

Part II - SITE INVENTORY AND ANALYSIS

Topography

A 600-foot difference marks the change in elevation from the lower portions of the Park to the “Grand Ridge” that dominates the site. Topography varies from an extremely steep rise along the southern portion to a few nearly level areas at the higher elevations of the ridge. Smaller hills and valleys are found throughout the site. Along the northern boundary, adjacent to the Issaquah-Fall City Road, a level area with a large wetland spreads across several acres. (See **Figure 4 – Sensitive Areas**)

Much of the southern portion of the site is designated as an Erosion Hazard Area in the King County Sensitive Areas Map Folio. The southwest hillside along the I-90 corridor is cited in the Map Folio as an area of Landslide Hazard.

Trail corridors will be designed to meet gradients recommended in USFS guidelines, which are not steeper than 15 percent. Switchbacks will allow users to climb the steeper slopes at acceptable gradients.

Soils

Alderwood soils predominate. These are gravelly sandy loams that are up to 40 inches deep. Runoff varies from slow to medium and the erosion hazard is moderate to severe. Ovall soils are found in an area near the central ridge and are a gravelly loam, typically found on hilly uplands. Runoff is medium and the erosion hazard is severe. At the northern part of the site, near the Issaquah-Fall City Road, Everett soils (gravelly, sandy loam) predominate. Runoff from these soils is medium to rapid, and the erosion hazard is moderate to severe.

Poorly drained Seattle Muck and Norma soils are found in the low area paralleling the Issaquah-Fall City Road. With less than two percent slope, this depression has hydric soils consisting of black sandy loam about 10 inches thick, with subsoil that can extend to a depth of 60 inches or more. Permeability is moderately rapid and the seasonal water table is at or near the surface. Runoff is slow and the erosion hazard is slight.

Trail layout will have to avoid the site’s highly erodible soils to the greatest extent possible and appropriate surface materials will have to be used where needed. Impacts to surrounding soils and vegetation should be minimized during trail construction and may include work only during the drier summer months. Trail use may be similarly constrained by weather conditions to prevent erosion.

Hydrology

Surface Water

The greater part of the Park drains to Issaquah Creek, either along the East Fork of the creek (stream #08.0183), which flows at the foot of the steep hills along the southern property edge, adjacent to I-90, or the North Fork (stream #08.0181), which drains west-facing slopes further north. The North Fork of Issaquah Creek is classed in the King County Sensitive Areas Map Folio as a Class 2 stream with salmonids and it flows into Lake Sammamish, which is part of the Cedar River Basin. Alligator Creek (08.0181Bd) drains across a corner of the Grand Ridge site and joins the North Fork of Issaquah Creek.

A creek commonly known as Samdog Creek (08.0190) flows from the southeastern corner of the site to join the East Fork of Issaquah Creek (08.0183) near I-90 just east of High Point. This is a Class 2 stream and its two upper elevation tributaries (08.0190D and 08.0190C) are likely Class 2 without salmonids. Many other small drainages, unnamed but numbered, exist along the southern edge of the property and are considered Class 3

streams. Further study would be necessary to determine the class and appropriate buffers for these streams if trail plans were to impact their corridors.

Canyon Creek (07.0382) also begins in these hills, flowing north, but heads northeast to join Patterson Creek near the Redmond-Fall City Road, and is in the Snoqualmie River Basin. Canyon Creek is a Class 2 stream with salmonids and water quality is considered excellent as it enters Patterson Creek.

Numerous other small creeks, many of which are intermittent and identified only with numbers, drain the site's hillsides. Where trail segments will cross streams, appropriate measures will have to be taken to preserve water resources and habitat conditions.

Wetlands

A Class 2 wetland has been identified along the northern portion of the site, just south of the Issaquah-Fall City Road. This complex of forested wetlands and uplands has a wide variety of vegetation, from western red cedar to black cottonwood, salmonberry, devil's club, and skunk cabbage. Drainage is to Canyon Creek, off site to the northeast, although it is possible that there is a connection with the adjacent larger wetland that drains west to the North Fork of Issaquah Creek. The onsite portion of the wetland is roughly 10 acres and serves a number of functions. It collects drainage from two streams, provides water quality improvement by filtering the flow through dense vegetation, provides base-flow support for Canyon Creek, and provides attenuation for stormwater. Much debris from earlier logging activities has accumulated here and the area is nearly impenetrable. There is no open water component. Further studies may be required by permitting agents if a future trail route is designed that passes through any of the buffer area.

A smaller wetland has been identified at roughly the 500-foot elevation near the center of the Park. Although not included in the Sensitive Areas Map Folio, it is cited in the environmental impact statement (EIS) for the Grand Ridge/Issaquah Highlands development (1995). A network of wetlands and small waterways that may be connected exists along the east side of the park property in the narrow "neck" adjacent to the former Black Nugget Ranch. A smaller complex of wetlands exists near the edge of the urban portion of the Issaquah Highlands development, just south of the former Black Nugget Ranch, one portion of which acts as head waters for a small, unnamed waterway that drains to the North Fork of Issaquah Creek. Another small complex exists south of the road that connects urban and rural Issaquah Highlands. Many seeps along the hillsides are considered wetlands in different places throughout the site.

The interconnected nature of the Park's wetlands, their proximity to streams and headwaters of streams, and the relatively large size of some of the wetlands contribute to high resource values for biological support, water quality improvement, erosion control, and flood and stormwater control. Streams and wetlands would require buffers, the setbacks of which would vary according to their classifications .

It may not be possible to build a north-south trail without passing through at least a portion of the buffer of the major wetland along the Issaquah-Fall City Road. Other wetlands and/or their buffers also lie along the north-south axis of the park through which a trail would pass and further investigation of these areas will be necessary before trail planning can continue to Duthie Hill Park.

Vegetation

A wide variety of vegetation is found within the study area, all of which is typical of Puget Lowlands second-growth forests. Douglas fir, hemlock, and western red cedar are the predominant conifers and are found in stands throughout the site. Black cottonwood, big leaf maple, and red alder dominate the deciduous trees, while vine maple, salmonberry, red elderberry, Oregon grape, and salal are found in the understory. Groundcover varies from a rare carpet of moss near one wetland to swordfern along drier hillsides. Skunk cabbage is found at a number of wetland areas. Trillium and other low-growing northwest plants are found in pockets along the

forest floor. Mosses, lichens, and mushrooms are found throughout the site as a result of the moist conditions, low level of sunlight, and abundance of decaying vegetation. A moderate snag component exists within some of the older stands.

Invasive plants are found at different spots throughout the site where birds have left seeds, the most obvious of which are holly seedlings. These will continue to grow unless manually removed. Of particular concern will be the potential for non-native, invasive plants to become established along the western edge of the park where it borders the Issaquah Highlands development. According to the Temporary Erosion and Sedimentation Control Plan (TESCP) for the Issaquah Highlands development, contractors building homes in this area will be responsible for monitoring edge conditions for two years after final acceptance by the City of Issaquah. This transitional zone should also be monitored by County staff as well as Park users for invasive plants as well as for trees and shrubs suffering from exposure at the edge of clearing. King County Parks staff will have to work with the City of Issaquah in monitoring and dealing with problem trees along the Park's edge.

Along the proposed south-to-central trail, interpretive material could be installed that would identify native plants and the dynamics of plant communities. Shade-tolerant plant species will be encouraged throughout the site, especially in wetland areas. Increasing stands of conifers where appropriate will result in additional year-round canopy for water retention and wildlife cover. Large logs already felled in wetlands areas will be retained to maintain amphibian habitat.

Additional vegetation will be planted within the site for structure and diversity. Mid-story trees and shrubs such as yew, cascara, huckleberry, salmonberry, and elderberry could be planted where appropriate in accordance with the forest management plan developed in conjunction with the DNR.

Clearing for a trail will have to avoid major trees and snags that provide habitat and forage for birds. Clearing of mid-story vegetation and groundcover will have to be performed in a way that minimizes disturbance of soils.

Wildlife

As would be expected in such expansive vegetation with numerous small streams present, the site is home to a variety of wildlife. Black bear, coyote, mule deer, barred owls, raccoon, mountain beaver, and pileated woodpecker, Pacific tree frog, red-legged frogs, and Pacific giant salamander are known to live in the area. Based on field investigation and available literature, approximately 80 bird species are expected to use the site at different times of the year. The majority of these are passerines (perching birds), such as swallows, chickadees, finches, and sparrows. Eleven species of raptors are expected to nest or forage on the site. Waterfowl populations are likely limited due to the lack of open water.

Up to 38 species of mammals may occupy the site. The most common and abundant of these are small mammals, such as shrews, deer mice, and coast moles. Squirrels and chipmunks have been observed by local residents in the area, as well as cougar, bobcat, and elk. Although no threatened, endangered, or sensitive species have been documented on the site, the U.S. Fish and Wildlife Service acknowledges that three species may potentially occur here, including bald eagle, northern spotted owl, and marbled murrelet. The presence of great-horned owls, however, makes it unlikely that spotted owls would be found. Any suitable nesting habitat within 50 miles of saltwater supports the potential for marbled murrelets. Eagles typically have a five-mile range from their nests and they have been documented at Lake Sammamish State Park, roughly two miles west of Grand Ridge. Pileated woodpecker and great blue heron, both state priority species, have been documented on the site by local residents and through field investigations, although no nests have been seen.

Wildlife corridors are acknowledged as very important within the site as well as off site in undeveloped lands and are generally thought to follow wetlands and stream corridors. However, the EIS for the 1995 Grand Ridge project states that the only indications of regularly traveled routes were along the transmission line easements. (Appendix F)

Trail planning will include considerations for wildlife corridors, especially in the vicinity of small streams and through buffer zones. Warnings should be posted about the presence of cougars and black bears. Interpretive signs could present details of animal and bird life in the Park. Pets should be required to be on leashes.

Fisheries

Canyon Creek leaves the Grand Ridge area site to flow northeast to Patterson Creek, which in turn joins the Snoqualmie River. Salmonid populations in the river include chinook, coho, pink, and chum salmon, steelhead, sea-run cutthroat trout, and several resident trout species. The onsite portion of the Canyon Creek basin includes the only streams within the park that support anadromous salmonids, namely Canyon Creek, Kody Creek, and the lower reaches of four small, unnamed tributaries (numbers 07.0382Bd, 07.0302Bc, 07.0382Bb, 07.0382Ba, and 07.0382A). Canyon Creek is rated Class 2 with salmonids and provides excellent fish habitat, with a riparian zone primarily composed of mature second-growth forest. Over 30 percent of the onsite reach consists of well-distributed pool habitat with abundant large woody debris.

The East Fork of Issaquah Creek flows west to Issaquah Creek, discharging into Lake Sammamish, which in turn drains to Lake Washington through the Sammamish River. The East Fork supports significant runs of coho, chinook, and sockeye salmon, and the mainstem supports winter steelhead as well. The only onsite fish-bearing stream in this basin is Samdog Creek, rated Class 2 with salmonids, and it supports resident cutthroat trout. While no fish have been documented in the uppermost reach, resident cutthroat trout were found in the lower onsite reach. All other onsite East Fork tributaries contain impassable cascades that act as barriers to anadromous fish migration and most are intermittent.

The North Fork of Issaquah Creek also has impassable cascades downstream that prevent anadromous salmonids from reaching the onsite portion of the basin. Alligator Creek, which flows in part through Grand Ridge Park, is rated Class 2 with salmonids, and supports resident cutthroat trout. Fish populations here are thought to be limited by extremely low summer flows.

Several small streams will have to be crossed in the building of a low-impact trail through the south-to-central portion of the site and additional small streams will have to be crossed when the trail is extended further north. Because of the nature of the topography, with steep slopes preventing the presence of migrating fish, none of the reaches to be crossed are thought to have salmonids present. However, preserving water quality within the Park site will be important to protecting fish habitat downstream.

Land Use

Historic Use

Early inhabitants of the region were Native American groups from the Sammamish and Snoqualmie tribes who used the area for gathering roots, plants, and berries, as well as for hunting game. What is now the I-90 corridor served in earlier centuries as a trade route connecting tribes living in the mountains and east of the Cascades with those living in the Puget Lowlands to the west. However, as Europeans moved into the area in the late 19th century, much of the land was bought for logging and mining purposes, and local tribes were either moved to reservations or withdrew from the immediate area.

Beginning in the late 1800s and continuing through the early 1900s, the site was logged for its timber. Coal mining activities occurred during the same time along the slopes of the southwestern corner, and this area is included in the Sensitive Areas Map Folio as a coal mine hazard area. Aside from earlier forestry and mining activities, the area has seen little activity.

Residential development in the Issaquah area that began in earnest after the 1970s made this area more accessible and therefore more popular with recreationists. Already by that time trails had been created along the upper ridge, from the former Black Nugget Ranch across the site to connect with the BPA powerline trail, and these became increasingly frequented by hikers, equestrians, and bicyclists. With improvements to I-90 in the late 1980s, further attention was focused along the highway's corridor and King County Parks joined other organizations such as Mountains-to-Sound Greenway, Issaquah Alps Trail Club, and King County DNR to preserve wildlife habitat and forested lands in the area. In 1993 the Metropolitan King County Council amended its Regional Trail Plan to include a soft-surface equestrian trail through what is now Grand Ridge Park because of the site's traditional use by horseback riders.

Current Use

Some of the site's existing trails were developed by local users and one east-west trail was created as part of a telephone company's surveying route. An old railroad grade along the southern edge of the park was originally created by Northern Pacific Railroad and now serves as a conduit for buried fiber optic telecommunications cable. Along the western portion of the site is the BPA easement, where a trail has traditionally been used by equestrians, but as this use is prohibited in urban areas, horses will no longer be allowed. In the steeply rising southwest corner of the park, topographic variations present challenges to mountain bicyclists who have created trails in this area to meet their needs in recent years.

User-made trails once existed within the Issaquah Highlands site but have been largely discontinued because of clearing and grading activities as well as trespassing issues.

Equestrians have tended to use trails established years ago by riders from the Black Nugget Ranch, along the BPA line, and across the site on the east-west segment created by the phone company. Horseback riders have helped to create other trails and have worked to maintain them. Hikers have shared the paths made by equestrians for recreational purposes such as photography and wildlife observation. All three user groups support continuing trail use on the site.