MIDDLE FORK SNOQUALMIE RIVER PARK NATURAL AREA

Site Management Plan

Prepared for:

King County Park System

Prepared by:

King County Department of Construction and Facilities Management
Division of Capital Planning and Development

July, 1999

CONTENTS

LIST OF FIGURES & TABLES

Figures

Tables

Acknowledgments

Foresight on the part of the King County Open Space Citizen Oversight Committee (COC), the Metropolitan King County Executive and Council, King County staff, and a diverse group of county residents has made the Waterways 2000 program, and subsequent protection of critical waterways throughout the county, a success.

King County Executive
Ron Sims

Metropolitan King County Council
Maggi Fimia, District 1
Cynthia Sullivan, District 2
Louise Miller, District 3
Larry Phillips, District 4
Dwight Pelz, District 5
Rob McKenna, District 6
Peter von Reichbauer, District 7
Greg Nickels, District 8
Kent Pullen, District 9
Larry Gossett, District 10
Jane Hague, District 11
Brian Derdowski, District 12
Christopher Vance District 13

King County Open Space Citizen Oversight Committee
Waterways 2000 Subcommittee
Carol James, Chair
Gerald Edlund
Durlyn Finnie
Mark Johnson
Teresa Lavender
Kal LeMaster
Thomas A. Rasmussen

King County Park System
Craig Larson, Director
Sharon Claussen, Parks Representative
Recreation & Aquatics Division
Chuck Lennox, Recreation Coordinator (Interpretation & Education)
Maintenance & Facilities Division
Alan Sinsel, Maintenance Specialist
Dave Kimmett, Parks Resource Coordinator

Department of Natural Resources
Pam Bissonette, Director
Office of Open Space, Resource Lands Section
Lise Ward, Acquisition Agent
Water and Land Resources Division
Catherine Houck, Ecologist
Kirk Anderson, Assistant Snoqualmie Watershed Coordinator
Megan Smith, Snoqualmie Watershed Coordinator

Department of Information and Administrative Services
Sheryl Whitney, Director
Geographic Information Systems, Technical Resources Center
Michael Jenkins, GIS Analyst

Department of Construction and Facilities Management
Pearl McElheran, Director
Division of Capitol Improvement and Planning
Diane Steen, Research Consultant
Leslie McLean, Project Manager

Italics indicate staff who contributed to the site planning process.

Waterways 2000

Waterways 2000 was initiated in 1993 by the Metropolitan King County Executive and Council as a pilot program to establish a system of connected habitat lands and waterways within the County for the protection of salmon and wildlife habitat. Under the leadership of the COC, the County's most critical waterways were identified and methods for their cost-effective acquisition were outlined. The majority of properties were purchased in fee; with others, conservation easements were acquired or they were enrolled in the Public Benefit Ratings System (PBRS), which allows property owners tax reductions for land left in open space. As a result, over 2,000 acres throughout King County now provide:

- Protection of high quality aquatic systems and habitat lands for salmonids and wildlife
- Preservation of properties of cultural, scenic, and historic importance
- Educational and passive recreational opportunities
- Opportunities for public participation in natural area stewardship

The Waterways 2000 partnership between King County, landowners, and the community has proven to be effective in acquisition and stewardship of valuable natural areas. Public support will continue to be critical in the long-term protection of waterways and the expansion of protection to other basins, and the Waterways program will provide a successful guide for those efforts. As our population grows, so will our need for viable wildlife habitat, healthy stream systems, and clean water. Future generations of residents and wildlife will benefit from this important effort.

EXECUTIVE SUMMARY

The Middle Fork of the Snoqualmie River (WRIA 07.0219) is the largest, and perhaps most pristine basin targeted by the Waterways 2000 program. The Middle Fork basin drains an area of over 110,000 acres and flows 74 miles from its headwaters high in the Cascade Mountains to the Snohomish County line—the longest system in King County. A large percentage of land within the basin is in public ownership and the remainder in commercial forest production and private ownership. Upstream tributaries, streams, and creeks feeding into this river system are designated Class AA (to be managed for extraordinary water quality) by the Washington State Department of Ecology. These headwater reaches provide contiguous habitat connections for migrating wildlife as well as providing outstanding habitat for a number of non-anadromous fish. The 149.76 acres comprising the Middle Fork Snoqualmie Park Natural Area play a role in the preservation of water and habitat quality within the larger Snoqualmie/Snohomish River system.

As a natural area, the site will be managed to protect natural systems, maintain and enhance wildlife habitats and corridors, and preserve scenic areas. Where public use does not compromise these resources, low-impact passive recreational, interpretive, and educational opportunities will be provided. The following objectives reflect Waterways 2000 program goals and will be used to establish effective management of the natural area:

- Preserve, protect and restore natural systems for fish and wildlife habitat
- Preserve the rural nature of the site in keeping with the surrounding community
- Eliminate incompatible uses which degrade sensitive site resources
- Provide site improvements to direct public use in appropriate areas
- Provide interpretive experiences to the community and foster public involvement in site stewardship
- Comply with requirements resulting from the listings of salmonids and other species under ESA
- Implement recommendations in phases according to priority order and available funding

Significant resources and public access opportunities at the Natural Area include:

- The Middle Fork of the Snoqualmie River, a King County Class 1 stream and Shoreline of State-wide Significance
- Granite Creek, (WRIA 07.0649) a King County Class 2, non-anadromous salmonid-bearing stream
- Numerous unnamed perennial creeks which drain to the river and beaver ponds in backwater areas
- Deciduous forested wetlands within the floodplain
- Habitat for numerous terrestrial and aquatic wildlife, including bear, elk, and cougar, and native amphibian species
- High quality, diverse habitat for a variety of resident and migratory bird species
- Good river viewing and relatively easy foot access to the river at site adjacent to the Lake Dorothy Road bridge

The following general planning and design elements are recommended for the Middle Fork Snoqualmie Park Natural Area:

- Maintain and enhance stream and riparian systems for salmonids and wildlife with native species plantings in degraded areas and buffer zones
- Cooperate with the Mountains to Sound Greenway Trust, the U.S. Forest Service and Washington State Department of Natural Resources in planning for overall management of the valley, and the Natural Area's role in this management
- Minimize and redirect existing informal uses at river's edge and forested wetland areas by providing low-impact alternatives within a smaller area, such as pedestrian-only river access near the concrete Lake Dorothy Road bridge
- Designate site uses as appropriate for nature observation, passive water access, photography, interpretation and education
- Periodically monitor general site conditions for dumping, illegal access, and resource degradation
- Cooperate with neighbors to improve existing easement road conditions which may contribute to erosion onsite
- Utilize existing County programs (as funding allows) to periodically monitor for water quality, habitat values, and restoration efforts onsite in order to gauge the success of protection and enhancement activities
- Coordinate with neighbors and community groups such as MidFORC and Friends of the Trail to steward the property in conjunction with KC Parks
- Pursue future acquisitions and taxation agreements within the basin to add buffers to the Natural Area, improve connection between the natural area and other resource lands, and generally preserve habitat corridors to the Middle Fork Snoqualmie River
- Consider potential land trades with WA DNR or other agencies in order to consolidate ownership and protection of holdings in area

Part I - INTRODUCTION

Foreword

With over 110,000 acres of largely inaccessible forested hills making up the watershed, the Middle Fork Snoqualmie River is one of the most ecologically intact valleys remaining in King County. This biologically rich valley extends from headwaters in the Alpine Lakes Wilderness to the confluence with the North and South Forks of the river near Mt. Si at North Bend, and is part of the larger Snohomish River system which extends to Snohomish County and ultimately, Puget Sound. The Middle Fork is mostly free-flowing, and unobstructed by dams, levees, or revetments within the Natural Area's reach—exceptions include the concrete bridge and associated fill and bank protection—and flows through braided channels, backwaters, and beaver ponds as it passes the Natural Area. Although anadromous salmon do not spawn or rear above Snoqualmie Falls, the Middle Fork supports a valuable non-anadromous recreational salmon fishery of cutthroat and rainbow trout, as well as whitefish. Moreover, the survival of anadromous salmon species in the lower watershed depends to a large degree upon the condition of the upper Snoqualmie system. The Natural Area represents a small portion of the overall watershed, but contains significant components important to the health of the system *(Figure 1).*

Purpose

The purpose of this document is to provide a record of existing features and to create guidelines for future management of a King County Park Natural Area along the Middle Fork of the Snoqualmie. This plan reflects: 1) a site inventory and analysis of existing natural resources and land uses; 2) Waterways 2000 program goals; 3) King County Park System (KC Parks) land classifications; 4) legal and land use restraints; 5) regional connection to other public lands; 6) King County agency recommendations and staff review; 7) public input; and 8) development costs. Resource information in this plan is a summation of the Technical Appendix prepared for the site. All other information was gathered through interagency cooperation, research and field visits. Collectively this data forms the basis for resource management and public use recommendations for the Natural Area. Once approved by KC Parks, design and cost elements will be refined and phased implementation of recommendations will begin.

Site Plan Goals

The Middle Fork Snoqualmie Park Natural Area will be maintained as open space by KC Parks, in accordance with Parks policies and Waterways program goals. Management will focus on the protection and enhancement of the natural systems onsite: its fish and wildlife habitats, corridors, and scenic character. Where public use does not compromise these systems, the Natural Area will provide low-impact passive recreational, interpretive and educational opportunities. The following site plan objectives reflect the goals of the Waterways 2000 program as well as KC Parks' management of natural areas within the Parks system:

- Preserve, protect and restore natural systems for fish and wildlife habitat
- Preserve the rural nature of the site in keeping with the surrounding community
- Eliminate incompatible uses which degrade sensitive site resources
- Provide site improvements to direct public use in appropriate areas
- Provide interpretive experiences to the community and foster public involvement in site stewardship
- Comply with requirements resulting from the listings of salmonids and other species under ESA
- Implement recommendations in phases according to priority order and available funding

Location

The Middle Fork Snoqualmie Natural Area consists of four parcels that border the south side of the Middle Fork of the Snoqualmie River, about nine miles east of North Bend. The Natural Area is served by only one road, the Lake Dorothy Road, which bisects the western edge of the Natural Area, then crosses the river at a concrete bridge (*Figure 2*).

[INSERT FIGURE 1]

[INSERT FIGURE 2]

Description

Almost 150 acres of forested land on the south bank of the river (in four discontinuous parcels) form the Natural Area between river mile (RM) 56 and RM 58. Granite Creek Flats, the westernmost and only publicly accessible portion of the area, is comprised of 8.76-acres west of the Dorothy Road bridge. Parcels two through four lie east of the Lake Dorothy Road, behind a locked gate on a private road. All four parcels are within the valley floor and all have riverfront exposure. All of the parcels have been logged at different times and many areas are in third or fourth generation forests. Washington State Department of Natural Resources (WA DNR) recently completed a large land trade with Weyerhaeuser Corporation and Champion International and solidified the former checkerboard pattern of ownership within the basin, including lands surrounding the Natural Area. Several privately held parcels (about 100 acres) lie between the parcels. These private properties often have an acre or so of cleared land around a house, cabin, or trailer (*Figures 2 & 3*).

Several tributaries flow from the steep valley walls to join the Middle Fork, crossing through the different parcels. Wetlands that have resulted from the river's changing course or from beaver activity are found on the valley floor. The gated gravel road follows the river within 200 feet of its banks for about a third of a mile. It then turns away from the river and meanders still roughly parallel with the river through wooded landscape to serve a privately owned parcel at the far eastern side of the Natural Area. Forested land lies along this stretch of the river, with residences scattered along the south side on parcels of 50 acres or more. The Middle Fork Snoqualmie River flows through a large, glacially carved valley. It has a relatively high gradient from the outflow of Williams Lake to its confluence with the North and South Forks. Through the Natural Area reach, the river is dynamic and continually reconfiguring the location and composition of the channel in this large valley.

Conservation Significance

The Middle Fork of the Snoqualmie is considered a King County Class 1 river and a Shoreline of State-wide Significance because of its flow (greater than 20 cubic feet per seconds mean annual flow). A majority of the Middle Fork Snoqualmie River basin is relatively undisturbed—roughly 60% of the basin lies within the Alpine Lakes Wilderness Area. The remainder of the basin is forested. These non-wilderness forestlands include public and private holdings (U.S. Forest Service, Washington State Department of Natural Resources, and private timber companies) and are periodically harvested. Currently, the Middle Fork of the Snoqualmie River basin is managed for northern spotted owl habitat (a federally threatened species) and as a result the extent of timber harvesting in the basin is limited. This watershed is considered an important component of the Mountains-to-Sound Greenway Trust (MTSG) greenbelt that extends from Seattle to Thorpe, Washington.

On-site wetlands and small tributaries combine with diverse vegetation and upland forests at the Natural Area to provide excellent habitat for resident and migratory bird species, mammals, fish, amphibians, and reptiles. The health of the lower reaches of the salmon-bearing Snoqualmie River system is directly related to the integrity of the upper reaches of its watershed, and therefore maintaining the Middle Fork and its surrounding habitat lands in a productive and healthy state will contribute to the biological health of the Snoqualmie River system in general.

Passive Recreational and Educational Significance

Public understanding and appreciation of the Natural Area will be an asset to the County's efforts to restore salmonids under ESA, as well as essential to maintaining the ecological health of the greater watershed. In 1996, the MTSG initiated the creation of a public use concept plan ("MFSR Concept plan"; see page 15 "Current Use"), which envisions the valley's use for recreation, wilderness protection, forest restoration, and timber harvest, the 8.76-acre portion of the Natural Area known as "Granite Creek Flats" was identified as one of only two suitable sites in the lower Middle Fork valley which could provide day use passive recreation and interpretive programming on a portion of dry, flat area adjacent to Lake Dorothy Road. However, protection of the site's sensitive wetland and riparian areas will be of primary importance in cooperation with the Mountains-to-Sound-Greenway planning effort.

Currently, the Natural Area is used for a variety of informal activities largely concentrated at river's edge. Mainly at Granite Creek Flats, these activities include water access for kayaks and angling, nature observation. Other unacceptable and/or illegal activities include squatting, camping, shooting, dumping, and ORV use. With appropriate site improvements, these inappropriate and destructive uses could be eliminated, and acceptable passive uses such as water access and nature observation could be redirected and their impacts minimized. As agency presence increases in the valley and recommendations of the MFSR Concept plan are implemented, interpretive and educational opportunities could highlight the importance of this stretch of river corridor to fish and wildlife habitat within the larger Snoqualmie River system. The effects of past site use and a list of future restoration efforts could be displayed. Restoration of heavily used areas could provide opportunities for public education and involvement within the basin.

Part II - SITE INVENTORY AND ANALYSIS

NATURAL RESOURCES

Topography

The Middle Fork Snoqualmie River flows through a high, broad, U-shaped valley that resulted from earlier periods of glaciation. The elevation of the valley floor is roughly 800 feet, with mountains rising steeply to nearly 5,000 feet on the south side of the river *(Figure 4).* For millennia the river has reworked the valley floor, often creating new channels and leaving oxbows, old meanders, and low terraces to be reworked by successive flood events. Depositional material brought from higher reaches is left by slow moving currents at accretion zones while elsewhere banks are scoured and sediments are carried further downstream.

Soils

Soils near the river are mapped as Sauk silt loam, 0 to 8 percent slopes. This soils series consists of very deep and well drained soils that formed in alluvium containing volcanic ash. They are generally found on river terraces at elevations between 500 and 800 feet. At the river's edge the Snoqualmie series of soils are very deep, somewhat excessively drained loamy fine sands that formed in gravelly alluvium, on low river terraces. Slopes are 0 to 8 percent. Hydric soils typical of wetlands are found in some areas that were once riverbed. These are classified as Humaquepts soils, very deep, poorly drained silt loams formed in alluvium and now found on river terraces. Slopes are 0 to 5 percent.

Hydrology

The Middle Fork Snoqualmie River (WRIA 07.0219) is a Class 1 stream and a Shoreline of Statewide Significance. It begins at the outlet of Williams Lake in the Alpine Lakes Wilderness and flows roughly 30 miles to join the North and South Forks of the Snoqualmie near North Bend. Much of this fork's headwaters lies in the pristine and isolated Alpine Lakes Wilderness. Within the Natural Area reach, eroding banks and accreting gravel bars occur along bends of the river. Large woody debris jams in the main channel, on gravel bars, or banks are absent. Floodplain wetlands are common here, often created by beaver in old river channels. The river channel itself is somewhat braided in areas, especially following large floods, but otherwise is usually confined to a single bed.

Several tributaries join the Middle Fork Snoqualmie in this reach. At the western portion of (easternmost) parcel four, an unnamed perennial creek meanders through private property, an old beaver pond, and deciduous forested

[INSERT FIGURE 3]

wetland before joining the river. Another perennial creek flows in a forested corridor to the east of this, crossing under the gravel access road and to the river. Where this creek joins the Middle Fork Snoqualmie near a bend in the river, a pool has formed.

Granite Creek (WRIA 07.0649) originates from Granite Lakes 1500 feet above the valley floor. This creek flows through parcel two as a high gradient stream and in several past storm events has caused extensive transport and deposition of material in the creek channel. Several feet of sediment (cobbles, gravels, and sand) were deposited within the creek channel, forming bars and islands. A portion of a wetland just downstream of the bridge over Granite Creek has also been filled with transported sediment. As a result of this heavy bed load, Granite Creek has formed several channels. It begins as one channel, braids into three channels in the middle portion of parcel two, then coalesces into one channel just upstream from the private access road and bridge over Granite Creek.

Deciduous forested wetlands are common within the floodplain and are often associated with beaver ponds in old river channels. An open-water, emergent and forested wetland system is associated with a perennial creek and old beaver pond at the eastern end of the Waterways reach. Beavers more recently have dammed an old river channel at the western portion of parcel four.

An emergent and deciduous forested wetland extends from the Lake Dorothy Road to the floodplain on parcel one, or Granite Creek Flats. This wetland may have been an old channel of Granite Creek. In addition to the floodplain wetlands, forested wetlands exist in low-lying land on benches above the floodplain, within the floodplain tributaries, and in areas where water is impounded.

Vegetation

The following general vegetation descriptions correspond to plant species observed on site *(Table 1)* and mapped natural resource areas *(Figure 4).*

Deciduous forest

Upland areas such as old river terraces and slopes above the river support deciduous forests. In more recently logged areas, dense stands of young red alder are common. Big leaf maple and mature red alder (10 to 16 inches in diameter) are common on logged areas above the floodplain. In some areas Sitka spruce saplings are prevalent, whereas in other areas they are limited to stumps and logs. Salmonberry and vine maple are common in the understory. Sword fern and herbaceous species including bleeding heart, false lily-of-the-valley, and Siberian miner's lettuce are common groundcover species.

Deciduous forested wetlands

Red alder-dominated forested wetlands are common in the floodplain, especially along tributaries and in low-lying areas inland of the riverbank. Western hemlock and western red cedar are infrequent in the understory and usually restricted to nurse logs, stumps, and hummocks. Salmonberry forms a dense understory along with devil's club, vine maple, and red elderberry. Lady fern and skunk cabbage are the main groundcover species. Other groundcovers include short-scale sedge, piggyback plant, hedge nettle, and sword fern.

Mixed forested wetlands

Stands of large cottonwood and Sitka spruce occur on flat, broad areas along the riverbank. Black cottonwood is the dominant species in the canopy of mixed forests, usually with Sitka spruce present in the overstory and often dominant in the subcanopy. Vine maple, salmonberry, highbush cranberry, and snowberry form an open understory. Sword fern is the common groundcover species. Elk use is high in these open, floodplain forests.

Riparian zone

On high banks along the river, patches of Sitka spruce and western hemlock are found. One huge, ancient nurse log perched on a bank above the river supports four large Sitka spruce trees (47 to 73 inches in diameter). Stands of

Table 1: Plant Species Observed within Middle Fork Park Natural Area

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
FERNS AND ALLIES		*Carex deweyana*	Short-scale Sedge
Athyrium filix-femina	Lady Fern	*Carex obnupta*	Slough Sedge
Blechnum spicant	Deer Fern	*Carex stipata*	Saw-beaked Sedge
Equisetum sp.	Horsetail	*Carex utriculata**	Beaked Sedge
Polystichum munitum	Sword Fern	*Carex vesicaria*	Inflated Sedge
Pterdium aquilinum	Bracken Fern	*Scirpus microcarpus*	Small-fruited Bulrush
AQUATICS		**SHRUBS AND SMALL TREES**	
Callitriche heterophylla	Water Starwort		
Polygonum sp.	Pondweed	*Acer circinatum*	Vine Maple
Sparganium sp.	Bur-reed	*Cornus stolonifera*	Red-osier Dogwood
		Corylus cornuta	Hazelnut
HERBS		*Gaultheria shallon*	Salal
Claytonia sibirica	Siberian Miner's-Lettuce	*Oemleria cerasiformis*	Indian Plum
Dicentra formosa	Pacific Bleeding Heart	*Oplopanax horridus*	Devil's Club
Digitalis purpurea	**Common Foxglove**	***Rubus laciniatus***	**Evergreen Blackberry**
Epilobium angustifolium	Fireweed	*Rubus parviflorus*	Thimbleberry
Epilobium watsonii	Watson's Willowherb	*Rubus spectabilis*	Salmonberry
Galium spp.	Bedstraw	*Rubus ursinus*	Trailing Blackberry (Dewberry)
Geranium robertianum	**Robert Geranium**	*Salix spp.*	Willow
Geum macrophyllum	Large-leaved Avens/Geum	*Sambucus racemosa*	Red Elderberry
Lycopis uniflorus	Bungleweed	*Spirea douglassii*	Hardhack
Maianthemum dilatatum	False Lily of the Valley	*Symphoricarpos albus*	Snowberry
Oenanthe sarmentosa	Water Parsley	*Vaccinium parvifolium*	Red Huckleberry
Petasites palmatus	Palmate Coltsfoot	*Vaccinium* sp.	Blueberry
Ranunculus repens	**Creeping Buttercup**	*Virburnum edule*	High Bush Cranberry
Sium suave	Water Parsnip		
Smilacina stellata	Star-flowered False Solomon's Seal	**TREES**	
Solanum dulcamara	**Bittersweet Nightshade**	*Acer macrophyllum*	Big Leaf Maple
Streptopus roseus	Rosy Twistedstalk	*Alnus rubra*	Red Alder
Tellima grandiflora	Fringecup	*Malus fusca*	Crab Apple
Tiarella trifoliata	Foamflower	*Picea sitchensis*	Sitka Spruce
Tolmiea menziesii	Piggy-Back Plant	*Populus balsamifera var. trichocarpa**	Black Cottonwood
Typha latifolia	Broad-leaved Cattail	*Pseudotsuga menziesii*	Douglas Fir
Urtica dioica	Stinging Nettle	*Rhamnus purshiana*	Cascara
Veronica americana	American speedwell	*Salix lucida ssp. lasiandra**	Pacific Willow
*Lysichiton americanum**	Skunk Cabbage	*Thuja plicata*	Western Red Cedar
		Tsuga heterophylla	Western Hemlock
GRASSES			
Glyceria sp.	Manna Grass		
RUSHES AND SEDGES			
Eleocharis sp.	Spike Rush		
Juncus effusus	Soft Rush		
Juncus spp.	Rush		

NOTES:
Bold indicates non-native species.
+ Indicates native status undetermined.
*Identifies updated plant names. Updated taxonomy follows Hickman (1993). All other nomenclature follows Hitchcock and Cronquist (1978).
This data is strictly seasonal (species observed during summer and fall site visits) and limited in nature; other species are expected to occur on this site.

[INSERT FIGURE 4]

large black cottonwood, with a subcanopy of Sitka spruce occur on relatively well drained but periodically flooded soils. Areas of gravel deposits in the river channel support dense thickets of willow and young red alder.

Emergent/scrub-shrub wetlands
Created by beaver dams in old river channels, each of these wetlands has its own characteristics. Red alder and western red cedar snags are common along the edges of these ponds and dense thickets of salmonberry and highbush cranberry occur on higher ground (old gravel bars). Willow, salmonberry, and red elderbery are also common along the edges. Spiraea is found at some of these ponds, although these have been pruned back by beaver over the years. Bungleweed is found at one wetland in the emergent zone, along with burreed, manna grass, saw-beaked sedge, water parsley, small-fruited bulrush, and soft rush. Other beaver ponds support pondweed and water starworts. Sedges, rushes, spike-rush, and manna grass are found in these areas. Lady fern, large-leaved avens, bedstraw, and American brooklime are common on drier ground within the emergent zone.

Non-native invasive species
Invasive plant species onsite include bittersweet nightshade, Robert geranium, and evergreen blackberry. All are considered Class C weeds by the Washington State Noxious Weed Board and are found along road sides and within clearings (see *Appendix*).

Vegetative Succession
Succession will be affected by the pattern the river establishes after major flood events. New channels will be cut and old ones abandoned, and new generations of alder, spruce, and cedar will establish themselves where they can find a foothold. In those forested areas left undisturbed, spruce, cedar, and hemlock will grow to dominate. Wet soils will continue to support a variety of vegetation types and will provide habitat to a wide range of amphibians, mammals, birds, and aquatic life.

Wildlife

A list of species observed on site *(Table 2)* supplements the following generalized fish and wildlife information. Wildlife Habitat Corridors, as identified in the 1996 King County Comprehensive Plan, are shown on this site's natural resources map *(Figure 4).*

Fish
Snoqualmie Falls acts as a natural barrier to anadromous salmonids. Above the falls, significant populations of resident cutthroat and rainbow trout occur in the river. Spawning and rearing habitat for these fish occurs in the mainstem as well as in perennial tributaries to the Middle Fork. Mountain whitefish, eastern brook trout, and sculpin also occur in the river system. Bull trout are assumed to occur above Snoqualmie Falls because the habitat is adequate, although their presence is unconfirmed. Coastal/Puget Sound populations of bull trout were proposed for listing on June 10, 1998 and a final decision to list will be made sometime in 1999. Native mudminnows may reside in the wetlands and oxbows along the river. All these species except brook trout are native to this system.

The U.S. Forest Service, fishing clubs, and individuals stocked lakes and streams with cutthroat and rainbow trout within this watershed beginning in the early 1900s. The Washington State Department of Game (WSDG) began managing a stocking program in the early 1930s and stocked eastern brook trout in these waters from 1940 to 1963. Stocking of streams ended in 1983, and in 1986 the Middle Fork Snoqualmie River was designated a "catch and release" fishery. Although official stocking of streams was discontinued in 1983, many lakes currently are illegally stocked with cutthroat and/or rainbow trout.

Amphibians and Reptiles
Amphibian surveys were not performed in the site survey for this Natural Area. However, Northwestern and common garter snakes, as well as Northwestern, long-toed and western redback salamanders could likely be found

Table 2. Wildlife Species Observed or Expected to Utilize Middle Fork Park Natural Area

SCIENTIFIC NAME	COMMON NAME	OBSERVED
MAMMALS		
Pouched Mammals (Marsupialia)		
Didelphis marsupialis	**Opossum**	
Insect-eaters (Insectovora)		
Soricidae		
Sorex bendirei	Marsh Shrew	
Sorex cinereus	Masked Shrew	
Sorex palustris	Water Shrew	
Sorex trowbridgei	Trowbridge Shrew	
Sorex vagrans	Vagrant Shrew	
Talpidae		
Neurotrichus gibbsi	Shrew-mole	
Scapanus orarius	True-coast Mole	
Scapanus townsendi	Townsend's Mole	
Bats (Chiroptera)		
Eptesicus fuscus	Big Brown Bat	
Lasionycteris noctivagans	Silver Haired Bat	
Myotis californicus	California Myotis	
Myotis evotis	Long-eared Myotis	
Myotis lucifugus	Little Brown Myotis	
Myotis volans	Long-legged Myotis	
Flesh-eaters (Carnivora)		
Ursidae		
Ursus americanus	Black Bear	X, X+
Procyonidae		
Procyon lotor	Raccoon	
Mustelidae		
Lutra canadensis	River Otter	X+
Martes americana	Marten	
Mustela erminea	Short-tailed Weasel	
Mustela frenata	Long-tailed Weasel	
Mustela vison	Mink	X+
Mephitis mephitis	Striped Skunk	
Spilogale putorius	Spotted Skunk	
Canidae		
Canis latrans	Coyote	X
Vulpes fulva	Red Fox	
Felidae		
Felis concolor	Mountain Lion	X+
Felis rufus	Bobcat	X+
Gnawing Mammals (Rodentia)		
Sciuridae		
Eutamias townsendi	Townsend Chipmunk	
Glauconys sabrinus	Northern Flying Squirrel	
Tamiasciurus douglasi	Douglas Squirrel	X
Castoridae		
Castor canadensis	Beaver	X, X+
Cricetidae		
Peromyscus maniculatus	Deer Mouse	
Clethrionomys gapperi	Boreal Red Backed Vole	
Microtus oregoni	Oregon Vole	
Microtus longicaudus	Long-tailed Meadow Vole	
Microtus richardsoni	Water Vole	
Microtus townsendii	Townsend's Vole	
Ondatia zibethica	Muskrat	
Muridae		
Rattus norvegicus	**Norway Rat**	
Erethizontidae		
Erethizon dorsatum	Porcupine	
Pikas, Hares, and Rabbits (Lagomorpha)		
Leporidae		
Sylvilagus spp.	Cottontail Rabbit	
Even-hoofed Mammals (Artiodactyla)		
Cervidae		
Cervus elaphus	Elk	X, X+
Odocoileus hemionus	Blacktail Deer	X, X+
BIRDS		
Grebes (Podicipedidae)		
Podilymbus podiceps	Pied-billed Grebe	
Podiceps auritus	Horned Grebe	
Podiceps nigricollis	Eared Grebe	
Aechmophorus occidentalis	Western Grebe	
Cormorants (	Phalacrocoracidae)	
Phalacrocorax auritus	Double-crested Cormorant	
Herons, Bitterns	(Ardeidae)	
Ardea herodias	Great Blue Heron	X
Butorides virescens	Green Heron	X+
Waterfowl (Anatidae)		
Geese (Anserini)		
Branta canadensis	Canada Goose	
Ducks (Anatinae)		
Aix sponsa	Wood Duck	X+
Anas crecca	Green-winged Teal	
Anas platyrhynchos	Mallard	X
Anas acuta	Northern Pintail	
Anas discors	Blue-winged Teal	
Anas cyanoptera	Cinnamon Teal	
Anas clypeata	Northern Shoveler	
Anas strepera	Gadwall	
Anas americana	American Wigeon	
Aythya americana	Redhead	
Aythya collaris	Ring-necked Duck	
Aythya affinis	Lesser Scaup	
Histrionicus histrionicus	Harlequin Duck	X+
Bucephala clangula	Common Goldeneye	
Bucephala islandica	Barrow's Goldeneye	X+
Bucephala albeola	Bufflehead	X+
Lophodytes cucullatus	Hooded Merganser	X+
Mergus merganser	Common Merganser	
Mergus serrator	Red-breasted Merganser	
Oxyura jamaicensis	Ruddy Duck	
Hawks, etc.	(Accipitridae)	
Pandion haliaetus	Osprey	X+

Table 2. (Continued)

SCIENTIFIC NAME	COMMON NAME	OBSERVED
Haliaeetus leucocephalus	Bald Eagle	
Accipiter striatus	Sharp-shinned Hawk	X+
Accipiter cooperii	Copper's Hawk	X+
Buteo jamaicensis	Red-tailed Hawk	X+
Falcons (Falconidae)		
Falco columbarius	Merlin	
Fowl-Like Birds (Phasianidae)		
Phasianus colchicus	**Ring-Necked Pheasant**	
Dendragapus obscurus	Blue Grouse	
Bonasa umbellus	Ruffed Grouse	X
Callipepla californica	California Quail	
Rails, etc. (Rallidae)		
Rallus limicola	Virginia Rail	
Porzana carolina	Sora	
Fulica americana	American Coot	
Plovers (Charadriidae)		
Charadrius vociferus	Killdeer	
Sandpipers, Phalaropes	(Scolopacidae)	
Tringa melanoleuca	Greater Yellowlegs	
Tringa flavipes	Lesser Yellowlegs	
Actitis hypoleucos	Common Sandpiper	
Actitis macularia	Spotted Sandpiper	
Calidris mauri	Western Sandpiper	
Calidris alpina	Dunlin	
Limnodromus griseus	Short-billed Dowitcher	
Limnodromus scolopaceus	Long-billed Dowitcher	
Gallinago gallinago	Common Snipe	
Jaeger, Gulls, etc. (Laridae)		
Larus delawarensis	Ring-billed Gull	
Larus californicus	California Gull	
Larus glaucescens	Glaucous -winged Gull	
Pigeons, Doves (Columbidae)		
Columba fasciata	Band-tailed Pigeon	
Zenaida macroura	Mourning Dove	
Owls (Tytonidae, Strigidae)		
Tyto alba	Barn Owl	
Otus kennicottii	Western Screech-owl	
Bubo virginianus	Great Horned Owl	X+
Glaucidium gnoma	Northern Pygmy Owl	
Strix occidentalis	Northern Spotted Owl	
Strix varia	Barred Owl	
Aegolius acadicus	Northern Saw-whet Owl	
Swifts (Apodidae)		
Chaetura vauxi	Vaux's Swift	X+
Hummingbirds (Trochilidae)		
Selasphorus rufus	Rufous Hummingbird	X
Kingfishers (Alcedinidae)		
Ceryle alcyon	Belted Kingfisher	X, X+
Woodpeckers (Picidae)		
Sphyrapicus thyroides	Red-breasted Sapsucker	
Picoides pubsescens	Downy Woodpecker	
Picoides villosus	Hairy Woodpecker	X
Drycopus pileatus	Pileated Woodpecker	X+
Colaptes auratus	Northern Flicker	
Flycatchers (Tyrannidae)		
Contopus borealis	Olive-sided Flycatcher	X
Contopus sordidulus	Western Wood Pewee	
Empidonax traillii	Willow Flycatcher	
Empidonax difficulis	Pacific-slope Flycatcher	X, X+
Empidonax hammondii	Hammond's Flycatcher	X+
Empidonax oberholseri	Dusky Flycatcher	
Swallows (Hirundinidae)		
Tachycineta bicolor	Tree Swallow	
Tachycineta thalassina	Violet-green Swallow	X+
Stelgidopteryx serripennis	Northern .Rough-winged Swallow	
Huirundo pyrrhonota	Cliff Swallow	
Hirundo rustica	Barn Swallow	
Jays, Magpies, Crows	(Corvidae)	
Cuanoatta stelleri	Steller's Jay	X,X+
Corvus brachyrhynchos	American Crow	X+
Corvus caurinus	Northwestern Crow	
Corvus corax	Common Raven	
Chickadees, Titmice	(Paridae)	
Parvus atricapilus	Black-capped Chickadee	X
Parus gambeli	Mountain Chickadee	
Bushtit (Aegithalidae)		
Psaltriparus minimus	Bushtit	X+
Nuthatches (Sittidae)		
Sitta canadensis	Red-breasted Nuthatch	
Creepers (Certhiidae)		
Certhia americana	Brown Creeper	
Wrens (Troglodytidae)		
Thryomanes bewickii	Bewick's Wren	
Troglodytes aedon	House Wren	
Troglodytes troglodytes	Winter Wren	X,X+
Cistothorus palustris	Marsh Wren	
Dippers (Cinclidae)		
Cinclus mexicanus	American Dipper	X,X+
Kinglets, etc. (Muscicapidae)		
Regulus satrapa	Golden-crowned Kinglet	X
Regulus calendula	Ruby-crowned Kinglet	
Catharus ustulatus	Swainson's Thrush	X, X+
Catharus guttatus	Hermit Thrush	X
Turdus migratorius	American Robin	X,X+
Ixoreus naevius	Varied Thrush	
Waxwings (Bombycillidae)		
Bombycilla garrulus	Cedar Waxwing	
Starlings (Sturnidae)		
Sturns vulgaris	**European Starling**	
Vireos (Vireonidae)		
Vireo solitarius	Solitary Vireo	
Vireo huttoni	Hutton Vireo	
Vireo gilvus	Warbling Vireo	X, X+
Vireo olivaceus	Red-eyed Vireo	

Table 2. (Continued)

SCIENTIFIC NAME	COMMON NAME	OBSERVED
Emberizids(Emberizidae)		
Wood Warblers(Parulinae)		
Vermiuora celata	Orange-crowned Warbler	X
Dendroica petechia	Yellow Warbler	
Dendroica nigrescens	Black-throated Gray Warbler	X+
Dendroica coronata	Yellow-rumped Warbler	
Dendroica townsendi	Townsend's Warbler	X
Dendroica occidentalis	Hermit Warbler	X
Oporornis tolmiei	MacGillivray's Warbler	X+
Geothylpis trichas	Common Yellow Throat	
Wilsonia pusilla	Wilson's Warbler	
Tanagers (Thraupinae)		
Piranga ludoviciana	Western Tanager	X+
Grosbeaks, etc. (Cardinalinae)		
Pheucticus melanocephalus	Black-headed Grosbeak	X
Passerina amoena	Lazuli Bunting	
Towhees, Sparrows, etc. (Emberizinae)		
Pipilo erythrophthalmus	Rufous-sided Towhee	
Spizella passerina	Chipping Sparrow	
Passerculus sandwichensis	Savannah Sparrow	
Passerella iliaca	Fox Sparrow	
Melospiza melodia	Song Sparrow	X+
Melospiza lincolnii	Lincoln's Sparrow	
Zonotrichia leucophrys	White-crowned Sparrow	
Zonotrichia atricapilla	Golden-crowned Sparrow	
Junco hyemalis	Dark-eyed Junco	
Blackbirds, Orioles, etc. (Icterinae)		
Agelaius phoeniceus	Red-winged Blackbird	
Euphagus cyanocephalus	Brewer's Blackbird	
Molothrus ater	Brown-headed Cowbird	
Icterus galbula	Northern Oriole	
Finches (Fringillidae)		
Carpodacus purpureus	Purple Finch	
Carpodacus mexicanus	House Finch	
Loxia curvirostra	Red Crosbill	
Carduelis pinus	Pine Siskin	
Coccothraustes vespertina	Evening Grosbeak	
Carduelis tristis	American Goldfinch	
Weaver Finches (Passeridae)		
Passer domesticus	**House Sparrow**	
FISH		
Salmons,Trouts, etc. (Salmonidae)		
Oncorhynchus clarki	Cutthroat Trout	X+
Oncorhynchus mykiss	Rainbow Trout	X+
Prosoplum williamsoni	Mountain Whitefish	X+
Salvelinus fontinalis	**Eastern Brook Trout**	X+
Salvelinus malma	Dolly Varden	
Salvelinus confluentus	Bull Trout	
Sticklebacks (Gasterosteidae)		
Gasterosteus aculeatus	Three-spine Stickleback	
Sunfishes(Centrarchidae		
Micropterus salmoides	**Largemouth Bass**	X+
Sculpin (Cottidae)		
Cottus sp.	Sculpin	X+
AMPHIBIANS		
Salamanders and Relatives		
Ambystomatidae		
Ambystoma gracile	Northwestern Salamander	
Ambystoma macrodactylum	Long-toed Salamander	
Dicamptodontidae		
Dicamptodon ensatus	Pacific Giant Salamander	
Newts (Salamandridae)		
Taricha granulosa	Rough-skinned Newt	
Lungless Salamanders (Plethodontidae)		
Ensatina eschscholtzii	Ensatina	
Plethodon vehiculum	Western Red-backed Salamander	
Frogs and Toads (Ascaphidae)		
Ascaphidae		
Ascaphus truei	Tailed Frog	
Bufonidae		
Bufo boreas	Western Toad	
Tree Frogs and Allies (Hylidae)		
Hyla regilla	Pacific Chorus Frog	
True Frogs (Ranidae)		
Rana aurora	Red-legged Frog	
Rana cascadae	Cascades Frog	
Rana catesbiana	**Bullfrog**	
REPTILES		
Colubrids (Colubridae)		
Thamnophis elegans	W. Terrestrial Garter Snake	
Thamnophis ordinoides	Northwestern Garter Snake	
Thamnophis sirtalis	Common Garter Snake	

NOTES:
Bold indicates non-native species.
X Indicates species observed onsite by County staff.
X+ Indicates species observed onsite by others.

onsite. Pacific chorus frog, red-legged frog, western toad, rubber boa, and roughskin newt, all associated with water at some time in their life cycle, could also be found. Habitat areas include the wetlands and oxbows along the river.

Birds

Wintering and breeding waterfowl such as Mallard, Common merganser, and Goldeneye most likely use mainstem and beaver pond wetlands. Migratory bird species such as warblers and flycatchers can be found in the extensive deciduous and mixed forests of this and adjoining lands. Shorebirds such as Spotted sandpiper and Killdeer may use gravel bars and mudflats along the river and the floodplain wetlands seasonally. Aquatic bird species such as American dipper, Great blue heron, and Belted kingfisher have been observed along this stretch of the river and are likely to frequent tributaries and wetlands as well. Hawks, owls, woodpeckers, hummingbirds and numerous songbirds also use the area.

Mammals

Black-tail deer, elk, black bear, and coyote are common residents along this part of the river. Mountain lion, bobcat, fox, mink, marten, and river otter are some of the predatory wildlife species expected in this reach. Beaver are active along the river and recently have ponded water in an old river channel on and southwest of the western portion of parcel four. Other small mammals, such as cottontail, voles, mice, shrews, Douglas squirrel, muskrat, and bats are also expected to use the Natural Area.

Future Wildlife

Over time, the site's vegetation will naturally change as the river varies its course, and the biological and regional significance of the Natural Area will also change according to the condition of the surrounding landscape. Changes in land use on adjacent parcels will likely result in changes to the wildlife species inhabiting the Natural Area.

LAND USE

Historic Use

Regional History

The South Fork of the Snoqualmie served for centuries as a trade route that enabled Yakama and Klickitat tribes from east of the mountains to trade with the Snoqualmie tribe and other lowland tribes to the west. The Snoqualmie, known as the *People of the Moon*, were the largest native tribe in the region. Tool-making materials from the interior, such as silica and obsidian, were traded for talc-like paint and finished tools from the northern lowland region. All the people involved would have hunted and fished along the three branches of the Snoqualmie and would have gathered roots, bulbs, berries, and nuts as well. This mountainous region was especially important for hunting goats, whose wool was used for making blankets. While no archaeological sites are known within the Natural Area itself, all this stretch of the river would have been actively visited by different groups of native people over the centuries.

European settlers arrived in the upper reaches of the Snoqualmie River in the 1860s and brought logging and mining to the Middle Fork area by the 1890s. Some of the first mines extracted copper ore at the head of the Middle Fork valley and somewhat later, gold, silver, copper, and lead were also mined, again in the higher reaches. Trees have been harvested from the area from the late 1800s to the present. Logging of old-growth timber peaked in the 1920s, so that no stands are left and much of the current forest is third or even fourth generation growth. Early operations transported logs out of the valley on a narrow gauge railroad with a line extended up the Middle Fork to the Taylor River, with spurs to the Pratt River and Goldmeyer Hot Springs.

Current use

Current Use Patterns
Recreation and industrial timber production are the main activities along the Middle Fork of the Snoqualmie today. Camping, angling, hiking, biking, kayaking, whitewater rafting, canoeing, and hunting are popular, as well as target practice, dumping and partying. Current use of the entire Natural Area is minimal but includes some illegal camping, dumping and firearm use. Easy access to the Granite Creek Flats parcel from Lake Dorothy Road has resulted in greater disturbance to that parcel than the remainder, whose access is blocked by a locked gate. Recreationists and anglers access the river and small sandy beach via an old road just downstream of the concrete bridge. Timber production is still active in the area and about 20 mining claims (primarily for quartz crystals) are still active in the neighboring National Forest.

Planning for Future Use
In 1996 the Mountains to Sound Greenway Trust brought together a group of user groups, landowners, and public agency representatives to develop a framework for long-term use and management of the Middle Fork Watershed. The resulting framework is outlined in the Middle Fork of the Snoqualmie River Valley Phase II River Corridor Public Use Concept. According to the MFSR Concept plan, portions of the watershed will remain as a "working landscape" to provide opportunities for a range of management activities from timber harvesting to restoration and preservation. Additionally, the plan provides a range of compatible recreational experiences, protection of currently unroaded areas, and prioritizes as well as coordinates recreational development opportunities.

Site Access
From Seattle, Interstate 90 travels east to the city of North Bend. Out of the city, SE North Bend Way heads east towards Tanner. Outside Tanner, 468th Avenue SE intersects Lake Dorothy Road, also called Middle Fork Road or Forest Service Road (FSR) 56. Just before crossing the river at the concrete bridge, a gated and locked gravel easement road leads from Lake Dorothy Road to four Natural Area parcels which roughly parallel the river. Granite Creek Flats, opposite this gate, is accessible along the length of its boundary with Lake Dorothy Road.

Parking
Informal parking occurs along Lake Dorothy Road adjacent to Granite Creek Flats.

Part III - SITE MANAGEMENT RECOMMENDATIONS

Land Use Classification/Park Use Areas

Parks and open spaces in the King County Park system are classified according to a three-level system. The first level distinguishes sites as local or regional, the second level specifies the site's primary purpose (natural area, active recreation, passive recreation, multi-use, trail or special purpose), and the third defines park use areas within the site (natural areas, active recreation areas, passive recreation areas, staging areas, and special management areas). Due to the nature of the site and purpose and goals of the Waterways 2000 program, the Natural Area is therefore classified as a *Natural Area* of *Regional* significance, with *natural*, *passive recreation,* and *special management areas* park use areas within its boundaries. *Natural areas* support little development and limited public access, with access via footpaths and interpretive and directional signage as necessary. *Passive recreation areas* allow for informal activities such as interpretive programs and passive water access. *Special management areas* onsite are for habitat protection, and public access is discouraged. *Staging areas* are designated for parking, restrooms, and/or maintenance facilities. The following planning elements are generally indicated on the site management map *(Figure 5).*

[INSERT FIGURE 5]

Planning Elements and Recommendations

Site Uses

The preservation, protection, and enhancement of fish and wildlife habitat onsite is the primary objective in planning for the Natural Area. The provision of appropriate, low-impact public access is the secondary objective. The Natural Area is mainly comprised of special management areas which are not appropriate to public access. At Granite Creek Flats however, restricting use to nature observation, angling, and passive water access will reduce the impact to the majority of the Natural Area's wildlife habitat while still allowing passive recreation experiences. Following are recommended public uses for the Granite Creek portion of the Natural Area:

- Nature observation
- Nature interpretation and education
- Picnicking
- Photography
- Pedestrian access to river (passive, non-motorized water use only)

Future Site Improvements at Granite Creek Flats

Access to a small, passive recreation, access area just downstream of the Lake Dorothy Road Bridge should be improved for foot access only. A staging area (restrooms, day use, parking) is proposed for the Granite Creek Flats site in the Phase III development of the MFSR Concept plan. A small staging area may be feasible here if such development does not adversely impact adjacent sensitive areas. More extensive facilities are proposed in the MFSR Concept plan for further up the valley (outside the Natural Area) at the USFS' Mine Creek site and Taylor River campground.

Separation of Uses

In order to conserve resources at the Natural Area and to provide limited, controlled public access, redirecting and minimizing current use impacts to riparian corridors and wetlands should be emphasized. Natural areas and passive use areas at Granite Creek Flats should be clearly defined with signage and other appropriate features, and access to sensitive riparian areas discouraged. Public use of the remainder of the Natural Area should be discouraged.

Special Management Areas

Habitat Preservation Areas

The site's most sensitive areas are located within wetlands, along tributaries, and within the river's riparian corridor. The character of the latter changes with floods, beaver activity, big storm events, and windthrow. These processes create a rich mosaic of multi-aged forests, wetlands, and off-channel and instream habitats. Erosion areas provide gravels for downstream reaches and are a necessary component of a healthy river system. During high flows, low-lying, off-channel areas provide flood refuge for fish, reduce the energy burdens of floods on the main channel, and become sediment-deposition zones. During the dry season, off-channel areas often contain small water reservoirs that slowly recharge the stream and support highly productive habitats. These areas should be left undisturbed to continue to provide critical functions but managed to promote the coniferous forest canopy. While seed sources are common, there is a lack of old trees and snags. Provided that stand-replacing disturbances such as floods or fire do not occur, these features will develop in time. Old trees and snags create multi-tiered forests, add diversity, and provide specialized habitats for conifer saplings and fungi as well as food for many bird species. Given the sensitivity of these areas, the following general design and planning elements are recommended:

- Restore coniferous riparian buffer to a minimum of 200 feet along river.
- Remove and revegetate former driveways onsite and install barriers as necessary.
- Restore conifer cover in cleared areas in conjunction with invasive species removal.
- Discourage public access beyond gate and within riparian zones at Granite Creek Flats.

Landslide/Debris Torrent/Erosion Prevention
Steep, clearcut, timberlands with extensive roads lie upslope of the Natural Area and have a high potential for failure during big storm events. Tributary streams, especially Granite Creek, and the riparian zone of the river are susceptible to extensive scour during such storms. A debris torrent on an unclassified tributary in this area scoured the creek and riparian zone down to bedrock during the 1995-1996 winter. Working in cooperation with adjacent landowners and WA DNR to close and properly ditch these roads will be critical in the prevention of debris torrents, landslides, and erosion which would affect downstream and downhill properties. Prevention of slope failures off-site is a critical component of natural area resource management.

Passive Recreation Areas

This Middle Fork Snoqualmie Natural Area was purchased largely for its conservation significance, but also for its passive recreational and educational opportunities. Appropriately directed public access and appreciation of the resources at the Natural Area will be important for future support of conservation efforts and site stewardship. The size and scope of current public use should be kept minimal on all portions of the site.

Water access
The river and its surrounding habitat will continue to attract visitors because of its isolated, wilderness character. A redesigned pedestrian-only route to the river at Granite Creek Flats would allow recreationists a low-impact way to get their equipment to the river and limit the impact to surrounding riparian areas. Design, review and construction of a (non-motorized) water access should be performed in cooperation with KC DNR.

Interpretation
Interpretive opportunities could highlight the dynamics of the river system and its importance to wildlife habitat and water quality in the Snoqualmie River system. Historic changes to the river and its ecology, including impacts of logging, could be included in this program. Interpretive signage at Granite Creek Flats would be appropriate once there is increased agency/public presence in the valley.

Day-use area
A small, day-use picnicking area at the dry, flat portion of Granite Creek Flats may be feasible as Phase III development of the MFSR Concept plan occurs. Any installations would need to be located outside of riparian buffers and potential impacts to sensitive areas would need to be evaluated prior to approval.

Coordination with other plans
The MFSR Concept plan includes recommendations that match suitable land uses and management activities with the general environmental characteristics and historic uses in the entire Middle Fork valley. Some of the Plan's management recommendations for the valley which will likely enhance management of the Natural Area include:

- Provision of security for visitors and protection for natural and constructed resources.
- Encouragement of lawful uses with signs, volunteer hosts, visitor contact points, public events and use.
- Enforcement of existing prohibition on shooting in the river landscape within 100 feet of roads.
- Installation of gates where necessary to protect resources, insure safety, or separate uses.
- Emphasis on day use along the river within the lower and middle sections of the valley.
- Development of low impact, non-motorized boat access facilities at selected sites along the river.
- Provision of vehicle and non-vehicle campgrounds in the middle section of the valley.
- Location of campgrounds out of sensitive ecological zones.
- Provision of a variety of trails for the elderly, children, the physically challenged, hikers, horses, mountain bikes.
- Emphasis on roads-to-trails conversions.
- Continuance of zero-use for all-terrain vehicles in the middle and upper sections of the valley.

Parking
The dry, flat portion of Granite Creek Flats adjacent to the Lake Dorothy Road which has seen considerable disturbance may be an appropriate location for a small gravel parking area to serve a day-use picnic/water access area (as cited in the Concept plan) if feasible and appropriate. Controlling ORV/4 wheel drive uses and other undesirable activities such as partying and illegal camping will be essential. Adequate construction design and patrolling will be important in the management of any parking area at Granite Creek Flats. Parking could also continue to occur along Lake Dorothy Road.

Site-wide Issues

Revegetation/habitat restoration
Restoration of the 200' river buffer was initiated in the spring of 1998 by KC DNR. Sitka spruce, western red cedar, western hemlock and Douglas fir were planted and logs and stumps added as habitat features. In the future, the Natural Area should continue to function as an important piece of natural habitat within the larger river basin. Restoration activities such as planting conifers in disturbed areas will encourage natural succession in this conifer-dominated landscape. In addition, stream and wetland buffers restored to maximum widths and improved instream habitat could increase the long-term habitat value of the Natural Area for fish and wildlife. Expansion of protected waterways and systems will likely occur as a result of ESA listings, and potentially increase the habitat protected within the vicinity of the Natural Area and other Snoqualmie River basin lands. The following are further recommendations for restoration onsite:

- Continue conifer plantings within riparian areas as necessary and at portions of the Natural Area formerly containing houses and trailers, in order to speed conifer succession in open areas.
- Decommission old driveways and replant with native conifers, installing erosion-control structures as necessary.
- As an aspect of restoration projects, monitor the survival of restoration plantings and provide necessary maintenance, watering, and replacement.

Boundary Delineation—Survey/Signage/Fencing
There is no current survey and posting of the site. KC Parks signage should be placed as necessary and appropriate at Granite Creek Flats. The locked gate should be maintained in cooperation with private landowners along the easement road.

Access
Access to the majority of the Natural Area should continue to be restricted past the locked gate off Lake Dorothy Road. At Granite Creek Flats, "tank traps" along its boundary with Lake Dorothy Road curtail vehicle access, although this area still receives some illegal camping, target practice, and parties.

Easements
The gravel easement road which accesses the majority of the Natural Area is indicated in *Figure 3*. Water from an uphill section of road ditch is currently eroding a portion of the road. As outlined in the road easement, "the cost of road maintenance and resurfacing shall be allocated on the basis of respective uses of said roads" and should be maintained in cooperation with private landowners who share the easement.

Maintenance/Staffing
- Budget for appropriate Parks maintenance staff to ensure that garbage is collected and general property condition monitoring is accomplished.
- Solicit and establish volunteer stewardship in the maintenance and monitoring of the site.
- Maintain a low-impact (pedestrian-only and non-motorized) passive water access at Granite Creek Flats to minimize and redirect access currently occurring in surrounding sensitive areas.

- Improve the ditch and culvert system of the easement road in order to minimize the potential of increased erosion and road damage.

Park Furnishings

Park furnishings will be limited at the Natural Area, as distinct from a more traditional park. Only those improvements that serve to preserve and protect natural resources onsite and minimize and direct the impact of public use will be considered. At this time (prior to Phase III MFSR Concept plan development), no furnishings are recommended.

Site Safety

Demolition and removal of existing house and trailer remains at Granite Creek Flats and other portions of the Natural Area was completed in 1998. "Tank traps" were excavated at Granite Creek Flats in 1998 in order to prevent further vehicular access to the Natural Area. A KC Parks lock was also installed on the jointly maintained gate. Following are remaining safety issues at the Natural Area:

- Discourage uses that cause unsafe site conditions such as firearm use, illegal camping, dumping and motor vehicle use at any portion of the property.
- Discourage activities which cause stream bank erosion, trampling of wetland areas and disturbance to sensitive areas.
- Work with neighbors to report all unwanted activities to the local authorities.
- Do not encourage public access to areas beyond locked gate.

Recommended Monitoring

To assess the long-term health of the Natural Area over time, the following activities are recommended:

- Monitor for establishment and spread of non-native and invasive plant species, using existing KC Parks/KC DNR monitoring and removal programs. Monitor disturbed areas (trails, roads) for weed establishment and remove as feasible (see *Appendix*).
- Use existing KC Parks/KC DNR monitoring projects for long-term collection of resource data on fish, amphibians, native plants, and other wildlife species on site. Specifically, amphibian breeding surveys of beaver pond wetlands and streams may provide better information on the distribution and abundance of amphibian species and the sensitivities of their habitat. Olympic mudminnows, a State Candidate species, may occur in floodplain wetlands and oxbows. Surveys for this species could also provide more information on the quality and use of these habitats.
- Bull Trout Surveys of mainstem Middle Fork Snoqualmie River and likely tributaries as recommended by U.S. Fish and Wildlife Service and Washington State Department of Fish and Wildlife in adherence to listing under the Federal Endangered Species Act.

Community Development

- Coordinate with MTSG planning and development for future public use of the valley as outlined in the MFSR Concept plan, especially in relation to those aspects which have implications for management of the Natural Area.
- Establish partnerships with neighbors, local landowners, civic and environmental organizations, and local schools. Utilize a variety of programs, such as KC Parks' "Adopt-a-Park", KC DNR's "Habitat Partners", MidFORC, and "Friends of the Trail" to encourage and manage volunteer stewardship efforts. Projects could include road decommissioning projects, invasive weed pulls, litter collection, and amphibian monitoring.
- Utilize existing KC Parks/KC DNR programs to formulate a consistent data collection and training program in order to develop, track and interpret long-term, volunteer data collection onsite
- Create a list and description of volunteer projects which could supplement existing site information. Potential volunteer projects could include monitoring for amphibian species, invasive plants, and litter/dumping.

Future Acquisitions

This Natural Area is a key property along the middle reaches of the Middle Fork of the Snoqualmie River. Continuing the Waterways 2000 process of working with neighboring property owners and applying a variety of approaches, including fee simple acquisition, purchase of conservation easements, enrollment in the current use taxation programs (PBRS) could improve linkages between protected areas. Identifying the habitat quality of areas upstream and downstream of the Natural Area as well as the level of threat to them could be used to prioritize future acquisitions. Maintaining and adding to riverside corridors may help to offset the negative effects of previous logging activities. Similarly, maintaining the ecological condition of the Middle Fork from its headwaters to its confluence with the North and South Forks of the Snoqualmie River may reduce impacts of development to fish and wildlife. Parks may consider engaging in land trades with WA DNR or other agencies in order to assist in the consolidation and protection of holdings in the area.

Phasing and Priorities

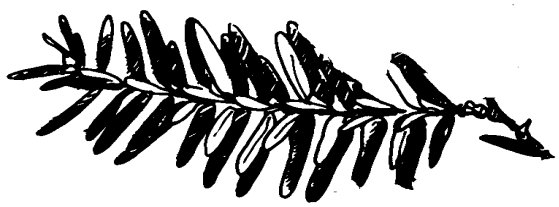
The phasing plan establishes priorities for management activities at the Natural Area. Prioritization is based on providing for public safety and resource protection during implementation and reflect items of short-term (primary) and long-term (secondary) importance. Implementation of recommendations will be funded by annual King County Parks Capital Improvement (CIP) funds, DNR funds, and other applicable funding mechanisms. Parks' capital improvements compete countywide for funding during the annual budget adoption process; therefore in any given year, priority actions may not be funded due to more urgent projects. Implementation of work will be managed by DCFM as the implementing agency for KC Parks. Other entities such as KC DNR would manage stream restoration and smaller projects subject to permit authority by KC Parks. Implementation will be accomplished by either outside contractors, in-house (KC) crews, or by maintenance and/or operational crews and volunteers.

<u>Highest Priority</u>

- Design and installation of low-impact passive water access at Granite Creek Flats
- KC Parks signage at appropriate points
- Continued restoration and enhancement of 200' river buffer throughout Natural Area
- Conifer plantings within riparian and cleared areas

<u>Secondary Priority</u>

- Interpretive signage at Granite Creek
- Installation of barriers along former driveways
- Removal and revegetation of former driveways, installation of erosion-controls
- Improved easement road ditch and culvert system as feasible



Estimated Costs of Parks Capital Improvement Projects

001 - CONSULTANT DESIGN		
Basic A/E Fee	8.50% of MACC	$2,688
Environmental Checklist		$1,000
Grading Permit/SWM Drainage Review		$5,000
Biological Assessment		$12,500
Total 001 - Consultant Design Cost		
		$21,188
003 - CONSTRUCTION		
Highest Priority		
Design and installation of low-impact passive water access		$16,720
KC Parks signage at appropriate points		300
Continued restoration and enhancement of 200' river buffer		N/A
Conifer plantings within riparian/cleared areas		$3,108
Secondary Priority		
Interpretive signage		3,000
Installation of barriers along former driveways		500
Removal and revegetation of former driveways, erosion controls		$1,500
Improved easement road ditch and culvert system as feasible		$3,000
INFLATION (Add percentage if appropriate)	5.00%	$1,216
DESIGN CONTIGENCY	10.00%	$2,433
CONTRACTOR OVERHEAD & PROFIT	15.00%	$3,649
MAXIMUM ALLOWABLE CONSTRUCTION COST (MACC):		**$31,626**
Sales Tax	8.60% of MACC	$2,720
Building Permit Fees	2.00% of MACC	$633
Total 003 - Construction Cost		
		$34,979
005 - CONTINGENCY		
Project Contingency.	10.00% of 001, 003, 004,007, 009	
Total 005 - Contingency Cost		
		$6,317
007 - COUNTY FORCE DESIGN		
Other		$500
Total 007 - County Force Design Cost		**$500**
009 - COUNTY FORCE ADMINISTRATION		
Facilities Mgm't. Admin.	(100 hrs.)	
Total 009 - County Force Admin. Cost		
		$6,500
006 - ART (1% of 001, 003, 005, 007 & 009)		
		$695
TOTAL PROJECT COST		**$70,179**

Part IV - Appendix

Table 3: Priority Invasive Plant Species at Middle Fork Park Natural Area

SCIENTIFIC NAME	COMMON NAME
Hedera helix	English Ivy
Iris pseudocorus	Yellow Iris
Phalaris arundinacea	Reed Canarygrass
Polygonum cuspidatum	Japanese Knotweed
Rubus discolor	Himalayan Blackberry
Rubus laciniatus	Evergreen Blackberry
Solanum dulcamara	Bittersweet Nightshade

Table 4: 1996 Washington State Noxious Weed List/Class A Weeds
Control is mandatory statewide.

SCIENTIFIC NAME	COMMON NAME
Abutilon theophrasti	Velvetleaf
Carduus pycnocephalus	Italian Thistle
Carduus tenuiflorus	Slenderflower Thistle
Centaurea calcitrapa	Purple Starthistle
Centaurea macrocephala	Bighead Knapweed
Centaurea nigrescens	Vochin Knapweed
Crupina vulgaris	Common Crupina
Helianthus ciliaris	Texas Blueweed
Heracleum mantegazzianum	Giant Hogweed
Hibiscus trionum	Venice Mallow
Hieracium pilosella	Mouseear Hawkweed
Hydrilla verticillata	Hydrilla
Isatis tinctoria	Dyers Woad
Mirabilis nyctaginea	Wild Four O'clock
Peganum harmala	Peganum
Proboscidea louisianica	Unicorn-plant
Salvia aethiopis	Mediterranean Sage
Silybum marianum	Milk Thistle
Solanum elaeagnifolium	Silverleaf Nightshade
Solanum rostratum	Buffalobur
Sorghum halepense	Johnsongrass
Spartina patens	Salt Meadow Cordgrass
Zygophyllum fabago	Syrlan Bean-caper

Table 5: 1996 Washington State Noxious Weed List/Class B Weeds
Control is mandatory in all or parts of King County.

SCIENTIFIC NAME	COMMON NAME
Acroptilon repens	Russian Knapweed
Alhagi maurorum	Camelthorn
Amorpha fruticosa	Indigobush
Anchusa arvensis	Annual Bugloss
Anchusa officinalis	Common Bugloss
Cabomba caroliniana	Fanwort
Carduus acanthoides, C. nutans	Plumeless and Musk Thistle
Centaurea biebersteinii, C. diffusa, C. jacea. C. nigra, C. jacea x nigra	Spotted, Diffuse, Brown, Black, & Meadow Knapweed
Cenchrus longispinus	Longspine Sandbur
Centaurea solstitaialis	Yellow Starthistle
Chondrilla juncea	Rush Skeletonweed
Cyperus esculentus	Yellow Nutsedge
Echium vulgare	Blueweed
Euphorbia esula	Leafy Spurge
Hieracium caespitosum	Yellow Hawkweed
Lamium hybridum	Hybrid Deadnettle
Lepidium latifolium	Perennial Pepperweed
Lepyrodiclis holosteoides	Lepyrodiclis
Linaria dalmatica ssp. dalmatica	Dalmatian Toadflax
Lythrum salicaria	Purple Loosestrife
Myriophyllum aquaticum	Parrotfeather
Onopordum acanthium	Scotch Thistle
Picris hieracioides	Hawkweed Oxtongue
Potentilla recta	Sulfur Cinquefoil
Rorippa austriaca	Austrian Fieldcress
Senecio jacobaea	Tansy Ragwort
Sonchus arvensis spp. arvensis	Perennial Sowthistle
Spartina alterniflora, S. anglica	Smooth, Common Cordgrass
Sphaerophysa salsula	Swainsonpea
Torilis arvensis	Hedgeparsley
Tribulus terrestris	Puncturevine
Ulex eropaeus	Gorse

Table 6: 1997 Washington State Noxious Weed List/Class C Weeds Control and containment strongly encouraged.

SCIENTIFIC NAME	COMMON NAME	SCIENTIFIC NAME	COMMON NAME
Aegilops cylindrica	Jointed Goatgrass	*Hyoscyamus niger*	Black Henbane
Anthriscus sylvestris	Wild Chervil	*Hypericum perforatum*	Common St. Johnswort
Artemisia absinthium	Absinth Wormwood	*Linaria vulgaris*	Yellow Toadflax
Cardaria pubescens	Hairy Whitetop	*Matricaria perforata*	Scentless Mayweed
Chaenorrhinum minus	Dwarf Snapdragon	*Phalaris arundinacea*	Reed Canarygrass
Cirsium arvense	Canada Thistle	*Polygonum cuspidatum*	Japanese Knotweed
Cirsium vulgare	Bull Thistle	*Secale cereale*	Cereal Rye
Conium maculatum	Poison-hemlock	*Silene latifolia* ssp. *alba*	White Cockle
Convolvulus arvensis	Field Bindweed	Xanthium spinosum	Spiny Cocklebur
Cuscuta approximata	Soothseed Alfalfa Dodder	*Cardaria draba*	Hoary Cress
Cynoglossum officinale	Houndstongue	*Tanacetum vulgare*	Common Tansy
Daucus carota	Wild Carrot	*Solanum dulcamara*	Bitter Nightshade
Eruca vesicaria ssp. *sativa*	Garden Rocket	*Tamarix* spp.	Saltcedar
Gypsopphila paniculata	Babysbreath	*Verbascum thapsus*	Common Mullein
Hemizonia pungens	Spikeweed		