



1. INTRODUCTION TO THE CITY OF SEATTLE'S HABITAT CONSERVATION PLAN

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1.1 Development of the Habitat Conservation Plan

1.1.1 Cooperative Development

The City of Seattle (City) has prepared a multi-species Habitat Conservation Plan (HCP) to comply with the federal Endangered Species Act (ESA: 16 U.S.C. 1531 et seq.) and to address a variety of related natural resource issues. The plan will cover the City's 90,545-acre Cedar River Municipal Watershed and the City's water supply and hydroelectric operations on the Cedar River, which discharges into Lake Washington. In general, the City's HCP is not an HCP for planned development, but rather it is a set of mitigation and conservation commitments related to ongoing water supply, hydroelectric power supply, and watershed management activities.

The HCP is based on a decade of studies and the results of over 5 years of analysis and negotiations with five state and federal agencies as documented in an Agreement in Principle, dated March 14, 1997. The Agreement in Principle addresses not only issues under the Endangered Species Act (ESA) but also related issues under state law and tribal treaties, and issues with the U.S. Army Corps of Engineers (ACOE). The ACOE manages lake levels in Lake Washington, and navigational traffic between Lake Washington and Puget Sound, through operation of the Hiram Chittenden Locks (Ballard Locks) and Lake Washington Ship Canal.

The City's commitments regarding these related issues are included in and are part of this HCP and associated Implementation Agreement (Appendix 1), and the agreements with other agencies are represented in the related draft Instream Flow Agreement and draft Landsburg Mitigation Agreement, which are Appendices 27 and 28 of this HCP, respectively. The Instream Flow Agreement covers minimum and supplemental instream flows, operation of an instream flow commission, supplementation of minimum flows, and water conservation improvements at the Ballard Locks. The Landsburg Mitigation Agreement covers mitigation for the blockage to anadromous fish posed by the Landsburg Diversion Dam, where the City diverts water for municipal and industrial supply, as well as the effects of the intake structure.

The Instream Flow Agreement and the Landsburg Mitigation Agreement are intended to resolve issues about river flows and fish passage at Landsburg related to a variety of interests of the different signatory parties in addition to the ESA.

Although the Muckleshoot Indian Tribe (the Tribe) has not signed any of the agreements related to the HCP, the City attempted to address many of the issues raised by the Tribe during negotiations, and the Tribe participated in the development of the proposed instream flows and mitigation for the Landsburg blockage to fish. The City and Services continue to seek the Tribe's agreement on issues related to instream flows and the blockage to fish passage posed by the City's Landsburg Diversion Dam.

1.1.2 Purpose of the City’s HCP under the Endangered Species Act

With several exceptions, Section 9 of the ESA (16 U.S.C. 1538(a)(1)(B)) prohibits the *take* of any endangered species and defines take as follows: “The term ‘take’ means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct” (16 U.S.C. 1532(18)). The USFWS has further defined “harm” to mean “an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering” (50 C.F.R. 17.3).

In 1982, Congress amended the Endangered Species Act to allow taking of listed species “if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity” (16 U.S.C. 1539(a)(1)(B)). A nonfederal landowner (often referred to as an *Applicant*) may apply for an “incidental take permit,” which may be granted if an applicant has an approved “conservation plan” (now commonly referred to as HCP) for the listed species. In approving the 1982 amendments to the ESA that created Section 10, Congress also expressed its intent that HCPs be long-term, multispecies plans that cover not only listed species but also unlisted species, as long as those species are treated as if they were listed [H.R. Rep. No. 835, 97th Cong., 2d Sess. 29 (1982)]. Congress also recognized that HCPs should provide to nonfederal property owners seeking HCP permits economic and regulatory certainty regarding the overall cost of species mitigation over the life of the permit, but that HCPs should also make provisions for circumstances and information that could change over time that might require revisions to an HCP [H.R. Rep. No. 835, 97th Cong., 2d Sess. 29 (1982)]. This regulatory certainty has often been referred to as *no surprises*.

On February 23, 1998, the USFWS and NMFS (the Services) jointly published a final rule for the No Surprises Policy for HCPs (Fed. Reg. Vol. 63, No. 35, Pp. 8859-8873), in part to implement the above stated intent of Congress when it passed the 1982 amendments to the ESA (see Section 2.3.2 for more information on this rule). Under the final rule, the Services will only provide assurances to applicants for the species that are listed on an incidental take permit and adequately covered in the HCP and specifically identified on the permit.

More recently (March 9, 1999), the Services published a Notice of Availability for a “Draft Addendum to the Final Handbook for Habitat Conservation Planning and Incidental Take Permitting Process” (Fed. Reg., Vol. 64, No. 45, pp. 11485-11490), which provides additional guidance for HCPs and incidental take permits. The draft addendum emphasizes five points for the preparation of HCPs, including the need for:

- Adequate monitoring, based on measurable biological goals, to obtain the information necessary to ensure compliance with the HCP, properly assess the impacts from an HCP, verify that the biological goals of the HCP are being reached, and provide information for adaptive management.
- Incorporation of adaptive management to allow for changes in mitigation strategies that may be necessary to reach the long-term biological goals of the

HCP and to ensure that conservation strategies are producing the desired results, particularly where there are significant biological data gaps.

- Development of measurable biological goals, which can be based on habitat or species, as a framework for monitoring and adaptive management.
- Appropriate terms for the duration of HCPs that take into account both the biological impacts resulting from the proposed activity and the nature or scope of the actions addressed in the HCP.
- Increased public participation in the process to develop HCPs, and a minimum 60-day public comment period for most HCPs.

In summary, an HCP is a long-term plan authorized under Section 10 of the ESA (16 U.S.C. 1539) to conserve species listed as threatened and endangered under the ESA or unlisted species also covered by the plan. Section 10 authorizes an applicant to negotiate a conservation plan with the secretaries of the Interior and Commerce to minimize and mitigate any impact to threatened and endangered species while conducting otherwise lawful activities. Section 10 authorizes incidental take of individuals of species populations covered by an approved HCP, including those caused by the disturbance of the habitat of such species, provided that an incidental take permit has been issued. Through recent rules and guidance, the Services have stated that an HCP is intended not only to provide regulatory certainty to applicants but also to include provisions that will work in the manner intended and meet the conservation goals of the plan through incorporation of clear goals, monitoring, and adaptive management.

Besides meeting the requirements of the ESA and its environmental stewardship responsibilities in general, the City has obligations to customers of Seattle Public Utilities to deliver an adequate supply of high quality drinking water, and to the customers of Seattle City Light to deliver reasonably priced electricity. Through the HCP, the City seeks to provide certainty for both current operation and future planning related to its water supply and hydroelectric utilities on the Cedar River, while providing for the conservation of species potentially affected by those public utilities.

The City's HCP was developed to offset any harm caused to individual listed and selected unlisted species by promoting conservation of populations as a whole. It specifies conservation objectives, provides for substantial monitoring and for adaptive management regarding key issues, and incorporates public participation during implementation.

This HCP is part of an application for incidental take permits for both listed species and unlisted species that are addressed by the HCP and covered by the permit. Using information included in the HCP and other information, the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) conducted a biological assessment and jeopardy analysis of the City's HCP, under Section 7 of the ESA, to determine whether the proposal complies with the ESA. Pursuant to the analysis and findings by the Services, the resulting incidental take permits define the limits to incidental take of those species addressed by the HCP for which sufficient information exists to issue the permit. The permits allow limited incidental take for listed species and the equivalent of incidental take of unlisted species covered by the HCP. The City

will implement the HCP to minimize and mitigate the impacts of incidental take to the maximum extent practicable.

In addition, the City has developed an HCP that should provide a net benefit for the species covered. The City's HCP should thus contribute to the recovery of any covered species that are currently listed or that could be listed during the term of the HCP, and could reduce, at least to some extent, the likelihood that some species might become listed in the future.

1.1.3 Response to Public Concerns

This HCP was under development for more than 5 years. In that time, the City has received considerable public comment, and HCPs in general have received considerable attention from scientists (Mann and Plummer 1997) and the public (Luoma 1998; Defenders of Wildlife 1998). In this HCP, the City has attempted to address many of the issues raised by scientists and the public. A draft HCP issued December 10, 1999, along with a National Environmental Policy Act (NEPA) Environmental Assessment (EA)/Draft State Environmental Policy Act (SEPA) Environmental Impact Statement (EIS) further address these concerns, for both the HCP and alternatives that were under consideration. This final HCP follows issuance of a revised NEPA EA/Final SEPA EIS.

The formal public review and comment period for the draft HCP and associated environmental documents ran from December 10, 1998 until March 1, 1999, a total of 78 days. During this period, the City conducted four public workshops that were attended by over 1,000 people, as well as two formal SEPA hearings and numerous question and answer sessions with the public. Hundreds of written comments were received on the HCP and environmental documents.

In response to these public comments, the Mayor of Seattle proposed substantial changes to the draft HCP, which were described in documents released in May 1999 for public review, concurrent with release of the revised NEPA EA/Final SEPA EIS. In June 1999, the Seattle City Council held a public hearing on potential changes to the draft HCP. In July 1999, the Seattle City Council adopted the Mayor's recommended changes by City of Seattle Resolution #29977, with some modifications to those recommendations. In December 1999, the Seattle City Council made several additional changes to the HCP as a result of meetings between the Mayor and the Muckleshoot Indian Tribe, amending the July resolution through adoption of Resolution #30091. This final HCP was prepared pursuant to instructions from the Seattle City Council regarding changes to the draft HCP in these two resolutions and to update information that changed after the time the draft HCP was issued.

1.2 Geographic Area Covered by the HCP

The "covered lands" for this HCP include all lands that the City owns on which the permit for this HCP authorizes incidental take of covered species (Section 1.4). As described in Section 1.3, the HCP applies to City activities ("covered activities") that are carried out or authorized by the City on covered lands and on any additional lands and waters to which the HCP's conservation measures apply. Such City activities include all City operations, facilities, and activities on the Cedar River in conjunction with its water

supply, hydroelectric power generation, and land management activities, as defined in Section 1.3. (Note that the terms “covered lands” and “covered activities” are legal terms, which are specifically defined in the Implementation Agreement (Appendix 1)).

The covered lands include the Cedar River Municipal Watershed in Washington State, totaling approximately 90,546 acres and shown on Map 2 and Figure 1.2-2, and the Cedar River upstream of the Landsburg Diversion Dam and water intake, as influenced by the City’s operations described in Section 1.3. The Cedar River discharges into Lake Washington at the city of Renton (Map 2). City operations in the municipal watershed influence the reach of the Cedar River between the Landsburg Diversion Dam and Lake Washington, which is 21.8 river miles in length.

The City of Seattle owns essentially all of the Cedar River Municipal Watershed. Most of the watershed is forested, primarily with conifers. The approximate current age distribution of forested lands in the municipal watershed is given in Figure 1.2-1 and Map 4. Nearly 14,000 acres of the watershed is unharvested native forest, which is termed “old-growth forest” in this HCP. All of this old-growth forest is believed to be between 190 and 800 years old. Elevations in the municipal watershed range from about 550 ft to about 5,500 ft. Lower elevation forests are dominated by Douglas-fir (*Pseudotsuga menziesii*) and western hemlock (*Tsuga heterophylla*). Middle to upper elevations are dominated by Pacific silver fir (*Abies amabilis*), and the highest elevations by mountain hemlock (*Tsuga mertensiana*).

Figure 1.2-1. Ages of forest stands in the Cedar River Watershed.

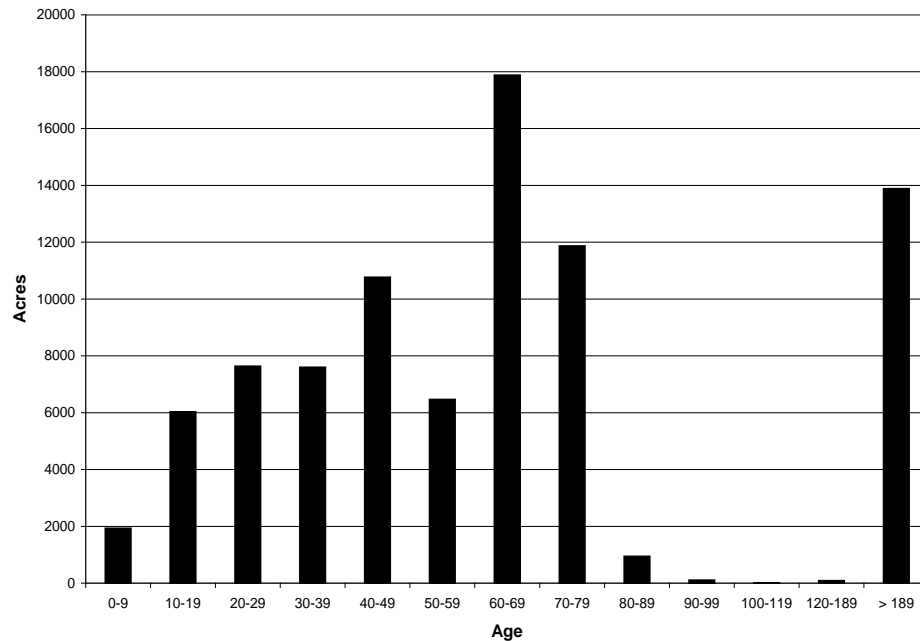
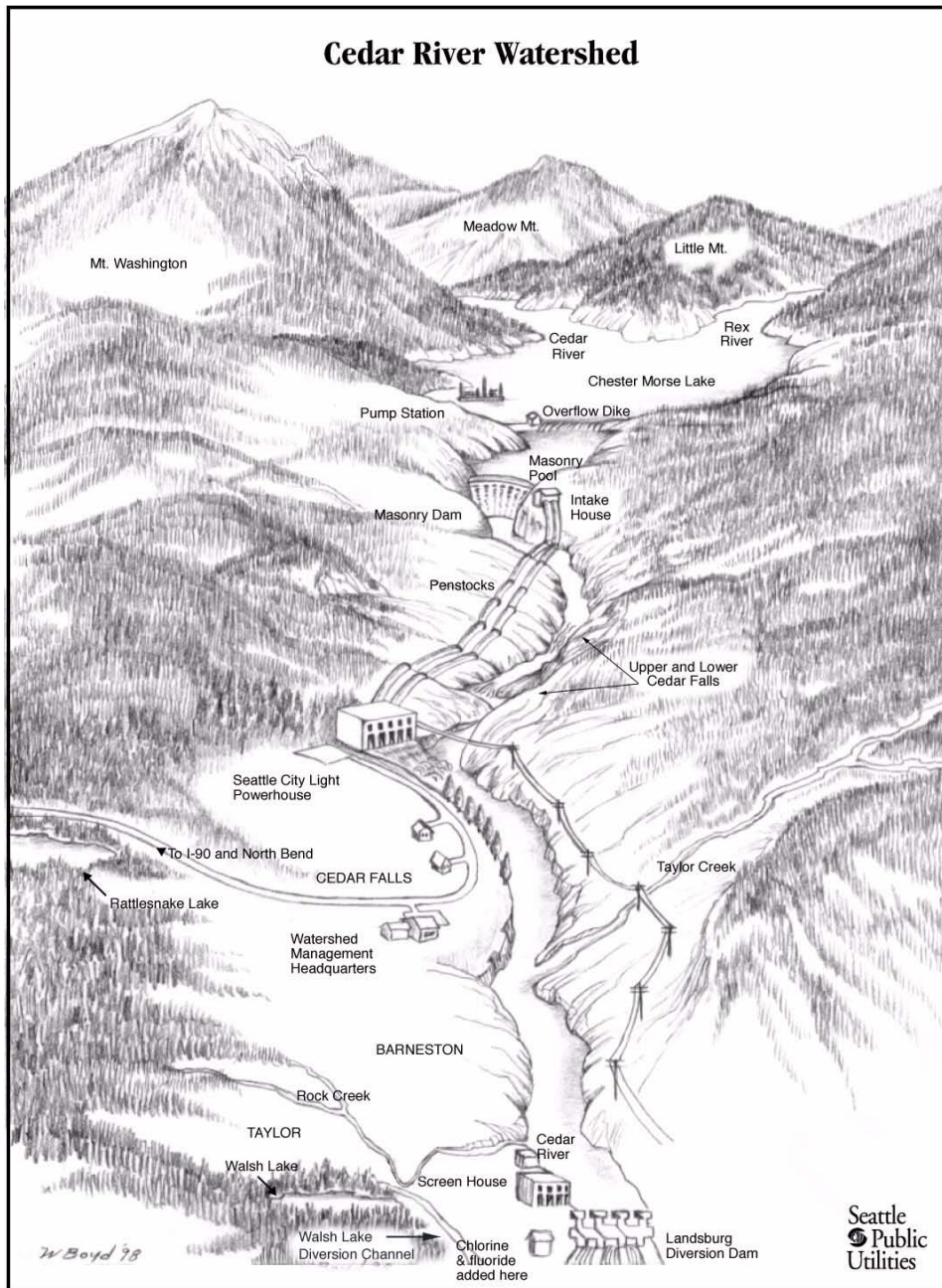


Figure 1.2-2. The Cedar River Municipal Watershed.



1.3 City Activities Covered by the HCP

Covered activities for the HCP include activities carried out or authorized by the City on Covered Lands (Section 1.2) and on any additional lands and waters to which the conservation and mitigation measures in the HCP apply. Covered activities include all City operations on the Cedar River in conjunction with its water supply, hydroelectric

power generation, and land management activities, including all attendant facilities at the Landsburg Diversion Dam and within the municipal watershed, but not facilities outside the municipal watershed. Seattle Public Utilities manages the water supply, with its attendant facilities, as well as the land in the municipal watershed. Seattle City Light manages the hydroelectric plant, with its attendant facilities, in conjunction with water supply operations.

Water supply activities include management of the reservoir complex, including the Overflow Dike, which impounds Chester Morse Lake, and the Masonry Dam, which impounds the Masonry Pool to the west of the lake (Map 2; Figure 1.2-2). Water is withdrawn from the Cedar River for municipal and industrial supply, including aquifer recharge, just upstream of the Landsburg Diversion Dam at the water intake operated by Seattle Public Utilities. The intake for the City's hydroelectric power plant is located at the Masonry Dam, and the plant is located downstream at Cedar Falls, within the municipal watershed. The Masonry Dam, Overflow Dike, and Landsburg Dam are operated conjunctively for water supply, hydroelectric power generation, flood control, and instream flow maintenance. Water supply activities include operation and maintenance of water diversion, water treatment, and fish handling and artificial propagation facilities located at Landsburg.

The application of the term "covered activities" as it applies to the waters downstream of Landsburg is restricted specifically to the impacts of City operations and facilities on species using those waters and covered by this HCP, and does not apply to the impacts of activities by other public agencies or private parties.

In general, covered activities downstream of Landsburg include mitigation, conservation, research, and monitoring activities carried out under the HCP and the related agreements (an Instream Flow Agreement and a Landsburg Mitigation Agreement, Appendices 27 and 28, respectively). Covered activities do not include operation and maintenance of facilities used to transmit, treat, and distribute water after it is diverted and treated at Landsburg. Covered activities do not include water supply activities associated with sources of supply other than the Cedar River, other than Cedar River operations that are needed to conjunctively operate the multiple sources of supply.

Covered municipal watershed management activities include forest practices as described in the Washington State Forest Practices Act (RCW 76.09) and Forest Practices Rules and Regulations (WAC 222-08), including timber harvest, thinning, reforestation, and mechanical brush control; repair, reengineering, decommissioning, and maintenance of forest roads, including use of gravel pits and other rock sources, as well as maintenance and replacement of culverts and bridges; and sale of forest products. Construction of new watershed roads is also a covered activity, provided that no more than 5 miles of new roads are constructed, and provided that there is a net reduction in total road miles in the municipal watershed.

Other covered watershed activities include actions to protect and restore watershed habitats, both aquatic and upland; cultural resource management and educational programs within the municipal watershed, including a public tour and field trip program and construction of educational and cultural facilities such as the planned educational resource center at Cedar Falls; scientific research, both by City staff and outside scientists; a public recreation program at several locations; and other activities or facilities identified elsewhere in this HCP. Educational and recreational activities in the

municipal watershed are considered covered activities under the HCP, provided that such activities do not materially increase levels of take from those existing at the time of permit issuance. Additional details of many Covered Activities within the municipal watershed are given in Section 4.2.2, in the subsection entitled “City Operations and Activities within the Municipal Watershed.”

The *evaluation* of the potential permanent use of dead storage in Chester Morse Lake for enhanced instream flows and future water supply (Section 4.5.6) is a covered activity under the HCP and incidental take permit, but the Cedar Permanent Dead Storage Project itself (Section 4.4.2) is not a covered activity. Implementation of the Cedar Permanent Dead Storage Project would require an amendment to the incidental take permit under Section 12.2 of the Implementation Agreement (Appendix 1).

During the term of the HCP, facilities within the municipal watershed, including facilities at Landsburg, may be significantly modified, reconstructed, or constructed by the City for reasons that do not relate to the conservation and mitigation measures in the HCP. The City agrees to notify the Services prior to such currently undescribed construction activities if there is a potential for take of Covered Species (Section 1.4) and to consult with the Services regarding measures to avoid or mitigate take. The City agrees to notify the Services prior to such construction activities related to the Masonry Dam, hydroelectric facilities, and the water intake at Landsburg, and prior to construction of any new bridges over the Cedar River between lower Cedar Falls and Landsburg.

1.4 Species Covered by the HCP

1.4.1 Species Addressed in the HCP

The City’s HCP addresses 83 species, including all 7 species currently listed as threatened or endangered and 76 unlisted species that could be listed as threatened or endangered during the term of the HCP. All these species either are known to use or may use the types of habitat that are found within the boundaries of the covered lands or that are under the influence of the covered activities. As described below, the incidental take permit will include all of these species that are adequately addressed in the HCP and for which sufficient information exists. Species included on the incidental take permit are referred to as “Covered Species,” as described below. Species addressed in the HCP but not included on the incidental take permit are termed “Plan Species,” as described below in Section 1.4.2 and in the Implementation Agreement (Appendix 1).

Currently listed species that are known to occur in the municipal watershed include the northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachyramphus marmoratus*), bull trout (*Salvelinus confluentus*), and bald eagle (*Haliaeetus leucocephalus*). Currently listed species that may occur, but are not known to occur, in the municipal watershed include the grizzly bear (*Ursus arctos*), gray wolf (*Canis lupus*), and chinook salmon (*Oncorhynchus tshawytscha*), which now occurs in Cedar River below the Landsburg Diversion Dam and will likely occur within the municipal watershed after fish passage facilities are constructed under the HCP.

The HCP includes habitat-based conservation and mitigation strategies for all species addressed in the HCP (Chapter 3), and species-specific conservation and mitigation strategies for the 14 species of greatest concern, which include all currently listed species. As described in Chapter 3, the species addressed in the HCP include resident and anadromous salmonid fishes, and a variety of amphibians, birds, mammals, and invertebrates.

1.4.2 Covered Species and Post-termination Mitigation

During the public review of the HCP and the review of the City’s application for an incidental take permit, the Services made a determination that all of the 83 species addressed in the HCP could be included on the incidental take permit (i.e., the Covered Species). Covered Species are listed in Exhibit A to the Implementation Agreement (Appendix 1). This determination of the list of Covered Species was based on whether sufficient information exists for each of the 83 species and whether the HCP adequately addresses each species under the ESA.

During their review of the City’s application for an incidental take permit, the Services prepared biological opinions for the Covered Species. During their review, the Services identified in the biological opinions any species for which the HCP could not be shown to provide a continuous net conservation benefit. If the incidental take permit is suspended or revoked under terms of the Implementation Agreement, the Implementation Agreement (Appendix 1, §§ 6.3 and 6.4) provides that no post-termination mitigation can be required for any species for which it can be shown that HCP will provide a continuous net conservation benefit (termed “pay-as-you-go” species). For species that do not qualify as “pay-as-you-go,” post-termination mitigation may be required if the Services demonstrate that any take of such species at the time of termination has not been substantially mitigated according to permit conditions. Species addressed in the HCP that the Services determined to qualify as “pay-as-you-go species” are listed in Exhibit B to the Implementation Agreement (Appendix 1).

1.5 Adjacent Ownership

The properties immediately adjoining the 80-mile boundary of the Cedar River Watershed remain largely in timberland (Map 3). Two current trends on these adjoining properties have special significance for the HCP.

First, along nearly the full length of the watershed’s northern boundary, recent and proposed property transactions are consolidating public ownership of the properties adjoining the watershed. Under the overall auspices of the Mountains to Sound Greenway Project, a highly visible civic forum and planning process, various public and private parties have taken bold steps to preserve a mostly forested corridor along Interstate 90 between the edge of the metropolitan area (near Issaquah) and the crest of the Cascade Mountains. More specifically, King County has acquired a large tract at the northwestern end of the watershed (the Mahnke property) from a private developer and intends to manage it as a working forest. King County and the state have jointly acquired portions of Rattlesnake Ridge, on the northern boundary of the watershed

northwest of Rattlesnake Lake. This 1,800-acre area is called the Rattlesnake Mountain Scenic Area, and is managed by the County. Finally, the U.S. Forest Service (USFS) has acquired many of the inholdings in its “checkerboard” ownership along the watershed’s northern and northeastern boundary through the Huckleberry Land Exchange with Weyerhaeuser, and may acquire more land in this area in an exchange with Plum Creek Timber Company.

Most of the southern boundary of the watershed adjoins the Green River Watershed, the source of Tacoma’s water supply. Although in multiple ownerships, this property is managed under agreements designed to give protection to Tacoma’s water supply.

Although, the significant trend of consolidation in public ownership will generally increase recreational activity near the watershed, a change that can be managed in terms of the City’s access concerns, it also portends more compatible land use on adjacent properties compared with the two most likely alternative scenarios: industrial forest management and development. From the standpoint of the HCP, consolidated public ownership along the northeastern edge of the watershed should have a positive long-term effect of maintaining and improving connectivity between the important habitat areas north and south of the I-90 corridor. This connection is presently narrow along an east-west axis, and still partially in checkerboard ownership, and may otherwise pose a limitation on the migration of wildlife along the north-south alignment of the Cascade Mountains. Similarly, recent public acquisitions along the northwestern boundary of the watershed should preserve and enhance habitat linkages to the Tiger Mountain area.

The second major trend on adjacent lands is along the western and southwestern boundary, where timberland and pastures are generally being converted to residential development. While this trend will pose challenges for watershed protection programs, it only accentuates the importance of the commitments to preserve habitat within the municipal watershed as growth and development in the metropolitan area pushes eastward and envelops the lower end of the watershed.

The City’s HCP also covers effects of the City’s facilities and operations upon the flows in the Cedar River downstream of the Landsburg Diversion Dam. In contrast to the single ownership and highly protected habitat along the river in the municipal watershed, the 22-mile reach from Landsburg Dam to the river’s mouth at Renton is in many ownerships and jurisdictions and has been substantially manipulated by humans. Some 64 percent of the stream course has been armored by rip rap or diking or both, and some of it has been rechanneled. Over the years, these modifications have allowed considerable development in the historical floodplain in the form of residences and other structures, as well as public facilities. While King County exercises the primary planning role in this area, the river flows through the City of Renton, and lands adjacent to the river are in hundreds of individual ownerships. In this highly diffused context, programs of habitat improvement are expected to be difficult to coordinate and implement.

1.6 Content of HCP Document

This HCP sets forth commitments by the City with regard to (1) watershed management and restoration; (2) anadromous fish mitigation (for blockage to fish passage at the Landsburg Diversion Dam); (3) instream flows; and (4) monitoring and research. The

City commits to fund the activities in the HCP at a total of approximately \$79 million, in 1996 dollars, over the life of the HCP.

The remaining chapters in this document describe the context for development of the HCP; information used to design the conservation strategies; the conservation and mitigation strategies for the covered species; the manner in which monitoring and research are used to address uncertainties; the manner in which the public and outside scientists will be involved in implementation of the plan; and the alternatives considered. The following is an overview of the content of the remainder of this HCP.

Chapter 2 (Planning context) provides background on the context in which this HCP is being prepared. It describes current standards and conditions that apply, existing plans, applicable constraints on the City, and planning objectives that can be used as benchmarks with which to understand and compare the proposed conservation strategies. Chapter 2 provides information on:

- City responsibilities with respect to water supply, watershed management, and related operations on the Cedar River;
- Applicable laws and regulations, including the ESA, related to drinking water, fish and wildlife, and forestry; and
- Pertinent City ordinances, environmental initiatives, and regional efforts related to fish and wildlife.

Chapter 3 (Biological Data and Other Information Used to Develop the HCP) provides information that the City used to prepare the HCP, including information about the species and habitats addressed in the HCP, both in the region and within the Permit Area. This information, along with the objectives and constraints described in Chapter 2, provides the basis for the mitigation and conservation strategies presented in Chapter 4. Chapter 3 provides:

- Descriptions of existing habitats in the municipal watershed and Cedar River below Landsburg Dam;
- Information from the literature on the life history, habitat needs, and status of the species addressed by the HCP;
- Information about the municipal watershed, including studies, analyses, assessments, and technical workshops, and the results of habitat inventories and surveys for particular species in the watershed;
- Descriptions of inventories and databases used;
- Descriptions of modeling efforts related to stream flows and forest management; and
- Results of analyses of drinking water quality risks needed to develop mitigation strategies for anadromous fish species.

In addition, the review of information identifies significant uncertainties that are addressed either in the mitigation and conservation strategies, in the research and

monitoring program described in Chapter 4, or in the adaptive management process described in chapters 4 and 5.

While chapters 1 through 3 present background information for the HCP, chapters 4 and 5, exclusively, represent the City's commitments under the ESA. Chapter 4 (Conservation and Mitigation Strategies) presents the conservation and mitigation strategies for the species and habitats addressed in the HCP. It provides the rationale for those strategies in view of the objectives of the HCP and the information used, explaining how the strategies will avoid, minimize, or mitigate take of covered species. Chapter 4 presents:

- Conservation and mitigation strategies for species and habitats that are, or may be, present in the Cedar River Municipal Watershed;
- Conservation and mitigation strategies for anadromous fish species downstream of the Landsburg Diversion Dam with respect to regulation of instream flows to provide habitat;
- Conservation and mitigation strategies for anadromous fish species related to the blockage to upstream passage posed by the Landsburg Dam, including mitigation for four species;
- A monitoring program designed to track compliance, effectiveness of mitigation strategies, and trends in the condition of habitats and key species populations;
- A research program designed to answer key questions, provide needed information for future decisions, and test important assumptions underlying conservation strategies; and
- A summary of effects of the HCP and the activities allowed under the incidental take permit.

Chapter 5 (Implementation of the HCP) provides information on implementation of the HCP, including information on:

- The term of the plan and timing of activities;
- Funding and management of costs;
- Oversight, with involvement of the public and outside scientists; and
- The process for implementing adaptive management.

Chapter 6 (Alternatives to the Proposed Taking) presents an overview of alternatives to the proposed taking that were considered, and the reasons why each of the alternatives was not pursued.

All literature references cited in the text are described in the Bibliography.

The Glossary defines many technical terms used in the text, and defines how other terms are used specifically for this HCP.

The Technical Appendices provide substantial additional information relevant to the HCP. Appendix 1 (the Implementation Agreement) is bound with this HCP, but all other

appendices to the HCP (2-38) are bound as a separate document entitled “Technical Appendices for the Cedar River Watershed Habitat Conservation Plan.” These appendices include the results or summaries of the results of key studies, analyses, assessments, data compilations, and workshops. Topics include anadromous and resident fish, water quality, fish and wildlife habitat, species surveys, environmental studies, reservoir operations, instream flow modeling, facility designs, and pertinent City ordinances and planning documents. Eight new appendices were added to the 30 technical appendices issued with the Draft HCP.

Color maps are included in a separate map document entitled “Resource Maps for the Cedar River Watershed Habitat Conservation Plan.” The number of maps was reduced from the original draft, which included maps for the alternatives addressed in the NEPA EA/SEPA EIS.

Numerous supporting documents were used to develop the HCP, but their number and bulk precluded distribution with the HCP and appendices. A list of some of these documents is provided in the front material to the HCP.

1.7 Alternatives to the HCP

As discussed in detail in Section 2.3.3, evaluation of alternatives to the HCP is required under Section 10 of the ESA and also as part of environmental review requirements under both NEPA and SEPA. Alternatives to the proposed taking for the watershed management, anadromous fish mitigation, and instream flow components of the HCP are discussed in Chapter 6. In addition, Chapter 6 also summarizes the reasons why implementation of these alternatives is not being pursued. Detailed descriptions and analyses of alternatives evaluated under NEPA and SEPA can be found in the “Draft Environmental Assessment/Environmental Impact Statement for the Cedar Watershed Habitat Conservation Plan” (SPU 1998) and in the Revised NEPA EA/Final SEPA EIS (SPU 1999). As described further in Chapter 2, the Environmental Assessment is the federal environmental document prepared under the National Environmental Policy Act, for which the USFWS is the lead agency. This same document also serves as an Environmental Impact Statement under the State Environmental Policy Act, for which the City is the lead agency.