quality buffer area, significant plant/wildlife/salmonid habitat, and public lands and right-of-way buffer. The site was enrolled using a Waterways 2000 application, initiated by DNRP.⁵

The Big Bend-0185 parcel contains plat restrictions for the Cedar River Recreation Tracts in its title noting the lots are “restricted to forestry recreation use governed by and subject to restrictions, rules and regulations of the county zoning resolution No. 11373 and subsequent changes thereto.”⁶ This language dates from 1952. Any applicable current forestry recreation use restrictions would likely not affect the use of this site for passive recreation.

The Purchase and Sale agreement indicates that “Hereafter, the site shall be named the Tausend Natural Area.” (King County 1996, p.3) This name was never adopted for the site.

Landsburg Reach Natural Area

This section provides acquisition information for each parcel in Landsburg Reach Natural Area

Landsburg Reach-9109 -9113, -9120, and -9121

Funding Source and Deed Restrictions

Four parcels were acquired together in 1999, using CFT and Open Space non-bond funding (Petersen pers. comm.. 2005). They have the typical Cedar River Legacy deed restrictions on use and alienation referencing RCW 84.34.200, et seq., and King County Ordinances No. 9071, 10750, and 11068 (see text above for references to CFT and Open Space Bond funding programs that helped to establish the Cedar River Legacy Program, cited in deed language).

Easements/Acquisition Information

While only parcels -9109 and -9113 were listed on the face of the Statutory Warranty Deed, the legal description transfers ownership of parcels -9120 and -9121 as well.

These parcels contain the following easements: a utility line easement along the Cedar River; Seattle Power Company water main and electric transmission lines (associated with aqueduct); and reserved

⁵ Open Space Taxation Agreement, Recording # 199605070223

⁶ Recording # 199704300750; dating from 1952. Recording # 4245127.

mineral rights. The parcels are on both sides of the Lake Youngs Pipeline Right-of Way and Pipeline Road right-of-way.

These parcels, and parcels -9107, -9023, and -9116 below, have a coal mine hazard mapped as a sensitive area layer on King County records (DeGoojer 1999). The Landsburg Mine (also known as “Lehman Millard Dump, or Landsburg Mine/Rogers Seam”) was a coal mine located directly across Summit-Landsburg Road from the Landsburg Reach-9109 property (DeGoojer 1999). Underground mining created a surface trench, and in the late 1960s approximately 4500 barrels of industrial waste were disposed of in the trench, located in an area above about 500 feet of abandoned mine tunnels. There is concern for groundwater contamination at the site. The Department of Ecology is currently pursuing cleanup efforts with potentially liable parties. (Ecology 2003; Wolinski 2003)

Landsburg Reach-9038

Funding Source and Deed Restrictions

This parcel was acquired using unrestricted open space non-bond funding (Petersen pers. comm. 2005).

Easements/Acquisition Information

The Landsburg Reach-9038 parcel is one of six parcels⁷ included in a road maintenance agreement for a private road which connects the property to SE 247th Street (Agreement is Recording # 199401122007; road created by Recording # 197710270076). The road runs through parcels 2422069112 and 2422069005 before it reaches the King County-owned parcel.

The road maintenance agreement states that “Maintenance costs shall be divided equally among each individual property ownership and/or its heirs, successors and assigns...EXCEPT that repair costs caused by above normal use by any one or more ownership(s)...shall be borne by the ensuing user. A simple majority vote of each and every individual property ownership will be required to entail maintenance costs.” Votes will be initiated by written notice sent to each owner via certified mail.

At this time, there is only one daily user of the road and King County has made no payment into a road fund (Harig pers. comm. 2003). In 2005, a road maintenance assessment may be made. A road maintenance fund is being established in the name of Elk Meadows Road Maintenance Association. A \$500 payment is due in the summer of 2005. Members of the Road Maintenance Association estimate that maintenance will need to occur every 3 years. (Darcy pers. comm. 2005)

Additional applicable easements and reservations on the Landsburg Reach-9038 parcel include (King County 2000a): road and utility easement on the northeast portion of the property (#198209290511); electric transmission system easement to Puget Power (#199306021833 and -34); waiver of liability of former owner for hazardous toxic wastes on or under the property, and reserved mineral rights (#9010041178); and well covenant for well located 280 feet south and 170 feet west of the NE corner of the property (#199401251031).

Landsburg Reach-9023, -9107, and -9116

Funding Source and Deed Restrictions

⁷ The six parcels included in road maintenance agreement are 242206-9017, -9026, -9038, -9110, -9111, -9112 (per information in King County Acquisition Files). Three separate road maintenance agreements were filed between property owners in 1994 (recording numbers 199401122007, -006, and -008), which preceded a 1995 boundary line adjustment which created the current parcel configuration. An illegal road easement was granted to the owner of parcel 2422069073 by the owners of parcels 2422069026 and 2422069017 (Recording #20020607000833). They were not owners of the parcels through which the easement runs (2422069112 and 2422069005), therefore they illegally granted the owner of parcel 2422069073 access on the easement road. The owner of parcel 2422069112 is looking into legalizing this easement at the time of writing. The owner of 2422069073 is making a 2005 contribution to the road maintenance costs.

Three parcels were acquired together in 2002 using Conservation Futures Tax Levy funding under the Cedar River Legacy Program.

Easements/Acquisition Information

The Warranty Deed reserves mineral rights to the former owner. The parcels are subject to an easement to Chicago, Milwaukee and St Paul Railway Company for an electric transmission system (AFN 3906597), including the right to erect wires and removal of trees that endanger wires. See coal mine hazard information described for parcels -9109 and -9113.

Landsburg Reach-9076

Funding Source and Deed Restrictions

This parcel was acquired using unrestricted open space non-bond funding (Petersen pers. comm.. 2005).

The Landsburg Reach-9076 parcel has the same typical Cedar River Legacy restrictions on the title deeds that reference RCW 84.34.200, et seq., and King County Ordinance No. 9071, 10750, 11068, and 11713 as described for Big Bend parcels above (CFT, Waterways, and Open Space Bond).

Easements/Acquisition Information

The parcel is subject a road easement across the northeast twenty feet of the property, and the same road maintenance agreement that applies to Landsburg Reach-9038 parcel (Recording #199401122007 and 199401122008).

Part 3. Ecological and Physical Setting

This section describes the existing natural resources and ecological processes associated with Landsburg Reach Natural Area and vicinity. Additional analysis is presented in Part 6 below. Figure 3 depicts site features such as topography, streams, wetlands, and floodplains.

Topography

Landsburg Reach begins at RM 21.7, at the Landsburg Diversion Dam. Between RM 21.7 and RM 21.3 at Landsburg Road SE, the Cedar River flows through a narrow valley (approximately 1/10 mile wide) with steep 40-50 foot bluffs.

Between RM 21.3 and RM 20.6, the Landsburg Reach Natural Area occupies the left bank and part of the right bank. These parcels along the river are described in acquisition documents as containing high bank waterfront that serves as a gravel recharge area (King County 1999). These parcels contain 40-foot bluffs between the aqueduct and the river; just to the south of the aqueduct, there are additional 50-foot bluffs between the aqueduct and Summit-Landsburg Road within Landsburg Reach-9109. The valley is approximately 1/20 mile wide through this portion of the reach.

Throughout its course downstream from Landsburg Road SE to RM 20.4, the river is bounded on the right bank by the Cedar River Trail until its entry into Big Bend Natural Area. The trail may constrain the flow of the Cedar River through many parts of this reach, although the river valley is relatively narrow in many parts and the river may have been naturally constrained by topography even before the railroad grade was constructed.

Between RM 20.6 and RM 20.4, the valley widens to approximately 1/8 mile, and includes an oxbow wetland on the right bank side of the river. This oxbow pond represents a relict channel meander of the Cedar River that was separated from the river by the construction of the railroad grade that now supports the Cedar River Trail.

The valley widens to approximately 1/3 mile wide through Big Bend-9046 between RM 20.4 and 19.8, where the river curves sharply through the parcel. The railroad grade diverges from the river and allows the river to take natural meanders through the site.

Steep bluffs more than 100 feet in height occur on the left bank of the river at approximately RM 20, across from Big Bend-9046. As noted below, these steep banks are an important source of gravels for the river (these bluffs are located in parcel 242206-9047 which is a potential future acquisition). Just downstream at the next river bend, the north central and northwest portions of Big Bend-9046 parcel also contain steep bluffs above the right bank of the river, rising close to 100 feet above the river.

The bluffs in this area are described as following in a Waterways 2000 report (King County 2000b):

“The most dramatic feature within [Landsburg] Reach is a glacially-deposited gravel wall rising some 100 feet. Erosion of this unique geologic feature provides a continual source of necessary spawning gravel for thousands of sockeye, coho, and Chinook. This section of the Cedar River has seen little disturbance and is one of the best examples of how rivers existed before the Puget Sound region was settled.”

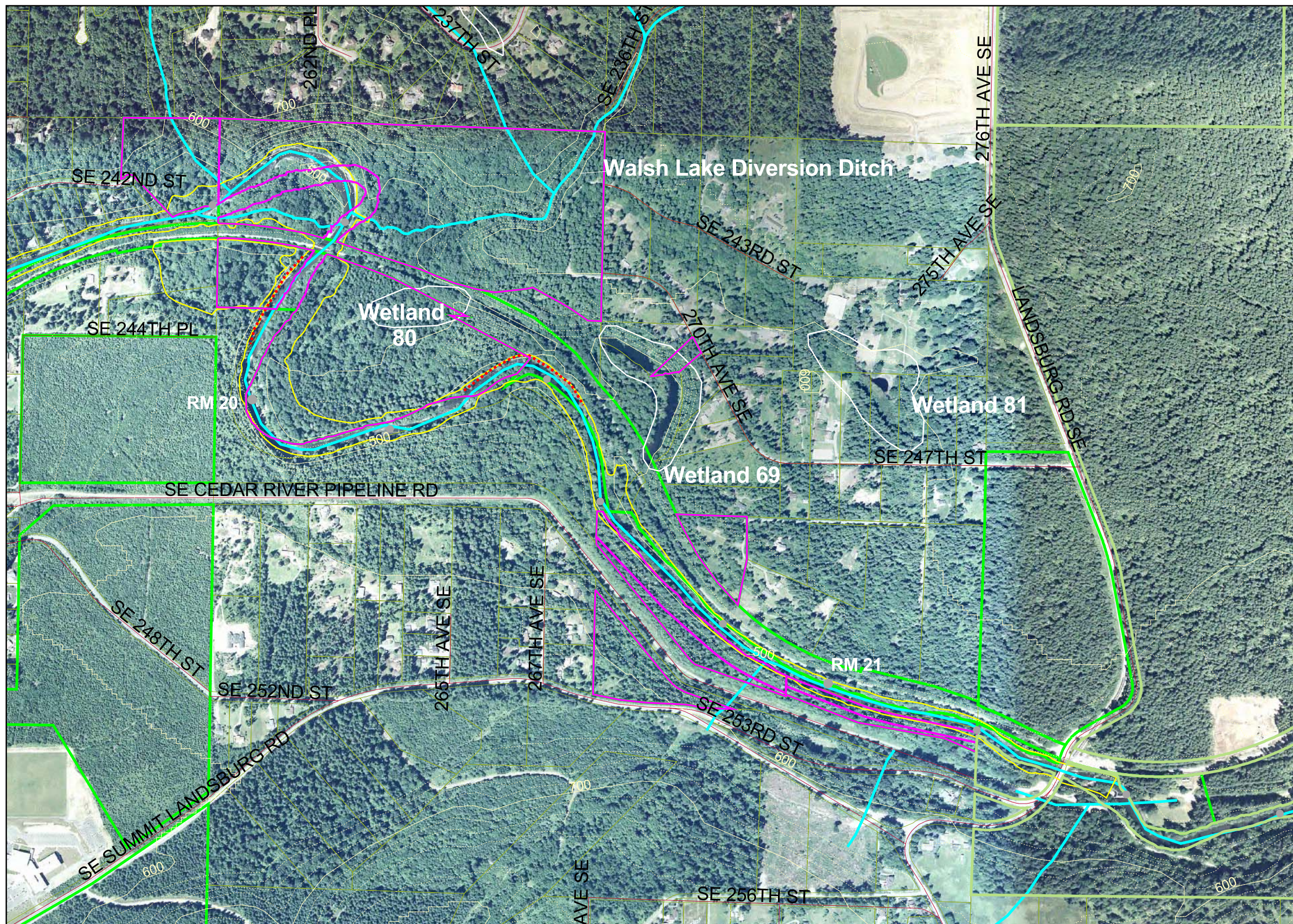
The Cedar River Trail bridges the Cedar River within Big Bend-9046 at RM 19.8. The river narrows between steep slopes to less than 1/10 mile wide downstream of RM 19.8 to the end of the Landsburg Reach at RM 19.6.

A former coal mine is located near the Landsburg Reach parcels on the south side of the Cedar River (as noted on p. 7. Additionally, other coal mine shafts may be located near Landsburg Trailhead on Landsburg Road SE (burlingame pers. comm. 2004).

Soils

The King County Soil Survey maps the following soil types in this vicinity (Snyder et al. 1973):

- Extensive portions of the riverbanks and meander bends in Big Bend-9046 and -9088 parcels are mapped as Neilton very gravelly loamy sand, 2-15% slopes (NeC). Neilton soils are excessively drained, undulating or rolling soils formed under conifers, on terraces, in stratified very gravelly glacial outwash. The Landsburg Reach parcels also support NeC soils.
- Portions of north central Big Bend-9046 and -9088 along the river are mapped as Riverwash (Rh) soils. Riverwash is “long, narrow areas of sand, gravel and stones along channels of larger streams.” If vegetated, common species include cottonwoods or willows. “Overflow and alteration by severe erosion and deposition are frequent.”
- A small area of in the eastern portion of Big Bend-9046, south of the Cedar River Trail at the base of the slope, is mapped as Shalcar muck (Sm). Shalcar soils are very poorly drained organic soils that are stratified with mineral soils. These soils formed in deposits of sedge peat and alluvium in the stream valleys and on rolling, glaciated uplands. The seasonal high water table is at or near the surface.
- The valley lowlands along the southern banks of the Cedar through Landsburg Reach Natural Area are mapped as Everett gravelly sandy loam, 0-5% slopes (EvB). Everett series are excessively drained soils underlain by very gravelly sand, that formed in gravelly glacial outwash deposits under conifers. They are located on terraces and terrace fronts. EvB has rapid permeability, with slow runoff and slight erosion hazard.
- The steep slopes on both sides of the river, between the high plateau above the river and the valley bottom, are classified as Alderwood gravelly sandy loam (AkF), very steep slopes (25-75%). Runoff is rapid to very rapid; erosion hazard is severe to very severe; slippage potential is severe. Alderwood soils are moderately well-drained soils located at upland sites, formed under conifers in glacier deposits.
- The plateaus above the river valley in Big Bend-9046 are classified as Everett gravelly sandy loam, 5-15% slopes (EvC). EvC soils are rolling, with slow to medium runoff and slight to moderate erosion hazard.



Legend

Aerial photos are from 2002.

Locations of stream, wetland, and floodplain layers are approximate.

River miles from Cedar River Basin Plan.

Cedar River Mile Markers

- River Mile
- River 1/5 Mile
- Floodplains - 100 year
- ▬ Streams
- ▬ Wetlands
- ▬ Levees
- ▬ 100 foot contour lines
- ▬ 20 ft Contour Lines
- ▬ Natural Areas
- ▬ Streets
- ▬ King County Tax Parcels
- ▬ Other King County-Owned Lands
- ▬ Cedar River Watershed



November 8, 2004
200 0 200 400 600 800 1000 Feet

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King County

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Figure 3

Landsburg Reach, Site Features

Hydrology and Channel Morphology

Cedar River Mainstem

Landsburg Reach Natural Area is located between RM 20.5 and 21.2; Big Bend Natural Area is located between RM 19.6 and 20.4. Using maps and aerial photographs, Perkins (1994, cited in Blair 2003a) described historic changes in channel characteristics. These studies classified the Lower Cedar River into eight river reaches. According to Perkins (1994), the reaches were identified based on channel morphology and slope. The river reach between RM 16.8 and 21.7 was classified as a single river reach in the Current and Future Conditions Report (King County 1993c, p. 5-22; Perkins 1994). The Current and Future Conditions Report describes historic conditions in this reach as follows:

“This historically stable reach flows through a narrow floodplain that is constrained in many places by cliffs composed of glacial sediments. No lateral migration could be detected [between 1936-1989] although the cliffs are probably retreating slowly at some slide areas at the outside banks of bends. Bank erosion of floodplain deposits has prompted installation of revetments in some locations, most notably from RM 18.4-18.6.” (King County 1993c, p. 5-29, -30)

Perkins noted that the 1895 active channel width was 180 feet, and in 1989 the active channel width was only 90 feet. She also characterized the natural degree of confinement as “moderately confined,” and the current level of hydrological modifications as “moderate.” The wetted channel width has decreased from a maximum 143 feet and minimum 77 feet in 1895 to a maximum 99 feet and minimum 82.5 feet in 1989. During this same period the historic pool frequency decreased from “high” to “moderate”. (Perkins 1994, Blair 2003)

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) (Figure 3). The mapped FEMA floodplain is very narrow and is mostly comprised of the channel width for most of the reach. The floodplain widens to include right bank portions of Big Bend-9046, and most of Big Bend-9008 before narrowing again to the channel width at the downstream extent of the reach.

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 shown on Figure 3, but it is contained entirely within the mapped 100-year floodplain. 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).

The mainstem Cedar River contains an area of braided side channels across the northwest portion of Big Bend-9008 parcel. These channels carry overbank flow at times of high water, creating islands of higher ground in this portion of the site. Even during the dry season in late summer 2003, many portions of these channels contained water and supported a current, indicating the upwelling of sub-surface flow from the Cedar River throughout the year. These side channels supported juvenile salmonids, amphibians, and macroinvertebrates at the time of field visit (Miller pers. comm. 2003).

The Basin Plan indicates that two percolation side channels in Big Bend Natural Area are Regionally Significant Resource Areas (RSRAs) for King County (WMC 1998, p. A-31).⁸ One percolation side channel appears to be the set of side channels described above on the left bank at Big Bend-9008 parcel. The other percolation side channel is on the right bank, associated with Wetland 80 which is described below in the “Wetlands” section.

⁸ “RSRAs are those portions of watersheds that contribute to the resource base of the entire Puget sound region by virtue of exceptional species and habitat diversity and abundance when compared to aquatic and terrestrial systems of similar size and structure elsewhere in the region. RSRAs may also support rare, threatened or endangered species or communities.” (2000 King County Comprehensive Plan Glossary)

Tributaries

The primary tributary in the Landsburg Reach is the Walsh Lake Diversion Ditch. The Walsh Lake Diversion Ditch (Tributary 0341) enters the Cedar River near RM 19.6 (WMC 1998, p. 7-31). Big Bend-9046 contains the Walsh Lake Diversion Ditch between RM 0.0 and approximately RM 0.4 (King County 1993c Map A-25).

The Walsh Lake Diversion Ditch is a 4.4-mile, artificially created channel that drains Walsh Lake, which is located within the City of Seattle Cedar River Watershed. The entire Walsh Lake Diversion Ditch is listed as a Locally Significant Resource Area (King County 1993c, p. 7-87).⁹ Historically, the outlet of the lake flowed into Upper Rock Creek, above the current site of the Landsburg Diversion Dam. In the 1930s, the City diverted the outlet due to contamination from a nearby town (City of Seattle 2000 in Kerwin 2001 p. 342).

The Habitat Limiting Factors analysis provides the following description of the Walsh Lake Diversion Channel:

“The lower reach of the Walsh Lake Diversion Channel (RM 0.0-0.18) is characterized by gently sloping bank topography and vegetation dominated by deciduous forest with dense underbrush. The major habitats in this lower reach are pocket water, high- and low-gradient riffles, and only a few pools that are absent of any LWD. Although surface substrates range from small gravel to small boulders, cobble-sized rocks dominate. There are a number of locations in which the channel is poorly defined and meanders from year to year through different section of the riparian forest (K. Kurko, pers. comm.). Evidence of meandering in the recent past includes the presence of several well-vegetated gravel bars outside of the present channel, indicating that habitat formation is still very dynamic (King County 1993c). Gravel deposits on the sediment fan in this reach are very permeable, and combined with the poorly defined channel, may be two factors that predispose this section of stream to go dry during low flows. Upstream from the diversion channel’s mouth, the gradient rises steeply. This high-gradient reach of the Walsh Lake Diversion Channel (RM 0.18-0.65) is typified by steep, generally unvegetated and eroding soil banks up to 40 feet high. These features indicate the extent of channel downcutting since flows were first diverted over the edge of the valley (King County 1993c). Despite this instability there is some good pool habitat formed by LWD that has fallen into the channel. This LWD is also serving to create a stair-step channel profile and to stabilize and store sediments. A relatively high percentage of boulder and cobble substrates are providing a basic level of streambed and habitat stability (King County, 1993)....

Flows in the lower mile of Walsh Lake Diversion sometimes go subsurface during late summer and early fall (King County 1993c and D. Beedle, pers. com.).” (Kerwin 2001, p. 342-343)

At RM 0.8, a high gradient, high velocity chute forms a partial migration barrier. Between RM 1.2 and 2.0 “there are reaches of fair to good habitat, including lateral and backwater pools.” Much of the upper 2.4 miles are “simple and straight...habitat is considered poor.” At RM 4.4, the river flows out of Walsh Lake, which is about 60 acres in size and up to 35 feet deep (Kerwin 2001 p. 343).

A 2003 field visit by NRL staff confirmed that Walsh Creek has created a steep canyon (with up to 40 feet of unvegetated and eroding soil banks) throughout the length of the upper third of the site. (Miller pers. comm. 2003)

King County DNRP watershed and ecological assessment unit staff provided the following description of Walsh Lake Diversion ditch stream morphology:

⁹ Locally Significant Resource Areas (LSRAs) contribute to the aquatic resources within a specific basin, when compared to aquatic and terrestrial systems of similar size and structure elsewhere in the basin. They also provide wetland and stream habitat that is important for wildlife and salmonid diversity and abundance within the basin.” (2000 King County Comprehensive Plan Glossary)

“There have been ongoing changes in this stream since [the 1993 Current and Future Conditions Report]. Since the LWD placement in 1996, there have been considerable changes in this reach, including formation of a more diverse, higher quality pool, riffle and spawning habitat for sockeye, coho and Chinook salmon as well as an occasional steelhead. This change in habitat conditions has also benefited native fish such cutthroat, sculpins, etc. There has also been a benefit to some terrestrial species including the red-tailed hawk that use the LWD to feed on salmon carcasses. Another benefit from adding LWD has been sediment storage and slowing down sediment transport, especially cobble and small boulders. The habitat value has continued to improve each year since the placement of LWD. The channel remains dynamic but it has stabilized considerably since the LWD placement.” (Priest, B., pers. comm. 2004)

Further description of recent salmonid use is provided in fish and wildlife section below.

Additional unnamed tributaries are mapped on Figure 3 throughout the reach, none of these tributaries are classified or mapped in stream inventories or the Basin Plan. The Landsburg Reach-9076 parcel contains on its northern boundary a steep-gradient channel into the oxbow wetland system that may have intermittent flow.

Wetlands

The 5.5-acre oxbow to the southeast of Big Bend is mapped as Wetland 69, classified as a Class 2 wetland in the King County Wetlands Inventory. The Current and Future Conditions Report identifies this as one of the least degraded wetlands in the basin, with forested and open water habitats (King County 1993c, p. 7-85). Most of the inflow to this wetland “comes from spring seeps that sheet flow down the walls of a short but deeply incised ravine near the center of the wetland” (King County 1993c, p. 7-85); this quote probably refers to the ravine on the north side of Landsburg Reach-9076 parcel. The report notes that “low flows prevent fish access to outstanding oxbow lake,” indicating there may be a connection between this oxbow to the mainstem channel at times of high flows (King County 1993c, p. A-14). Long-term possibilities for restoration in this vicinity include a more extensive re-connection of the oxbow lake to the mainstem river, which may affect Big Bend Natural Area as well. Wetland 69 is listed as an RSRA.

The King County Wetlands Inventory identifies a 2.5-acre Class 2 wetland called “Lower Cedar River 80” on the southern portion of the Big Bend-9046 property, south of the Cedar River Trail. The Inventory lists this as a palustrine forested wetland, dominated by deciduous vegetation. The outflow is overland defined flow to the Cedar River (King County 1991). The Basin Plan indicates that there is a left bank percolation side channel associated with this wetland (WMC 1998, p. A-31). Field investigation in August 2003 indicated that this wetland is a ponded depression below the railroad fill, approximately half of the mapped size of 2.5 acres. The wetland is supported by ponded water collecting from the base of the railroad bed. The wetland should be classified as a shrub/scrub wetland dominated by spirea. Red alders and black cottonwood surround the wetland and provide cover to give it a forested wetland appearance. Other observed species include red-osier dogwood, patches of salmonberry and reed canarygrass. The wetland was dry during August 2003 (Miller pers. comm. 2003). Wetland 80 and its associated side channel are also listed as RSRAs (WMC 1998, p. A-31).

Small wetland areas were observed on Big Bend-9046 north of Walsh Diversion Ditch below the slope and on Big Bend-9008 southwest of the Cedar River Trail bridge. Black cottonwoods dominate the overstory and patches of bulrushes and salmonberries were observed underneath them. These wetlands on Big Bend-9008 may be those referred to in acquisition documents for this parcel: “information from the Surface Water Management Department of King County indicates that there is a potential wetland habitat on the site located immediately south of the railroad right-of-way.” (Property Counselors 1994, Section I p. 7) The information is derived from a 1992 Cedar River Floodplain Survey performed to collect data for the Cedar River Basin Plan (Property Counselors 1994, Section II p. 2.).

Additional small wetlands associated with depressions, seeps, and surface or sub-surface flow may exist throughout these properties.



Legend

Preliminary identification of problem areas as described in text of Site Management Guidelines

- Area 1: Invasive Species
- Area 2: Invasive Species on trails and trail use problems
- Area 3: Invasive Species
- Area 4: Entrance problems
- Area 5: Illegal use of adjacent property
- Area 6: Degradation of road
- Area 7: Trail use problems
- Area 8: Reconnection of oxbow
- Area 9: Erosion along stream

Cedar River Mile Markers

- River Mile
- River 1/5 Mile
- Streams
- - - Levees
- 100 ft Contour Lines
- - - 20 ft Contour Lines
- Natural Areas
- Streets
- King County Tax Parcels



October 7, 2004
100 0 100 200 300 400 500 Feet

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King County

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Figure 4

Big Bend Natural Area: Preliminary Problem Identification

There are no mapped wetlands on the Landsburg Reach parcels, but numerous seeps occur on slopes and the portions of the Landsburg Reach-9109 parcel adjacent to the Cedar River Pipeline Road support wetlands.

Vegetation

The second-growth forest throughout this vicinity is predominantly deciduous, with a component of coniferous species throughout. The composition is typical lowland riparian forest with black cottonwood, bigleaf maple, red alder, western red cedar, Douglas-fir, and western hemlock in the overstory, and a variety of species including vine maple, indian plum, snowberry, and salmonberry in the shrub layer.

Big Bend Natural Area

There is a mix of forest types on the site. On Big Bend-9046, there are stands of mature conifers along the northeastern portion of the site, and one stand of young Douglas fir trees 20 to 30 feet in height north of the trail coming down from 270th Ave SE. Most of the rest of the site is covered by mixed forest. Black cottonwood and bigleaf maples, with patches of western red cedar or hemlock, dominate the forests within the floodplain. Douglas-fir, red alder, and bigleaf maples dominate the mixed forest on the slopes. The stage of development at Big Bend indicates that most of the site has not been harvested for the last 50 years (Miller pers. comm. 2003). (See Figures 5-7 in Appendix 4 for photographs of vegetation).

There are extensive young conifer understory plantings throughout Big Bend, mostly in the lowland peninsulas along the Cedar River and along the old roadbed from the 270th Ave SE entrance. These plantings were part of a King County Parks tree planting campaign in 2000 (Miller pers. comm. 2003).

The King County Wetlands Inventory identified red alder, black cottonwood, western red cedar, vine maple, red osier dogwood, willows, bittersweet nightshade, marsh violet, and small-fruited bulrush at Wetland 80 on the site. As noted above, field investigation indicated that the wetland is primarily tall cottonwoods, with Himalayan blackberry, spiraea, and willows.

Many noxious and invasive species are found on the site. Major weed species on the site include (references to weed category are from 2003 King County Noxious Weed List): tansy ragwort (Class B), Scot's broom (Weed of Concern), St. Johnswort (Weed of Concern), herb Robert (Weed of Concern), Canada and bull thistles (Weed of Concern), reed canarygrass (Weed of Concern), blackberries, (Obnoxious Weed), butterfly bush (Obnoxious Weed); holly and comfrey are also highly invasive but not listed on the noxious weed list. English ivy (Class C) has been noted along the trail (burlingame pers. comm. 2004).

Figure 4 portrays three areas with high concentrations of invasive species (in addition to other problem areas that will be described later in this document) (Miller pers. comm. 2003):

Area 1: The large braided gravel bar west of the Cedar River bridge that was cleared of vegetation during the flooding events of the mid 1990's

Area 2: Along trails and railroad beds

Area 3: An area that appears to have been cleared and may have been the old homesite in the middle of the bend

Other species are present at lower concentrations in other parts of the site, including herb Robert widespread in the forested portion of the site. Tansy ragwort is a King County-listed noxious weed for which control is required. There are individual tansy plants scattered occasionally through the peninsula areas of the site, including along trails, old road beds, and the braided side channels in particular.

Immediately along the river there are areas of frequent disturbance, characterized by riverwash cobble soil, and predominantly shrub layers of vegetation that probably date to the last major flood events in the mid-1990s. This was observed most extensively in Big Bend-9008 parcel, marked as Area 1 on Figure 4,

the large gravel bar between the overflow channel and the river (see Figure 7 in Appendix 4 for photo from across Cedar River). There are large areas along the river dominated by willows, although these disturbed areas have a very high proportion of invasive species including butterfly bush, Scot's broom, herb robert, tansy ragwort, and other non-native species.

Landsburg Reach Natural Area

The various parcels that comprise Landsburg Reach Natural Area support similar mixed coniferous-deciduous forest as described above. There are limited amounts of invasive species on these parcels, primarily observed near the Cedar River Trail and the Cedar River Pipeline Road.

The Landsburg Reach-9038 parcel has been cleared and graded for a house site; substantial portions of the site are open grass.

The Landsburg Reach-9109 parcel is cleared on the upland portion adjacent to SE Summit Landsburg Road. The western portions of the site support predominantly conifers; the vegetation is primarily deciduous in the lowland and wetland areas adjacent to the Cedar River Pipeline Road. The wetlands on this parcel support typical wetland species including skunk cabbage and red osier dogwood beneath tree cover of red cedar and black cottonwood.

Fish and Wildlife

The Cedar River in this vicinity is used for spawning and rearing by all species of anadromous salmonids in the river. There are extensive areas of high-quality spawning gravel through the mainstem Cedar in this vicinity (Miller pers. comm. 2003).

The lower reaches of the Walsh Lake Diversion Channel are used by coho, sockeye, and Chinook salmon, and steelhead trout (City of Seattle 2000 p. 3.2-23). "At RM 0.8, a high gradient, high velocity chute forms a partial migration barrier...on private property. Regular spawning surveys upstream of the barrier initiated by the City of Seattle in 1997 have only observed a few spawning coho salmon." (Kerwin 2001 p. 343-344)

"A recent study has confirmed the presence of kokanee, a form of landlocked sockeye salmon, in Walsh Lake. The kokanee population spawns in lower Webster Creek and matures in Walsh Lake. Cutthroat trout are found throughout the waters of the Walsh Lake subbasin, and rainbow trout have been observed in the upper Walsh Lake Diversion Ditch. Other fish species in this subbasin include speckled dace, redbreast shiner, and western brook lamprey which have all been observed in the Walsh Lake Diversion Ditch." (City of Seattle 2000 p. 3.2-23)

King County DNRP watershed and ecological assessment unit staff provided the following description of salmonid use of Walsh Lake Diversion ditch:

"Prior to 2003, I have only observed an occasional Chinook in this channel. In 1994 and 1998 (November, both years) I observed 2 Chinook on one day in each of those years. Prior to the past few years, access to Walsh Lake Ditch has been restricted in September and October due to lower flows and alluvial wedge that develops each winter when mainstem flows are higher. In 2003, a combination of slightly higher flow in Walsh and smaller alluvial wedge because of reduced sediment transport; access was not a problem for adult salmon. As a result, the first survey conducted on October 17, 2003 had 10 adult Chinook that were displaying spawning behavior. Live Chinook totals peaked at 10 on October 28th with 5 carcasses also found. Totals dropped off quickly to one live Chinook on November 1st and no live Chinook were observed after that for 2003. Future surveys will establish if the recent use of higher numbers of Chinook in this stream is a growing trend or an anomaly from previous years. These surveys could include what species, both aquatic and terrestrial, are using this stream. This would help determine not only what is using this stream, it could also establish when it is being used and what the frequency it is being used by each species." (Priest, B., pers. comm. 2004)

The Cedar River corridor provides high quality habitat for a variety of resident and migratory bird species. This corridor is connected to the large forested landscape of the Cedar River Watershed, and the riparian corridor of the Cedar River that flows all the way to Lake Washington. Big Bend and Landsburg Reach Natural Area are located within two miles of the watershed in a rural area with surrounding woods, pastures, and some wetlands. It is expected that most species observed in the Cedar River Watershed could be found at these nearby Natural Areas. Bird species observed on a mid-day site visit during August 2003 include robin, song sparrow, black-capped chickadee, flycatcher, vireo, pileated woodpecker, northern flicker, and band-tailed pigeon. It is expected that the site is being used by bald eagles, listed as a threatened species under the Endangered Species Act. Hawks, owls, woodpeckers, crows, sparrows, warblers, and waterfowl are all expected to use the habitat on site. The site is part of the wildlife habitat corridor identified in the King County Comprehensive Plan (2004).¹⁰

Many species of mammals are expected. Tracks and scat of black-tailed deer and elk were observed throughout the area. Coyotes, black bears, raccoons, beaver, river otter, muskrat, mink are believed to use the shorelines and surrounding habitats. Small mammals such as voles, squirrels, shrews, bats, and weasels are also likely to exist on the sites.

Chorus frogs (tree frogs) and red-legged frogs were observed on the large vegetated gravel bar on the western portion of Big Bend Natural Area. Other species of frogs and salamanders and garter snakes are expected to inhabit the wetland and shoreline areas. No wildlife inventory of the site has been completed.

Part 4. Public Use and Infrastructure

This section describes public use, access points, and site infrastructure such as trails, roads, and utilities at Big Bend and Landsburg Reach Natural Areas.

Big Bend Natural Area

Public Use

Big Bend Natural Area is used by local and regional populations, from neighboring properties and from the Cedar River Trail. The Cedar River Trail is a popular walking, cycling, and equestrian trail. Informal trails leading from the Cedar River Trail into Big Bend Natural Area allow for access by all of these types of users. The site provides linkages with a horse riding circuit that includes access from the Danville-Georgetown trails and connections on the Cedar River Pipeline Road and the Cedar River Trail. (Appendix 5 contains a map of Danville-Georgetown Trails produced by the Friends of Rock Creek Valley).

Big Bend Natural Area is used for walking, nature observation, and fishing, among other activities. Tracks on informal trails evidence use by horses, bicycles, and occasional use by motorbikes or off-road vehicles. Motorized uses are not permitted at the site. Use by horses and bicycles is not prohibited on trails at the site.

Within the site, there can be littering in areas of regular use such as riverbanks and trails (particularly when use increases seasonally during the summer). Local volunteers from Backcountry Horsemen spend time picking up this litter as they ride the site, providing significant help to Parks staff in keeping an eye

¹⁰ The King County Wildlife Habitat Network is described in the 2004 update to the King County Comprehensive Plan as a method to “identify and protect critical fish and wildlife habitat conservation areas, [and] to link those critical habitat areas and other protected lands through a network system.” (King County 2004, p. 4-19) The network is intended to provide some degree of landscape-level protection for wildlife species, to maintain wildlife as viable components of ecosystems, and to facilitate wildlife movement between large habitat patches. This approach creates a network of natural lands across the landscape by linking contiguous blocks of ecologically significant natural resource areas (hubs) with natural corridors through adjacent critical habitat, open space tracts, and wooded areas. Ideally, these corridors would enable terrestrial populations to intermingle and disperse from east to west and north to south within the County.

on site conditions. The more remote portions of the site may also support a limited amount of dumping that has occurred over time, such as a large appliance dumped in the woods on the southeastern peninsula of Big Bend-9046. Specific litter problems at entrances are noted below.

There is no signage marking any portion of the properties as public property.

Access

The primary access to Big Bend is from the Cedar River Trail. The Landsburg Trailhead with a parking area is located about 1 mile east of Big Bend Natural Area, at the terminus of the Cedar River Trail on Landsburg Road SE (see Figure 2). (This trailhead may be referred to as “Landsburg North Trailhead” by local riding community.) There may be access from other regional or local community trailheads that connect to site along Cedar River Trail.

There is also access from 270th Ave SE off of Landsburg Road SE, though there is no parking available there, this is a private road and posted entrance sign at Landsburg Road SE notes “no public access to the river.”

The 270th Ave SE entrance to Big Bend Natural Area is the site of regular dumping activity (marked as Area 4 on Figure 4). Park staff have blocked the entrance with logs and ecology blocks to prevent entry of motorized vehicles, but there is regular clearing of vegetation to create side entrances for motorbike or off-road vehicle access. People are using this entrance to access a lot that is not currently owned by King County at 270th Ave SE (labeled “9050” on Figure 2 and Area 5 on Figure 4). In an August 2003 field visit there was dumping on this lot and evidence of people using the site to light fire works and to have campfires. While it is not part of the Natural Area, uncontrolled fires could easily spread to the Natural Area.

Where 270th Ave SE extends to the north past the Natural Area entrance, the road continues through County property; the County owns the land to the east and the west of the road (labeled Area 6 on Figure 4). There are large rutted swaths along each side of the road through certain sections that appear to be used as turnarounds by vehicles within county property (see Figure 11 in Appendix 4).

There is one steep section of trail that serves the local residents of the ridge top properties that has many seeps flowing down the cut bank and is not very stable (marked as Area 7 on Figure 4).

There may be limited access on the west side from SE 242nd Street, a cul-de-sac that terminates at the western edge of Big Bend-0185. However, the parcel drops more than 40 feet in elevation at the dead end, which prevents ready access to the site (Allen and Associates 1996, p. 7).

The public also accesses the site from boats floating down the Cedar River.

Trails

The Cedar River Trail is the main trail through both Big Bend Natural Area and Landsburg Reach Natural Area. With the exception of the Cedar River Trail, all trails on Big Bend Natural Area and former roads are unmaintained by Park staff. Downed trees that block trails may be cleared by Park staff to allow passage. The Backcountry Horsemen do take care of many of these trails during their regular riding on the site.

On Big Bend-9046, a main informal trail leads from the 270th Ave SE entrance into the site along an old road bed (see Figure 12 in Appendix 4). Another main trail crosses Walsh Lake Diversion Ditch (see Figure 13 in Appendix 4) and provides access to the local residents on the bluffs above the site, where the braided system at the top ends at several pasture gates (Miller pers comm 2003). One main trail loops around the peninsula south of the Cedar River Trail on Big Bend-9046. Smaller trails to the Cedar River have been opened by local users off of this trail during the 2004 fishing season. These trails may not be appropriate in location or condition. Various other informal trails cross the site, connecting to the Cedar River Trail, the old road bed, and the Cedar River.

As noted above, tracks on the trails evidence foot, horse, mountain bike, and motorcycle or off-road vehicle use. Seeps or low spots in the trails may form large muddy areas during wet seasons, and trail improvements may be useful in some of these areas. The trail across Walsh Lake Diversion Ditch is used to walk horses across the channel. This type of use has the potential to impact salmonid use during spawning or rearing seasons. Seasonal salmonid use of the Cedar River and Walsh Lake Diversion Ditch may make use of certain water access locations inappropriate at those times. If funding is available, a bridge over Walsh Lake Diversion Ditch would be an appropriate improvement.

Acquisition documents indicate that there were bulldozer tracks across the southern half of the Big Bend-9008 parcel approaching the Cedar River Trail, accessing the site from the parcel to the south (DeGoojer 1998, p. 4). This report has not been verified; the location was not found during 2003 field work.

Revetments

There are two revetments at Big Bend Natural Area, both unnamed. One revetment is located on the right bank at the upstream extent of the Big Bend-9046, along the Cedar River Trail. The other revetment is located on the left bank, extending from off site onto the Big Bend-9008 parcel to the Cedar River Trail. These revetments probably date to the construction of the railroad grade. According to recent WRIA 8 planning documents, the revetment at river mile 20.2 probably “no longer exists as anything other than an old, slightly raised eroding prism of native channel material (so no need to do anything with it but let the river continue to erode it). The revetment at 20.6 still exists. Removal would be problematic because it protects the regional Cedar River Trail.” (WRIA 8 Service Provider Team 2004, Appendix F p. 4).

Neither revetment is maintained by the Flood Hazard Reduction Services (FHRS) section of WLR. FHRS would repair any damage to the revetments from flooding to preserve public infrastructure (the Cedar River Trail). FHRS performs mapping and other flood-related studies 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 revetment or banks to mark sites at which river cross-sections are measured. (Koon pers. comm. 2003).

Landsburg Reach Natural Area

Public Use

On the Landsburg Reach parcels, the levels of use appear to be lower than on Big Bend Natural Area. Landsburg Reach-9109 supports regular use on a trail between SE Summit Landsburg Road and the Cedar River Pipeline Road, containing tracks by pedestrians, horses, and bike tires at a May 2003 field visit. A signpost erected within the property notes the trail to “Danville” (the name of an area containing popular trails to the southwest of this property). There has been dumping off the edge of the slope.

There is also trail use of the parcels that between the Cedar River Pipeline Road and the Cedar River (parcels 9116, 9023, 9107, 9113, and 9121). These parcels have a steep drop to the river and do not provide any river access.

There is little to no evidence of public use at the Landsburg Reach parcels that lie on the north side of the Cedar River, other than a limited number of informal trails that may be used by locals.

Access

There are a number of access points to Landsburg Reach Natural Area parcels. The Cedar River Pipeline Road (with access from Landsburg Trailhead or other local trailheads or trails) provides the main route to the parcels on the south side of the river.

Local riders traveling Danville/Georgetown trails may also enter the Landsburg Reach-9109 parcel from SE Summit Landsburg Road (vehicle access is restricted to the site).

Landsburg Reach-9076 lies on 270th Ave SE, and Landsburg Reach-9038 lies on a private road off of SE 247th St. Limited parking may be found on the road shoulder at both of these sites. Access is partially blocked to the Landsburg Reach-9038 parcel by bollards and a chain. This parcel may also be accessed off of the Cedar River Trail.

Trails and Roads

The Cedar River Trail runs adjacent to Landsburg Reach parcels on the right bank of the river; the Cedar River Pipeline Road runs adjacent to the Landsburg Reach parcels on the left bank of the river. With the exception of the Cedar River Trail, all trails and former roads on King County land are unmaintained by Park staff. The City of Seattle's Cedar River Pipeline Road regularly used as a trail.

The trails on Landsburg Reach-9109 between SE Summit-Landsburg Road and the Cedar River Pipeline Road traverse steep slopes and may become muddy and erosive with use during the winter season (Figure 14 in Appendix 4).

Part 5. Site Management Chronology

Understory plantings were installed at Landsburg Reach-9076 parcel by Earth Corps shortly after the acquisition in 2000. These plantings were performed by Puget Sound Energy as off-site mitigation for other project work.

Plantings were installed by contract crews in 1997-1998 on the main trail of Big Bend-9046 from 270th Ave SE to limit 4x4 vehicle access. Further work has been done at the 270th Ave SE entrance to limit access by placing ecology blocks and logs. Annual work by Parks staff at Big Bend Natural Area includes regular site inspection, litter pickup, and limited invasive removal, trail maintenance, and habitat enhancement. Annual work by Parks staff at Landsburg Reach Natural Area includes inspection and litter pickup.

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 lands within Big Bend and Landsburg Reach Natural Areas. 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

There has been limited analysis of ecological conditions and physical processes in the Big Bend and Landsburg Reach Natural Areas. This type of information is necessary prior to developing habitat enhancement concepts and specific designs, particularly for large-scale changes and modifications to site features.

If extensive capital project work is to be undertaken at these natural areas, further analysis of plant, fish, and wildlife species, geologic and hydrologic conditions, and evaluation of proposed actions should be conducted by staff with appropriate expertise. Assessment should focus at a minimum on the conditions and processes that management activities will affect. Prior to minor management activities (e.g., small planting project), 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. If the likely outcome is harm, then the activity should not be undertaken.

Additional 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 staff.

Field work during the Fall of 2003 by King County NRL staff with restoration expertise identified items of high, medium, and low concern at Big Bend Natural Area, and made recommendations to address these concerns. These items will be addressed under appropriate respective headings below: ecological processes, structure, function, and public use. The main concerns are as follows (Miller pers. comm. 2003); “Area” numbers denote where these are labeled on Figure 4:

High Concern:

- Noxious, invasive and non-native plant species grow throughout the site (Areas 1, 2, and 3)
- Minor problems (erosion or drainage issues) occur from public use of informal trails (parts of Area 2, and Area 7)
- 270th Ave SE entrance allows inappropriate public access and activity to Big Bend and adjacent property (Areas 4 and 5)

Medium Concern

- Invasive species colonize disturbed areas of large western gravel bar and side channel (Area 1)
- Oxbow wetland is disconnected from Cedar River by railroad grade (Area 8)

Low Concern

- Erosion is occurring on steep slopes of the Walsh Lake Diversion Ditch (Area 9)

Species of Concern

Because of the lack of a comprehensive biological inventory at these sites, 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 habitat enhancement necessary management priorities at the site.

Restoring Processes

Overall, Big Bend Natural Area is allowing natural processes to occur. Forested habitats are naturally establishing in several different succession patterns. Flooding is allowed throughout most of the site to establish floodplain richness. Gravel recruitment is occurring naturally from the surrounding banks.

It is apparent from current information that several constructed features are controlling the natural processes on portions of the site, including the Cedar River Trail and Walsh Lake Diversion Ditch. Further recommendations may be developed from more in-depth analysis of historic river conditions, hydraulics, and hydrology at the site.

Cedar River Trail

The Cedar River Trail/railroad bed bisects Big Bend Natural Area. Construction of the railroad bed required portions of the Cedar River shoreline to be anchored by a bermed revetment for flood protection and to direct flow under a bridge. The meander of the Cedar River through the valley is limited by this infrastructure.

Another section of the Cedar River Trail to the southeast of Big Bend Natural Area impacts connection with the oxbow wetland (Wetland #69) to the north of the trail. Historic construction of the railroad bed disconnected a section of old Cedar River channel that used to be part of the floodplain. The oxbow Wetland #69 just southeast of Big Bend Natural Area lacks direct connection to the Cedar River (Area 8 in Figure 4). This wetland system is providing high wildlife value and is capable of providing high value for salmonid species.

Recommendations have been made in the Lower Cedar Basin Action Plan and WRIA 8 Action Plan to consider reconnecting the wetland to the Cedar River, or establishing the area as a floodplain of the Cedar River. An ecological study could determine the costs, benefits, and value of reconnecting this wetland and/or reestablishing the area as a floodplain of the Cedar River. Costs include not only economic costs

but impacts to existing habitat and wetland-dependent native species that currently use Wetland 69 (Priest, B., pers. comm. 2004). Rerouting the trail around the area would need to be considered to reestablish the floodplain connection with the river.

Walsh Lake Diversion Ditch

Another altered feature is the Walsh Lake Diversion Ditch, which was routed through the northern half of Big Bend-9046 by the City of Seattle for water quality protection of the Cedar River upstream. Walsh Creek has created a steep canyon (with up to 40 feet of unvegetated and eroding soil banks) throughout the length of the upper third of the site. This is an area that previously did not contain a stream the size of Walsh Creek.

At the present time this creek is providing fair to good fish habitat. It was described by the Cedar River Watershed Habitat Conservation Plan as having reached a basic level of habitat stability due to the high percentage of boulder and cobble substrate in the area. However, erosion has been identified as a concern. Several spots were observed to have slope failures during the field observations in August 2003 (marked as Area 9 on Figure 4). A survey of the area could determine the extent of erosion, its impacts, and actions that may help to stabilize the banks. Recent information from King County ecological staff indicated that large woody debris installation during the 1990s has contributed to sediment storage and reduced sediment transport by the stream. Ecological staff recommended ongoing surveys of salmonid use to determine how salmonid usage of the creek has responded to recent habitat improvements. (Priest, B., pers. comm. 2004)

Restoring Structure and Function

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 the site in particular. Inherent in the enhancement 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.

Invasive Species

Invasive species presence was identified as a key area of concern at the site during recent field work. Figure 4 portrays three areas with high concentrations of invasive species (Areas 1, 2, and 3); other species are present at lower concentrations in other parts of the site.

Removal of tansy ragwort, a Class B noxious weed, is required by State and King County Noxious Weed Boards. Plants were observed in the large western gravel bar, along the trail leading to 270th Ave SE, along the Cedar River Trail, and a few along the informal southern trail that leads from the Cedar River bridge crossing to the USGS gaging station.

The relatively limited amount of Scot's broom, thistle, and comfrey may make them appropriate candidates for control before they spread more extensively. The large amount of butterfly bush, herb Robert and blackberries present that are well established make these species relatively difficult to control. Control may be targeted in areas where native tree and shrub plantings are to be established, and/or at rates that can be maintained by Parks staff.

The large gravel bar between the overflow channel and the river on Big Bend-9008, marked as Area 1 on Figure 4, is colonizing numerous noxious and invasive weed species. Establishing the large gravel bar with native trees and shrubs would benefit the ecological structure of the site and increase the forested floodplain habitat along the river. An appropriate time for habitat enhancement may be after the next large flooding event that scours out the existing noxious and invasive vegetation. At that time reestablishing the site with native species by planting willow and black cottonwood stakes would be

easier because of less need for weed control, and this should help to reduce colonization of non-native plant species. Funding from the next large flood event could help to support immediate planting with native tree and shrub stakes by the resource coordinators program and/or other funding sources (i.e. Small Habitat Restoration Program). In the mean time, the noxious and invasive weeds should be cut once a year to reduce the need for weed control after the area is planted. Staff should utilize the volunteer program for tree planting events and helping with maintenance of the native plants.

Public Use

At this time this level of public trail use does not seem to be significantly impacting the natural resource values of the site. There is one steep section of trail that serves the local residents of the ridge top properties that has many seeps flowing down the cut bank (Area 7 on Figure 4). This trail is not very stable and may need to be closed or maintained/improved. Installing water bars to control the seep flows should greatly reduce erosion from this source. Survey of trail conditions during the winter could determine trail conditions, water quality impacts are occurring from erosion of the bare soils, and identify if the trail needs maintenance, such as water bars or gravel placement. Similar problems may occur on the trail from Landsburg Reach-9109 down to the Cedar River Pipeline Road.

Future acquisitions may bring into the Landsburg Reach Natural Area inventory additional land on the left bank that contains trails extending off the Pipeline Road. This parcel is listed in the Rock Creek Valley Conservation Plan as an acquisition priority (FRCV 2004, Section 5.2 and Map 5.2-1). These trails are mapped by local community groups as part of the complex of 'Danville/Georgetown' trails in Maple Ridge Highlands Open Space and surrounding areas. As with other trails on the property, upon acquisition these trails should be evaluated as to appropriateness of location in terms of sensitive area impacts, connectivity with other trails, and implications for maintenance and liability. The Friends of Rock Creek Valley and the Backcountry Horsemen contribute extensive time and energy to maintaining this Danville/Georgetown trail system and are key partners for King County in those areas where the trails cross King County Natural Area property.

The public also accesses the site from boats floating down the Cedar River, using gravel bars and shoreline as pull-outs and picnic areas. This type of use does not appear to have a negative impact on the site at this time.

Small informal trails opened by fishermen accessing the river during the 2004 fishing season. These trails should be monitored and closed down when they appear to be problematic in terms of location and condition.

The trail crossing the Walsh Lake Diversion Ditch leads users through the water. This may have seasonal impacts on salmonids using the stream. If funding is available and prioritized, installation of a bridge may help reduce negative impacts on the stream.

Activity at the 270th Ave SE entrance should be monitored, and continued efforts made to prevent or reduce motorized vehicle access and use of adjacent private property for partying. The legal ownership of road easement through this parcel (connecting 270th Ave SE to SE 243rd Street) should be investigated to determine whether road use is in accordance with easement (discussed in Part 2).

The trail system on these two Natural Areas is part of a larger system of local trails on Parks, NRL, and other public lands in this vicinity. A public access plan could help to direct and support use not only of these sites but of this larger area. This work would have to be prioritized and funded, coordinated with local user groups, and coordinated with the landowners involved in this trail system.

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 Big Bend and

Landsburg Reach Natural Areas as new information from baseline inventory, assessment, and site monitoring programs and other initiatives becomes available for use in land management decisions.

Goals for Big Bend and Landsburg Reach Natural Areas

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 the Natural Areas.

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 hydrologic and habitat value of the site, and should preserve and protect ecological integrity. Of particular significance for their ecological value are the Walsh Lake Diversion Ditch corridor, the large tracts of riparian and upland forest, the river corridor including relict site channels along meander bends, and the high bank along the Cedar River. Use should be directed to a limited number of main informal trails through the Big Bend Natural Area, to the regional Cedar River Trail that runs through Big Bend, and to the single trail through a Landsburg Reach Natural Area parcel. This overarching recommendation is carried out through the various recommendations below.

Objective: Develop long term ecologically based protection and habitat enhancement actions

Recommendation: Perform baseline inventories and assessments

Complete assessment of basic ecological conditions and physical processes. Staff with appropriate expertise (e.g., ecologists, biologists, engineers) should perform this work. The Ecosystem Diagnosis and Treatment study, and past and future work by King County Ecological and FHRS staff, may contribute substantial inventory and assessment information about the sites.

Recommendation: Develop recommendations for habitat enhancement from assessment

Use inventory and assessment information to develop projects that achieve a set of goals and objectives consistent with those identified for King County Ecological Lands.

The Lower Cedar Basin Plan makes a number of management recommendations in the vicinity of the site that may be considered for future recommendations. These general proposals are aimed at the multiple interests of the basin plan (flood hazard reduction, habitat quality and salmonid health, and water quality and quantity), though they are not prioritized or scheduled for implementation in the near term.

Lower Cedar Basin Plan Recommendations (WMC 1998)

- CIP 3161 Walsh Lake Diversion Ditch Habitat Improvements, RM 0.0-0.5. The project recommends modification of a passage barrier at RM 0.6, add spawning gravel and LWD to increase habitat quality (p. 4-43 and A-144).
- Landsburg Oxbow Habitat Enhancement (right bank, RM 20.5): construct a pipe to divert water from downstream of Landsburg to Wetland 69, and provide a fish-passable outlet into the river (p. 4-87, Mainstem Recommendation 4).
- Shaw Property Habitat project (right bank, RM 19.8): excavate groundwater habitat near Wetland 80 on Big Bend-9046 (p. 4-87, Mainstem Recommendation 4).

- Wingert Property Habitat projects (left bank, RM 19.7): excavate two groundwater-fed ponds on Big Bend-9008 south of the Cedar River Trail, and connect them to the Cedar River via a new culvert under the Trail. Also excavate a string of small groundwater-fed pools in an existing side channel and underplant conifers (p. 4-87, Mainstem Recommendation 4).

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. 4, Reach 18).

- Reconnection of Wetland 69 to Cedar River. Additional acquisition would be needed and consideration of costs, benefits, and impacts would need to be considered.
- Explore whether revetments at river mile 20.2 and 20.6 still exist. The 20.6 revetment may be the only remaining facility; removal may impact the Cedar River Trail.
- Protect riparian functions in Landsburg Reach, 87 acres including forested floodplain and areas of unarmored, steep bank. "In particular, protect gravel recruitment source on left bank in downstream portion of reach."

There are no specific plans or timeframe for implementing these Basin Plan or Draft Plan Framework recommendations at this time. When prioritized and funded, those projects that are planned for Ecological Lands should be evaluated for their appropriateness on the site.

Objective: Contain spread of invasive vegetation

Recommendation: Monitor and control invasive vegetation

Park staff should monitor and contain the spread of noxious and invasive plant species that are present at the sites, particularly in those areas where planting projects have occurred. Control is primarily through manual removal of plants by Park staff or organized volunteer groups.

Control of tansy ragwort and selective control of other invasive species is a priority at the site. These plants have been noted on trails through many parts of the site. Regular control of invasive species on the Big Bend 9008 peninsula and post-flood habitat enhancement work is recommended.

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 monthly.

Backcountry Horsemen are key partners in maintaining a clean property, as they collect litter during regular riding activities.

Park staff should consider installing litter/dumping policy signs on the property if litter activity increases. The 270th Ave SE area should be checked for dumping and partying regularly especially when fire risk is high. Adjacent private property near the 270th Ave SE entrance may be posted for no trespassing if owner is willing.

Park staff should continue to monitor and try to prohibit motorized vehicle access from 270th Ave SE.

NRL and Acquisition staff should continue to investigate road easement from 270th Ave SE and determine whether road use is in accordance with easement.

Objective: Allow appropriate level of impacts of passive recreation at the sites

Recommendation: Monitor public access

Current use is primarily by pedestrians and equestrians on the main informal trails on Big Bend Natural Area. While the Cedar River Trail is maintained to support regional trail use by many users, the informal trails on Big Bend Natural Area are not intended to support the same level of use. At this time,

the use of the main informal trails on the site appears, for the most part, to be at levels and in areas where it is not negatively affecting ecological resources.

Park staff should note changes in visitor impacts and types of recreational activities at these sites, and observe any noticeable visitor impacts on the ecological values of the site (at least monthly during the summer and quarterly the rest of the year). This information should be reported to King County Natural Resource Lands Management Staff responsible for updating site management guidelines, and should help to guide management actions at the site.

Recommendation: Consider development of public access plan

Public access planning can help to direct and manage access and support improvements at the site. This work could be considered at these sites, particularly if part of larger access planning on Parks and NRL lands in this vicinity.

Recommendation: Ensure trails do not negatively impact ecological resources

Areas such as those on Big Bend-9046 and Landsburg Reach-9109 where trail systems may impact streams and seeps should be monitored for level of use, and action taken to repair or re-route trails if resources are negatively impacted by public use. Informal trail systems should be periodically evaluated for appropriateness in location and condition.

Recent seasonal use by fishermen has introduced new small informal trails in areas of Big Bend Natural Area where they may present negative impacts to streambank conditions or inappropriately distribute use on the site. These trails should be observed and closed down where appropriate.

Consider installing bridge on Walsh Lake Diversion Ditch trail crossing if funding is available and prioritized.

Recommendation: Work with community partners to exchange information and focus management/maintenance work

Partnership with the Backcountry Horsemen and the Friends of Rock Creek Valley is key in working on these issues on properties crossed by these local trail systems. The Backcountry Horsemen regularly ride and observe the site, maintain a regular presence on the site, and contribute significant amounts of time to litter collection and trail upkeep. Communication between these community partners and Park staff/NRL can help to identify and address problems as they arise.

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, habitat enhancement projects 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 enhancement projects may be available through Surface Water Management CIP funding or salmon conservation planning funds.

Table 4. Matrix of Management Recommendations

Recommendations	Year	NRL staff	Park Resource Staff	Basin Steward	Friends of Rock Creek Valley/ Backcountry Horsemen/ other local stakeholders	WRIA Project Coord.	CPOSA	WEAT	FHRS
Priority One									
Monitor and control invasive vegetation	At least monthly		X		X				
Control litter/dumping and encroachment activities	At least monthly		X		X				
Monitor public access	At least monthly		X		X				
Ensure trails do not negatively impact ecological resources	As needed	X	X	X	X				
Work with community partners on management/maintenance	As needed	X	X		X				
Priority Two									
Perform baseline inventories and assessments	As prioritized and funded	X			X			X	
Consider development of public access plan	As prioritized and funded	X	X	X	X				
Develop recommendations from inventory information	As prioritized and funded	X		X		X	X	X	(X)
Update Site Management Guidelines	Within at least five years	X	X	X					

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