BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF APPROVING A REFINEMENT PLAN FOR THE COOPER MOUNTAIN TARGET AREA AS OUTLINED IN THE OPEN SPACE IMPLEMENTATION WORK PLAN	))))	RESOLUTION NO. 96-2275A Introduced by Mike Burton Executive Officer

WHEREAS, In July 1992, Metro completed the Metropolitan Greenspaces Master Plan which identified a desired system of natural areas interconnected with greenways and trails; and

WHEREAS, at the election held on May 16, 1995, the electors of Metro approved Ballot Measure 26-26 which authorizes Metro to issue $135.6 million in general obligation bonds to finance land acquisition and capital improvements pursuant to Metro's Open Spaces Program; and

WHEREAS, Cooper Mountain was designated as a Greenspace of regional significance in the Greenspaces Master Plan and identified as a regional target area in the Open Space, Parks and Streams Bond Measure; and

WHEREAS, in November 1995, the Metro Council adopted the Open Space Implementation Work Plan, which calls for a public "refinement" process whereby Metro adopts a Refinement Plan including objectives and a confidential tax lot specific map identifying priority properties for acquisition; and

WHEREAS, Resolution No. 95-2228A authorizes the Executive Officer to purchase property with accepted acquisition guidelines as outlined in the Open Space Implementation Work Plan, now therefore,

BE IT RESOLVED,

That the Metro Council adopts the Cooper Mountain Refinement Plan, consisting of objectives and a confidential tax lot specific map identifying priority properties for acquisition, authorizing the Executive Officer to begin the acquisition of property and property rights as detailed in the Open Space Implementation Work Plan adopted in November, 1995 and in Resolution No. 95-2228.

ADOPTED by Metro Council this 15th day of February, 1996.

Jon Kvistad, Presiding Officer

Approved as to Form:

Daniel B. Cooper, General Counsel

Staff Report

CONSIDERATION OF RESOLUTION NO. 96-2275A, FOR THE PURPOSE OF APPROVING A REFINEMENT PLAN FOR THE COOPER MOUNTAIN TARGET AREA AS OUTLINED IN THE OPEN SPACE IMPLEMENTATION WORK PLAN

Date: February 1, 1996 **Presented by: Jim Desmond**
Charles Ciecko

BACKGROUND AND ANALYSIS

The target area description in the Bond Measure Fact Sheet (authorized by Council Resolutions 95-2113, 94-2050 and 94-2029B) was as follows:

> "Cooper Mountain. Acquire 428 acres of forest natural area".

In the 1992 Green Spaces Master Plan, the target area was described as follows:

> COOPER MOUNTAIN (Tualatin River and Fanno Creek watersheds)
> One of the highest points in the Fanno Creek watershed. Some uncommon ponderosa pine stands remain. Remnants of forested headwaters of numerous streams draining into the Tualatin River are rapidly being lost or altered by surrounding development.

Target Area Description:

Cooper Mountain lies within Washington County and is approximately three miles southwest of downtown Beaverton. The target area is roughly bounded by Murray Boulevard on the east, Farmington Road on the north, Tile Flat Road on the south and Grabhorn Road on the west.

The mountain rises to an elevation of 700' and has historically been a part of the rural farm and forest activities of the Tualatin Valley. In recent years however, the north and east slopes, which are within the Urban Growth Boundary, have been developed with single family homes. Currently, additional portions of the north and east quadrants of the mountain are being studied for potential inclusion in the Urban Growth Boundary in the 2040 planning process. There are headwaters to a number of small creeks on both the north and south portions of the mountain. Timber harvest and aggregate mining have also been factors impacting the natural habitat conditions on the mountain.

The initial biological assessment identified seven existing natural areas within the Cooper Mountain target area with approximately 1200 to 1600 total acres. See Attachment "Evaluation of Wildlife Habitat Value..." prepared by Esther Lev, an independent biological consultant.

Refinement Process:

The Open Space Implementation Work Plan adopted by the Metro Council in November, 1995, required that a Refinement Plan be submitted to the Council for approval for each target area. The Refinement Plan will contain objectives and a confidential tax lot specific map identifying priority properties for acquisition, enabling Metro to begin the acquisition of property and property rights as detailed in the Open Space Implementation Work Plan and in Resolution No. 95-2228. Resolution No. 95-2228 "authorizes the Executive Officer to acquire real property and property interests subject to the requirements of the *Acquisition Parameters* and *Due Diligence* guidelines of the Open Space Implementation Work Plan."

Public involvement - A variety of public information and involvement activities were conducted to ensure public awareness and input regarding the Cooper Mountain Refinement Process. In October of 1995, twelve key stakeholders were interviewed to identify key issues pertaining to the Cooper Mountain greenspace area. These interviews included representatives of Friends of Cooper Mountain, property owners, government agencies, and natural resource experts. Subsequently, Metro staff and consultants met with representatives of key stakeholder groups, in a series of three meetings, to provide information on the proposed open space plans and solicit input. These groups included Friends of Cooper Mountain, area neighborhood associations and CPOs and natural resources experts. In addition to the stakeholder interviews and meetings, discussion through dozens of phone calls and individual meetings were conducted by Metro staff with representatives of Friends of Cooper Mountain and various government agencies.

Finally, a public workshop was held on January 9th, 1996 to present Metro staff's proposed plans for Cooper Mountain. The workshop was well attended with approximately 100 participants (over 3900 notices were mailed to area residents and other interested stakeholders). A questionnaire (see Attachment) regarding preferences on regional resource key elements and site specific connectivity issues was distributed, eliciting 27 responses. The results are summarized as follows: *

Q. #1. Prioritization of Key Elements	First Preference	2nd	3rd	4th	5th	6th
Large size	42%	33%	4%	0%	17%	4%
Watershed Protection	31%	35%	23%	8%	5%	0%
Linkage issues	15%	23%	31%	19%	8%	4%
Oak/Madrone habitat	8%	4%	29%	21%	17%	21%
Public access & education	4%	8%	16%	32%	36%	4%
Views "in and out"	0 %	5%	0%	13%	17%	65%

* Not all respondents answered all questions - the number of responses varies from 18 to 26.

Q. #2 Desired Linkages	First Preference	2nd	3rd	4th	5th
N and NE to neighborhoods	38%	17%	17%	11%	17%
SW to Tualatin River Refuge Area	30%	25%	20%	5%	20%
Link NW to Jenkins Estate	20%	35%	25%	10%	10%
E to BPA trail & Murray Hill	11%	11%	17%	42%	21%
SE to Scholls Ferry and BPA trail	5%	17%	26%	26%	26%

Additionally, questions and comments from the floor are summarized in the Attachment "Cooper Mountain Refinement Plan Meeting Notes".

Natural Resources - In addition to the report by Ester Lev, a Metro staff biologist evaluated the same seven sites based on the regional target area criteria (see Attachment "Evaluation of Target Area Based on Regional Target Area Criteria"). These two evaluations are the key components leading to the staff's recommended Refinement Area.

Regional Parks and Greenspaces Advisory Committee

A presentation of the Staff Report was given by Metro Staff and its consultant at a public meeting in the Metro Council Chambers on January 16th, 1996. This analysis and resulting objectives were approved by a unanimous vote of the full Regional Parks and Greenspaces Advisory Committee. Several residents of the Cooper Mountain area expressed their views on the report.

Site 5 (southern area of Cooper Mountain-see attached Map) for the Cooper Mountain Refinement Plan accomplishes several important objectives of the Bond Measure and Greenspaces Master Plan. Its approximate 800 to 1200 acres includes a variety of habitat types, evidenced by the relatively undisturbed closed canopy cedar/fir areas and unique oak/madrone forest characteristics, wetlands, crop fields, meadows and recently cleared portions. The entire watershed of a perennial stream which flows to Lindlow Creek and the Tualatin River originates in the area, and four intermittent streams may become perennial if segments of the forest canopy are restored. The Site is the last opportunity for Metro to create a major assemblage in the area that will be accessible to the greatest number of citizens of the region, due to several major roads in close proximity. The Refinement Plan articulates a long range goal of a dynamic regional natural area anchored by a large contiguous assemblage of 700 acres with the potential for numerous physical linkages, financial and management partnerships. The proposed Refinement Plan focuses on the crest and southern portion of the mountain (roughly Site 5 - see attached map) and is directly responsive to the policies and natural area selection criteria contained in the Greenspaces Master Plan.

In addition, a number of citizens from the Cooper Mountain Area strongly support Metro's acquisition strategy to focus on Site 1. According to the Staff's analysis, Site 1

does not meet all the acquisition criteria for a regional target area as outlined in the Open Spaces Bond Measure and the Greenspaces Master Plan.

The following are specific objectives of the Cooper Mountain proposed Refinement Plan:

Tier I.

Establish a regionally significant natural area with a core component of 700 acres that will support a diversity of plant and animal life and sustain key biological features referred to as the Cooper Mountain Refinement Area. The initial acquisition goal will be 428 acres. Attainment of this acquisition goal will contribute to the protection and enhancement of Cooper Mountain's unique woodland aspects and also the Tualatin River water quality by protecting the headwaters of its tributaries.

Protect areas that allow scenic vistas both "in and out" of the Cooper Mountain Refinement Plan Area.

Tier II.

Provide linkages from the Cooper Mountain Refinement Area to other trails, greenways, parks, habitat areas, schools and community centers. Particular emphasis should be given to connections with the Tualatin River Wildlife Refuge, the Jenkins Estate, and local neighborhoods.

Work with adjacent rock and quarry owners and local jurisdictions on the long term reclamation plans for those quarry areas with the goal of expanding the open space potential of the Refinement Area.

Partnership Objectives:

Develop partnerships to assist in implementing the long range vision for the Cooper Mountain Refinement Plan. Metro will work with appropriate local governments in supporting the concept of this Refinement Plan and the regional natural area site on the south slope of Cooper Mountain. In addition, Metro will work in cooperation with local governments to identify additional funding sources, devise cooperative management agreements and similar inter-governmental partnerships.

Executive Officer's Recommendation

The Executive Officer recommends passage of Resolution No. 96-2275A.

BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF APPROVING A REFINEMENT PLAN FOR THE COOPER MOUNTAIN TARGET AREA AS OUTLINED IN THE OPEN SPACE IMPLEMENTATION WORK PLAN	))))	RESOLUTION NO. 96-2275A Introduced by Mike Burton Executive Officer

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WHEREAS, Resolution No. 95-2228 authorizes the Executive Officer to purchase property with accepted acquisition guidelines as outlined in the Open Space Implementation Work Plan, now therefore,

BE IT RESOLVED,

That the Metro Council adopts the Cooper Mountain Refinement Plan, consisting of objectives and a confidential tax lot specific map identifying priority properties for acquisition ~~as described in the Staff Report and Refinement Map~~, authorizing the Executive Officer to begin the acquisition of property and property rights as detailed in the Open Space Implementation Work Plan adopted in November, 1995 and in Resolution No. 95-2228.~~—A copy of the Staff Report and Refinement Map are attached and hereby incorporated by this reference.~~

ADOPTED by Metro Council this _____ day of _____, 1996.

_____
Jon Kvistad, Presiding Officer

Approved as to Form:

_____
Daniel B. Cooper, General Counsel

Staff Report

CONSIDERATION OF RESOLUTION NO. 96-2275A, FOR THE PURPOSE OF APPROVING A REFINEMENT PLAN FOR THE COOPER MOUNTAIN TARGET AREA AS OUTLINED IN THE OPEN SPACE IMPLEMENTATION WORK PLAN~~ADOPTING TARGET AREA BOUNDARIES AND OBJECTIVES FOR COOPER MOUNTAIN~~

Date: February 1, ~~January 29~~, 1996 **Presented by: Jim Desmond**

Charles Ciecko

BACKGROUND AND ANALYSIS

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Protect areas that allow scenic vistas both "in and out" of the Cooper Mountain Refinement Plan Area.

Tier II.

Provide linkages from the Cooper Mountain Refinement Area to other trails, greenways, parks, habitat areas, schools and community centers. Particular emphasis should be given to connections with the Tualatin River Wildlife Refuge, the Jenkins Estate, and local neighborhoods. ~~This may be accomplished through easements, leases, dedications, donations and other property owner agreements in addition to fee acquisitions and local land use designations.~~

Work with adjacent rock and quarry owners and local jurisdictions on the long term reclamation plans for those quarry areas with the goal of expanding the open space potential of the Refinement Area.

Partnership Objectives:

Develop partnerships to assist in implementing the long range vision for the Cooper Mountain Refinement Plan. Metro will work with appropriate local governments in supporting the concept of this Refinement Plan and the regional natural area site on the south slope of Cooper Mountain. ~~through complementary land use policies.~~ In addition, Metro will work in cooperation with local governments to identify additional funding sources, devise cooperative management agreements and similar inter-governmental partnerships.

Executive Officer's Recommendation

The Executive Officer recommends passage of Resolution No. 96-2275A.

BEFORE THE METRO COUNCIL

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ADOPTED by Metro Council this _____ day of _____, 1996.

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Approved as to Form:

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Executive Officer's Recommendation

The Executive Officer recommends passage of Resolution No. 96-2275.

EVALUATION OF THE WILDLIFE HABITAT VALUE OF SEVEN SITES ON COOPER MOUNTAIN

Submitted to Metro Parks and Greenspaces
Prepared by Esther Lev
January 6, 1996

TABLE OF CONTENTS

INTRODUCTION

Seven natural areas sites were surveyed on or proximate to Cooper Mountain. These seven sites were evaluated for their ecological significance, as a task of the Metro Parks and Greenspaces land acquisition process.

Urban natural areas provide ecological and environmental quality values. Acquisition or protection of these sites can help to maintain biodiversity. Biodiversity has often been described as high species diversity-the greater the number of species found in an area the greater the biodiversity. On a regional scale, it makes more sense to concentrate on species richness-on quality rather than quantity. For instance, it may not be of greater ecological value to have an area with seventy species of plants, half of which are exotic or problem species, than to have a site with only twenty plant species that are all native and function as a healthy vegetative community. In the case described above, the site with less species will probably provide a higher value for wildlife species.

Critical factors in predicting the likelihood of the presence of particular species or levels of total species richness include: amount of area, the presence of essential resources, such as food, water and nest-building materials; heterogeneity of environments; and occurrence of competitors, predators and diseases (Usher 1986).

The following are descriptions of the six criteria evaluated at each of the seven sites for their ecological significance and wildlife habitat value;

Area Size
Edge vs. Interior Habitat
Fragmentation
Structural Diversity
Connectivity
Pattern of Overall Landscape Change

Area Size

Size of natural areas or amounts of a given type of environment present in a landscape directly affect colonization by individuals, persistence of individuals, and breeding units and number of species in the area (Morrison, Marcot, Mannan, 1992). Habitat area (size) is one of the best predictors of the number of terrestrial wildlife species as a whole and of birds and amphibians separately. Vizyovain, in his 1982-1984 studies of woodlots and forests in Czechoslovakia, found that mammal and reptile occurrence can be correlated most closely with degree of habitat isolation. He concluded that the optimum minimum size for managing land vertebrate communities in urban woodlots is 20-30 ha (49 - 74 acres). Other studies in England and the United States have found similar results (Galli,1976, Robbins 1979, Whitcomb 1981). Neo-tropical migrants (long distance insect-feeding bird migrants that winter in the New World tropics) only tend to occur in larger areas of contiguous forest. They may require forested areas 30 to greater than 100 ha (75 - 247 acres) in size, areas much greater than their minimum territory sizes.

Most existing urban and suburban parks are unsuccessful as avifaunal reserves, probably as a result of their combination of small size, increasing isolation and high level of human-related disturbances (Lynch and Whitcomb, 1978). On the other hand, short-distance migrants that have adapted to survival in edge habitats and permanent resident species tend to maintain their populations despite urban development and associated forest fragmentation. (Robbins 1979)

Edge vs. Interior Habitat

It was once thought that a mosaic of highly contrasting plant communities like pasture, hedgerow and forest, enhanced the wildlife habitat value of an area. The logic continues that more habitat types, would produce more wildlife species and hence greater biodiversity. Further research has raised the question whether the quality of each habitat decreases in value as the size lessens, causing the transition zones or edges between them to increase. In between any two plant communities (habitat), or a plant community and a development (houses, roads) a transition or edge habitat is created. Edge habitats provide different character and properties than a homogeneous ecological stable area, such as forest interiors. Edge habitats are often exposed to more sun, wind, cold and introduction of exotic plant species. For some wildlife species, mortality rate will be greater along the edge because of increased exposure to predation, nest parasites, sun, wind, or limited cover from rain and snow. Other species, including many predators, prefer edge or ecotonal to forest interior habitats. Generally, the narrower or smaller the natural area parcel, the higher the ratio of edge to interior species. Interior species will predominate in the center of a wider site. Examples of species tending to occur in portions of forests far from edges (interior areas) include the varied thrush, Townsend's warbler, and goshawk.

Disturbance-tolerant species are often abundant in habitats with paths and roads, as well as those adjacent to agricultural fields and residential development (Soule, 1991). Long-range migratory songbirds (neo-tropical migrants) nesting in forests are particularly impacted by clearing and edge creation (Askins, 1987). Nest parasitism and predation increases for as much as 600 m into a stand (Gates, Gysel, 1978), effectively eliminating functional interior forest habitat in small stands. Potentially, one of these effects is competition between edge and interior species, where species that use both edge and interior habitat can have a competitive advantage over species that are more dependent on the forest interior.

Fragmentation

Habitat fragmentation is one of the greatest threats to biodiversity worldwide (Burgess and Sharpe 1981, Noss 1983, 1987, Harris 1984, Wilcox and Murphy, 1985). Construction of roads, houses, larger developments, timber harvesting and agriculture can all fragment habitats. Fragmentation is often considered to have two components: (1) decrease in some habitat type or perhaps all natural habitat in a landscape; and (2) apportionment of the remaining habitat into smaller more isolated pieces (Wilcox et al. 1986). As discussed earlier, as parcel sizes decrease so does the quality and utility of the habitat for specific wildlife species.

As the landscape becomes more fragmented and habitat conditions become influenced by housing, timber harvesting and agriculture, the habitat begins to favor wildlife species that prefer mixed habitat type conditions. These species either require multiple habitat types or find the unique conditions found in ecotones –the transition zone between two habitat types – the most suitable for foraging and reproduction. Some species are rarely found outside of ecotones. Other groups of species that are commonly found in ecotones are only utilizing them as secondary habitat and spend most of their time in either of the habitat types that form the edge. In some cases, the areas characterized by forest land intermixed with clearings, pastures, and agricultural fields can promote high species richness and high number of individuals, given adequate size and shape of each habitat type.

Examples of species found in mixed habitat areas are (1) red-tailed hawks that nest in mature trees and forage in open areas such as pastures and (2) song sparrow that utilize dense shrubs common at the edges of forest and field habitats. Therefore, it is important to have a diversity of habitats, within a landscape mosaic; however, each of the areas must be

of large enough size to provide high value habitat. In the Pacific Northwest, "edge effect" is commonly assumed to occur 150m (500 ft) into forest patches from a forest-opening interface (Diaz and Apostol 1992).. That part of the forest not influenced by edge is considered interior forest habitat. Much of the forested habitat in the Portland metro region is second-growth Douglas fir in patches too small to provide interior habitat. The area of the remaining island or patch of forest habitat combined with the shape of the stand determines how much interior habitat remains.

Structural Diversity

In addition to size, degree of isolation and impacts of edge effect, the various layers of habitat available within a site are also important to wildlife habitat value of a site. These various layers, both vertical and horizontal, are call structural diversity. A stand of trees must have a sufficient mix of biotic (plants, animals, living things)and abiotic (water, rocks, minerals, soil) components along with a large enough area to support the home ranges of species with limited dispersal capability (Lemkuhl and Ruggiero, 1991). Structure, including large trees, snags, downed and dead wood, and a wide range of plant species at all canopy levels, is an important component of overall natural area quality (Ambuel and Temple, 1983).

Connectivity

How a specific natural area fits into the larger landscape influences the quality of the habitat. .All animal species require food, water, shelter and a place to breed. Birds are very mobile and can find all these elements by flying from area to area. Roads, parking lots, houses, fences, domestic animals and lack of protected passage are large obstacles for mammals, amphibians and reptiles. If one site can not provide all of the required elements, it must situated adjacent to or accessible by safe passage other areas that providing the missing elements.

Pattern of Overall Landscape Change

The sixth criteria may be the most critical yet the most difficult to conceptualize. The landscape mosaic has an ability to change overtime, where different patches within the landscape will be at different stages of successional sequence. It is important to look beyond the successional stage and structure of a landscape that one sees today and visualize what the same space, if left to grow (with little human intervention), will look like, and how it will function in fifty or more years. Changes to the habitat structure, form and function over time must be evaluated for each individual site, as well as how the successional sequence and changes of the entire site or patch impact and fit into the adjacent and regional landscape.

An urban landscape is composed of a variety of elements; forest, streams, rock outcrops, meadows, wetlands, cultivated fields, roads and structures. Patches of each of these elements within the landscape are continually at different successional stages. Nevertheless, over a long term, the landscape may be stable, losing biomass or accumulating biomass. Over long-term gradual change, short-term conversions of one landscape element to another take place, often at a rapid rate (Gormon,1986). For example, prior to timber extraction, a site was vegetated with a mixed 50 - 70 year old coniferous deciduous forest. Within one year of the timber extraction, the site will be covered with weedy species and small woody shrubs will begin to establish. After 5 years, 4 ft. red alder and bigleaf maple trees will begin to establish themselves. If the site has been replanted there will also be 2-3 ft. conifers interspersed. At the ten year mark, the alder and maple will be 8-12 ft. and the planted conifers will be about 6-8 ft. At 20 years,

conifers will begin to establish in the natural system amongst tall alder and bigleaf maple, the planted forest will begin to look like a mixed coniferous/deciduous forest. At fifty years, portions of the forest begin to look like Forest Park in 1995. In fifty years, portions of Forest Park will look more like some of the 100 year old forests on Mt. Hood.

As a site transitions from cleared to mature forest, it provides habitat for different wildlife species at each phase. The first year or two after clearing provides critical feeding habitat for deer and elk. This can also be good habitat for some small mammal species as long as there is contiguous cover for moving between one area and the next and safe passage to adjacent more mature forest areas. Species such as the Pileated woodpecker will generally only be found in older coniferous forests with large snags.

It is critical to evaluate a site on its habitat potential over landscape time in addition to current habitat value and structure. Timber harvesting and clearing land for pastures are temporary changes in the succession of a site while roads, impervious surfaces, structures and fences are more permanent forces that can significantly and permanently alter the landscape dynamic and value.

METHODOLOGY

Each of the seven sites was visited one or more times in September and October 1995. Field notes on plant species, wildlife observed, habitat condition, presence of drainage, water features, adjacent lands and restoration and rehabilitation were taken during walks through each site. A map of the Cooper Mountain area including all seven sites and the Tualatin River, indicating topography, drainages and roads, was used to evaluate the larger landscape and watershed relationship of each of the seven sites. A literature review of articles on biodiversity, urban wildlife habitats, and fragmentation was conducted. Information from the literature review in conjunction with field data were used to formulate the recommendations contained in this report.

RESULTS

Descriptions of each of the seven sites are discussed in the following section. Acreage figures given for each of the seven sites are approximations based upon all contiguous undeveloped lands.

Site 1 is approximately 53 acres. It is comprised of a second growth coniferous forest that was logged approximately 50 years ago. Also contained within the site is a small pocket of bigleaf maple (*acer macrophyllum*) and red alder (*alnus rubra*), which are the plants that have established since the last time the area was cleared. The absence of conifers in this area may suggest that after clearing the trees, the area was used for livestock grazing. Douglas fir (*pseudotsuga menziesii*) is the dominant tree species with western red cedar (*thuja plicata*) and red alder scattered throughout. Tree ages range between 35-70 years old. The trees are generally 10-18 inches dbh, ranging to up to 28 in. dbh. Within the wetter, drainage areas western red cedar is the dominant tree species. A small intermittent drainage which form the headwaters of Johnson Creek flows through the center of the site.

The shrub layer is composed of vine maple (*acer circinatum*), Oregon grape, (*berberis repens*), salal (*gaultheria shallon*) and oceanspray (*holodiscus discolor*). Young western red cedar are common throughout the shrub canopy, indicating good recruitment

(reproduction) of the mature cedars on the site. Salmonberry (*rubus spectabilis*) and sword fern (*polystichum munitum*) are dominant along the drainage.

The site provides high quality habitat for many of the native bird species. Black-capped chickadee, pine siskin, cedar waxwing, golden-crowned kinglet, brown creeper, American crow and cedar waxwing were observed during the site visit. Pileated woodpecker holes were also observed. The isolated or island nature of the site, being surrounded by roads and homes may limit the value and use of this site for some mammal, amphibian and reptile species who have greater mobility constraints than birds.

If no further development or fragmentation of the site occurs, fifty years from now it will look more like some of the 100 year old smaller forest patches within Mt. Hood National Forest.

Site 2 is approximately 87 acres. Similar to Site 1 the drainage on this site forms a portion of the headwaters of Johnson Creek. Slopes of the drainage are very steep and vegetated with native riparian tree, shrub and groundcover species. Some of the trees throughout the site are up to 100 years old. Western red cedar, Douglas fir, bigleaf maple and Oregon hazel are the dominant tree species. Vine maple, sword fern and Oregon grape are the dominant understory species.

Purple finch, rufous-sided towhee, pine siskins and black-capped chickadees were observed on the site. The structural and plant species diversity of this site is very high, providing high quality habitat for many bird species. The site size and isolation from other natural areas limit its value for less mobile wildlife species. In fifty years, the trees will be taller and larger with more snags and woody debris on the ground.

The steep slopes and should limit any development within the drainage. A minimum of a 50 feet vegetated zone along the top of the slope, measured from the top of the slope should be maintained in order to protect the habitat and water quality of the site.

Site 3 is approximately 37 acres. The perennial waters of the deeply incised narrow (3 ft) channel form the headwaters of Butternut Creek. Similar to the other headwater sites around Cooper Mountain, cedar and Douglas fir are the dominant tree species. The riparian forest is between 40 - 60 years old. There is a lot of dead down wood scattered throughout the riparian forest, which provides habitat for some small mammals, reptiles and amphibians. However, development and roads at the top of the drainage slopes may restrict movement by some small mammal and amphibian species.

Slopes along the ravine are steep and primarily vegetated with native riparian vegetation with the exception of a storm sewer line that runs across a portion of the slope. The sewer line is vegetated with non-native grass species.

The steep slopes and should limit any development within the drainage. A minimum of a 50 feet vegetated zone along the top of the slope, measured from the top of the slope should be maintained in order to protect the habitat and water quality of the site.

Site 4 is approximately 40 acres, which includes portions of the headwaters of Butternut Creek. The western portion of the site is contiguous with Jenkins Estate, a park owned by Tualatin Parks and Recreation District. This site is separated from direct connection to the forests of the Jenkins Estate by Grabhorn Road.

Douglas fir and bigleaf maple are the dominant tree species throughout the site. Trees range between 35-65 years old. The forest has a diverse and rich shrub layer; vine maple,

Oregon hazel (Corylus cornuta), blue elderberry (*sambucus cerulea*), Oceanspray (*Holodiscus discolor*) and Indian plum (*Oemelaria cerasiformis*). Each of these shrub species produce fruit, nuts and seeds that provide food for many bird species. Black capped chickadee, rufous-sided towhee, western flycatcher, pine siskin and downy woodpecker were observed.

Portions of the channel are deeply incised. A recently cleared path with sediment fence along it may have been constructed for installation of a storm sewer across the slope of the drainage on the western end. Similar to Sites 1-3, the riparian area provides habitat for a variety of wildlife species. However small size, coupled with roads and developments along the boundary of the site may limit use and the habitat value of the site.

Site 5 is approximately 810 acres. This large areas is a mosaic of oak madrone forest, cedar/ Douglas fir forest, large tracts of cleared (logged) area, scrub/shrub, wetlands, agriculture fields, an old orchard and a "park-like area. Although much of the area has been altered by clearing for agriculture and timber harvest, there is still a diversity of native plant assemblages scattered throughout the larger site.

The most unique association is the Oregon white oak (*quercus garryana*) and madrone (arbutus menziesii), with serviceberry (*amelanchier alnifolia*), Indian plum, snowberry (*symphoricarpos albus*), Nootka rose (*rosa nutkana*) and swordfern (*polystichum munitum*) as the dominant understory. This plant association is more common to the central Willamette Valley, and found less frequently in drier portions of the metro region. The oak are 10 - 25 in. dbh and the madrone are 5-10 inch dbh. Also unusual, is the tall height, approximately 25 ft. of the serviceberry.

Other forest assemblages found on the site are Douglas fir/bigleaf maple, dense closed canopy cedar/Douglas fir, and more open canopy cedar/Douglas fir. Oceanspray, thimbleberry, serviceberry, salal are the dominant understory plants. Western red cedar and bigleaf maple are the dominant species along the drainageways, with vine maple, young cedar and swordfern composing the understory.

Pockets of scrub/shrub habitat are found throughout the site, generally associated with roads and areas that have previously been altered. Hawthorne (*crataegus sp.*) Oregon hazel, wild rose, mixed with invasive Himalayan blackberry (rubus discolor), Scot's broom (*cytisus scoparius)* and pasture grass are the dominant species.

Small pockets of emergent wetland are found throughout the five drainages that flow through the site and form Lindow Creek which flows into the Tualatin River. There is very little riparian vegetation along Lindow Creek.

California quail, red-tailed hawk, Northern flicker, white-crowned sparrow, black-headed grosbeak, American crow, robin and dark-eyed junco were observed on the site, in addition to deer tracks and bear scat.

The habitat value of this site has been lessened by timber harvest and clearing. In addition the land clearing has negatively impacted the five drainages on the site. However, these alterations are only temporary, re-planting, rehabilitation of the drainages and natural seeding from adjacent forest areas will begin the dynamic forest succession process. If re-planting and restoration activities are undertaken soon, the site will look like the forests of the adjacent natural areas, with the addition of oak and madrone forest.

Site 6 is approximately 71 acres. Douglas fir, western red cedar, and bigleaf maple are the dominant tree species in this second growth mixed coniferous deciduous forest. Oregon hazel, red flowering currant, rose, Indian plum elderberry, Oregon grape and salal compose the understory of this forest. The one drainage through the site was dry at the time of the field visit.

Dark-eyed junco, black-capped chickadee, robin, rufous-sided towhee, bushtits and a black-headed grosbeak were observed during the field visit.

There are roads and houses immediately adjacent to this site. Informal trails made by domestic animal and kids traverse the site, impacting the wildlife habitat value of the site. The site does provide habitat for some wildlife species, however its small size, isolation and fragmentation be roads and houses limits its habitat value on a larger landscape level.

Site 7 is approximately 166 acres. The forest composition and age of this site is similar to that of Site 6, as they were once part of a large forested area. Homes and roads have fragmented the larger forested area into two separate sites. The roads, houses, fences, domestic animals (cats and dogs) and children may limit use of the site by some wildlife species that require greater protection, safe passage between areas and limited disturbance.

Douglas fir, western red cedar, and bigleaf maple are the dominant tree species in this second growth mixed coniferous deciduous forest. Oregon hazel, red flowering currant, rose, Indian plum elderberry, Oregon grape and salal compose the understory of this forest.

Dark-eyed junco, black-capped chickadee, robin, rufous-sided towhee, bushtits and a black-headed grosbeak were observed during the field visit.

The site does provide habitat for some wildlife species, however its small size, isolation and fragmentation be roads and houses limits its habitat value on a larger landscape level.

CONCLUSION

All seven Cooper Mountain sites provide some wildlife habitat value, are the home to a variety of the region's native wildlife species and contain perennial waterways. The seven sites differ in size, adjacent landuse, fragmentation and only Site 5 has a continuous connection to the Tualatin River.

The matrix in a fragmented landscape is always in a state of flux and evolution, as timber is harvested, areas are re-vegetated, crops are planted, roads and houses are constructed and more and more pervious surface (grass, soils, forests) becomes impervious (asphalt, concrete). Fragmentation is a process and ecological effects will change as the process unfolds. (Noss 1995). One of the goals for acquisition priorities based on ecological significance should be to maintain, or, where absent, to create a complete array of forest successional stages, including old-growth forest conditions; to maintain structural diversity throughout the forest landscape, e.g., by retaining standing dead trees and fallen logs; to protect aquatic diversity in the streams, and rivers associated with forested area and to develop effective stewardship with the community adjacent to the natural area as well as people from all over the region.

As discussed earlier, each site was evaluated on its habitat potential over landscape time in addition to current habitat value and structure. Each site was also considered for its habitat

value as a single site within the regional landscape as well as its function and value as a patch of the larger landscape ecology.

RECOMMENDATIONS

The Cooper Mountain area, like many of the Tualatin River sub-basins is urbanizing at a rapid rate. Protection of the few remnant natural areas and free-flowing drainages in this part of the region is critical, if we want to provide habitat for any of the regions plant and wildlife species. The region will benefit from the protection of the natural resource values of all seven sites. Both acquisition and land use should be explored as options to protect these areas. Due to financial limitations, it is not possible to purchase all seven properties with Metro funds. Based on the criteria discussed in this report, one of the seven sites clearly emerged as the best choice.

Site 1. Protection and restoration of headwater areas are critical to the health of the entire watershed. Site 1 has some high quality habitat but is also surrounded by residential development. The habitat is second growth Douglas fir with some large cedars scattered throughout, similar to much of the forest habitat in the region. Although providing habitat for a number of wildlife species, the size limits its ability to provide interior habitat. Some proposed housing developments on adjacent lots may further fragment this site. The site has high structural diversity and connectivity to Johnson and Beaverton Creeks, but falls short on the other criteria; area size and pattern of overall landscape change.

Site 2 similar to Site 1 is the headwaters to Beaverton Creek. It is a very steep sided canyon with a very healthy riparian area,. The site size is smaller than site 1. Currently development is outside the setback from the top of the bank. Human access and potential trails through the riparian zones may negatively impact the health and structural integrity of these sites. Similar to Site 1, it has high structural diversity and connectivity to Johnson and Beaverton Creeks, but falls short on the other criteria; area size and pattern of overall landscape change.

Site 3 is the headwaters to Butternut Creek. Topography within the drainage is steep similar to Sites 1 and 2, however habitat quality in parts of the site have been compromised by placement of a sewer line that runs along the slope. Human access and potential trails through the riparian zones may negatively impact the health and structural integrity of these sites. This site also falls short of several of the criteria; area size, structural diversity, connectivity and pattern of overall landscape change.

Site 4 is also the headwaters to Butternut Creek and is located across Grabhorn Road from the Jenkins estate. Grabhorn Road serves as a barrier or obstacle for some mammal, amphibians and reptile species trying to travel between the site and the Jenkins Estate. The riparian habitat is high quality, coupled with the diversity provided by a small grassy opening near an underground water storage tank. Human access and potential trails through the riparian zones may negatively impact the health and structural integrity of these sites. This site falls short of some of the criteria.

Site 6 is the smallest parcel of all seven sites. Similar to Site 1, it has Douglas fir and Cedar that are 50 - 70 years old, however much of the site is fragmented by roads, houses, fences and small areas of timber harvest.

Site 7 is the second largest of the seven sites. Similar to sites 1 and 6 it has healthy second-growth forest habitat that provides habitat for a variety of wildlife species and a natural backdrop to the surrounding houses. Roads and houses fragment this site and isolate it from other larger habitat areas.

Site 5, approximately 810 acres, is the largest of the seven areas that were evaluated. The size of the site varies depending upon which properties are available. The Oregon white oak (Quercus garryana), Madrone (Arbutus menziesii) and Serviceberry (Amelanchier alnifolia) community is unique compared to the Douglas fir/cedar forests of the other six sites. This community is somewhat rare within the metro region. There are five drainages on the site, three that have been negatively impacted by the timber harvesting on the site, and are currently intermittent. The five drainages converge and empty into Lindow Creek which flows into the Tualatin River. A portion of the site has been recently logged (~ 110 acres), however most of the oak, madrone and service berry were left forming small fingers of habitat throughout the site. Pockets of Douglas fir and Douglas fir/cedar/Oregon white oak are growing adjacent to the timber harvest area. The dry forested area, as well as Lindow Creek, have high rehabilitation and restoration potential. Restoration of this large site can begin to create interior forest habitat for the future.

The large size of this site can accommodate human use without compromising the wildlife habitat value, if trails and access points are well planned. There is very little riparian zone currently intact along Lindow Creek. Rehabilitation of the riparian zone can restore an important travel corridor between the upland site and the Tualatin River. Although parts of the site have been logged, diminishing the wildlife habitat structure and value and negatively impacting several of the drainage ways, it is recommended as the site that can provide the most elements critical to wildlife in the region. These elements include; large size, high structural diversity, connectivity to other sites including the Tualatin River and the ability to restore large portions of the site that will improve the overall habitat quality of the entire site.

Purchase of this site can help promote biodiversity in our region. Site 5 meets the most criteria of all the sites evaluated in the Cooper Mountain area and is recommended as the highest priority for acquisition.

DEFINITIONS

Configuration the location and juxtaposition of landscape elements

Corridor- a narrow strip of land that differs from the matrix on either side

Land potential- the possible uses and values of a land area

Landscape- a heterogeneous land area composes of a cluster of interacting ecosystems that are repeated in similar form throughout. Landscapes vary in size, down to few kilometers in diameter.

Landscape ecology- a study of the structure, function and change in heterogeneous land area composed of interacting ecosystems.

Landscape Element- the basic, relatively homogeneous, ecological unit, whether of natural or human origin, on land at the scale of a landscape.

Line Corridor- a narrow band essentially dominated throughout by edge species

Natural landscape- an area where human effects, if present are not ecologically significant to the landscape as a whole.

Network connectivity- the degree to which all nodes in a system are linked by corridors

Node- a patch attached to a corridor, both of the same landscape type. Also, an intersection of corridors, and a source or sink of flows of object.

Patch- a nonlinear surface area differing in appearance from its surroundings.

Species richness. The number of species within a defined area.

Shifting mosaic- a system exhibiting a pattern of long-term change along with short-term internal spatial conversions.

Structural diversity. Diversity in a community that results from having many horizontal or vertical physical elements.

Succession. The more or less predictable change in the composition of communities following a natural or human disturbance.

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COOPER MOUNTAIN REFINEMENT PLAN MEETING
JANUARY 9, 1996

Abbreviated Notes.
Comment, Question and Answer session:

From Floor: For staff.	Q. Show on map where sites 1-7 are. UGB is drawn wrong on map. (done)
	Q. How much will be spent on the site? A. Metro's acquisition budget is 4.2MM. A. Washington County Commissioner Kim Katsion announced that they are exploring reprogramming some of their local share money to help purchase in Area 1. Jim Desmond stated that Metro is aware to t he possible partnership approach and is supportive if the dollars are there.
For Bill Bugbee (BB)	Q. I see new construction on site 1 on 6 acres on 171st. A. Wrong - that is Madrona Heights, not on Site 1.
For Staff	Q. Will funds be spent inside or out of UGB?
	A. Metro Council (MC) will make decision - not decided yet- original campaign map had icon outside UGB. Staff recommendation is mainly outside with some linkage to outside.
	Q. Green Spaces Master Plan (GSMP) did not have Site 5 in it. Clarify if #1 were purchased, what is effect on #5? A. That is a false assumption because the GSMP was not site specific. Hard to gauge effect on #5 if #1 is purchased..
	Q. What is Metro's proposal? A. JD explained refinement, reason behind "cartoon map", #5 is our focus now.
For BB	Q. How will you provide access to #1? A. BB showed on map - Rigget Rd & 170th, Tualitin Hill park has additional parking, also at end of 171st. Nora Rd. is possibility. Q. Nora Rd. is one-lane gravel w/houses. A. It will be developed further.
For Staff	Q. What are watershed laws? legal limits on # of trees cut? A. By Hal Bergsma of Wash. Co. Recent ordinance tightened up tree cutting, permit process, owners must determine habitat & environmental. impacts. Q. Is it same in and out of UGB? A. No, only inside. outside is under State Forest Practice Act. Watershed will no allow removal of vegetarian w/in 25' of riparian area.
	Q. What is accessibility on #5? Audobon report says its bad. A. Audobon report did not say that. Jim Morgan explained cul-de-sac problems on other areas. RE #5- ability to build additional parking lots is good due to many major roads in area. In other areas, parking will be in front of homes. If corridor is narrow, hard to build access. Shape is

	as important as size.
	Q. Is Metro's sole focus the clear cut area? A. No. Only 15% of Area #5 has been clear cut.
COMMENT SECTION	
Ken Vanderhey	Where is the green blob located and what are the linkages? (Shown on map.)
Joseph	If no access, wildlife can't migrate. Do you believe you can find sellers at 10K an acre?
R. Relisn	Site 5 is great are - clear cut will grow back - encouraged Metro to proceed
Tony Rogales	Going outside UGB for open space makes sense - that's why we have UGB. If you take land out of UGB area, the more replacement land you must find. RE: Elementary school comments by BB - every child is bussed.
Trudy Russer -	pro site 5. Asked if any of the owners were here and will they contribute? No response
BB	United Pacific Properties will donate 7 1/2 acres on Site 1, and Don Morissette will donate 3.
Anita Carr	Happy that #5 is being looked at - in favor. Good for parking, accessible from Scholls Ferry - logged area came back in 18 years.
Elinor Hale	Site 5 makes more sense. better legacy for children. JD. - Not a 1 vs. 5 issue, refinement, citizen meetings, etc.
Kathy Arnill	Where will UGB expansion take place and how affect prices. JD - Under study by Council.
Ken Ruser	Can we have both sites? Favors # 5 due to size and price.
John Begee	Has small parcel N. of Gassner- doesn't know what to do with it. Concerned about increase in cars. May donate but wants it blocked off.
Barb Wilson	Clarify why this is either 1 or 5. JD - explained refinement again. All proposals are preliminary. Q. - If you don't know if you have willing sellers, why can't area include both?
Ron Murray	What is effect of any final purchase on tax rolls? Is Site 5 platted? Suspects that donated lands on site 1 may not be plattable.
Bill G.	Owns fox hollow farm. Read "Save Our Forest" by children of Cooper Mountain. "Save as much as you possibly can. We would for you."
Martin Moore	Pro site 5 - significant area, most purchasable land around.. Plant and animals that were there 5 years ago aren't anymore. Know that if you turn it into park, people will "love it to death", pick trilliums, etc.
Fran Warren	Maybe it is better for owners to hold land and maintain as natural habitat themselves.
Shery Arthur	Metro staff proposal is best. - more bang for buck.
Kathy Sayles	RE: petition from 161 residents pro site 1. Site 1 has deer and bald eagles, said #5 has bad accessibility

David Stein	Deep concerns on site 5. It is a buffer to stop UGB from expanding - 40 acres are being developed. GSMP is 90% urban - Site 5 does not fit in. Resents his tax $ being spent outside UGB. Metro staff concept not consistent with GSMP.
George	Metro cartoon map is deceiving. Green color makes you visualize trees.
Jean Posner	Lives near Site 2 - thinks 2,3, 4,6, 7 are being left out of discussion. Invited staff to CPO meeting.
Roger Yanda	Concerned we are rehashing same issues with no progress or property sales. Thinks many smaller parks are better than one big one.
Novel Mercadel	Supports site 5 - "bigger picture" effect, re: concerns about other development in area.
GENERAL COMMENT SECTION	Several smaller parks would defeat purpose. THPRD will have $ for that. Jean Posner would like to see more consideration by Metro for Site 1.

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COOPER MOUNTAIN OPEN SPACE WORKSHOP

Questionnaire
January 9, 1996

1. For the Tualatin Refinement Plan (proposed by Metro Staff) what key elements of this regional resource should be emphasized as part of the acquired land?
(rank in order of your preference 1 to 6)

- ☐ Watershed protection.
- ☐ Views "in and out".
- ☐ Unique Oak / Madrone Forest habitat.
- ☐ Linkages to other sites for connection of trails, greenways, and wildlife and stream corridors.
- ☐ Large size, with existing or future potential to support a diversity of plants and animal life.
- ☐ Public access and education.

2. For the Tualatin Refinement Plan (proposed by Metro Staff) what linkages from the proposed central area out to the surrounding area would be most desirable?
(rank in order of your preference 1 to 5)

- ☐ Link to northwest to Jenkins Estate.
- ☐ Link to north and northeast to local neighborhoods.
- ☐ Link to east to BPA right of way trail and Murray Hill Neighborhood.
- ☐ Link to southeast to Scholls Ferry Road and BPA right of way.
- ☐ Link to southwest to Tualatin River Refuge Area.

3. What further suggestions would you propose to enhance the regional natural area?

4. What additional information would be helpful to you?

Comments:

Please share any additional comments or opinions.

Name: _____

Address: _____

_____

Phone: _____

☐ Please add my name to your Cooper Mountain mailing list regarding future information and events.

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Call Metro's open space hot line, (503) 797-1919, for more information or to leave a comment.

M E M O R A N D U M

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EVALUATION OF TARGET AREA BASED ON
REGIONAL TARGET AREA CRITERIA

Cooper Mountain

Seven sub-areas or sites have been identified for focusing acquisition efforts within the Cooper Mountain regional target area. These areas were evaluated by staff and consulting biologists for their regional significance based on the criteria for regional target areas.

Site 1

Approximately 53 acres in size, this site is mostly closed canopy, second-growth conifer forest dominated by Douglas-fir, with Western red cedar and red alder scattered throughout the area. The shrub layer is open to scattered, depending on the upper canopy closure. Dominant plants include vine maple, oceanspray, Oregon grape, and salal. An intermittent stream runs through its center, bounded by steep slopes. Most of the site is dominated by native plant species with a few areas invaded by exotic plants. Though this type of forest is not rare in the region, local development patterns makes this habitat type increasingly rare locally.

As part of the headwater drainage for Johnson Creek and containing a healthy riparian forest, protecting this site will protect water quality in the creek. However, the site is discontinuous from the lower portion of Johnson Creek, fragmented by residential development, with little to no opportunity for linking to the stream corridor. As an isolated site, its relatively small size limits the diversity of wildlife it presently or ultimately can support. Its long, narrow shape makes it susceptible to intrusion by pest (i.e. invasive pest plants, domestic animals).

The site is visible from areas inside the UGB. Views out are non-existent nor is the site capable of affording vistas without removal of trees, which would have a significant detrimental impact on these limited resources. The site has severe limitations for supporting public use without compromising the limited natural resources (i.e. low public use carrying capacity). Restoration needs are minimal if the existing pest plants are controlled. One potential long-term management problem controlling access, especially with the many cul-de-sac access points reachable by small neighborhood streets.

Site 2

Approximately 87 acres, drainage in this steep-sloped area forms a portion of Johnson Creek headwaters. Primarily Douglas-fir, Western red cedar, and Bigleaf maple forest habitat, the tree, shrub and groundcover species are mostly native. With high structural and plant species diversity, the site has a healthy riparian forest, which is a disappearing resource in this area but not rare. There is interrupted linkage with the downstream riparian resources, which are minimal. Its size and isolation from other natural areas limits its value for many wildlife species other than the most mobile. The site is fragmented by a road into its center and by developed lots that are scattered throughout the area.

The steep ravines and aspect limits its visibility from the region, which, combined with the tree canopy, limits views out. Public access is limited to neighborhood arteries, and the site would support limited use without compromising the resource.

Site 3

Approximately 37 acres, this site is comprised mostly of forested, steep ravines interspersed with ridges with housing developments. The perennial stream leaving the site forms the headwaters of Butternut Creek. The remaining undeveloped land is mostly riparian forest, dominated by 40-60 years old Douglas fir and Western red cedar, with adequate shrub and ground cover for providing habitat.

The very steep slopes that describe nearly all of the remaining undeveloped land probably preclude further development. The site's fragmented nature and the intrusion of a storm sewer line (i.e. introduction of non-native plants) has compromised the habitat quality. Access is very limiting, as well as the views. There is little to no potential to increase the habitat quality due to site limitations, nor is there linkage potential.

Site 4

Approximately 40 acres, this site includes a portion of Butternut Creek headwaters. Most of the undeveloped land is steeply sloped riparian forest, similar to Areas 2 and 3: 35-65 years old Douglas fir and Bigleaf maple and a diverse shrub layer that includes many plants that are wildlife food sources (i.e. hazel, elderberry, oceanspray, Indian plum).

Although the western portion of the site is contiguous with the Jenkins Estate, it is separated by Grabhorn Road which poses a barrier to some wildlife. There is limited access due to housing and road developments. The relatively-small size, lack of connectivity, and fragmentation pose limitations on wildlife habitat potential. The highest quality habitat in the riparian area may be protected by the steep slopes that preclude most developments.

Site 5

Approximately 810 to 1160 acres, dependent on the inclusion of tilled fields, this site has the greatest variety of habitat types: oak/madrone forest, Douglas fir/cedar forest, cleared (logged) area, scrub/shrub, wetlands, an old orchard, row-crop fields, meadows, and a "park-like" area.

There are four forest assemblages on this site: oak/madrone/fir, closed fir/cedar, closed fir/Bigleaf maple, and open fir/cedar. The oak/madrone/fir is most unique, a plant community association more common to central Willamette Valley but relatively uncommon in this region. The Oregon oak ranges from 10 to 25 inches diameter at breast height (dbh) with isolated specimens up to 40 inches. Interspersed with similar size Douglas fir and madrone trees at 5-10 inches dbh, this assemblage includes a native understory dominated by serviceberry, Nootka rose, Indian plum, and snowberry.

The closed canopy cedar/fir habitat is relatively undisturbed, containing primarily native vegetation, with second-growth Western red cedar and Douglas fir up to 30 inches dbh. The shrub layer contains vine maple and young cedar, the herbaceous layer is predominately sword fern and mosses. Snags and dead/downed wood is distributed throughout; Bigleaf maple dominates in the riparian area except in the emergent wetland areas. Timber harvesting recently occurred on about 110 acres in the northern portion of the site, leaving pockets of oak and madrone and scrub/shrub habitat.

Large grazing meadows and row-crop fields surround the forested areas. Within the forested area is a "park-like" area where all understory vegetation has been removed and pasture grasses have been established.

At least one perennial stream originates in the area, with four intermittent streams that may become perennial after the forest canopy is restored. This site encompasses almost the entire watershed of the stream leaving the site flowing to Lindlow Creek and Tualatin River.

Views from the area are good, with a number of open areas existing that can remain open while maintaining a diverse landscape. There are numerous access points to the area, most which can be controlled. The site's size, shape, and varied landscape form (i.e. variation in slope and aspect) allows high potential for enhancing diverse and species-rich habitats while accommodating considerable human use. The site's potential linkage to other Cooper Mtn. sites as well as outlying natural areas makes it a potential anchor for the region.

Site 6

This approximately 71 acre site is primarily second-growth mixed coniferous forest, dominated by Douglas fir, Western red cedar, and Bigleaf maple, with a native understory of Oregon hazel, currant, rose, elderberry, and salal. It is isolated by roads from adjacent sites and has an intermittent stream, which has potential for providing an access corridor to the site from Nancy Ryles Elementary School to the west. The surrounding

development, limited size, isolation, and fragmentation yields limited potential for habitat values. Protection of the site's natural features is mostly limited to the riparian area.

Site 7

At approximately 166 acres, this site is mostly second-growth mixed coniferous forest composed of Douglas fir, Western red cedar and bigleaf maple, with native understory assemblages intact in the undisturbed areas.

Its is highly fragmented by roads and houses. The presence of numerous domestic animals, homes, fences, and defacto human trails will continue to have an impact on wildlife habitat. Its relatively small size, fragmentation, isolation, and degree of development will limit its current and potential habitat values.

Recommendation: Highest priority for protection should be placed on Site 5. Second priority should be placed on Sites 1 and 6, with the remaining sites grouped as lower priority.