BIOLOGICAL ASSESSMENT / BIOLOGICAL EVALUATION: PARTS I, II, III

MOOSE CREEK ESTATES DEVELOPMENT
LEMHI COUNTY

TOWNSHIP 27 N RANGE 21 E

APRIL 2001

Prepared for:

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Biological Assessment / Biological Evaluation: Federally – Listed Threatened and Endangered Species, & US Fish and Wildlife Service Species of Special Interest

for the

Moose Creek Estates Development: Parts I, II, III

March 2001

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INTRODUCTION

The Endangered Species Act, Section 7(a)(2), requires federal agencies to insure that any action that is authorized, funded, or carried out by such an agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction of or adverse modification of its habitat.

This biological survey has been conducted to assess potential impacts to USFWS-listed threatened / endangered species, and Salmon National Forest Species of concern and sensitive species, from activities associated with the Moose Creek Estates development project. The project proponent, has requested this document be prepared as input in the creation of an ecologically sensitive development.

Due to the broad nature of the study, 2 wildlife biologists specialized in the study of terrestrial fauna and aquatic species were enlisted.[1] Their results are presented in three parts: terrestrial fauna, aquatic species, and mitigation measures.

CONCLUSION

The cumulative conclusion of all parts of the biological assessment study are presented in the table below. Details associated with each study are outlined in Part I and II of the report. Recommended general mitigation measures associated with this development can also be found in part III of the report.

[1] USFWS Threatened and endangered species of flora was deemed nto to be of concern as it is not known to be present on the subject property (Haagas, 2000)

Table 1. Moose Creek Estates Development Biological Assessment / Biological Evaluation Results Summary

Name	Common Name	Status	No Impact	May Impact*	Likely To Impact **	Beneficial Impact
Accipiter gentilis	Northern Goshawk	Sensitive / Candidate Species	X	---	---	---
Aegolius funereus	Boreal Owl	Sensitive / Candidate Species	X	---	---	---
Alces alces	Moose	Managed	X	---	---	---
Ascaphus truei	Tailed Frog	Candidate Species	X	---	---	---
Athene curicularia hypugea	Western Burrowing Owl	Candidate Species	X	---	---	---
Brachylagus idahoensis	Pygmy Rabbit	Candidate Species	X	---	---	---
Bufo boreas	Western Toad	Candidate Species	X	---	---	---
Buteo regalis	Ferruginous Hawk	Candidate Species	X	---	---	---
Canis lupus	Gray Wolf	USF&WS-Experimental Non-essential Population	---	---	X	X
Centrocercus urophasianus	Sage Grouse	Candidate Species	X	---	---	---
Cervus elaphus	Elk	Managed	X			
Chlidonias niger	Black Tern	Candidate Species	X	---	---	---
Corynorhinus townsendii	Townsend's Big-eared Bat	Candidate Species	X	---	---	---
Cygnus buccinator	Trumpeter Swan	Candidate Species	X	---	---	---
Dicamptodon aterrimus	Idaho Giant Salamander	Candidate Species	X	---	---	---
Euderma maculatum	Spotted Bat	Sensitive / Candidate Species	X	---	---	---
Glaucidium gnoma	Northern Pygmy Owl	Candidate Species	X	---	---	---
Gulo gulo	Wolverine	Sensitive / Candidate Species	X	---	---	---
Haliaeetus leucocephalus	Bald Eagle	USF&WS-Threatened	X	---	---	---
Histrionicus histrionicus	Harlequin Duck	Sensitive / Candidate Species	X	---	---	---
Lanius ludovicianus	Loggerhead Shrike	Candidate Species	X	---	---	---
Lynx canadensis	Lynx	USF&WS-Threatened	X	---	---	---
Martes pennanti	Fisher	Sensitive / Candidate Species	X	---	---	---
Myotis ciliolabrum	Small-footed Myotis	Candidate Species	X	---	---	---
Myotis evotis	Long-eared Myotis	Candidate Species	X	---	---	---
Myotis thysanodes	Fringed Myotis	Candidate Species	X	---	---	---
Myotis volans	Long-legged Myotis	Candidate Species	X	---	---	---
Myotis yumanensis	Yuma Myotis	Candidate Species	X	---	---	---
Numenius americanus	Long-billed Curlew	Candidate Species	X	---	---	---
Oncorhynchus clarki lewisi	Westslope cutthroat trout	USFS Sensitive Species	---	X	---	---
Oncorhynchus mykiss	Steelhead trout	ESA Threatened	---	X	---	---
Oncorhynchus tschawytscha	Chinook salmon	ESA Threatened	---	X	---	---
Otus flammeolus	Flammulated Owl	Sensitive / Candidate Species	X	---	---	---
Phrynosoma douglassi	Short-horned Lizard	Candidate Species	X	---	---	---
Picoides arcticus	Black-backed Woodpecker	Candidate Species	X	---	---	---
Picoides tridactylus	Three-toed Woodpecker	Sensitive / Candidate Species	X	---	---	---
Plegadis chihi	White-faced Ibis	Candidate Species	X	---	---	---
Rana luteiventris	Columbia Spotted Frog	Sensitive / Candidate Species	X	---	---	---
Rana pipiens	Northern Leopard Frog	Candidate Species	X	---	---	---
Salvelinus confluentus	Bull trout	ESA Threatened	---	X	---	---
Sitta pygmaea	Pygmy Nuthatch	Candidate Species	X	---	---	---

Table 1. Moose Creek Estates Development Biological Assessment / Biological Evaluation Results Summary (cont.)

Sorex preblei	Preble's Shrew	Candidate Species	X	---	---	---
Strix nebulosa	Great Gray Owl	Sensitive / Candidate Species	X	---	---	---
Thamnophis sirtalis	Common Garter Snake	Candidate Species	X	---	---	---
Tympanuchus phasianellus	Col. Sharp-tailed Grouse	Candidate Species	X	---	---	---
Ursus arctos horribilis	Grizzly Bear	USF&WS-Threatened	X	---	---	---
Vulpes macrotis	Kit Fox	Candidate Species	X	---	---	---
Oncorhynchus nerka	Sockeye Salmon	ESA Endangered	---	X	---	---

* May Impact = May impact individuals or habitat, but will not likely result in a trend toward Federal listing or reduced viability for the population or species.

** Likely to Impact = Likely to impact individuals or habitat, with a consequence that the action may contribute toward Federal listing or reduced viability for the population or species.

Biological Assessment / Biological Evaluation: Federally - Listed Threatened and Endangered Species, & US Fish and Wildlife Service Species of Special Interest

for the

Moose Creek Estates Development: Part I Terrestrial Fauna

March 2001

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1.0 PROJECT DESCRIPTION

The proposed development would encompass 202.7 acres of High Terrace Placer and Gold Nugget Placer, Number 3303 on the Mineral Survey in Lemhi County. The proposed development entails the placement of 15 to 25 separate and individual vacation homes on this property. Homesite development would include building construction, individual septic systems, access roads, wells for domestic water supply, phone and power line installation. To get onto the properties, two bridges located within 20 feet of each other need to be upgraded. No construction, besides the upgrading of the bridges will occur on or near the banks of the North Fork Salmon River or it's tributaries. Although it is anticipated that homesites will be built at least 150' away from the North Fork Salmon River and tributaries, additional site specific information regarding the location of roads, septic drainage fields, phone and power lines was unavailable at the time of document preparation.

2.0 LIST OF SPECIES

Name	Common Name	Status
Accipiter gentilis	Northern Goshawk	Sensitive / Candidate Species [a, b]
Aegolius funereus	Boreal Owl	Sensitive / Candidate Species [a, b]
Ascaphus truei	Tailed Frog	Candidate Species [b]
Athene curicularia hypugea	Western Burrowing Owl	Candidate Species [b]
Brachylagus idahoensis	Pygmy Rabbit	Candidate Species [b]
Bufo boreas	Western Toad	Candidate Species [b]
Buteo regalis	Ferruginous Hawk	Candidate Species [b]
Centrocercus urophasianus	Sage Grouse	Candidate Species [b]
Chlidonias niger	Black Tern	Candidate Species [b]
Corynorhinus townsendii	Townsend's Big-eared Bat	Candidate Species [b]
Cygnus buccinator	Trumpeter Swan	Candidate Species [b]
Dicamptodon aterrimus	Idaho Giant Salamander	Candidate Species [b]
Euderma maculatum	Spotted Bat	Sensitive / Candidate Species [a, b]
Glaucidium gnoma	Northern Pygmy Owl	Candidate Species [b]
Gulo gulo	Wolverine	Sensitive / Candidate Species [a, b]
Histrionicus histrionicus	Harlequin Duck	Sensitive / Candidate Species [a, b]
Lanius ludovicianus	Loggerhead Shrike	Candidate Species [b]

Martes pennanti	Fisher	Sensitive / Candidate Species [a, b]
Myotis ciliolabrum	Small-footed Myotis	Candidate Species [b]
Myotis evotis	Long-eared Myotis	Candidate Species [b]
Myotis thysanodes	Fringed Myotis	Candidate Species [b]
Myotis volans	Long-legged Myotis	Candidate Species [b]
Myotis yumanensis	Yuma Myotis	Candidate Species [b]
Numenius americanus	Long-billed Curlew	Candidate Species [b]
Otis flammeolus	Flammulated Owl	Sensitive / Candidate Species [a, b]
Phrynosoma douglassi	Short-horned Lizard	Candidate Species [b]
Picoides arcticus	Black-backed Woodpecker	Candidate Species [b]
Picoides tridactylus	Three-toed Woodpecker	Sensitive / Candidate Species [a, b]
Plegadis chihi	White-faced Ibis	Candidate Species [b]
Rana luteiventris	Columbia Spotted Frog	Sensitive / Candidate Species [a, b]
Rana pipiens	Northern Leopard Frog	Candidate Species [b]
Sitta pygmaea	Pygmy Nuthatch	Candidate Species [b]
Sorex preblei	Preble's Shrew	Candidate Species [b]
Strix nebulosa	Great Gray Owl	Sensitive / Candidate Species [a, b]
Thamnophis sirtalis	Common Garter Snake	Candidate Species [b]
Tympanuchus phasianellus	Col. Sharp-tailed Grouse	Candidate Species [b]
Vulpes macrotis	Kit Fox	Candidate Species [b]
Canis lupus	Gray Wolf	USF&WS – Experimental / Non-essential Population [c]
Lynx canadensis	Lynx	USF&WS – Threatened [c]
Ursus arctos horribilis	Grizzly Bear	USF&WS – Threatened [c]
Haliaeetus leucocephalus	Bald Eagle	USF&WS – Threatened [c]
Alces alces	Moose	Managed
Cervus elaphus	Elk	Managed

a. USFS, Intermountain Region Sensitive Species List (November 1996).
b. Candidate species on the Salmon – Challis National Forest, from the US Fish and Wildlife Service's list, reference No. SP#1-4-01-SP-0094, dated December 1, 2000.
c. Threatened and endangered animal species on the Salmon – Challis National Forest, from the US Fish and Wildlife Service's list, reference No. SP#1-4-01-SP-0094, dated December 1, 2000

3.0 DESCRIPTION OF PROJECT AREA

The project is located approximately 39 miles north of Salmon, Idaho, at Township 27N, Range 21E. The eastern property boundary is the National Forest boundary, and the western property boundary is US Highway 93. The access road to the property enters off Highway 93 just south of the green Highway Building. Part of the property surrounds this Highway Building. Lost Trail Pass is located approximately 4 miles north of the northern property boundary. A ditch runs through the property and was historically used to run water for placer separation, although the mines previously located on the property have been out of operation for some time. The site was logged within the last five years, with encroachment into the Riparian Habitat and included removal of woody debris along the stream channel (Feldhausen, 2000).

The North Fork Salmon River joins with Moose Creek at the northern edge of the property, immediately upstream of the bridge. The West Fork of the North Fork enters the North Fork immediately downstream of the bridge. Two other named tributaries, Cool Gulch and State Creek, enter the North Fork from the western side of the property further downstream. Pierce Creek enters the North Fork just below the property boundary. Multiple seeps and springs are located on the eastern slope of the project area, all of which contribute to the North Fork.

4.0 DESCRIPTION OF THE SPECIES AND HABITAT

4.1 Northern Goshawk

The Goshawk occupies mature to old growth coniferous forests, usually near water. The National Forest habitat surrounding this proposed subdivision meets these requirements and is considered suitable for Goshawks. However, there is little suitable Goshawk habitat remaining on the property since it was logged. Therefore, there will be no negative effects on Goshawks or their habitat resulting from this project. There is a slight possibility of beneficial effects resulting, depending on whether residents feed song birds around their homes, which will attract foraging birds of prey.

4.2 Boreal Owl

The Boreal Owl requires habitat very similar to the Great Gray Owl. The Forest Service has verified the presence of Pygmy Owls on this property. Their calling surveys have produced elicited responses from the north edge of the property. The area surrounding the subdivision should be considered suitable habitat for this species, but the subdivision proper has been severely degraded as a result of recent logging. There should be no additional negative effects as a result of this project.

4.3 Tailed Frog

This frog lives in fast moving streams and its presence has been documented in the North Fork of the Salmon River (further downstream). It can be assumed that they are present on the subdivision also. No negative impacts are anticipated as long as present water quality is maintained.

4.4 Western Burrowing Owl

This owl is found in open sagebrush areas where it nests underground. The closest known nesting site is in the Pahsimeroi River valley near May. It is virtually impossible that one would be seen around the subdivision.

4.5 Pygmy Rabbit

The Pygmy Rabbit is a species whose range is limited to sagebrush habitats. There is no sagebrush on this site, which precludes it from being found here. The nearest known site where it has been found is Hayden Creek, about 50 miles south of this location (H. Roberts 1997).

4.6 Western Toad

A Western Toad breeding colony is known to exist at a pond adjacent to the Hughes Creek Field Station, about 10 miles south of this site (C. Wenger, Pers. Comm.). It is very likely that they can be found on the subdivision also, especially around the wetland sites. Assuming there is no disturbance allowed in the wetlands, there should be no threat to this species.

4.7 Ferruginous Hawk

Ferruginous Hawks are limited to sagebrush and juniper habitats and are seldom seen in Lemhi County. A few birds have been seen near Leadore, usually during the summer.

4.8 Sage Grouse

Sage Grouse are restricted to the sagebrush-dominated valleys of Lemhi County, including the main Salmon River, south of North Fork. However, there are no records of them being found in the North Fork of the Salmon River.

4.9 Black Tern

The Black Tern is a migratory species that has been recorded on its northbound migration through Lemhi County during May and June. It likely passes over the subdivision in migration but there is little reason for it stopping because of lack of ponds and marshes.

4.10 Townsend's Big-eared Bat

This bat is consistently found in areas with canyons or cliffs. Important parts of their habitat include caves, mines, buildings and bridges. None of these features are found on the subdivision; therefore the area is probably not suitable habitat for the Townsend's Big-eared Bat.

4.11 Trumpeter Swan

This swan is seen sporadically during migration in Lemhi County and is usually seen on ponds or the Salmon River. Since there is no suitable habitat on the subdivision, there is almost no possibility that it would ever be seen here except as it flies over.

4.12 Idaho Giant Salamander

There are no records of this species occurring on the Salmon National Forest (C. Wenger, Pers. Comm.).

4.13 Spotted Bat

This bat is found in open or scrub country or in open coniferous stands, usually in canyons where cliffs and water are present. The habitat on and surrounding the proposed subdivision does not meet these requirements and is probably not suitable habitat for Spotted Bats.

4.14 Northern Pygmy Owl

This owl is a resident in coniferous forests during the nesting season and spends a considerable amount of time in shrubby riparian habitats in the winter. There are no existing records of it from this specific area but it is highly likely that it will be found on the subdivision with some effort. Development will have no harmful effect on this species. Erecting nest boxes could prove beneficial to this cavity-nesting species.

4.15 Wolverine

The Wolverine is a wide-ranging animal of boreal and mountain habitats, with a home range of nearly 400 square kilometers in Montana. The habitat adjacent to this subdivision does not meet these requirements and is considered marginal at best. The likelihood of the animal being seen here is very remote. However, a Wolverine was recently sighted in Twin Creeks, in more favorable habitat, less than five miles from this project site (Wenger, Pers. Comm.). This subdivision will cause no negative effects to Wolverines or their habitat. Wandering animals will probably avoid it.

4.16 Harlequin Duck

There are no records of Harlequin Ducks being seen on the property, more specifically the North Fork of the Salmon River. There are recent sightings of this duck on the Hayden Creek, a stream of similar size, which makes it possible that

Harlequin Ducks could be seen along the North Fork during the migration period. However, no habitat changes are anticipated that would detract from its usability. Therefore, there will be no negative effects on the species or its habitat.

4.17 Loggerhead Shrike

This shrike is a winter visitor in Lemhi County, usually present from October to February. It is found in open sagebrush areas. It could be seen on the subdivision as it migrates through the area but the likelihood of that happening is very slight.

4.18 Fisher

The Fisher is an animal requiring dense coniferous forest with dense understory composed of conifers and deciduous shrubs. It is also a wandering animal confined largely to wilderness environments and seldom seen around open developed areas. The degraded habitat from recent logging would also cause it to be unsuitable. The likelihood of it being seen here is extremely remote.

4.19 Small-footed Myotis

It is found in habitat similar to both the Townsend's Big-eared Bat and the Spotted Bat. Habitat on and surrounding the proposed subdivision is probably not suitable habitat for this species.

4.20 Long-eared Myotis

This species is a forest dweller that can be found from the lowest to highest elevations. Salmon National Forest surveys (C. Wenger, Pers. Comm.) have found it in similar habitat in Dahlonega Creek, approximately five miles south of this site. Therefore, it is considered highly likely that it does occur on or closely adjacent to the subdivision. A major threat to the species would be humans removing them from buildings if they should roost on buildings.

4.21 Fringed Myotis

This species occurs in a wide range of habitats at mid-elevations (1200 to 2150 meters), however surveys by Salmon National Forest Wildlife Biologists have found it only along the Middle Fork of the Salmon River (C. Wenger, Pers. Comm.). It is highly unlikely that it will be discovered on or closely adjacent to this subdivision.

4.22 Long-legged Myotis

This bat is a forest dweller and can be found as high as sub-alpine fir habitats at elevations between 2000 to 3000 meters (C. Wenger, Pers. Comm.). It is highly dependent on Douglas-fir snags for roosting. It also roosts in trees, rock crevices, cracks and crevices in stream banks and buildings. The species has not been documented near the subdivision but it is highly likely. If it is found here, a major threat will be humans removing them from buildings where they may be roosting.

4.23 Yuma Myotis

The closest documented site where this bat has been observed is Hayden Creek, about 50 miles south of this property. It is found in open or forested areas. The common feature of its preferred habitat is the presence of open water. This site would probably be considered marginal habitat and the chance of observing one here is very slight.

4.24 Long-billed Curlew

This curlew occupies open grasslands and marshes in the upper Lemhi River valley near Leadore and in the Pahsimeroi River valley near May. No similar habitat is found adjacent to the subdivision, precluding its use of this area.

4.25 Flammulated Owl

The area surrounding the subdivision should be considered suitable but marginal habitat for Flammulated Owls. Recent logging (removal of the Douglas-fir and ponderosa pine overstory) has degraded the project area to where it is probably

now unsuitable for the species. No additional negative effects should result from implementing this project.

4.26 Short-horned Lizard

This lizard occupies sagebrush habitat and can be found in the Salmon River and Lemhi River valleys. This habitat does not exist on the site; therefore, it should not be looked for on the subdivision.

4.27 Black-backed Woodpecker

This woodpecker occupies habitat similar to the Three-toed Woodpecker but usually at higher elevations. There is a slight possibility that they could be found closely adjacent to the subdivision but at much lower numbers than the Three-toed Woodpecker. They might also be attracted to the area by use of nest boxes.

4.28 Three-toed Woodpecker

The area surrounding the subdivision should also be considered suitable for Three-toed Woodpeckers. Recent logging has degraded the project area for these birds but it is possible they could be seen foraging on some of the few remaining snags. Development should not further reduce its usability.

4.29 White-faced Ibis

The White-faced Ibis has been seen only a few times in cattail marshes in Lemhi County, and then for only a few days during migration (May). Since this habitat does not exist on the subdivision it is virtually impossible that it will ever be seen there.

4.30 Columbia Spotted Frog

The wetland portions of this property appear to be suitable habitat for Spotted Frogs but this has not been verified by surveys. However they have been reported from near Hughes Creek Field Station, 10 miles south of this location (O'Siggins, 1995). It is very likely they will be found on the site with further study.

No developments are planned for any of the wetland sites; therefore no negative effects should result.

4.31 Northern Leopard Frog

There are no records of this species occurring on the Salmon National Forest (C. Wenger, Pers. Comm. and J. Yeo, Pers. Comm).

4.32 Pygmy Nuthatch

This nuthatch occupies mainly ponderosa pine habitats. Since most of the ponderosa pine has been removed from the site, the area is currently considered to be unsuitable for this species.

4.33 Preble's Shrew

This species has not been recorded in Idaho (G. Stevens, Pers. Comm.).

4.34 Great Gray Owl

The Great Gray Owl is found in dense coniferous forest usually near meadows. National Forest habitat surrounding this subdivision meets these requirements and is considered to be suitable habitat for Great Gray Owls. They have been sighted on the Anderson Mountain Road, a distance of three miles. Its usability as nesting habitat on the subdivision has been reduced by recent logging, however, the timbered opening could be used as a foraging area. There should be no additional negative effects as a result of this project.

4.35 Common Garter Snake

This snake occurs in Lemhi County but has not been documented in the North Fork of the Salmon River (J. Yeo, Pers. Comm.). It is very likely that it is present. The biggest threat to this species (if present) would be humans killing them or being collected for pets. This should be discouraged.

4.36 Columbian Sharp-tailed Grouse

Merriam (1891) reported Sharp-tailed Grouse near Lemhi, Idaho. It was apparently extirpated shortly after that date, as there are no recent records.

4.37 Kit Fox

The Kit Fox is a resident of open desert of the Great Basin of southern Idaho, associated mainly with sagebrush / grass habitat. This habitat does not exist on this subdivision, which precludes it from being found here. The closest documented sighting is from Antelope Flat, 14 miles southeast of Challis, Idaho (G. Stevens, Pers. Comm.).

4.38 Gray Wolf

I personally observed two sets of Gray Wolf tracks approximately two miles south of this proposed subdivision during the spring of 2000. I was later informed by C. R. Wenger (Pers. Comm.) that a female wolf denned and raised puppies about four miles from the site and subsequently left the area. It is unclear whether this is just a chance occurrence or whether this pack will return to this birthing site. If they do return and this area becomes a permanent wolf territory, it seems likely that wolf – human interactions will increase. The worst case scenario will be wolves appearing around vacation home sites, scavenging for meat or possibly killing dogs or cats. Wolves have been seen within two miles of Salmon, attracted there by the presence of carrion. They have also killed hunting dogs in the same general area. Should wolves be attracted to this subdivision by the presence of pets or meat (carrion or hanging wild game), similar problems could result that would require the wolves be removed or slaughtered by the US Fish and Wildlife Service. As a result, the subdivision has a fair chance of adversely affecting the continued existence of the Central Idaho Wolf Population but will not likely jeopardize the continued existence of this population.

4.39 Lynx

Lynx occur in mesic forests that have cold, snowy winters and provide a prey base of Snowshoe Hares. Habitat on and immediately surrounding the

subdivision only marginally portray this scenario and no Snowshoe Hare tracks were seen in the snow at the time of my visit on November 14, 2000. However, the subdivision is located near the center of the inventoried US Forest Service North Fork Headwaters Lynx Analysis Unit (16,627 acres). Of this total, 15,029 acres are considered to be suitable Lynx habitat, including 5,433 acres of potential denning habitat. Although the subdivision was suitable habitat prior to logging, approximately 50% to 60% of its 203 acres, were downgraded to unsuitable when the timber was removed; no further habitat changes are anticipated. The only remaining suitable habitat is the narrow riparian strip, which averages 70 to 100 feet wide,that a Lynx might possibly use as a travel route. They could theoretically be seen on or adjacent to the property but this would be considered highly unlikely. This secretive mammal most likely would skirt around the area during their wanderings. As a result, the subdivision has a slight chance of affecting individual animals but is not likely to adversly affect the continued existence of Lynx in the North Fork Headwaters Lynx Analysis Unit, or neighboring LAU's.

4.40 Grizzly Bear

There are no documented reports of Grizzly Bears on the Salmon National Forest in recent history. Their historic range does include central Idaho but it is highly unlikely that they exist here today. This proposed project is outside of the Bitterroot Grizzly Bear Ecosystem Recovery Area (Selway - Bitterroot Wilderness and Frank Church - River of No Return Wilderness) where "Grizzly Bear management decisions in the recovery area would favor bear recovery, allowing the area to serve as a core for survival, reproduction and dispersal of the recovering population." (USF&WS, 2000). However, the subdivision is situated immediately east of the boundary (US Highway 93) of the Bitterroot Grizzly Bear Nonessential Experimental Population Area. Bears "that move outside the recovery area onto public lands in the experimental population area would not be disturbed unless they demonstrate a real and imminent threat to human safety or livestock." (USF&WS, 2000). The subdivision is far enough removed from the core area that it should cause no negative effects to the Grizzly Bear or its habitat unless bears are attracted to the area by the presence of garbage, carrion, beehives, etc.

4.41 Bald Eagle

The main Salmon River and some of its major tributaries is a major Bald Eagle wintering area and also supports several nesting pairs. The nearest known nest site is over 15 miles away. Most eagle activities are concentrated closely adjacent to the Salmon River. Few, if any, are ever seen along the North Fork of the Salmon River. Therefore, this subdivision will cause no negative effects to Bald Eagles or their habitat

4.42 Moose

This subdivision lies at the north end of a patch of moose winter range that extends southward along the North Fork of the Salmon River to approximately Gibbonsville. Moose also uses the area during the summer but to a lesser degree. Most animals move to higher elevations to where forage is more plentiful.

Problems with moose are anticipated during winter months. Moose – vehicle collisions occasionally occur on US Highway 93 under present day conditions. Should moose be forced from their traditional winter range, there is a high likelihood that the accident rate on this section of highway will increase. Moose very frequently are seen on plowed roads when deep snow conditions persist. If the subdivision is occupied during the winter months, necessitating snow plowing, there is a high likelihood that moose – human confrontations will result that could end up with property damage and / or personal injury.

4.43 Elk

Grkovic (1976) determined that the North Fork of the Salmon River was a major migration route for elk. From radio-collared animals he was able to follow their migration from summer range along the Montana / Idaho border to winter range along the North Fork of the Salmon River (generally lying south of Twin Creek). I was able to verify this migration from tracks in the snow when I was on the property on November 14, 2000. At that time it appeared that between 20 to 25 elk had moved southward through the area within the previous two to three days.

Many of the tracks were on the existing road. The tracks continued southward across the Royal Elk Ranch and headed toward Twin and Deep Creeks.

What will result if 19 new homes are built on a major elk migration route is purely conjectural but could range from a slight adjustment in their wanderings to avoid people and noise disturbance to a complete disruption and abandonment of their migratory pattern. A worse case scenario will be one where elk in avoiding the subdivision were forced to use US Highway 93 as a travel way, which will increase the likelihood of collisions on the highway. On the other hand, migrating elk may just slip through the subdivision at night with no conflict. This situation needs further study to see what other states (if any) have done to correct similar problems.

Fences are another potential problem. Any fence that will impede the progress of either elk or moose will be undesirable. Most adult animals can jump across them or occasionally bust through them. The most detrimental situation is when younger animals become entangled while trying to go under or through.

5.0 ANAYLIS OF AFFECT

Little if any changes in vegetation will result from the development of this property. Ground disturbance should be limited to that area immediately surrounding actual building sites and septic systems. Some vegetative disturbance will also occur with road widening and upgrading.
Very little timber clearing is anticipated as most of the larger trees were removed by a timber sale about three years ago. However, the residual lodgepole pine “whips” can be expected to blow down in future wind storms.

The most likely negative effect on any of the listed wildlife species is the possible increased interaction between humans and the wildlife species themselves. This will result from the invasion of humans into what is now considered to be an area lightly trammeled by man. The negative effect would range from wildlife avoidance of the area to actual conflicts between humans and wildlife.

6.0 MITIGATION MEASURES

General Mitigation

1. Erect nest boxes for cavity-nesting bird species (owls, woodpeckers, swallows, chickadees and nuthatches, etc.).

2. Replant the area with native tree species, especially Douglas-fir and ponderosa pine.

3. Take measures to perpetuate quaking aspen, i.e. prescribed burning of decadent clones.

4. Encourage bats for insect control by erecting bat-nesting structures.

5. Encourage bird feeders.

6. Discourage capturing or killing any reptile or amphibian species.

7. Preserve all remaining snags on the subdivision and on the surrounding National Forest for use by cavity-nesting species.

8. Develop an information and education brochure for residents, informing them about what wildlife species live here and how they should be treated.

9. Do not allow fences other than small pet kennels.

10. Do not allow dogs to chase big game animals.

11. Do not winter feed elk or moose without express permission from Idaho Department of Fish and Game.

12. Do not allow pets and / or livestock to roam at large.

13. Maintain strict garbage regulations. Do not allow storage of meat or meat scraps out of doors.

14. Do not allow bee hives.

7.0 DETERMINATION

Name	Common Name	No Impact	May Impact *	Likely To Impact **	Beneficial Impact
Accipiter gentilis	Northern Goshawk	X	---	---	---
Aegolius funereus	Boreal Owl	X	---	---	---
Ascaphus truei	Tailed Frog	X	---	---	---
Athene curicularia hypugea	Western Burrowing Owl	X	---	---	---
Brachylagus idahoensis	Pygmy Rabbit	X	---	---	---
Bufo boreas	Western Toad	X	---	---	---
Buteo regalis	Ferruginous Hawk	X	---	---	---
Centrocercus urophasianus	Sage Grouse	X	---	---	---
Chlidonias niger	Black Tern	X	---	---	---
Corynorhinus townsendii	Townsend's Big-eared Bat	X	---	---	---
Cygnus buccinator	Trumpeter Swan	X	---	---	---
Dicamptodon aterrimus	Idaho Giant Salamander	X	---	---	---
Euderma maculatum	Spotted Bat	X	---	---	---
Glaucidium gnoma	Northern Pygmy Owl	X	---	---	---
Gulo gulo	Wolverine	X	---	---	---
Histrionicus histrionicus	Harlequin Duck	X	---	---	---
Lanius ludovicianus	Loggerhead Shrike	X	---	---	---
Martes pennanti	Fisher	X	---	---	---
Myotis ciliolabrum	Small-footed Myotis	X	---	---	---
Myotis evotis	Long-eared Myotis	X	---	---	---
Myotis thysanodes	Fringed Myotis	X	---	---	---
Myotis volans	Long-legged Myotis	X	---	---	---
Myotis yumanensis	Yuma Myotis	X	---	---	---
Numenius americanus	Long-billed Curlew	X	---	---	---
Otus flammeolus	Flammulated Owl	X	---	---	---
Phrynosoma douglassi	Short-horned Lizard	X	---	---	---
Picoides arcticus	Black-backed Woodpecker	X	---	---	---
Picoides tridactylus	Three-toed Woodpecker	X	---	---	---
Plegadis chihi	White-faced Ibis	X	---	---	---
Rana luteiventris	Columbia Spotted Frog	X	---	---	---
Rana pipiens	Northern Leopard Frog	X	---	---	---
Sitta pygmaea	Pygmy Nuthatch	X	---	---	---
Sorex preblei	Preble's Shrew	X	---	---	---
Strix nebulosa	Great Gray Owl	X	---	---	---
Thamnophis sirtalis	Common Garter Snake	X	---	---	---
Tympanuchus phasianellus	Col. Sharp-tailed Grouse	X	---	---	---
Vulpes macrotis	Kit Fox	X	---	---	---

* May Impact = May impact individuals or habitat, but will not likely result in a trend toward Federal listing or reduced viability for the population or species.

** Likely to Impact = Likely to impact individuals or habitat, with a consequence that the action may contribute toward Federal listing or reduced viability for the population or species.

Name	Common Name	No Effect	Not Likely to Adversely Affect	Not Likely to Jeopardize the Continued Existence	Likely to Adversely Affect
Canis lupus	Gray Wolf	---	---	X	X
Lynx canadensis	Lynx	---	X	X	---
Ursus arctos horribilis	Grizzly Bear	X	---	---	---
Haliaeetus leucocephalus	Bald Eagle	X	---	---	---

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9.0 SIGNARURE OF PREPARER

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Hadley B. Roberts, SERG, Inc. Date

Certified Wildlife Biologist, US Forest Service (Retired)

Biological Assessment / Biological Evaluation: Federally - Listed Threatened and Endangered Species, & US Fish and Wildlife Service Species of Special Interest

for the

Moose Creek Estates Development: Part II Aquatic

March 2001

Prepared by:

SERG, Inc.
525 Park Ave. Suite 2D
Idaho Falls, Idaho 83402

1.0 PROJECT DESCRIPTION

The proposed development would encompass 202.7 acres of High Terrace Placer and Gold Nugget Placer, Number 3303 on the Mineral Survey in Lemhi County. The proposed development entails the placement of 15 to 25 separate and individual vacation homes on this property. Homesite development would include building construction, individual septic systems, access roads, wells for domestic water supply, phone and power line installation.

To get onto the properties, two bridges located within 20 feet of each other need to be upgraded. Homesites will be built at least 150' away from the North Fork Salmon River and tributaries.

Septic system locations will be identified on landowner plats, and will be located based on soils and proximity to wetlands and water bodies. All septic systems will be standard systems with holding tanks and leach fields.

Electricity will be supplied initially by an onsite propane generator. At a later date, power may be brought to the site through standard transmission lines which will be buried underground except at the river crossing. Currently, no power lines exist in the immediate area.

One dirt road currently accesses the property from the northern end. The existing road will be graveled and maintained. The access road entering off Highway 93 will be rerouted to reduce the grade and erosion. The uphill slope will be pulled back to a gentler slope, contoured and revegetated to reduce erosion potential.

Telephone coverage will be provided by cellular service or by standard telephone lines, which will be brought in along with the power lines.

2.0 LIST OF SPECIES

The area of proposed development provides suitable habitat for three fish species listed as Threatened under the Endangered Species Act of 1974, as amended, and one fish species considered Sensitive by the US Forest Service (USFS). These species were identified on the Salmon-Challis National Forest Forest-wide species list (SP# 1-4-01-SP-0094) provided by the US Fish and Wildlife Service (USFWS, 2000).

Name	Common Name	Status
Oncorhynchus tschawytscha	Chinook salmon	ESA Threatened
Oncorhynchus mykiss	Steelhead trout	ESA Threatened
Salvelinus confluentus	Bull trout	ESA Threatened
Oncorhynchus nerka	Sockeye Salmon	ESA Endangered
Oncorhynchus clarki lewisi	Westslope cutthroat trout	USFS Sensitive

3.0 DESCRIPTION OF PROJECT AREA

The project is located approximately 39 miles north of Salmon, Idaho, at Township 27N, Range 21E. The eastern property boundary is the National Forest boundary, and the western property boundary is US Highway 93. The access road to the property enters off Highway 93 at milepost 346. Lost Trail Pass is located approximately 14 miles north of the northern property boundary. A ditch runs through the property and was historically used to run water for placer separation, although the mines previously located on the property have been out of operation for some time. The site was logged within the last five years, with encroachment into the floodplain and riparian area, and included removal of woody debris along the stream channel (Feldhausen, 2000).

The North Fork Salmon River joins with Moose Creek at the northern edge of the property, immediately upstream of the bridge. The West Fork of the North Fork enters the North Fork immediately downstream of the bridge. Two other named tributaries, Cool Gulch and State Creek, enter the North Fork from the western side of the property further downstream. Pierce Creek enters the North Fork just below the property boundary. Multiple seeps and springs are located on the eastern slope of the project area, all of which contribute to the North Fork.

4.0 DESCRIPTION OF THE SPECIES AND HABITAT

4.1 Spring/Summer Chinook Salmon

Adult migration requires passage free of temperature, chemical and physical barriers. Holding (pre-spawn staging) generally takes place in streams greater than 10 feet wide and in channels with gradients less than four percent. In medium-sized streams (11-30 feet wide), key habitat attributes for successful holding are lateral pools greater than three feet deep with good cover provided by undercut banks, overhanging vegetation, or large woody debris. As stream size increases, large pools greater than five feet deep become a more important feature of holding habitat.

Cool, clean water is required for successful spawning and incubation. Spawning generally takes place at pool tail outs in perennial streams less than 100 feet wide and in channels with gradients less than four percent. The overall geology of the watershed and dominant substrate likely influence potential for spawning/incubation success. Successful spawning is dependent upon the presence of suitable spawning habitat in proximity to escape cover provided by pools with the attributes described above for “holding” habitat. Successful incubation and emergence is dependent upon the free flow of well-oxygenated water to the egg pocket and the absence of surface sediments.

Cool, clean water is also required for successful early rearing. Early rearing takes place in all stream sizes, but predominantly in those channels with gradients less than four

percent. Successful early rearing is dependent upon low velocity habitats with cover provided by terrestrial vegetation, large woody debris, and substrate. Differences in the basic productivity of the aquatic system likely influence the potential for early rearing success.

Overwintering generally takes place in stream channels with gradients less than four percent. Overwintering may be influence by gross geology due to influences on substrate size, stream size, and dominant substrate size. Successful overwintering is dependent upon the juveniles' ability to find low velocity areas with cover provided principally by cobble and boulder substrates, and to a lesser extent, by large woody debris and terrestrial vegetation. Deep pools and spring areas may be important to the fish in terms of avoiding the effects of ice. The condition of streamside vegetation may be an important factor in providing thermal insulation.

Again, cool, clean water is required for successful late rearing (post-year 1). It is believed that spring chinook late rearing takes place primarily in center channel pools with cover provided by coarse substrates, water depth and/or large woody debris.

4.2 Steelhead Trout

The Salmon River and its tributaries, including the North Fork Salmon River, have runs of both A-run and B-run steelhead trout. Although spawning and incubation habitat requirements are similar for both runs of steelhead, B-run steelhead spawn more extensively in streams greater than 30 feet wide.

Adult migration requirements are generally similar to those described for spring chinook. Adult holding, however, takes place over a much longer period (from fall arrival in the Snake River drainage until spring spawning). Holding generally takes place in streams greater than 100 feet wide and in channels with gradients less than 1.5 percent. Pools greater than five feet deep are significant features associated with suitable holding habitat.

Cool, clean water is required for successful spawning and incubation. Like spring chinook, spawning frequently occurs at pool tail outs. Steelhead make more extensive use of smaller lateral spawning areas than chinook, generally spawning in streams less than 30 feet wide and in streams with a variety of gradients, including those greater than 4 percent. Factors influencing the success of incubation and emergence are the same as those described for spring chinook.

Early rearing requirements for steelhead are similar to those described for spring chinook, although timing of the habitat use is different based on emergence timing.

Overwintering requirements for steelhead are similar to those described for spring chinook. Steelhead make more significant use of streams with gradients greater than 4 percent than do spring chinook.

Steelhead generally require two or more summer rearing periods prior to outmigration. Cool, clean water is required for successful late rearing. Age one+ juvenile steelhead rearing generally takes place in "pocket water" and pool habitats within all stream sizes and gradients. The most significant cover element appears to be associated with cobble/boulder substrates. Streamside cover is less significant, as is large woody debris - except to the degree it affects stream hydraulics and creates late rearing holding pools. Outmigration requirements are similar to those described for spring chinook.

4.3 Bull Trout

Bull trout move into natal tributaries beginning in August and spawn in mid- to late September and October. Hatching may occur in winter or early spring, but alevins may stay in the gravel for an extended period after yolk absorption (McPhail and Murray 1979). Growth, maturation, and longevity vary with environment; first spawning is often noted after age four, with individuals living 10 or more years (Rieman and McIntyre 1993).

Two distinct life-history forms, *migratory* and *resident*, occur throughout the range of bull trout (Pratt 1992; Rieman and McIntyre 1993). Migratory forms rear in natal tributaries before moving to larger rivers (fluvial form) or lakes (adfluvial form) or the ocean (anadromous) to mature. Migratory bull trout may use a wide range of habitats ranging from 2nd to 6th order streams and varying by season and life stage. Seasonal movements may range up to 300 km as migratory fish move from spawning and rearing areas into overwinter habitat in downstream reaches of large basins (Bjornn and Mallet 1964; Elle et al. 1994). The resident form may be restricted to headwater streams throughout life. Both forms are believed to exist together in some areas, but migratory fish may dominate populations where corridors and subadult rearing areas are in good condition (Rieman and McIntyre 1993).

Bull trout appear to have more specific habitat requirements than other salmonids (Rieman and McIntyre 1993). Habitat characteristics including water temperature, stream size, substrate composition, cover and hydraulic complexity have been associated with the distribution and abundance (Jakober 1995; Rieman and McIntyre 1993).

Stream temperatures and substrate composition may be particularly important characteristics of suitable habitats. Bull trout have repeatedly been associated with the coldest stream reaches within basins. Goetz (1994) did not find juvenile bull trout in water temperatures above 12.0^{0}C. Temperature also appears to be a critical factor in the spawning and early life history of bull trout. Bull trout in Montana spawned when temperatures dropped below 9 to 10^{0}C (Fraley and Shepard 1989). Survival of bull trout eggs also varies with water temperature (McPhail and Murray 1979). Weaver and White (1985) found that 4-6^{0}C was needed for egg development for Montana bull trout. Temperature may be strongly influenced by land management and climate change; both effects may play an important role in the persistence of bull trout.

Bull trout are more strongly tied to the stream bottom and substrate than other salmonids (Pratt 1992). Substrate composition has repeatedly been correlated with the occurrence and abundance of juvenile bull trout (Rieman and McIntyre 1993) and spawning site selection by adults (Graham et al. 1981; McPhail and Murray 1979). Fine sediments can influence incubation survival and emergence success (Weaver and White 1985), but might also limit access to substrate interstices that are important cover during rearing and overwintering (Goetz 1994; Jakober 1995).

Watershed disruption is a factor, which has played a role in the decline of bull trout. Changes in or disruptions of watershed processes likely to influence characteristics of stream channels are also likely to influence the dynamics and persistence of bull trout populations. Bull trout have been more strongly associated with pristine or only lightly disturbed basins (Brown 1992; Clancy 1993; Cross and Everest 1995; Huntington 1995; Ratliff and Howell 1992).

Changes in sediment delivery, aggradation and scour, wood loading, riparian canopy and shading or other factors influencing stream temperatures, and the hydrologic regime (winter flooding and summer low flow) are all likely to affect some, if not most, populations. Significant long-term changes in any of these characteristics or processes represent important risks for many remaining bull trout populations. Populations are likely to be most sensitive to changes that occur in headwater areas encompassing critical spawning and rearing habitat and remnant resident populations.

Introduced species are a third factor influencing bull trout. Brook trout are seen as an especially important problem and may progressively displace bull trout through hybridization and higher reproductive potential (Leary et al. 1993). Introduced species such as brook trout may pose greater risks to native species where habitat disturbance has occurred (Hobbs and Huenneke 1992).

Isolation and fragmentation are the fourth factor likely to influence the status of bull trout. Historically bull trout populations were well connected throughout the Salmon River Basin. Habitat available to bull trout has been fragmented, and in many cases populations have been isolated entirely. In the upper Salmon River basin, irrigation diversions, culverts, and degraded mainstem habitats have eliminated or seriously depressed migratory life histories effectively isolating resident populations in many headwater tributaries. Loss of suitable habitat through watershed disturbance may also increase the distance between good or refuge habitats and strong populations thus reducing the likelihood of effective dispersal (Frissel et al. 1993).

4.4 Westslope Cutthroat Trout

The Westslope cutthroat trout (*Oncorhynchus clarki lewisi*) is one of several subspecies of cutthroat trout native to the Rocky Mountain region. It often exhibits bright yellow, orange, and red colors and is generally distinguishable from other inland subspecies of cutthroat trout by the particular pattern of black spots that appear on the body.

The Westslope cutthroat trout is a subspecies of cutthroat trout common to the west slope of the Rocky Mountains of Idaho, Alberta, and British Columbia. It is also found in the upper Missouri River Basin of Montana and Wyoming. Sporadic, disjunct populations are present in eastern Oregon and Washington. The known distribution in Oregon is limited to the John Day Basin. The origin of these disjunct groups is unknown. One possible theory is that the subspecies may have been carried to the Oregon and Washington locations during the Bretz floods, 10,000 to 12,000 years ago (ODFW, 1995). Westslope cutthroat occupied Lake Missoula, the origin of the catastrophic floods, and the disjunct populations are scattered along the route of the floods (Allen et al. 1986). Today, populations occur almost exclusively in small, isolated streams in mountainous areas.

Westslope cutthroat trout feed primarily on macroinvertebrates, particularly immature and mature forms of aquatic insects, terrestrial insects, and, in lakes, zooplankton. These preferences for macroinvertebrates occur at all ages in both streams and lakes. In contrast to other subspecies of cutthroat trout, the westslope subspecies does not appear to be highly predaceous on other fish. Behnke (1992) attributes the weak development of piscivory by westslope cutthroat trout to its evolution with two fish-eating species, the bull trout and northern pikeminnow. By specializing as invertebrate feeders, Westslope cutthroat trout have avoided direct feeding competition with these other species.

Westslope cutthroat trout usually reach maturity at four or five years of age. Spawning occurs primarily in small tributary streams between March and July, when water temperatures reach about 50 F. Fertilized westslope cutthroat eggs are deposited in stream gravels where they incubate for several weeks before hatching. Several days after hatching from the egg, when about one inch long, the fry emerge from the gravel and disperse into the stream. The fry may grow to maturity in the spawning stream or they may move downstream and mature in larger rivers or lakes. Three life-history types are recognized in Westslope cutthroat: resident fish, which spend their lives entirely in headwater tributary streams; fluvial fish which spawn in small tributaries and whose young migrate downstream to larger rivers where they grow and mature; and adfluvial fish, which spawn in streams but grow and mature in lakes (Jakober, 1995).

Growth of individual Westslope cutthroat, like that of fish of other species, depends largely upon the interaction of food availability and water temperature. Resident fish usually do not grow longer than 30 cm (12 inches), likely because they spend their entire lives in small, coldwater tributaries with limited food supplies. In contrast, fluvial and adfluvial fish often grow longer than 30 cm (12 inches) and attain weights of 0.9-1.4 kg (2-3 pounds). Such potential for growth only results from the warmer, more productive environments of large rivers, lakes, and reservoirs.

4.5 Sockeye Salmon

Sockeye salmon *(Oncorhynchus nerka)* use the Salmon River corridor only for migration, with spawning and juvenile rearing occurring only in headwater lakes. No habitat exists in the North Fork Salmon River watershed and no further discussion of sockeye life history or effects of this project will be presented.

4.6 Habitat Evaluation

Existing habitat conditions were evaluated during a field survey of the project area in October 2000, and from data supplied by the US Forest Service (USFS), North Fork Ranger District, in December 2000. A field review of the project area was completed on October 20, 2000. General habitat conditions of the North Fork Salmon River were evaluated from the confluence of Moose Creek and the North Fork, down to the confluence of Pierce Creek and the North Fork.

Spawning habitat for anadromous fish appeared to be very limited in this reach, especially the upper end. Suitable substrate was limited with large cobble dominating the reaches inventoried, as were deep pools with cover necessary to hold pre-spawn fish. Habitat at the lower end of the reach was more suitable to spawning for anadromous fish; substrate size was the primary limiting factor, as pools were larger and deeper than further upstream.

Large woody debris (LWD) was extensive in the upper two-thirds of the reach, diminishing as one moved downstream but became quite limited in the lower one-third of the reach. Recent timber harvest activities have limited the amount of onsite LWD available for future recruitment into the system. Pools appeared more numerous than in the upper reaches of the project area, but were still relatively shallow. Most were associated with woody debris or large substrate. The loss of LWD will affect substrate sorting and diminish the availability of substrate suitable for spawning by both resident and anadromous fish.

State Creek does not appear to provide suitable habitat for any fish species due to its small size and limited flows. The lowermost reaches of Pierce Creek appeared very suitable for trout spawning and rearing as well as rearing for anadromous fish.

Access to the site is from an existing dirt road that enters off the highway, drops down to cross the streams on two bridges, and then continues down the eastern side of the property. This road does not appear to have impacted water quality or aquatic habitat except where it crosses the North Fork Salmon River and Moose Creek at the northern end of the property. Due to the steep grade the road as it drops down toward the stream from the west, lack of maintenance and proximity of the road to the stream channel, this road has resulted in increased sediment delivery to both streams. Both bridges are of wood construction with abutments that are located within the channel prism, which can impact hydrology of the system, especially during high water.

Downstream of the proposed development, at Pierce Creek, the stream bottom has been impacted by vehicles crossing the stream in a wet, boggy area, as well as further up Pierce Creek where one tread of the "roadway" is in the stream bottom. This site is on adjacent private land and will not be discussed further in this analysis.

USFS data on stream sediment monitoring shows that the North Fork Salmon River has consistently been near or within the Forest Plan goal of 20% depth fines for anadromous fish, and well below the goal of 29% depth fines for resident fish. Percent depth fines have been on a downward trend since 1993. Limited data exists for the West Fork of the North Fork Salmon River and Pierce Creek. One years data (2000) on the West Fork shows that depth fines are at 22%, slightly above the Forest Plan goal of 20% depth fines for anadromous fish, but below the goal of 29% depth fines for resident fish. Two years data (1993-1994) collected near the mouth of Pierce Creek shows that depth fines averaged 30.1%, well above the Forest Plan goal of 20% depth fines for anadromous fish, and slightly above the goal of 29% depth fines for resident fish.

This data was been collected by core sampling between 1993 and 1999, and by a newer shovel methodology in 1999 and 2000 (USFS, 2000a).

The USFS North Fork Ranger District has been collecting stream water temperature data since 1993 on the North Fork Salmon River and various tributaries (USFS, 2000b). This data was collected using continuously recording thermographs, which are used to monitor long term trend in water temperatures.

Summer water temperatures in the North Fork Salmon River above the proposed project site have generally peaked between 50^{o} F and 55^{o}F, with maximum temperatures never exceeding 55^{o}F since 1993.

Daily summer water temperatures in Moose Creek, which enters the North Fork Salmon River at the upper end of the proposed project site have generally peaked between 45^{o} F and 55^{o}F, with maximum temperatures occasionally exceeding 55^{o}F since 1993.

Daily summer water temperatures in the West Fork of the North Fork Salmon River, which enters the North Fork Salmon River at the upper end of the proposed project site have generally peaked between 45^{o}F and 50^{o}F. Daily maximum temperatures only exceeding 55^{o}F one summer since 1993, in 2000, when water temperatures were regularly above 55^{o}F but never exceeding 60^{o}F.

Daily summer water temperatures for Pierce Creek, which enters the North Fork Salmon River at the lower end of the proposed project site have generally averaged between 50^{o}F and 60^{o}F. Daily maximum temperatures occasionally exceeded 60^{o}F, but only during one summer since 1993, in 2000, did water temperatures ever exceed 65 ^{o}F, and that was only on two days.

Data collected in the North Fork Salmon River at Pierce Creek in 1997 averaged between 50^{o} F and 55^{o}F, with maximum temperatures exceeding 55^{o}F on several days.

USFS hydrology data (USFS, 1998) documents that the North Fork Salmon River has a mean annual monthly flow of 90 cfs, with mean peak flows generally occurring in May (289 cfs) and June (314 cfs). Pierce Creek has a mean annual monthly flow of 4.5 cfs, with mean annual peak flows of 13 cfs in May and 18 cfs in June. The West Fork of the North Fork Salmon River has a mean annual monthly flow of 3.0 cfs, with mean annual peak flows of 9 cfs in May and 12 cfs in June. Moose Creek has a mean annual monthly flow of 4.1 cfs, with mean annual peak flows of 12 cfs in May and 17 cfs in June.

A summary of R1/R4 inventory data supplied by the USFS for the North Fork Salmon River (USFS, 1998) indicated that pool density is slightly above expected natural conditions. Large woody debris density is approximately one half of expected natural conditions. Bank stability is well within desired values, averaging 99.1% stable over 11 reaches. Natural condition refers to the USDA-FS General Technical Report INT-GTR-322 User's Guide to Fish Habitat: Descriptions that Represent Natural Conditions in the Salmon River Basin, Idaho (August 1995).

The same R1/R4 inventory data for Pierce Creek and Moose Creek shows that pool density is well below expected natural condition in Pierce Creek and well above expected natural condition in Moose Creek. Large woody debris density in Pierce Creek is again, well below expected natural condition, and well above expected natural condition in Moose Creek. Streambank stability is well within desired conditions, at 99% stable on Pierce Creek, and averaging 98.1% stable over two reaches on Moose Creek.

Using the above data and professional judgement, the USFS North Fork Ranger District identified limiting factors with regard to bull trout within the North Fork Salmon River watershed. In the North Fork, large woody debris, quantity and quality of pools, and an unscreened diversion on private land were identified as limiting factors. Large woody debris, quantity and quality of pools and high stream gradient were identified as limiting in the West Fork of the North Fork. Large woody debris and the quantity and quality of pools were also identified as limiting in Moose Creek (USFS, 1998).

During the October field survey, a diversion dam was noticed on the North Fork, near the lower end of the property. The site was not investigated due to the "No Trespassing" signs posted in the area. The diversion appears to take water out of the North Fork onto adjacent downstream property. If possible, opportunities for improving this site should be evaluated in the future.

5.0 INVENTORIES AND SURVEYS

Hook and line sampling on October 20, 2000 yielded Westslope cutthroat trout, rainbow trout and rainbow/cutthroat trout hybrids in low numbers. Fish condition appeared good.

Population density and trend monitoring information was obtained from the USFS North Fork Ranger District for the period 1997 to 2000. This information was gathered in conjunction with the Idaho Department of Fish and Game (IDFG) using backpack electroshockers. Data collected at four sites along the North Fork Salmon River document the presence of Westslope cutthroat trout, rainbow trout/steelhead and unidentified sculpin species (*Cottid sp*.). No bull trout, brook trout or chinook were captured in any of these surveys. Data collected at two sites along Moose Creek in 1997 and at one site in 1999 document the presence of Westslope cutthroat trout, rainbow/steelhead trout and bull trout. Data collected at one site in the West Fork North Fork Salmon River in 1997 and in 2000, document the presence of Westslope cutthroat trout, bull trout and unidentified sculpin species (*Cottid sp*.). Data was also collected in Pierce Creek and the East Fork Pierce Creek in 1997, documenting the presence of Westslope cutthroat, rainbow trout/steelhead and unidentified sculpin species (*Cottid sp*.) (USFS, 2000c).

Currently, chinook salmon do not spawn above Twin Creeks, a tributary to the North Fork Salmon River that enters downstream of the project area (Feldhausen, 2000a). Historically, when higher numbers of adults returned to the Salmon River basin, it is likely that chinook spawned within the proposed project area.

6.0 ANALYSIS OF AFFECT

6.1 Cumulative Effects

The effects defined in the Endangered Species Act (50 CFR 402.02) are the effects of future state and private activities that are reasonably certain to occur in the project area.

Activities that occur within the project area include big game hunting, fishing, motor vehicle use, off-road motor vehicle use, timber harvest and irrigation. The impacts from these activities have all affected vegetation communities to some degree, but effects on specific threatened or sensitive species are unknown. The recent timber harvest, though confined mostly to the bench on the eastern side of the river, did include removal of timber in the valley bottom. Removal of these large trees will affect future recruitment of large woody debris to the river channel, impacting the ability of the system to sort and store substrate, create pools and provide adequate rearing habitat for all aquatic species present.

6.2 Direct and Indirect

There are naturally reproducing Snake River spring/summer chinook salmon, steelhead trout, bull trout and Westslope cutthroat trout present in riverine habitat directly or indirectly affected by the proposed development. The proposed development has the potential to affect water quality and/or quantity in occupied habitat.

The primary threat to all aquatic species from this project is sediment input into the North Fork Salmon River. Sedimentation has the potential to occur during all stages of this project. Soil will be disturbed while upgrading the existing bridge, during construction of the pads for homesites, during road construction, widening and reconstruction, and during placement of power and phone lines. These impacts will be minimized and nearly eliminated by project design and associated mitigation. The reconstruction of the existing access road will reduce impacts from those that occur currently from this roadway.

The accelerated accumulation of sediments in aquatic ecosystems leads to a decline in surface water quality and biodiversity. Adverse impacts on aquatic ecosystems result from excessive sedimentation and turbidity. Sediments fill the interstices of gravel and cobble stream bottoms, greatly decreasing the spawning areas for many fish species and the habitat for macroinvertebrates, which serve as food for many fish species. Sediment also darkens the channel bottom, increasing temperature via solar input.

The proposed development has minimal potential to affect the water flow regime and annual hydrography in occupied habitat. Beyond the potential impacts to the system from sedimentation, as discussed above, the reconstruction of the road necessary to provide access to the homesites has a limited potential to affect the flow regime of the area. Roads tend to focus and accelerate runoff altering and interrupting the natural flow regime of the uplands adjacent to the floodplain. The likelihood of this occurring is great at this site given the number of wetland areas, seeps and springs evident on the adjacent upland benches and floodplain areas. This potential will be addressed through mitigation identified below in Section 7.0, Mitigation.

Replacement of the existing bridges will further mitigate any potential effects to the flow regime. Bridge “abutments” or sill plates will be installed three feet further back from the high water mark than the current structures. When the supports are in place, the existing bridge deck will be lifted off and removed from the site. New bridge decks, which will span the stream channels, will be set upon the new support structures. No disturbance will occur at or below the high water mark because of this strategy. Sediment fences will be installed (see Appendix A) to the capture any soil disturbed during this process.

The proposed development will involve toxic and/or hazardous materials that may reach occupied habitat. The primary threat here is motor vehicle fuels and lubricating oils that will be onsite during construction phases. Spill response materials will be onsite to address any spills and reduce potential effects.

Surface disturbance associated with development of the proposed project has the potential to increase weed spread in the area. Alteration of the natural vegetation by weeds has the potential to further increase the rate of soil erosion and sedimentation to the stream. These impacts should be mitigated by implementation of various components of the Moose Creek Estates Environmental Protection Plan for Vegetation

Enhancement/Weed Control/Erosion Control. Mitigations specific to this BA are included in Section 7.0 below.

The proposed development has the potential to increase disturbance of listed juvenile or adult fish species, especially behavior related to survival or reproduction, indirectly, through increasing the number and frequency of human visits to the area. Although not as easily correlated as the relationship between increased sedimentation and decreased egg to fry survival, the effects of increased disturbance on spawning or rearing fish may be as great. Given the lack of suitable cover for spawning anadromous fish in this reach, they will be highly susceptible to disturbance from individuals fishing, walking the streambanks, or even attempting to observe the fish spawning. With the limited cover, they will likely move considerable distances from their desired spawning location when disturbed, lengthening the time required for spawning and reducing their chance of success. These impacts will be addressed through an environmental education effort and a stream habitat restoration strategy which will replace large woody debris removed during earlier occupancies of the site.

7.0 MITIGATION

Although project design has reduced the potential for impacts, increased sediment delivery to the North Fork Salmon River or its tributaries from the proposed development is a potential, under certain conditions, and is the greatest threat to the aquatic system from this proposed development. To reduce this and any other impacts to these systems, the following general and site-specific mitigation designated to meet State water quality standards, shall be implemented to preclude or reduce measurable effects on species and their habitat:

General Mitigation

- Road widening will occur away from the stream, except where widening into the existing shoulders can occur without further encroachment toward the stream.

- Minimize sediment delivery to streams by routing drainage away from unstable channels, fill and hillslopes.

- Minimize disruption of natural hydrologic flow paths, both during construction phases and during homesite design.

- Install drainage structures large enough to accommodate 100-year flood events wherever constructed roads cross drainages.

- Erect sediment barriers such as fences, straw matting or bales between the work area and any flowing waters; such structures shall be placed where they will best intercept any flows that might transport sediment from the worksite;

    - During bridge reconstruction, where fences meet the river, they shall be placed along the highwater mark where possible, and at least one foot upslope of the water's edge at a minimum; fences shall be placed under the bridge structure, connecting the two adjacent fences to preclude water from flowing along either side fence and entering the river channel *(see Appendix A for an example*);

  - Sediment barriers shall be examined on a regular basis, particularly after a storm event, for buildup of sediment; should buildup occur to the point where the barriers risk failing and releasing the captured sediment, sediment will be removed and transported off site;

    - The homeowners association or a representative will monitor silt screening in July and September of each year to ensure that screens are functioning as intended. Required maintenance or corrective changes will be done at that time;

- Sediment barriers shall be maintained until new fill or disturbed soil is vegetated.

- The developer will plant all soil disturbed during road and bridge construction with native grass mixes and shrubs at the appropriate time for each phase of the work;

- All rock materials (riprap) used to stabilize the streambank and bridge supports shall be washed and free of excess dirt.

- Fuel storage and refueling sites should be located a minimum of 300 feet from flowing waters.

- Fuel spill response materials of sufficient quantity and type shall be present on site and readily accessible during the period of work.

- No construction in or adjacent to the North Fork Salmon River between April 1 and September 30 to protect salmonid spawning and fry incubation within the streambed substrate.

- Weed Control will be addressed through various components contained in the Moose Creek Estates Environmental Protection Plan, including:

  - A complete inventory of all weeds will be done in the spring to find and map each of their infestations so that a control strategy can be implemented.

  - A contract will be made with a certified and licensed herbicide applicator, with spraying to start in June or July 2001. In mid-August, a study of the spray effectiveness on the properties will be conducted to determine the seeding to be

done at first snow of that fall. This will include native grass mixes, forage plants, as well as trees and shrubs.

- Every fall, the homeowners association will monitor and map of the progress of weed control to determine the areas to be seeded that fall and plan a spray program for the following spring. The seed mix, trees and shrubs selection will be made with input from Rocky Mountain Native Plant book, Natural Resource Conservation Services, Idaho Fish and Game, USFS and Moose Creek Estates.

- During project construction, all contractors will be required to have excavation equipment power cleaned to remove all dirt and seed. An authorized agent for Moose Creek Estates will inspect equipment prior to its coming to the job sight.

- All mulches, seeds and planting materials must be accompanied by a weed free certification.

8.0 DETERMINATION

Name	Common Name	Status	Determination
Oncorhynchus tschawytscha	Chinook salmon	ESA Threatened	May Affect – Not Likely to Adversely Affect
Oncorhynchus mykiss	Steelhead trout	ESA Threatened	May Affect – Not Likely to Adversely Affect
Salvelinus confluentus	Bull trout	ESA Threatened	May Affect – Not Likely to Adversely Affect
Oncorhynchus nerka	Sockeye salmon	ESA Endangered	No Effect
Oncorhynchus clarki lewisi	Westslope cutthroat trout	USFS Sensitive	May Affect – Not Likely to Adversely Affect Individuals, Population or Habitat

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10.0 SIGNATURE OF PREPARER

_____ _____2/28/2001__

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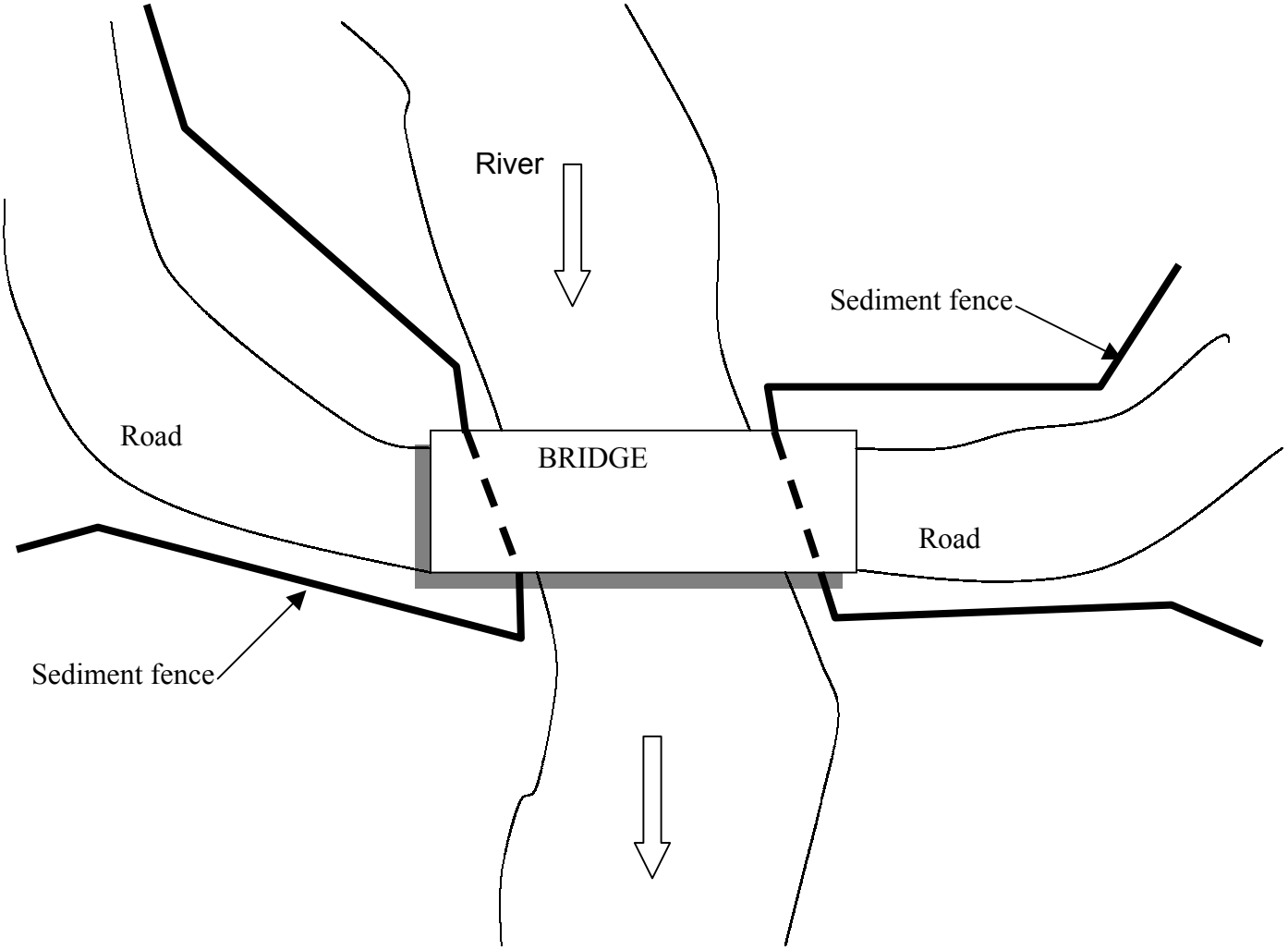

Appendix A. Example of sediment fence location around a bridge structure during installation or modification.

Biological Assessment / Biological Evaluation: Federally – Listed Threatened and Endangered Species, & US Fish and Wildlife Service Species of Special Interest

for the

Moose Creek Estates Development: Part III Recommended Practices

March 2001

Prepared by:

SERG, Inc.
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RECOMMENDED PRACTICES

Species	Concerns	Mitigation Measures
Wolverine Fisher	1. Limited habitat available for species.	1. Replant the area with native tree species, especially Douglas-fir and ponderosa pine
Townsend's Big-eared Bat Long-eared Myotis Long-legged Myotis Yuma Myotis Three-toed Woodpecker Black-backed Woodpecker Boreal Owl Great Gray Owl Flammulated Owl Northern Pygmy Owl Pygmy Nuthatch Northern Goshawk Loggerhead Shrike	1. Loss and degradation of habitat due to logging. 2. Interaction with humans. 3. Limited prey available.	1. Replant the area with native tree species, especially Douglas-fir and ponderosa pine 2. Encourage bats for insect control by erecting bat-nesting structures 3. Encourage songbird feeders 4. Preserve all remaining snags on the subdivision and on the surrounding National Forest for use by cavity-nesting species 5. Erect nest boxes for cavity-nesting bird species (owls, woodpeckers, swallows, chickadees and nuthatches, etc.). 6. Take measures to perpetuate quaking aspen, i.e. prescribed burning of decadent clones.
Western Toad Columbia Spotted Frog Tailed Frog Common Garter Snake	1. Interaction with humans. 2. Loss of habitat due to development.	1. Discourage capturing or killing any reptile or amphibian species. 2. Avoid development activities in and around wetlands.
Elk Moose Deer	1. Impacts to migratory routes. 2. Interactions with humans and fencing.	1. Do not allow fences other than small pet kennels. 2. Do not allow dogs to chase big game animals. 3. Do not winter feed elk or moose without express permission from Idaho Department of Fish and Game.

Chinook salmon Steelhead trout Bull trout Sockeye salmon Westslope cutthroat trout	1. Sediment control. 2. Discharge of wastewater into the North Fork of the Salmon River.	1. Road widening should occur away from the stream, except where widening into the existing shoulders can occur without further encroachment toward the stream. 2. Minimize sediment delivery to streams by routing drainage away from unstable channels, fill and hillslopes. 3. Minimize disruption of natural hydrologic flow paths, both during construction phases and during homesite design. 4. Install drainage structures large enough to accommodate 100-year flood events. 5. Erect sediment barriers such as fences, straw matting or bales between the work area and any flowing waters; such structures shall be placed where they will best intercept any flows that might transport sediment from the worksite. 6. During bridge reconstruction, where fences meet the river, they shall be placed along the highwater mark where possible, and at least one foot upslope of the water's edge at a minimum; fences shall be placed under the bridge structure, connecting the two adjacent fences to preclude water from flowing along either side fence and entering the river channel; 7. Sediment barriers shall be examined on a regular basis, particularly after a storm event, for buildup of sediment; should buildup occur to the point where the barriers risk becoming ineffective, sediment will be removed and transported off site; 8. Sediment barriers shall be maintained until new fill or disturbed soil is vegetated or otherwise stable; 9. All rock materials (rip-rap) used to stabilize the streambank and bridge supports shall be washed and free of excess dirt; 10. Fuel storage and refueling sites should be located a minimum of 300 feet from flowing waters. 11. Fuel spill response materials of sufficient quantity and type shall be present on site and readily accessible during the period of work. 12. 12.No construction in or adjacent to the North Fork Salmon River between April 1 and September 30 to protect salmonid spawning and fry incubation within the streambed substrate.

Gray Wolf Lynx Grizzly Bear Bald Eagle	1. Loss and degradation of habitat. 2. Interaction with humans.	1. Do not allow pets and / or livestock to roam at large. 2. Maintain strict garbage regulations. Do not allow storage of meat or meat scraps out of doors. 3. Do not allow bee hives.

Note: It is important that an information and education brochure for residents be developed to inform them about the wildlife species inhabiting the area and how they should be treated.