

TETON COUNTY
PLANNING & ZONING

SEP 01 2010

RECEIVED

– NATURAL RESOURCES ANALYSIS –
HERITAGE PEAKS LLC PROPERTY
TETON COUNTY, IDAHO



Prepared For

D&R Roberts Family Partnership

c/o Sean Moulton, Moulton Law Office
60 Wallace Ave., Driggs, ID 83422

Prepared By

research & consulting inc

B i o t a



PO Box 8578, 140 E. Broadway, Suite 23, Jackson, Wyoming 83002
PO Box 880, 73 N. Main, Suite 3, Victor, ID 83455

September 1, 2010

Copyright 2010, Biota Research and Consulting, Inc.

CONTENTS

Introduction.....	1
Location of Property	1
Land Uses.....	1
Project Area Vicinity	1
Physiography and Soils.....	2
Surface Hydrology and Wetlands	2
Surface Hydrology.....	2
Wetlands	3
Vegetative Covertypes (Associations).....	3
Mesic Deciduous Forest – Cottonwood.....	3
Mesic Deciduous Forest – Aspen	4
Tall Shrub.....	4
Disturbed.....	4
Rare Plants	4
Invasive Plants	4
Threatened and Endangered Species	4
Gray Wolves	5
Canada Lynx	5
Yellow-billed Cuckoo.....	5
Species of Special Concern.....	6
Bald Eagle.....	6
Harlequin Ducks	6
Grizzly Bear.....	7
Yellowstone Cutthroat Trout	7
Wildlife	7
Neotropical Migratory Birds.....	8
Upland Game Birds.....	8
Waterfowl/Waterbirds.....	8
Raptors	9
Mammals.....	9
Elk.....	9
Deer.....	9
Moose.....	10
Amphibians and Reptiles	10
Development Impact Assessment.....	10
Proposed Development	10

Aesthetic Impacts.....	10
Water Quality Impacts	10
Watercourse and Wetland Impacts	10
Watercourses.....	10
Wetlands	10
Impacts to Vegetation and Riparian Corridors	11
Wildlife Impacts.....	11
Impact Definitions	11
Threatened and Endangered Species	12
Bald Eagles	12
Harlequin Ducks	12
Grizzly Bear.....	12
Yellowstone Cutthroat Trout	12
Neo-tropical Migratory Birds	12
Upland Game Birds.....	12
Waterfowl/Waterbirds.....	12
Raptors	13
Small Mammals	13
Elk.....	13
Deer.....	13
Moose.....	13
Amphibians and Reptiles	13
Impact Conclusion	13
Future Development and Management Recommendations	13
Residential Development.....	14
Stream Corridor Protection.....	14
Forest Management.....	15
Topographic Alterations	15
Agriculture	15
Raptor Habitat Protection and Restoration	16
Fences	16
Invasive and Non-native Plants	16
Non-native Fauna.....	17
Domestic Pets.....	17
Intentional Feeding of Ungulates.....	17
Wildlife Harassment	17
Minimize Wildlife Attraction and Bear-Human Encounters	17
Roads.....	18
Off-road Vehicle Use.....	18
Herbicides	18
Literature Cited	18
Appendix 1 – Attachments.....	20

– NATURAL RESOURCES ANALYSIS –
HERITAGE PEAKS PROPERTY, TETON COUNTY, IDAHO

INTRODUCTION

A natural resources analysis (NRA) of the 20-acre Heritage Peaks property was performed by Biota Research and Consulting, Inc. during August 2010. This study was prepared at the request of Sean Moulton of Moulton Law Office, representative of the property owners. This NRA includes both an inventory of natural resources on the property and an assessment of impacts associated with proposed development on the property. The first portion is the natural resources inventory and provides documentation of existing natural resources on the property. The second portion consists of the impact assessment and management recommendations.

Field reconnaissance, personal interviews, and aerial-photo interpretation were the primary methods employed in conducting this study. Use of the property by various wildlife species, as evidenced through direct and indirect observations (e.g., pellet groups, tracks, browse, burrows, nests) was recorded. Documents and reports pertaining to the property and its vicinity were also examined and reviewed.

LOCATION OF PROPERTY

The property is located approximately 1 mile southeast of Tetonia in Teton County, Idaho (T6N, R45E, Section 34; Appendix 1-Attachment 1 and 2). Access to the property is gained by traveling north from Driggs on Idaho State Highway 33 for approximately 7 miles and then south 0.1 miles on N 2000 W to the property access road.

LAND USES

The project area has been and continues to be used for pasturing livestock; several horses were present during site evaluations in August 2010. Historic and current land uses have, in places, altered the vegetation and topography of the project area, creating areas of disturbed land and converted native plant communities.

PROJECT AREA VICINITY

The property is bordered by agricultural land and rural residential development on parcels ranging in size from 15 to 120 acres. The Teton Regional Land Trust holds conservation easements on 14 properties, encompassing 2,176 acres, within a 5-mile radius of the project area. Residential development in the vicinity occurs at a relatively low density.

The project area encompasses portions of the Spring Creek riparian corridor and is adjacent to the South Leigh Creek riparian corridor. Riparian plant communities, such as the hawthorn, aspen, and cottonwood forests found in these corridors, have many ecologically important attributes. These riparian associations typically take on a linear form as a result of their proximity to and dependence on rivers and streams and often form continuous strips along watercourses. This pattern of occurrence creates a high edge-to-area ratio and results in numerous ecotones with multiple aquatic and terrestrial plant communities and diverse habitats for animals. Mesic environments associated with riparian zones also

support lush, multi-layer vegetative communities, a scarcity in many parts of the arid West. Over one-half of all wildlife species in the western United States require riparian areas for at least some portion of their lifecycle, and riparian areas provide daily, seasonal, and dispersal-related movement corridors for many wildlife species. Riparian areas also buffer watercourses from pollution, sedimentation, and high temperatures (i.e., by providing shade) that can be harmful for aquatic life and human health.

PHYSIOGRAPHY AND SOILS

The project area is relatively flat at elevations between 6,090 and 6,110 feet, and drainage patterns are generally east to west. Spring Creek and its associated riparian zone bisect the property, and this watercourse and the adjacent South Leigh Creek have exerted considerable influence on local topography.

Soil types within the project area include Badgerton gravelly loam and Fox Creek loam (Noe 1969; Appendix 1-Attachment 3). These soils formed in a mixed alluvium and generally occur on 0-4% slopes at elevations of 5,900 to 6,000 feet. Foxcreek loam is the only soil found within the project area that is listed as hydric on the hydric soils list for the Teton area, Idaho-Wyoming (USDA 1991, 2007).

Badgerton gravelly loam – These well drained to moderately well drained soils were formed from medium textured alluvium and derived from granite, gneiss, quartzite, sandstone, limestone, and loess. Permeability is moderate in the upper part and very rapid in the sand and gravel. The available water capacity is moderate, and the soil is often subject to flooding for short periods in the spring. Under natural vegetation, the erosion hazard is slight, but when vegetation is removed, the erosion hazard is severe because of the susceptibility to flooding.

Fox Creek loam – These poorly drained, medium-textured soils formed in alluvium derived from gneiss, sandstone, quartzite, and limestone. These soils occur along stream channels on the upper edge of wet bottomland at elevations between 5,800 to 6,500 feet. These soils are typically used for meadow hay and range, but natural vegetation consists mostly of hydrophytic grasses and sedges.

SURFACE HYDROLOGY AND WETLANDS

SURFACE HYDROLOGY

Surface hydrologic features present within the project area include Spring Creek, a small unnamed spring-fed creek, and an irrigation ditch.

Spring Creek – Spring Creek is a natural watercourse that originates along the west slope of the Teton Mountain Range and culminates at its confluence with the Teton River. Spring Creek generally flows from east to west, and it enters the property in the northeastern corner after flowing under Idaho Highway 33 east of Tetonia (Appendix 1-Attachment 4).

The hydrologic regime of Spring Creek is complex due to ground and surface water interactions within the drainage. Spring Creek proper begins mid-way between the Teton River and the Teton foothills, where a change in geologic and topographic conditions results in the discharge of groundwater in an array of natural springs. Presently, the project area reach of Spring Creek is a perennial watercourse that is connected to the Teton River by continuous surface water flows during most years. Using the U.S. Geological Survey's StreamStats hydrologic modeling program, annual peak flows through the project area reach are estimated at 195 cubic feet per second (cfs); base flows are estimated at about 5-10 cfs during the fall and winter

Other Watercourses – Two channels of a small, unnamed, spring-fed watercourse parallel Spring Creek and meander through the property from east to west. It is unclear whether this watercourse is perennial or intermittent, but it conveyed less than 1 cfs during the August site assessment. This watercourse appears to originate at groundwater springs located north and east of the property, but some flood flows from Spring Creek may occasionally escape into the channel, flow across the floodplain, and enter this unnamed spring-fed creek.

Irrigation Ditch – An old irrigation ditch is present on the property, extending from the unnamed watercourse in a northwesterly direction to County Road 2000 East. It is unclear how this ditch is operated, or whether it currently functions to supply a downstream water user. However, flows through the ditch are likely seasonal in conjunction with spring runoff and increased discharge through the unnamed watercourse at the irrigation ditch origination.

WETLANDS

A wetland delineation was performed by Lone Goose Environmental in May 2004 within the project area, and about 10 acres were mapped as wetlands (Appendix 1-Attachment 5). These are primarily palustrine forested and scrub-shrub wetlands supported by surface water and near-surface groundwater associated with the creeks in the project area.

VEGETATIVE COVERTYPES (ASSOCIATIONS)

Vegetative covertypes within the project area include agricultural meadow (*Poa pratensis/Bromus inermis*), mesic cottonwood forest (*Populus angustifolia/Rosa woodsii*), mesic aspen forest (*Populus tremuloides/tall shrub/forb*), and tall shrub (*Crataegus douglasii/Salix/Symphoricarpos*). The general covertypes have been further classified into associations based on Merigliano (2009), as adopted by Teton County in May 2010. Covertypes presented below are presented irrespective of whether or not they classified as or included wetlands.

Table 1. Areal tabulation of vegetative covertypes on the Heritage Peaks project area, Teton County, Idaho.

Vegetative Covertypes	Acreage	% Tract
Mesic Deciduous Forest - Cottonwood (<i>Populus angustifolia/Rosa woodsii</i>)	8.4	42.0
Agricultural Meadow (<i>Poa pratensis/Bromus inermis</i>)	6.4	32.0
Mesic Deciduous Forest - Aspen (<i>Populus tremuloides/tall shrub/forb</i>)	1.1	5.5
Tall Shrub (<i>Crataegus douglasii/Salix/Symphoricarpos</i>)	3.1	15.5
Disturbed Area	1.0	5.0
Total	20.0	100.0

MESIC DECIDUOUS FOREST – COTTONWOOD

The cottonwood covertypes found within the project area is best characterized as the *Populus angustifolia/Rosa woodsii* association, which has a canopy dominated by *Populus angustifolia*, *Populus balsamifera ssp. trichocarpa*, and/or *Populus acuminata*, which is a hybrid of the first 2 species (Merigliano 2009). Woods rose (*Rosa woodsii*) and several other shrub species (e.g., black hawthorn-*Crataegus douglasii*, coyote willow-*Salix exigua*, Geyer’s willow-*S. geyeriana*, Bebb’s willow-*S. bebbii*, and prickly currant-*Ribes lacustre*) comprise the shrub layer. The understory also contains a substantial amount of immature cottonwood saplings due to seed germination and vegetative suckering. Due to the dense tree and shrub canopy, very few herbaceous species are present in the understory.

Black cottonwood (*Populus balsamifera ssp. trichocarpa*) is a large, broad-leaved tree that is typically found along major watercourses. Small stands of black cottonwood trees are known to occur in Teton

County intermixed with narrowleaf cottonwoods. These species also regularly hybridize when they occur in the same community (*Populus acuminata*). This community is considered to be of global rarity and importance (IDFG 2007) and represents important habitat for many bird species (TRLT 2006).

MESIC DECIDUOUS FOREST – ASPEN

Several aspen groves are found within the tall shrub and mature cottonwood stands. These stands are dominated by both mature and immature quaking aspen. The specific Merigliano (2009) association for these aspen stands is the *Populus tremuloides/tall shrub/forb*. The overstory is comprised entirely of mature aspen, and the shrub layer is comprised of black hawthorn (*C. douglasii*), chokecherry (*Prunus virginiana*), serviceberry (*Amelanchier alnifolia*), snowberry (*Symphoricarpos albus*), and immature aspen. The herbaceous layer is comprised of a variety of forbs and graminoids. Some portions have such robust aspen regeneration that the herbaceous community is essentially nonexistent.

TALL SHRUB

The particular association for the tall shrub covertepe found within the project area was not identified in Merigliano (2009); however, its abundance suggests that the inclusion of it is warranted. The tall shrub layer is dominated by black hawthorn (*C. douglasii*), with some intermixed willows (*Salix* sp.). The understory is dominated by snowberry (*S. albus*) and Woods rose (*R. woodsii*).

DISTURBED

Although not technically a vegetative covertepe, disturbed areas include land altered by human use, development, or natural disturbances. Disturbed areas on the project area are primarily associated with the gravel driveway.

RARE PLANTS

No rare plants are expected to be present within the project area to the due lack of habitat and/or current land use practices.

INVASIVE PLANTS

Several species of invasive weeds are present within the project area, some of which have been listed as noxious by the State of Idaho. Although a comprehensive inventory has not been performed, site investigations revealed the presence of musk thistle (*Carduus nutans*), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), houndstongue (*Cynoglossum officinale*), oxeye daisy (*Leucanthemum vulgare*), and herb sophia (*Descurainia sophia*). All of the species listed above are on the state's noxious weed list except for sophia and bull thistle. Several patches of musk thistle were especially dense.

THREATENED AND ENDANGERED SPECIES

Although not likely, there is a possibility that two threatened and one candidate species may occasionally travel through the project area. These species are listed below in Table 2.

Table 2. Wildlife species listed as threatened, endangered, or candidate which may occur within or near the Heritage Peaks project area, Teton County, Idaho (Miller 2008).

Species Name	Federal Classification/Status	Expected Occurrence
Gray Wolf (<i>Canis lupus</i>)	Threatened/Experimental	Rare accidental
Canada Lynx (<i>Lynx canadensis</i>)	Threatened	Rare accidental
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Candidate	Very rare migrant

GRAY WOLVES

The current estimate of wolf numbers in the Greater Yellowstone Experimental Population Area, including Wyoming and adjacent parts of Idaho and Montana, is 455 wolves (USFWS et al. 2010). This population is classified as nonessential experimental, which incorporates more flexible management options than if the population were threatened or endangered. Population goals for the wolf recovery program in Wyoming, Montana, and Idaho were met in 2002, and all 3 states support viable recovered wolf populations. However, litigation in recent years has resulted in these populations being delisted, and then most recently relisted under the Endangered Species Act in August 2010.

In 2009, the Upper Snake Region was home to 2 documented resident packs of wolves and 3 documented border packs (Mack et al. 2010). The 3 border packs, 2 of which are from Montana and 1 from Wyoming, are known to occasionally venture into Idaho, and wolves have been observed in Teton Valley in recent years.

Wolf activity is intricately tied to prey availability, and the emerging pattern is for the Yellowstone area wolves to establish territories near ungulate winter ranges. Because the project area supports year-round use by wild ungulates, it is possible that wolves travel in the vicinity of and through the project area.

CANADA LYNX

The Canada lynx was first proposed for listing as a threatened species under the ESA in July of 1998 and was formally listed in April 2000. The final rule to list lynx in the lower 48 states emphasized the need for management and protection of lynx habitat on public lands (primarily public lands administered by the US Forest Service and the Bureau of Land Management) to ensure the continued survival of the species in the “contiguous US distinct population segment”. In response to the uncertain status of lynx in the conterminous United States and to Endangered Species Act listing, an interagency lynx coordination effort between the US Fish and Wildlife Service, US Forest Service, Bureau of Land Management, and National Park Service was initiated in March 1998. A revised federal proposal to protect Canada lynx critical habitat does not include any areas in Teton County, ID or the Teton Mountains Range.

Lynx are solitary carnivores generally occurring at low densities in boreal forests. Distribution and abundance of this species is closely tied to that of the snowshoe hare, their primary prey. Vegetative communities present on the property are not considered suitable for lynx foraging or denning, and lynx presence is not expected.

YELLOW-BILLED CUCKOO

The yellow-billed cuckoo is a candidate for listing as threatened and was identified by the USFWS as possibly present in the vicinity of the project area. However, this species is not expected to occur within the project area, except as an extremely rare migrant, and was dismissed from further consideration.

SPECIES OF SPECIAL CONCERN

As part of the environmental review process, potential presence of special concern species not otherwise protected by federal law was analyzed. Known occurrences of “species of greatest conservation need,” including those previously listed as threatened or endangered, within the project area and neighboring townships were provided by the Idaho Conservation Data Center (Table 3; ICDC 2008).

Table 3. Wildlife species of greatest conservation need which may occur in the vicinity of the Heritage Peaks project area, Teton County, Idaho (ICDC 2008).

Listed Species	Status	Expected Occurrence
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Delisted	Resident
Harlequin duck (<i>Histrionicus histrionicus</i>)	Sensitive	Breeding
Grizzly Bear (<i>Ursus arctos</i>)	Delisted	Rare/Accidental
Yellowstone Cutthroat Trout (<i>Oncorhynchus clarki bouvieri</i>)	Sensitive	Seasonal

BALD EAGLE

The bald eagle was removed from the federal list of threatened and endangered species on August 8, 2007 (72 FR 37346). Following the delisting of the bald eagle, the US Fish and Wildlife Service published the National Bald Eagle Management Guidelines following guidance from the Bald Eagle and Golden Eagle Protection Act (BGEPA), 16 U.S.C. 668 and Migratory Bird Treaty Act (MBTA), 16 U.S.C. 703.

Bald eagles in Teton Basin primarily breed and winter along the Teton River and the lower reaches of river tributaries. Teton River tributaries such as South Leigh and Teton Creek are known to provide important roosting habitat for wintering bald eagles (TRLT 2006). Active bald eagle territories in Teton Basin are monitored annually (BLM et al. 2009). In 2009, 8 bald eagle breeding areas were active in the Teton Basin. The project area is more than 3 miles from the closest known historic bald eagle nesting territory and more than 3 miles from the Teton River, where eagle breeding and wintering are known to occur. Due to the proximity to these breeding areas, Bald eagles likely occasionally use large cottonwood trees within the project area for perching and/or roosting.

HARLEQUIN DUCKS

Harlequin ducks are currently listed by the Idaho Conservation Data Center as a breeding species of special status with a state rank of 1, meaning that the population is critically imperiled in Idaho. There are presently fewer than 100 breeding pairs of harlequin duck throughout all of Idaho, and Teton County comprises the southern extent of the species range in the state. Certain reaches of Teton Creek and Darby Creek in Wyoming have been identified as harlequin duck breeding habitat, but these are located upstream of the project area.

The characteristics of Spring Creek on and in the vicinity of the project area lack several important components common to documented harlequin duck breeding habitat including: a montane riparian setting; fast moving, low gradient mountain stream channel with good water quality; and a conifer-dominated forested riparian landscape free of human disturbance. The lack of isolated, montane riparian nesting habitat in a conifer-dominated woodland setting precludes the project area from potential nesting by harlequin ducks. Hens tend to escort broods downstream from high-quality nesting sites during brood rearing, and this behavior may result in very rare occurrences of this species within the project area.

GRIZZLY BEAR

On March 22, 2007, the USFWS announced that the Yellowstone population of grizzly bears no longer meets the Endangered Species Act's definition of threatened or endangered. Since listed in 1975, the grizzly bear population has been steadily increasing at a rate between 4 and 7 percent. The current grizzly bear population is more than 500 animals, which is significantly higher than the population of 136 animals estimated in 1975 (USFWS 2008). Grizzly bear habitat has also expanded to areas where grizzly bears have been absent for decades. Monitoring of grizzly bear population will continue in order to insure the future existence of this species.

Grizzly bears currently inhabit much of the Greater Yellowstone Area, including portions of Yellowstone National Park, Grand Teton National Park, and Bridger-Teton, Shoshone, Caribou-Targhee, Gallatin, and Custer National Forests, but at a relatively low density. Grizzly bears are not expected to be present within the project area with any regularity. The project area and its vicinity are unattractive to bears due to land use activities, such as farming and residential development, and the lack of suitable habitat components.

YELLOWSTONE CUTTHROAT TROUT

Yellowstone cutthroat trout is considered a "species of special concern" or a "sensitive species" within its historical range by a number of state and federal natural resource agencies and organizations. A petition for listing under the Endangered Species Act was rejected in February 2001 when the US Fish and Wildlife Service (USFWS) published a finding of not warranted (USFWS 2001). A 12-month review of the status of Yellowstone cutthroat trout performed by the US Fish and Wildlife Service concluded that the species did not warrant listing as threatened or endangered under the ESA (Federal Register Doc. 06-1539, files 2-17-06).

Although other native species (e.g., sculpin, longnose dace, speckled dace, Utah sucker, Utah chub, and red-sided shiner) are likely present in the project area, Yellowstone cutthroat trout are generally thought of as the species of highest conservation need. They have been documented throughout the Teton Basin, including in the project area catchment upstream of the Heritage Peaks property in upper North Leigh Creek on the Targhee National Forest (Colyer 2006). That headwaters population has been invaded by non-native brook trout, reflecting the connectivity of surface water flows during the late summer and fall in the drainage. The hydrologic connectivity, perennial flows, and presence of Yellowstone cutthroat trout in the vicinity of the project area indicate that YCT have access to, and likely utilize, the project area reach of Spring Creek for seasonal holding and feeding, migration, rearing, and potentially spawning. The population of YCT in the Spring Creek catchment is sympatric (residing with non-native salmonid species), which suggests that the population may be subjected to introgression by rainbow trout and/or competition and displacement by brook trout.

WILDLIFE

The project area contains year-round representatives of 5 vertebrate animal classes including birds, mammals, amphibians, reptiles, and fish (see above). Vertebrates were not systematically surveyed but species observed during site visits were recorded. The presence of other species was assumed when appropriate habitats were present, based upon the general distribution of these species.

NEOTROPICAL MIGRATORY BIRDS

Neotropical migratory birds include raptors, passerines, and shorebirds that breed in North America but migrate to Mexico, Central, and South America for the winter. In the United States, the Migratory Bird Treaty Act of 1918 establishes a federal prohibition, unless otherwise permitted by regulations, to “pursue, hunt, take, capture, kill, attempt to take, possess, offer for sale, sell, offer to purchase, purchase, export, at any time, or in any manner, any migratory bird, including any part, nest, or egg of any such bird” (16 U.S.C. 703). Of the 243 bird species that breed in Idaho, 119 are considered neotropical migrants (Ritter 2000). IDFG reports that 99 species of birds could utilize the cottonwood bottom habitat (Wright 1993).

All of the project area but a small portion in the northwest corner has been mapped within the landbird wildlife overlay prepared jointly by the TRLT and the IDFG (Appendix 1-Attachment 7). Specifically, the overlay identifies this area as songbird and raptor breeding and wintering habitat. This is undoubtedly due to the presence of mature cottonwoods, tall shrubs, and associated riparian vegetation. Riparian and wetland habitats generally contain the highest density of neotropical migrants, and cottonwood and tall shrub cover types found within the project areas represent high quality foraging habitat to many bird species, such as various warblers, flycatchers, and vireos; cedar waxwings and black-headed grosbeaks. In contrast, agricultural landscapes are often characterized by low habitat connectivity and decreased habitat patch size and tend to lack structural complexity found in undisturbed but otherwise similar landscapes (Saab 1999). Species richness and abundance of individual species often decline as a result of such fragmentation. Although studies were not conducted to inventory neotropical migrant species presence and possible nesting within the project area, the mixture of riparian and upland habitats found within the project area ensure that a variety of neotropical migrant species are present and breed here between May and mid-July.

UPLAND GAME BIRDS

Upland game birds are primarily ground-dwelling birds that forage on plants and insects. Roughed and sharp-tailed grouse, gray partridge, and possibly ring-necked pheasants may use the project area. Ruffed grouse are year-round inhabitants of the structurally diverse plant community associated with the aspen stands and streamside thickets of the project area. Roughed grouse were observed within the riparian forest during August 2010 site evaluations. Both ring-necked pheasants and gray partridge are generally found in open agricultural areas, wet meadows, and along riparian ecotones. Anecdotal evidence suggests that numbers of pheasants are very low in the Teton Basin, with artificial stocking maintaining the population.

WATERFOWL/WATERBIRDS

A variety of waterfowl species likely use Spring Creek for nesting and brood rearing, including Canada geese, mallards, cinnamon teal, green-winged teal, and American widgeon. Brood cover is generally good due to the dense riparian vegetation. Various shorebirds may also be present. Great blue herons are commonly found in wetland open-water communities, particularly in cottonwood riparian forests, lakes, and rivers. The long-billed curlew is classified as a Level 3 special status bird, meaning it is rare or uncommon (IDFG 2007). This species is considered a locally common resident in Teton Valley and uses agricultural areas and short-grass wetlands for reproduction and during migration. Although long-billed curlews prefer to nest in large expanses of grassland, adults often move the young to dense cover for brooding (TRLT 2006). Curlew nesting habitat is not present within the project area, but a few curlew use may occur irregularly within the project area. Sandhill cranes are relatively common in Teton Valley, but a map of greater sandhill crane habitat utilization in Teton County does not identify the

project area as pre-migration habitat (TRLT 2006). Any use of the project area by cranes is expected to be peripheral.

RAPTORS

Shrub-grassland, forest, and water-dependant raptor species are expected to be present in the project area. Raptor nesting is expected within the cottonwood-dominated riparian zone along Spring Creek. As mentioned previously, all but a small portion of the project area has been mapped within the Teton County landbird wildlife overlay for songbird and raptor breeding and wintering habitat (Appendix 1- Attachment 7).

Shrub-grassland Raptors

Northern harrier
American kestrel
Red-tailed hawk
Swainson's hawk
Great horned owl
Prairie falcon
Rough-legged hawk
Short-eared owl

Water-associated Raptors

Osprey
Bald eagle
Peregrine falcon

Forest Raptors

Northern goshawk
Cooper's hawk
Sharp-shinned hawk
Great gray owl
Northern saw-whet owl
Merlin

The great gray owl is a forest dwelling raptor that is listed as a sensitive species by Region 4 of the USFS and is expected to use the project area in all seasons. Eastern Idaho hosts a large population of great gray owls (Franklin 1987, 1988; Whitfield 1997) and represents the southern edge of the breeding range.

MAMMALS

The covertypes present within the project area support a diverse array of native mammals. Terrestrial, small- and medium-sized mammals expected to use the project area include coyotes, red squirrels, ground squirrels, pocket gophers, weasels, badgers, chipmunks, mice, voles, and shrews. The reliable, consistent flows in Spring Creek may also provide habitat for aquatic and semi-aquatic animals such as beaver, muskrat, and mink. Two river otters were observed within the project area during a 2010 site evaluation. Large ungulates are known to use the riparian areas in the vicinity of the project area for movement corridors. Although the habitat is not ideal for large carnivores due to a limited prey base and avoidance of human development, mountain lions and wolves may move through the area.

Elk

The forested vegetative covertypes and the riparian area along Spring Creek could provide suitable cover for elk within the project area, and the agricultural meadow could provide a food source. However, the proximity to a major highway and surrounding human activity probably limits elk use of the project area. No evidence of elk use was observed during site evaluations and elk use of the project area is believed to be peripheral at best.

Deer

Mule Deer –It is likely that snow depth and the lack of accessible forage suggests the project area has little or no value as mule deer winter range; however, these animals likely use the project area on an occasional basis.

White-tailed Deer –The Spring Creek riparian corridor is expected to provide winter range to white-tails during some winters, and yearlong range during all years. The riparian habitat also provides a movement corridor for deer moving between bottomlands along the Teton River and summer range along the foothills of the Teton Mountain Range (Wright 1993).

Moose

Winter moose use is likely quite common within the project area and its vicinity due to the presence of a perennial watercourse, wetlands, thick cover, and substantial foraging opportunities. Single animals and cow/calf groups likely use the mature cottonwood and tall shrub cover types along Spring Creek with regularity. In addition to winter habitat, Spring Creek and South Leigh Creek and their riparian zones provide important corridors for moose moving from the valley bottom to area highlands (Wright 1993).

Amphibians and Reptiles

Flowing and standing water, wetlands, and coarse woody debris (fallen logs left on the ground) represent excellent amphibian habitat, and it is likely that tiger salamanders, boreal chorus frogs, and Columbia spotted frogs are present within the project area.

The western terrestrial garter snake is expected to be the most common reptile found within the project area. These snakes are generalists and can be found in virtually any wetland or terrestrial habitat below 11,000 feet. Rubber boas, which inhabit moist or dry forests, may also be found in the project area.

DEVELOPMENT IMPACT ASSESSMENT

PROPOSED DEVELOPMENT

Proposed development within the project area consists of 2 building envelopes for residential structures, 2 septic leachfields, and a vehicle turn-around (Appendix 1-Attachment 8). The western building envelope is 0.39 acres in size and the eastern envelope is 0.56 acres. The impact analysis is based on an assumption that all areas within the proposed building envelopes would be disturbed by future development; however, this assumption may actually over-estimate vegetative impacts associated with future development. All planned development was designed to avoid impacts to wetlands and watercourses on the project area. Impacts to vegetation were unavoidable, but these impacts are concentrated in the agricultural meadow, which provides the lowest quality wildlife habitat on the project area.

AESTHETIC IMPACTS

Proposed development is expected to have minimal impacts to aesthetics, as seen from Idaho Highway 33 or the surrounding properties. The presence of relatively dense stands of cottonwood and aspen trees and tall shrubs will provide substantial vegetative screening of development areas.

WATER QUALITY IMPACTS

Proposed development will be located on an elevated alluvial terrace approximately 8 to 10 feet higher than the creeks and riparian area, and at least 175 feet from Spring Creek and 15 feet from the small, spring-fed stream. The thick, forested, riparian area is expected to mitigate any adverse impacts to water quality in the project area watercourses. Efforts should be taken to use approved stormwater BMPs to prevent any erosion/sedimentation during construction.

WATERCOURSE AND WETLAND IMPACTS

Watercourses

There will be no impacts to watercourses within the project area.

Wetlands

There will be no impacts to wetlands within the project area.

IMPACTS TO VEGETATION AND RIPARIAN CORRIDORS

A total of 1.32 acres of vegetative covertypes will be impacted by the proposed development, including 0.11 acre of mesic cottonwood forest, 0.62 acres of agricultural meadow, 0.26 acres of mesic aspen forest, and 0.28 acres of tall shrub. In addition, 0.05 acres of previously disturbed land will be impacted. Vegetative impacts for proposed development within the project area are summarized in Table 4.

The Idaho Fish and Game Department considers the loss of and impacts to riparian corridors resulting from residential development a major concern and actively discourages habitat fragmentation or development within the riparian areas (IDFG 2007). The proposed development will impact 0.65 acres of high-value riparian covertypes and will likely result in a small amount of habitat fragmentation.

Table 4. Vegetative impacts (acres) for the proposed development associated with the Heritage Peaks project area, Teton County, Idaho.

Vegetative Covertypes	Building Envelopes		Septic Leachfields		Vehicle Turn Around		Total Impact
	West Lot	East Lot	West Lot	East Lot	West Lot	East Lot	
Mesic Deciduous Forest - Cottonwood (<i>Populus angustifolia/Rosa woodsii</i>)	0	0.04	0	0.07	0	na	0.11
Agricultural Meadow (<i>Poa pratensis/Bromus inermis</i>)	0	0.39	0.15	0.08	0	na	0.62
Mesic Deciduous Forest - Aspen (<i>Populus tremuloides/tall shrub/forb</i>)	0.18	0.08	0	0	0	na	0.26
Tall Shrub (<i>Crataegus douglasii/Salix/Symphoricarpos</i>)	0.21	0	0	0	0.07	na	0.28
Disturbed Area	0	0.05	0	0	0	na	0.05
Total	0.39	0.56	0.15	0.15	0.07	na	1.32

WILDLIFE IMPACTS

Impact Definitions

Future development occurring on the property may have adverse effects on certain species and natural resources. The following assessment of environmental consequences of the proposed development on wildlife and fish species used the following impact measure, duration, and intensity definitions.

Impact Measures - Four impact measures are examined for wildlife. These include habitat loss, mortality, habitat fragmentation, and human-caused disturbance.

- Habitat Loss - Implementation and perpetuation of all or part of the project would result in a direct loss of habitat.
- Mortality - Implementation and perpetuation of all or part of the project would result in the death(s) of individuals.
- Habitat Fragmentation - Implementation and perpetuation of all or part of the project would result in the fragmentation of habitat.
- Human-caused Disturbance - Implementation and perpetuation of all or part of the project would result in the displacement of individual animals.

Duration of Impact - A short-term impact would have a duration less than or equal to 3 years and a long-term impact would have a duration greater than 3 years following implementation.

Intensity of Impact - Impact thresholds are defined in Table 5.

Table 5. Wildlife impact threshold definitions.

Measures	Negligible	Minor	Moderate	Major
Habitat Loss	A small number of individual animals and/or a small amount of their respective habitat may be adversely affected via direct or indirect impacts associated with a given alternative. Populations would not be affected or the effects would be below a measurable level of detection. Mitigation measures are not warranted.	Adverse impacts to individual animals and/or their respective habitats would be more numerous and detectable. Populations would not be affected or the effects would be below a measurable level of detection. Mitigation measures may be needed and would be successful in reducing adverse effects.	Effects to individual animals and their habitat would be readily detectable, with consequences occurring at a local population level. Mitigation measures would likely be needed to reduce adverse effects and would likely be successful.	Effects to individual animals and their habitat would be obvious and would have substantive consequences on a regional population level. Extensive mitigation measures would be needed to reduce any adverse effects and their success would not be guaranteed.
Mortality				
Habitat Fragmentation				
Human-caused Disturbance				

Threatened and Endangered Species

Proposed development is not expected to impact any threatened, endangered, or candidate species

Bald Eagles

Proposed development is not expected to impact bald eagles.

Harlequin Ducks

Proposed development is not expected to impact harlequin ducks.

Grizzly Bear

Proposed development is not expected to impact grizzly bears.

Yellowstone Cutthroat Trout

Proposed development is not expected to impact Yellowstone cutthroat trout.

Neo-tropical Migratory Birds

Proposed development is expected to directly impact 0.65 acres of migratory bird habitat, and this impact is expected to be adverse, negligible, and long-term. A recent study found that bird abundance and species diversity tends to decline as residential development increases and the decrease is proportional to the development density (Smith and Wachob 2003). In this case, development density for the foreseeable future is relatively low, thus impact to migratory birds should be minimal. Depending on construction timing, ground-nesting and tree-nesting birds could be disturbed and productivity of individual pairs reduced. Impacts from the proposed development will result in a small degree of fragmentation of neo-migratory bird habitat. Nonetheless, by preserving standing dead trees (snags), protecting wetlands and watercourses, and conserving the undeveloped area as open space, the loss of habitat for migratory birds will be minimal.

Upland Game Birds

Proposed development is not expected to adversely impact upland game birds. Dispersed human uses within the Spring Creek riparian zone may result in flushing individuals or small coveys of birds.

Waterfowl/Waterbirds

Proposed development is not expected to adversely impact waterfowl/waterbird habitat. However, dispersed human uses occurring within the Spring Creek riparian zone may result in individuals or small groups of birds being flushed.

Raptors

Impacts to raptors resulting from the proposed development are expected to be adverse, negligible, and long-term. Raptor foraging habitat (e.g., agricultural meadows) will be impacted by the proposed development, but similar foraging habitat for raptors is abundant in the vicinity.

Small Mammals

Impacts to small mammals are expected to be adverse, negligible, and short-term during the construction periods. After construction has ceased, small mammal populations are expected to return to near pre-development numbers.

Elk

The project area is mapped within the big game overlay for migration corridors and seasonal range. The relatively small amount of disturbance associated with the proposed development is not likely to adversely impact elk. Any impacts would be adverse, negligible, and short-term.

Deer

Impacts to mule and white-tailed deer resulting from the proposed development are expected to be adverse, negligible, and short-term. Some individuals may be displaced by construction activities, but this impact is expected to be temporary. Deer are expected to adapt to the future development proposed on the project area.

Moose

Crucial moose habitat is not present within the project area, but moose may occasionally be found within the project area. Impacts to moose are expected to be adverse, negligible and short-term.

Amphibians and Reptiles

The impacts of proposed development on reptiles and amphibians are expected to be adverse, negligible, and short-term. Most herptile habitat is located within the Spring Creek riparian zone and wetlands, and these areas will not be impacted by proposed development.

IMPACT CONCLUSION

The Heritage Peaks property provides habitat for a variety of wildlife species, primarily linked to the Spring Creek riparian forest and tall shrub habitat. Impacts associated with proposed development are associated with residential building envelopes, septic leach fields, and a vehicle turn-around. The development will directly impact about 1.27 acres of vegetated covertypes. No wetlands or watercourses will be impacted by the proposed development.

Development-related impacts to wildlife are expected to be adverse, negligible and short-term or long-term for neotropical migratory birds, raptors, small mammals, elk, deer, moose, and herptiles (Table 6). No development related impacts are associated with threatened or endangered species, bald eagles, harlequin ducks, Yellowstone cutthroat trout, upland game birds, or waterfowl.

FUTURE DEVELOPMENT AND MANAGEMENT RECOMMENDATIONS

The project area represents habitat to variety of wildlife species, including songbirds, raptors, waterfowl/waterbirds, small to medium-sized mammals, ungulates, amphibians, and fish. Habitats within the project area are associated with the Spring Creek riparian corridor where forested and scrub-shrub wetlands, upland stands of deciduous forests and tall shrubs, and several agricultural meadows. Bird life within the riparian community is abundant and diverse with resident and migratory songbirds, waterbirds, gamebirds, and raptors using the property. Small mammal use is extensive and habitat is present to support medium-sized and large mammals on a seasonal and year-round basis. Livestock

operations and farming of large, privately owned agricultural tracts is the primary land use occurring in the vicinity of the project area.

Table 6. Summary of impact types, thresholds, and duration conclusions associated with proposed development on the Heritage Peaks project area, Teton County, Idaho.

Species	Impact Threshold		
	Adverse	Beneficial	Duration
Gray Wolves	None	None	None
Canada Lynx	None	None	None
Grizzly Bear	None	None	None
Yellow Billed Cuckoo	None	None	None
Bald Eagle	None	None	None
Great Gray Owl	None	None	None
Harlequin Ducks	None	None	None
Yellowstone Cutthroat Trout	None	None	None
Neotropical Migratory birds	Negligible	None	Long
Upland Game Birds	None	None	None
Waterfowl/Waterbirds	None	None	None
Raptors	Negligible	None	Long
Small Mammals	Negligible	None	Short
Elk	Negligible	None	Short
Deer	Negligible	None	Short
Moose	Negligible	None	Short
Amphibian and Reptiles	Negligible	None	Short

RESIDENTIAL DEVELOPMENT

Certain measures have been taken to minimize impacts to important wildlife habitats resulting from any future residential development occurring on the project area. The relatively limited wildlife values associated with the agricultural fields make them preferred areas for development and this is where the majority of impacts associated with proposed development will occur.

STREAM CORRIDOR PROTECTION

Riparian areas are the single most productive wildlife habitat in North America (Thomas et al. 1980). The cottonwood-dominated forested wetlands and riparian zone found along Spring Creek support a wide variety of wildlife, including ungulates, mammalian predators, small- and medium-sized mammals, and many species of songbirds, waterfowl, shorebirds, raptors, amphibians, and reptiles. The importance of riparian and wetland habitats to avifauna in particular is well documented. Over half of all wildlife species in the western United States require riparian areas for at least some portion of their lifecycle. In relative terms, riparia support a greater avian diversity than any other habitat in the Intermountain West. Functioning as an ecotone between aquatic and terrestrial habitat, riparian ecosystems support a diversity of wildlife communities that are influenced by and respond to various vegetation characteristics (i.e., structural diversity, plant diversity and successional stage).

Portions of the project area provide considerable ecotone (edge) communities (e.g., along stream channels, between the cottonwood forest and tall shrub habitats, and between the tall shrub and

agricultural meadow covertypes). Due to the variability in the herbaceous layers of vegetation, the vertical and horizontal diversity is high, and this overall vegetative and structural diversity translates directly into a complex assemblage of wildlife species using these habitats (Brinson et al. 1981). Riparian obligate species benefit from increased habitat connectivity and distribution, larger patch sizes, and increased structural complexity (Saab 1999). The proposed project has minimized impacts to the Spring Creek riparian corridor.

FOREST MANAGEMENT

Snags and fallen trees in various stages of decay contribute much needed diversity of ecological structure to terrestrial environs and are abundant on the parcels. Providing and maintaining a supply of coarse woody debris is a major challenge in effective wildlife and land management. A continuous source and production of trees, snags, and deadfall are needed to support the complex interactions among animals, plants, and dead organic material. The practice of removing all or large quantities of standing dead or dead-fallen woody material is ecologically undesirable, and dead trees and snags greater than 15-inch diameter at breast height should be retained whenever possible. Taller trees provide greater security to nesting birds against ground predators. In general, it is best to leave taller snags because, in time, tall snags become shorter and taller trees may reduce interspecific conflicts by allowing vertical segregation of species and activities. To provide a diversity of nesting and feeding habitat, snags of all tree species and in all states of decay should be left standing. Snags should be left in dispersed clumps rather than as single trees uniformly scattered over an area. The desirable density of snags depends upon habitat type, but 300-400 per 100 acres is recommended for many western forests.

Conserving snag-dependent wildlife requires planning for replacement of snags as they fall. Some live trees can be retained as sources of future snags. Saving trees with crown and upper stem defects, such as top rot, broken top, or fork, is desirable because they provide certain species of raptors (e.g., great gray owls) with nest sites and are likely to contain some decay that produces desirable snags for cavity dwellers. Live trees may also be converted to snags through anthropogenic actions. One strategy may be to kill trees at intervals to provide a continuing source of snags through forest rotation. Thus, desirability of snags generally increases with diameter, proportion of stem covered by bark, height, and broken top. It is recommended that at least some snags located within the project area be left in place as real or potential nesting and foraging habitat to raptor species so long as they do not represent a threat to humans or residential structures.

TOPOGRAPHIC ALTERATIONS

The filling, excavating, dredging, mining, drilling, or removing of topsoil, sand, gravel, rock, minerals, or other materials, or other changes of the topography of the project area is discouraged, except where absolutely necessary or associated with approved development and enhancement plans.

AGRICULTURE

Intensive grazing of livestock within the project area, as historically practiced, is discouraged. If livestock pasturing occurs on the project area, it should only be at levels that would not cause overgrazing, soil compaction, and/or erosion. A general rule of thumb is available forage should not be reduced below 50 percent by pastured livestock. Wintering livestock on the project area is not recommended; to do so would require the storage of hay or other alfalfa or grass product on-site. Careless hay storage or feeding livestock will likely attract deer, elk, and/or moose and increase the likelihood of problems resulting from this attraction.

RAPTOR HABITAT PROTECTION AND RESTORATION

The mature cottonwood coverytype within the Spring Creek riparian zone represents important raptor habitat and should be left as intact and undisturbed as practicable. Maintaining hunting perches will also enhance raptor use on the project area. Low stumps, downed trees, leaning trees, and trees with low branches are essential to juvenile success and should be left on the parcels. Leaning trees are critical in the pre-flight period of development for young birds. Specific plans for nest platform construction can be found in a report published by Bull, Henjum, and Anderson (1987).

FENCES

An assessment of site-specific fencing needs should be made for the project area. Fences frequently disrupt or discourage normal movement and use patterns of wildlife or actually present hazards to wildlife and their use should be avoided or minimized. In situations where fences are necessary, they should be constructed in such a way so as to reduce their potential negative impacts to wildlife. Fence construction should adhere to the recommendations provided below for wildlife-compatible fences. If the control of livestock is not necessary, perimeter fences around the parcel should be removed.

Perimeter boundary fences should be constructed of wood posts and a mix of barbed wire, rails, or sheep fence. Recommended materials, dimensions, and techniques for erecting any new fences on the project area are provided below:

- 1) The preferred fence design is a combination of posts, wire strands, and a top pole. This design effectively controls livestock while promoting wildlife movements.
- 2) The spacing of fence posts should be 13-16 ft.
- 3) The overall height of the fence should not exceed 42 in; the preferred height is 38 inches in most situations and 40 in if problems develop.
- 4) Installed fence posts should have sufficient extra height to allow raising or lowering the top pole between 38 and 42 in above the ground.
- 5) The bottom wire should be smooth twisted wire and located 16-18 in above the ground. This will allow immature ungulates (elk calves and deer fawns), and smaller animals to crawl under the fence.
- 6) The second and third wire strands can be barbed wire and spaced evenly over the distance between the bottom strand and the top of fence (e.g., the second strand is at 25 in and the third strand is at 34 in). It may be that only one strand of wire is actually needed and could be placed at about 29 in.
- 7) The top pole nailed to the side of the fence posts will facilitate animals attempting to jump the fence and protect them from injuries resulting from rubbing or becoming entangled in a top strand of wire. The top pole should be set at a maximum height of 42 in above the ground; the preferred height is 38 in.
- 8) Gates will allow wildlife access to the project area during periods when livestock control is unnecessary. At these times the gates should be opened and left opened until livestock control is again necessary.
- 9) Gates should be constructed of wire (both barbed and smooth-twisted wire) with a optimal height of 38 in. The gates should be installed at least every 450 ft of continuous fence. The spacing of the wires should be the same as that on the fence (i.e., bottom at 16-18 in above ground, top at no more than 42 in, and either one or two strands spaced evenly between). The top and bottom strands should be of smooth-twisted wire and the middle strand(s) of barbed wire.

INVASIVE AND NON-NATIVE PLANTS

Once development plans are finalized, it is recommended that native vegetation be restored in areas not occupied by buildings, landscaped, or in cultivation. This will likely require both active seeding and planting as well as invasive plant control. The best long-term control technique for reducing exotic plant invasions is to establish diverse and continuous native vegetative cover; however, spot herbicide spraying of weeds will likely be necessary for several years prior to establishment of native plant communities.

Additionally, the introduction of any non-native plants that might compete with or harm native species and result in their decline is discouraged. An exception to this would be the introduction of non-native species within the immediate confines of the building envelopes. However, planting certain ornamental (non-native) woody or shrubby vegetation for landscaping purposes is discouraged in order to reduce the likelihood of human-wildlife encounters. Wildlife damage to landscaping efforts may occur and should be accepted when the project area is located within an area used by moose, mule deer, and elk. A list of native plant species recommended for screening and revegetation efforts, based on palatability to wildlife, should be generated once goals and objectives have been identified.

NON-NATIVE FAUNA

The introduction into the wild of any non-native or domesticated animal species that might compete with or harm native species and result in a decline in their use is strongly discouraged.

DOMESTIC PETS

Free-roaming, unrestrained domestic pets should be prohibited. Unrestrained pets can easily disrupt wildlife use on the parcel and should be actively controlled. Dogs will readily chase, harass, and even kill both small and large mammals, as well as birds. Although less conspicuous than dogs, free-roaming cats can be as damaging to wildlife as dogs. Cats are effective predators of small birds, and mammals and free-roaming cats have a high potential (both short- and long-term) for disturbing many wildlife species. Domestic pets, exotic predators, and native predators often expand near human settlements and may have negative effects on some native migratory bird species (Odell and Knight 2001).

INTENTIONAL FEEDING OF UNGULATES

Artificial feeding of deer and elk on the project area is strongly discouraged because it “short-stops” ungulates in route to natural winter ranges and frequently precipitates many unforeseen and potentially devastating problems. By attracting animals close to roads and human habitations, the number of vehicle-caused deaths and the likelihood of human disturbance and harassment by domestic dogs are greatly increased. Supplemental feeding may also lead to both localized depletion and over-utilization of vegetation in the area surrounding the feedground. Concentrating animals in small, localized areas can increase the chance of disease and parasite transmission, which could result in an epizootic that under normal circumstances would be confined to a few individuals. Artificial feeding can also cause animals to abandon traditional migration routes and ranges and become less wary of humans.

WILDLIFE HARASSMENT

A variety of big game mammals may be present on the project area at various times of the year. The presence of these and other wildlife species should be expected and tolerated. People residing on or owning project area should be both respectful of and sensitive to wintering wildlife and not purposefully harass these animals as they struggle to survive harsh winters. Deer can be expected to browse on landscaped vegetation, and this activity can sometimes cause significant damage to vegetation. Owners and residents should make a concerted effort to educate themselves on how to minimize wildlife harassment. A variety of local and regional non-profits can help the owners achieve a compatible and responsible co-existence with native wildlife species.

MINIMIZE WILDLIFE ATTRACTION AND BEAR-HUMAN ENCOUNTERS

Although grizzly and black bears are not common on the project area, human-bear conflicts could be deterred by vigilant adherence to and enforcement of food storage and sanitation recommendations.

1. Livestock and pets: No animals or fowl, other than household pets, should be kept on the premises. Indoor feeding of pets is encouraged. Salt blocks should be prohibited.
2. Food storage: Food items, whether for humans or pets, should be kept in bear-resistant food and garbage storage containers or made unavailable to bears. Refrigerators used for food storage should be inside a closed building.
3. Food preparation and clean-up: When preparing food out-of-doors, such as for barbecues, it is important to clean up immediately afterwards to keep the area as free from food odors as possible. Ice chests and food containers use out-of-doors must be stored so they are unavailable to bears.
4. Garbage and refuse disposal: All garbage should be kept in bear-resistant containers, stored inside, and transported to an approved garbage transfer site regularly. Bear resistant containers are securable containers, constructed of solid non-pliable material capable of withstanding 200 pounds of energy. When secured and under stress, the container will not have any cracks, openings, or hinges that would allow a bear to gain entry by biting or pulling with its claws. Wood containers are not considered bear resistant unless they are reinforced with metal.
5. Human safety: Feeding bears and other wildlife for any purpose should not be prohibited.
6. Reporting: Grizzly bear sightings and/or incidents should be reported within 24 hours to the District Ranger's Office in Ashton at (208) 652-7442.
7. Bird feeding, including seed, suet, and sugar water, should be discontinued when bears are active (typically March through November).

ROADS

The construction of roads should be minimized. Roads of varying sizes are often associated with habitat loss and fragmentation, increases in weedy species along roadsides, increases in noise and visual disturbance, and direct mortality.

OFF-ROAD VEHICLE USE

Control the use of any off-road vehicles such as all-wheel drives, motorcycles, all-terrain vehicles, and snowmobiles, except when necessary for specified activities on existing roads. This is very important so wildlife can adapt to *predictable* patterns of human use.

HERBICIDES

The use of chemical herbicides and pesticides are discouraged except for controlling noxious terrestrial weeds. Application of state-approved herbicides should be done responsibly by licensed and trained people. All label directions should be strictly adhered to.

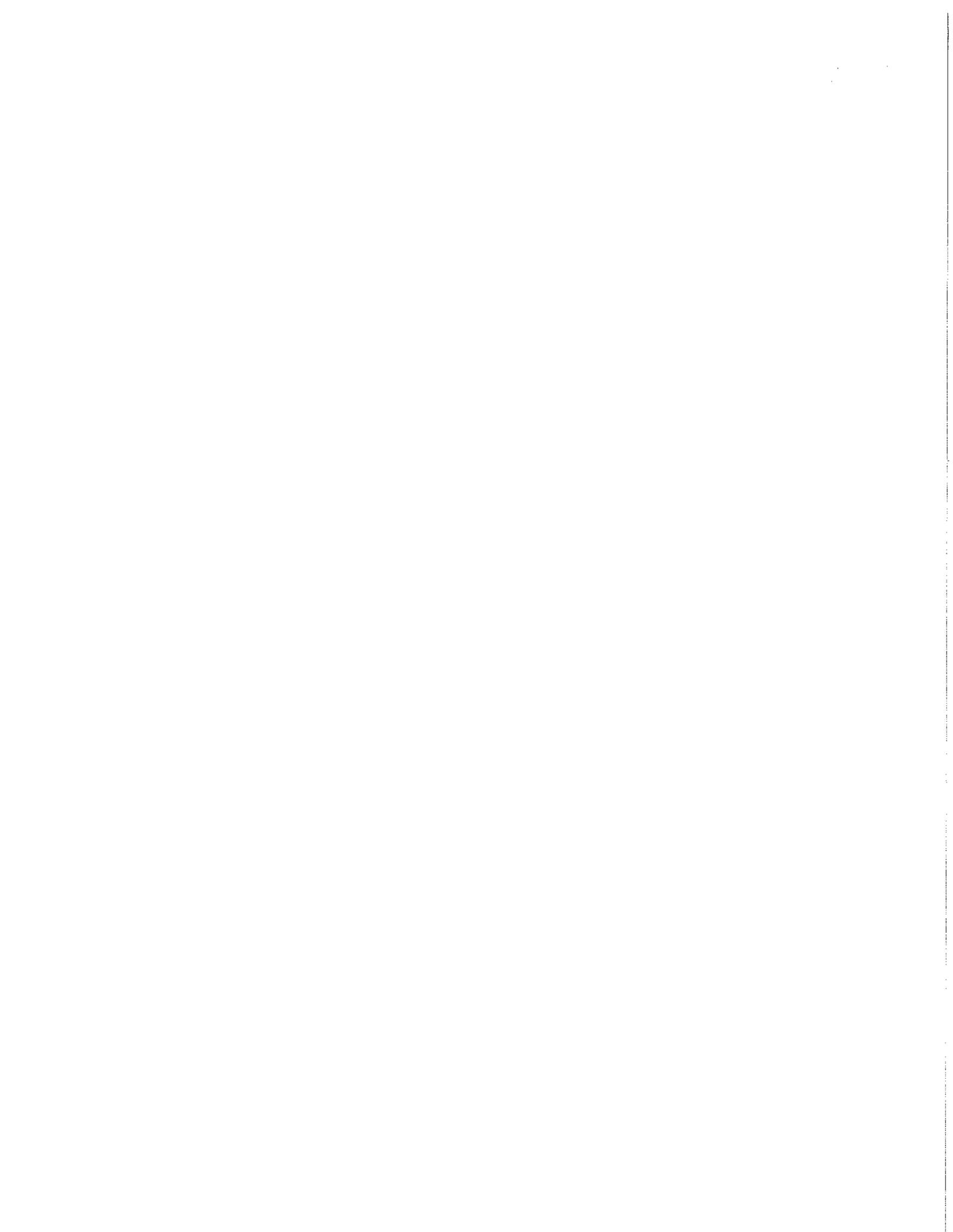
LITERATURE CITED

- Brinson, M.M., B.L. Swift, R.C. Plantico, and J.S. Barclay. 1981. Riparian ecosystems: their ecology and status. U.S. Fish and Wildlife Service Office, Biological Service. Publication FWS/OBS 81-17. 155 pp.
- Bull, E.L., M.G. Henjum, and R. Anderson. 1987. Nest Platforms for Great Gray Owl. Biology and Conservation of Northern Forest Owls Symposium Proceedings. Winnipeg, Manitoba. Bull, E.L., M.G. Henjum, and R.S. Rohweder. 1988. Home range and dispersal of great gray owls in northeastern Oregon. Raptor Research 22: 101-106.
- Bureau of Land Management, USFS-Targhee National Forest, US Fish and Wildlife Service, ID Dept. Fish and Game, and Northern Rockies Conservation Cooperative. 2009. Bald Eagles of eastern Idaho, Greater Yellowstone Ecosystem: 2009 Annual productivity report. Idaho Portion of the Greater Yellowstone Ecosystem, Zone 18. Idaho/GYE Bald Eagle Research Project. Unpubl. Rept. 24 pp.
- Colyer, R. 2006. Upper Teton River Tributary Trout Population Assessment – Final Report. Prepared for Friends of the Teton River.
- Franklin, A. 1987. Breeding biology of the Great Gray Owl in southeastern Idaho and northwestern Wyoming. Humboldt, CA: Humboldt State University. 83 p. M.S. thesis.
- Franklin, A. 1988. Breeding biology of the Great Gray Owl in southeastern Idaho and northwestern Wyoming. Condor . 90: 689-696.

- Idaho Conservation Data Center. 2008. Data compilation for N. Kashi, completed January 22, 2008. Unpublished report. Idaho Conservation Data Center, Idaho Department of Fish and Game, Boise, Idaho.
- IDFG. 2007. Idaho Conservation Data Center. <<http://fishandgame.idaho.gov/cms/tech/CDC/>>. Accessed 5 March 2007.
- Mack, C., J. Rachael, J. Holyan, J. Husseman, M. Lucid, B. Thomas. 2010. Wolf Conservation and management in Idaho: progress report 2009. Nez Perce Tribe Wolf Recovery Project, P.O. Box 365, Lapwai, ID. Idaho department of Fish and Game, 600 South Walnut, Boise, ID. 67pp.
- Merigliano, M. 2009. A field manual for classified vegetation in the upper Snake River valley. Unpublished report prepared for the Teton Regional Land Trust. 36 pp.
- Noe, H. F. 1969. Soil survey of Teton County Area, Idaho. USDA Soil Cons. Serv. 128pp.
- Odell, E. A., and R. L. Knight. 2001. Songbird and medium sized mammal communities associated with exurban development in Pitkin County, Colorado. *Conservation Biology* 15:1143-1150.
- Ritter S. compiler. 2000. Idaho Bird Conservation Plan, Version 1.0. Idaho Partners in Flight. Idaho Department of Fish and Game, Boise, ID.
- Saab, V. 1999. Importance of spatial scale to habitat use by breeding birds in riparian forests: a hierarchical analysis. *Ecological Applications* 9:135-151.
- Smith, C.M and, D.G Wachob. 2003. Human Residential development alters avian community structure in western riparian landscapes. Conservation Research Center of Teton Science Schools. Unpublished.
- Teton Regional Land Trust. 2006. Wildlife overlay and wildlife conservation measures for Teton County, Idaho. Technical Support Document. Teton Regional Land Trust. 55 pp.
- Thomas, J.W., C. Maser and J.E. Rodick. 1980. Wildlife habitats in managed rangelands- the great basin of southeastern Oregon riparian zones. U.S. Department of Agriculture, Forest Service, Pacific Northwest Forests and Range Experimental Station General Technical Report PNW-8.
- USFWS. 1982. Grizzly bear recovery plan. USDI-Fish Wildl. Serv., Denver, CO. 195pp.
- USFWS. 1990. Fish and Wildlife Coordination Act report for the Jackson Hole Snake River Flood Protection/Levee Maintenance Project Teton County, Wyoming. WY State Office, Fish & Wildlife Enhancement, Region 6. 115 pp.
- USFWS. 1993. Grizzly bear recovery plan. U.S. Fish and Wildlife Service, Missoula, MT. 181 pp.
- USFWS. 2001. Endangered and threatened wildlife and plants: 90-day finding for a petition to list the Yellowstone cutthroat trout as threatened. *Federal Register* 66: 11244-11149.
- USFWS. 2008. Yellowstone Ecosystem Grizzly bear recovery. [Online]. USFWS, Mountain Prairie Region Available: <<http://www.fws.gov/mountain-prairie/species/mammals/grizzly/yellowstone.htm>> [date of access March 10, 2008]
- USFWS, Nez Perce Tribe, National Park Service, Montana Fish, Wildlife & Parks, Idaho Fish and Game, and USDA Wildlife Services. 2010. Rocky Mountain Wolf Recovery 2009 Interagency Annual Report. C.A. Sime and E. E. Bangs, eds. USFWS, Ecological Services, 585 Shepard Way, Helena, Montana.
- Van Kirk, R. and A. Jenkins. 2005. Hydrologic Alteration in the Upper Teton Watershed and its Implications for Cutthroat Trout Restoration. Project completion report for Friends of the Teton River.
- Whitfield, M. 1997. Great gray owl breeding habitat use within altered forests, eastern Idaho and northwest Wyoming. Proceedings of the Second International Symposium: Biology and Conservation of Owls of the Northern Hemisphere, Winnipeg, Manitoba.
- Wright, D.E. 1993. Letter to F. Woner, Teton County Planning and Building Commission, Driggs, ID. 7 April, 1993 regarding Rendezvous Ranch Subdivision Proposal. Region 6, Idaho Department of Fish and Game, Idaho Falls, ID.

APPENDIX 1 – ATTACHMENTS

- 1) Location and topography of the Heritage Peaks property, Teton County, Idaho.
- 2) Aerial photograph depicting the location and site characteristics of the Heritage Peaks property, Teton County, Idaho.
- 3) Aerial photograph depicting USDA mapped soil types on the Heritage Peaks property, Teton County, Idaho.
- 4) Aerial photograph depicting surface hydrologic features on the Heritage Peaks property, Teton County, Idaho.
- 5) Aerial photograph depicting delineated wetlands on the Heritage Peaks property, Teton County, Idaho.
- 6) Aerial photograph depicting vegetative covertypes (associations) on the Heritage Peaks property, Teton County, Idaho.
- 7) Aerial photograph depicting the Teton County wildlife overlays on the Heritage Peaks property, Teton County, Idaho.
- 8) Aerial photograph depicting proposed development on the Heritage Peaks property, Teton County, Idaho.



WETLANDS DELINEATION REPORT

for

Roberts Property

Prepared for:

Reg Roberts
c/o Moulton Law Office
Box 631
Driggs, ID 83422

May 12, 2004

Job. No.: 12001.01

Prepared by:

Lone Goose Environmental, LLC
3879 East 200 North
Rigby, ID 83442
(208) 745-0076
nkagel@ida.net

TABLE OF CONTENTS

I.	INTRODUCTION: Site Location and Project Purpose	1
II.	SITE DESCRIPTION.....	1
III.	METHOD.....	2
IV.	VEGETATION.....	2
V.	SOILS.....	3
VI.	HYDROLOGY.....	3
VII.	CONCLUSION.....	4
VIII.	FIGURES.....	5
IX.	DOCUMENTATION.....	8
X.	PHOTOGRAPHS.....	22
	SURVEY PLAN.....	Back Pocket

- 1 -

I. INTRODUCTION: Site Location and Project Purpose

This report describes the character and extent of federally regulated wetlands on a 20 acre (+/-) site in Teton County, Idaho. The site is located approximately 1 mile south of the town of Teton in the northern portion of Teton County, Idaho (Sections 34, Township 6N, Range 45E). Highway 33 borders the property along its north boundary line, but access to the parcel is via a gravel county road that turns south off Highway 33 at the site's northwest corner. Approximately 300 feet from the Highway, there is a new gravel subdivision road into the site.

The site is now owned by Reg Roberts who proposes to develop it for low-density residential housing. Since two creeks, Spring Creek and a high flow channel of South Leigh Creek flow through the site, Mr. Roberts is aware that his property contains wetlands regulated by the Corps of Engineers, and the Corps has, in fact, already granted him a permit for his subdivision road, which crosses two wetland drainages. Before proceeding with site development and planning board approval for his subdivision, Mr. Roberts deemed it prudent to commission a wetlands delineation for the entire site. In April 2004, he hired Lone Goose Environmental, LLC, (LGE) to complete this task. This report contains the site observations, field data, and results of that delineation.

II. SITE DESCRIPTION

The site appears to be rectangular parcel with a piece missing in its northeast quadrant. It is a relatively young alluvial terrace cut by the above-mentioned creeks. Spring Creek enters the site near the northeast corner along Highway 33. It curves to the south in a roughly semicircular fashion and then flows back out of the site near its northwest corner. South Leigh Creek side channel enters the site near its southeast corner, and this creek's braided channel transects the site along and generally parallel to the south boundary line. Portions of the braided channel may actually cross the south boundary, but that is difficult to discern in the thicket of riparian woodland bordering this creek.

The first impression of the site upon entering along the new subdivision road is that this is generally level terrace encased by woods along the two creeks. Upon exploring the site, it becomes evident that its topography is quite uneven. The high flow branch of South Leigh Creek, in particular, has cut such a maze of old channels that it is difficult to differentiate side channels from the main channel. This web of channels is hidden in the thicket of woods along the south boundary. Spring Creek, which currently has a more defined meandering pattern than South Leigh Creek, has also historically created some distinct topographic changes. The creek has moved over time leaving a high cut bank that separates a low wetland terrace from a higher upland terrace. This change in elevation is, as in the case of South Leigh Creek's channels, screened by a stand of mixed aspen, cottonwoods and willows. Such distinct topographic changes created by both creeks define the wetland/upland boundary on the Roberts site.

This site, like most undeveloped sites in Teton County, was formerly in agricultural use. It was probably previously used to pasture cattle, but it was certainly not rich pasture. The gravelly, well-drained soils would not have produced abundant forage with significant irrigation.

- 2 -

III. METHOD

The methodology used for identifying and delineating wetlands on the subject site was the three parameter approach approved by the U.S. Army Corps of Engineers and described in their 1987 Corps of Engineers Wetlands Delineation Manual (Corps Manual). To meet the Corps' definition of a wetland, under normal conditions all three of the following criteria must be satisfied:

1. Vegetation--more than fifty percent (50%) of the dominant vegetation must have a wetland indicator status of facultative (FAC), facultative-wet (FACW), or obligate (OBL).
2. Soils--soils that are either included on the national list of hydric soils or evince distinct hydric properties approximately 10-inches below the surface. Such properties include soils with a matrix chroma of one or less in the absence of redoximorphic features (mottling) or a chroma of two or less in the presence of these features (re: Munsell).
3. Hydrology--positive evidence of hydrology during the growing season. Such evidence is typically indicated by one or more of the following: surface inundations, soil saturation in the major portion of the the upper root zone (w/in 12-inches of the soil surface), water marks, surface drainage patterns, driftlines, sediment deposits, surface scouring, and/or specialized plant morphological adaptations.

For a routine delineation a sufficient number of borings are dug throughout the study site to reveal the nature of that site. At each boring location dominant plants are identified, soils are examined for hydric indicators, and the presence or absence of hydrology indicators are noted. These data enable the delineator to locate and flag a wetland/upland boundary. The boundary flags are then surveyed by a state licensed surveyor and plotted on a survey plan.

On the Roberts site the work of delineation was done in four days during mid-April 2004 (April 10, 13, 15, and 16). During that period, thirteen soil borings were dug throughout the site, and based on the findings from those thirteen data points, the wetland/upland line was located. The task to setting the wetland/upland boundary was facilitated by the creek-carved topography of the site. The wetland/upland line was surveyed by AW Engineering of Victor, Idaho, and the survey plan is attached in the back pocket of this report.

IV. VEGETATION

There are two major plant communities on the site: Thickets of riparian scrub-shrub woodlands surrounding the two creeks and near level, largely upland pastures between the stream corridors and bordering Highway 33.

The woodland overstory is composed of aspen (Populus tremuloides--FAC+) and narrowleaf cottonwood (Populus angustifolia--FACW). The shrub layer is a tangle of willows (Salix sp.--FACW-OBL), hawthorne (Craetegus douglasii--FAC), golden current (Ribes aureum--FAC+), and serviceberry (Amelanchier alnifolia--FACU). Wild rose (Rosa woodsii--FACU) was also present indicating a level of disturbance on the site. It was

- 3 -

occasionally observed in the delineated wetlands, but it was more commonly found on uplands. In the absence of cattle grazing, wild rose and buckbrush (Symphoricarpos albus--FACU) are early successional woody plants on the upland pastures.

Pasture grasses are the dominant herbaceous plants in both the woodland and on the old upland pastures. Naturalized species; bluegrass (Poa pratensis--FAC), timothy (Phleum pratense--FAC-), and brome (Bromus inermis--FAC); appear in both uplands and wetlands. Redtop (Agrostis stolonifera--FACW) typically becomes, however, the most important of the dominant grasses on the wetlands. Conversely, the increased presence of wheatgrass (Pascopyrum smithii--FACU), dandelion (Taraxacum officinale--FACU) and yarrow (Achillea millefolium--FACU) is indicative of uplands. Scattered nebraska sedge (Carex nebrascensis--OBL) is found in wetland swales, but sedges are most dominant in a broad area of shrubby wetlands at the eastern end of the site below the high bank carved and abandoned by Spring Creek. Dense stands of wire rush (Juncus balticus--FACW) are also found among the sedges.

V. SOILS

The Soils Survey, Teton Area, Idaho-Wyoming, depicts essentially one soil series underlying the Roberts site. There is a sliver of Foxcreek loam (Fs) along Highway 33, but this small mapped area probably does not extend beyond the road right-of way into the site. The primary soil underlying the site is Badgerton gravelly loam (BgA). It is described as being well drained, permeable, and tending to be either gravelly or underlain by gravel and/or cobbles. It is a cryoboroll derived from alluvium with a tendency to be xeric, and given its classification, Badgerton gravelly loam is not a listed hydric soil.

All upland borings exhibited in the upper soil profile (0 to 12 inches in depth) either a chroma of 3 or a chroma of 2 without redoximorphic features (mottles). Wetland borings typically revealed a chroma of 2 with mottles and occasionally a chroma of 1. There was a distinct relationship between soil chroma and boring location on the landscape. Wetland borings having low chromas and mottling were at low elevations in swales, drainages, and along creek channels. Upland borings, immediately upslope at somewhat higher elevations, had chromas of 2 and 3 without mottles.

VI. HYDROLOGY

The most significant hydrologic features of the site are the two creeks. These creeks created the site's topography and sustain its woodlands and wetlands. Each creek, however, is quite different in character. The two creeks transect the site separated by a low, barely perceptible ridge on which the new subdivision road is located. This ridge was formerly a wide corridor of open pasture; it currently provides access into the site.

Spring Creek contains perennial water and follows a meandering pattern through the northern half of the property. As its name suggests, it is fed by springs, and consequently it has a reasonably consistent flow. It may rise a few inches (less than a foot) in the late spring during the peak of the hydrologic cycle in the Teton Valley, but it does not appear to be subject to cyclical flooding.

The South Leigh Creek highflow branch was dry during mid-April, but there was clear

- 4 -

evidence of surface hydrology during significant high flows. The creek follows a web of braided channels that torrents of water have carved across the alluvial terrace on which the site is situated. These channels probably contain water only during spring runoff, when snow is rapidly melting in the mountains. The creek might contain water well into the summer but for upstream irrigation diversions. Old wood headgates indicate that this portion of the creek was used to transport irrigation flows, but the headgates do not appear to be maintained.

Despite the brief seasonal flows in South Leigh Creek, the channel and its adjacent wetlands are still regulated waters of the United States. It was possible to determine from site observations of soils, plants, and indications of surface ponding, that there are sufficient flows in the creek to support wetlands along the creek corridor.

VII. CONCLUSION

The gravelly, well drained soils underlying the site would not sustain wetlands but for the creeks. Regulated wetlands and waters are confined to creek corridors, to low areas (old flood terraces) near the creeks, to old highflow channels and to the main creek channels. Due to the fact that this delineation was completed during the early portion of the growing season prior to the peak of the hydrologic cycle, soil saturation in wetlands was sometimes observed below 12 inches in depth. On wetland sites it was typically found at about 17 to 18 inches in depth, but the presence of distinct hydric soils indicators, critical diagnostic hydrophytic plant species, and specific landscape features formed by the creeks (channels, flood terraces) revealed jurisdictional wetlands and waters. Coincidence of these factors plus "best professional judgment" given the season of the year determined the location of the wetland/upland boundary line.

As noted previously, the wetland/upland line frequently followed distinct landscape features formed over time by the two creeks. In one instance the wetland/upland boundary was set at the top of a high (near vertical) old cut bank. While the actual boundary was somewhat lower on the bank, it was most practical (i.e., reasonable) to set the line at the top edge of this steep slope (see Photograph #9).

Another factor to be considered in locating the wetland boundary (i.e., extending the typical 12-inch depth rule for soil saturation) is the prolonged drought conditions in Teton County. It remains to be seen whether this drought is an anomaly or an indication of a changing climate, but wetlands throughout the county appear to be drying out. The Roberts site did not evince some of the dramatic changes in plant community that have been observed in other locations. The delineated wetlands still contain a distinct hydrophytic plant community, but it was assumed that the level of saturation in the soil profile is lower this season than in previous years due to the lengthy drought. Exceptionally dry conditions were considered in addition to the fact that hydrologic site data were sampled about a month before peak levels of hydrology in Teton County.