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Memorandum

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From: Supervisor, Snake River Fish and Wildlife Office, Boise, Idaho *Acting Stephen D. Duke*

Subject: Section 10(a)(1)(A) Enhancement of Survival Permit for Columbia Spotted Frogs in Sam Noble Springs, Owyhee County, Idaho Conference Opinion  
(Permit Number: TE109603-0) File # 6070.2000 OALS 06-0065

This document transmits the Fish and Wildlife Service's (Service) Conference Opinion (Opinion) based on our review of the proposed Candidate Conservation Agreement with Assurances (Agreement) and the associated Environmental Assessment (EA) for the issuance of a section 10(a)(1)(A) Enhancement of Survival Permit for Columbia Spotted Frogs at Sam Noble Springs, Owyhee County, Idaho, and its effects on Columbia Spotted Frogs and listed species in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended.

If you have any questions concerning this Opinion, the Agreement, or the EA, please contact Carmen Thomas at 208-378-5654.

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**CONFERENCE OPINION  
FOR THE  
ISSUANCE OF A RECOVERY PERMIT FOR A  
CANDIDATE CONSERVATION AGREEMENT WITH ASSURANCES FOR  
COLUMBIA SPOTTED FROGS (*RANA LUTEIVENTRIS*) AT  
SAN NOBLE SPRINGS, OWYHEE COUNTY, IDAHO**

**September 2006  
FISH AND WILDLIFE SERVICE  
SNAKE RIVER FISH AND WILDLIFE OFFICE  
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## INTRODUCTION

The Snake River Fish and Wildlife Office (Service) has prepared the following Conference Opinion (Opinion) in response to the Service's Portland Regional Office request for intraservice consultation. The Service proposes to issuance of an Endangered Species Act section 10(a)(1)(A) (recovery) permit for a Candidate Conservation Agreement with Assurances (Agreement) for Columbia spotted frogs (*Rana luteiventris*) at Sam Noble Springs, Owyhee County, Idaho. Both that permit and this section 7 conference opinion are carried out under the Endangered Species Act (Act) of 1973, as amended.

The purpose of this proposed Agreement is for the Service to join with the Idaho Department of Lands (IDL) and the Idaho Department of Fish and Game (IDFG) to implement conservation measures to improve breeding, foraging, dispersal, and hibernating habitat, as well as migration corridors, for Columbia spotted frogs. The permit would allow continued livestock use in the action area outside the enclosure.

The Service has determined there will be adverse effects to spotted frogs associated with implementing the Agreement. As such, conference under section 7 is required. In this Opinion, we have considered the effects of implementing the Agreement, along with cumulative effects, and conclude that the proposed action is not likely to jeopardize the continued existence of Columbia spotted frogs. We considered effects to gray wolf (*Canis lupus*), bald eagle (*Haliaeetus leucocephalus*), Snake River physa snail (*Physa natricina*), Bliss Rapids Snail (*Taylorconcha serpenticola*), Idaho springsnail (*Fontelicella idahoensis*), bull trout (*Salvelinus confluentus*), and Bruneau hot springsnail (*Pyrgulopsis bruneauensis*). A complete administrative record for this Opinion is on file in the Service's Snake River Fish and Wildlife Office, Boise, Idaho.

## CONSULTATION HISTORY

Following is a summary of meetings and correspondence between the Idaho Department of Lands, Idaho Department of Fish and Game, and the Service in the course of this consultation. A complete record of this consultation is on file at the Service's Snake River Fish and Wildlife Office in Boise.

1999 – 2002	IDL, IDFG, Boise State University, and the Service intermittently discussed Columbia spotted frog conservation.
December 2003	IDL and IDFG submitted a complete draft Agreement to the Service.
December 2003 – March 2005	Drafts of the Agreement were exchanged between IDL, IDFG, and the Service. The Service began drafting the EA.
August 2005	The draft Agreement and EA were completed and submitted to Service’s Regional Office for review and comment.
February – March 2006	A 30-day public comment period on draft Agreement and draft EA was provided.
April – June 2006	The Service, IDL, and IDFG prepared responses to comments and made revisions to the Agreement and EA.
July – September 2006	The Service drafted a Conference Opinion, finalized the EA, finalized the Agreement, completed a Finding of No Significant Impact (FONSI), and completed a Findings document.

## CONFERENCE OPINION

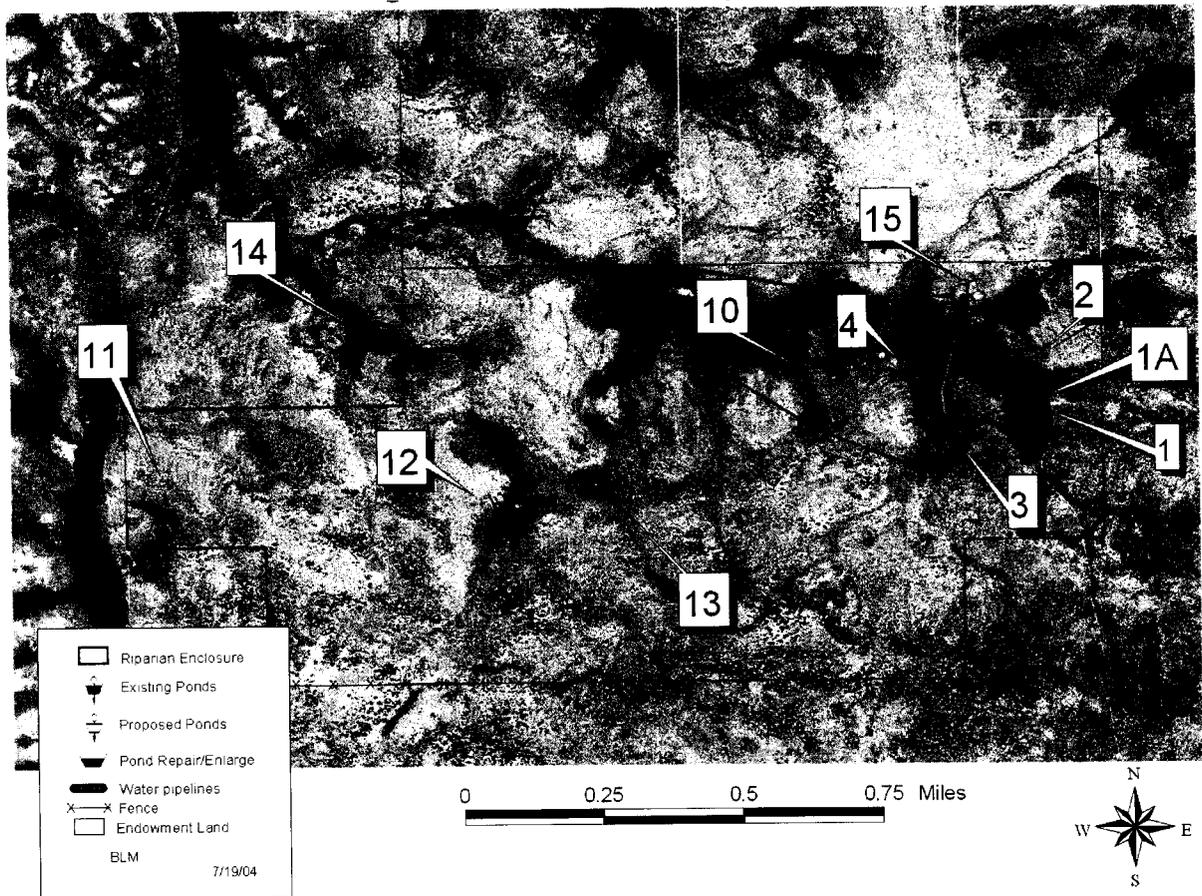
### I. DESCRIPTION OF PROPOSED ACTION

#### A. Action Area

The action area is defined as all areas to be affected directly or indirectly by the proposed action. For purposes of this Opinion, the action area includes a portion of the upper Rock Creek drainage in Owyhee County, Idaho. The action area includes 680 acres of Idaho State endowment land. The area is managed by the IDL and is commonly referred to as the Sam Noble Springs parcel: N½SE¼, SE¼SE¼ Section 22; S½, S½N½ Section 23; SW¼NW¼, NW¼SW¼ Section 24 Township 9 South, Range 2 West. The land is not irrigated, and the dominant use is livestock grazing.

The Sam Noble Springs parcel is a complex of several natural springs and nine man-made livestock watering ponds (Figure 1). There are approximately six springs within the 104 acre (42 ha) enclosure proposed in the Agreement and identified on the map, and three springs outside the enclosure in the 680 acre (275 ha) area. The springs in the wet meadow complex on the Sam Noble Springs parcel produce from 10 to 20 gallons (38 to 76 liters) per minute depending on the year; discharge may drop to six gallons (23 liters) per minute in extreme drought years (IDL *et al.* 2006).

**Figure 1: The Big Field Parcel and Sam Noble Springs, Owyhee County, Idaho (IDL et al. 2006).**



Flow from these springs varies from year to year and appears to be affected, at least in part, by snow pack. Spring flow also decreases over the course of the season, with flow highest in the spring and decreasing during the summer. By late summer when livestock grazing typically occurs, total flow from the spring has decreased substantially, and some of the springs are reduced to a trickle, particularly during periods of drought (Tim Duffner, IDL, pers. comm., 2004). The springs drain into a wet meadow complex dominated by sedges (*Carex* spp.). Willows (*Salix* spp.) are present around some of the ponds, and there is an isolated clump of willows in the wet meadow. The wet meadow and spring complex occupy less than 100 acres (40 ha) of the 680 acre (275 ha) Sam Noble Springs parcel.

The Sam Noble Springs parcel is part of a larger pasture, called the “Big Field” which is composed of the Sam Noble Springs parcel, and private and BLM land to the north of the State land parcel. There are no division fences between these ownerships or within the Big Field. The Big Field is leased to a rancher, who is also an adjacent landowner, for livestock grazing.

**B. Proposed Action**

The proposed action is for the Service to approve a Candidate Conservation Agreement with Assurances (Agreement) and issue a 10(a)(1)(A) permit to the State of Idaho, Department of Lands

and Department of Fish and Game (State) for incidental take of Columbia spotted frogs. The State would implement conservation measures on their land as identified in the Agreement and would receive incidental take authorization for certain management and conservation activities on the 680 acres (275 ha) known as Sam Noble Springs. The permit would be issued in accordance with section 10(a)(1)(A) of the ESA and the Service's CCAA Final Rule (64 FR 32726).

The Agreement would support efforts to manage for the enhancement, protection, and/or creation of habitat for frogs, with an emphasis on core wetland and riparian habitat for most life history functions of the species. These measures would enhance conservation of the species within Sam Noble Springs. The conservation measures would be implemented by the State and would consist of modifying grazing practices and actively managing habitat for the purpose of conserving the species.

Under the Agreement, the State would be issued a section 10(a)(1)(A) permit and would agree to implement the conservation measures outlined in the Agreement. This permit would authorize incidental take of Columbia spotted frogs as long as the permit conditions, including the Agreement and its specified conservation measures, are implemented. Should the species eventually be listed under the ESA, the proposed permit would authorize incidental take of Columbia spotted frogs, consistent with the Agreement and as the result of specified land management practices. The permit would include ESA regulatory assurances as discussed in the Service's Candidate Conservation Agreement with Assurances Final Policy (64 FR 32726).

Consistent with the Service's Candidate Conservation Agreement with Assurances Final Policy, the conservation goal of the Agreement is to encourage development and protection of suitable Columbia spotted frog habitat on non-Federal lands by modifying livestock grazing and water management and restoring/creating suitable breeding habitat. The conservation goal would be met by giving the State incentives to implement conservation measures, primarily through regulatory certainty concerning land use restrictions that might otherwise apply should the Columbia spotted frog become listed under the ESA.

The practices covered in the proposed Agreement are related to livestock management activities and habitat restoration efforts which include: grazing management activities, installation of grazing management structures, creation of additional livestock watering ponds, installation and operation of a water collection facility serving a livestock watering trough, maintenance of existing livestock watering ponds, maintenance and enhancement of ponds within the enclosure to benefit spotted frogs, and management of vegetation in and adjacent to spotted frog habitat.

The Agreement contains the following measures, some of which have already been implemented, and others that have not yet occurred. Table 1 provides additional detail about conservation measures contained in the proposed action. Specifically, Table 1 identifies specific actions, responsible parties, and completion dates. Some activities have already taken place, and some will occur in the future.

**Table 1: Conservation measure implementation schedule for the Columbia spotted frog Agreement, Owyhee County, Idaho**

<i>Conservation Measure</i>	<i>Specific Action</i>	<i>Party(s) Responsible</i>	<i>Completion Date</i>
1	Lease	IDFG, IDL	January 1, 2003
1	Fence enclosure	IDFG	July 2003
1	Eliminate livestock grazing in enclosure	IDFG, IDL	July 2003
2	Reduce AUMs	IDL	Began in 2003, ongoing annually for term of lease
2	Develop water collection and delivery system	IDL	September 2004
2	Operate and maintain water collection and delivery system	IDL	Began in 2004, ongoing annually for term of lease
3	Excavate new pond	IDL	November 2003
3	Fence spring and new pond	IDFG	September 2006
3	Rehabilitate two livestock ponds	IDL	October 2003
4	Rehabilitate spotted frog ponds	IDFG	Ongoing as needed
4	Manipulate vegetation	IDFG, IDL	Ongoing as needed
4	Monitor wetland vegetation	IDL	Began in 2004, ongoing annually for term of lease
4	Monitor spotted frog population	IDFG	Began in 2006, ongoing annually for term of lease

Subheadings below correspond to numbered conservation measures in Table 1 above.

**1. Habitat Maintenance and Enhancement within Enclosure**

The proposed action includes maintenance of an existing fence to exclude livestock from a 104-acre (42 ha) portion (“Enclosure”) of the enrolled land that includes the wet meadow, spring complex, and the six ponds fed by Sam Noble Springs (Figure 1). Construction of the enclosure fence was completed in 2003. All ponds within the enclosure are occupied by spotted frogs. The IDL has leased to IDFG the 104-acre (42 ha) enclosure. As part of the proposed action, this lease would be maintained for approximately 22 years, and there would be no grazing within the enclosure.

The quality and amount of occupied frog habitat would be increased within the enclosure by precluding livestock access, conducting vegetation management, and by refurbishing some or all of the ponds inside the enclosure, as needed to benefit frogs. If frog populations do not respond well to the complete removal of livestock from within the enclosure, the Agreement provides for

reintroduction of limited livestock grazing or alternative methods of vegetation management within the enclosure to thin vegetation where needed to allow spotted frog movements. Vegetation would be manipulated through potential juniper removal and noxious weed control to enhance habitat quality for spotted frogs relative to the existing condition. Ponds inside the enclosure would be rehabilitated if it is determined that excavation to increase their size and/or depth would benefit spotted frogs (IDL *et al.* 2006).

## **2. Increase Water Availability for Columbia Spotted Frogs within the Enclosure**

The proposed action would increase the amount of water available in occupied frog habitat during the period livestock would be grazing on enrolled lands by reducing the amount livestock use allowed within the enclosure and by piping water outside the enclosure for use by remaining livestock on the enrolled lands. The project proponents have already developed a subsurface water collection system in the wet meadow below pond 3 inside the enclosure to deliver water to troughs located outside the enclosure to facilitate the reduction in water use by livestock (trough 15, Figure 1). As part of the proposed action, water would be collected and delivered outside the enclosure only during the 30-day period when livestock are grazing in the Big Field. Water troughs served by the collection system are equipped with float valves, so water shuts off when the troughs are full; thereby only delivering the amount of water consumed by livestock and lost via evaporation. When livestock are not present in the Big Field, the water collection system will not operate, and water previously collected would instead go to the wet meadow immediately downslope of the collection area (IDL *et al.* 2006).

## **3. Habitat Enhancement and Maintenance Outside Enclosure**

Livestock grazing on the 576 acres (233 ha) of enrolled lands outside the enclosure would continue (IDL *et al.* 2006) for a total of 30 days between late July and the end of October. The Agreement provides for a reduction of AUMs authorized in the grazing permit by 43 percent from 254 to 144. This reduction in the permit occurred in 2003. There are four livestock watering ponds and one trough in the Big Field where cattle would continue to have access.

The proposed action would improve existing and provide potential additional breeding and hibernation habitat (ponds and springs) for Columbia spotted frogs on the western end of the enrolled lands outside the enclosure. To date, one new pond has been constructed adjacent to an existing springhead used by spotted frogs at the western boundary of the parcel (pond 14, Table 1). By 2007, a livestock exclusion fence would be constructed around a portion of pond 14 and all of its springhead (Figure 1). In 2003, ponds 12 and 13 were refurbished by excavation to increase their depth and thereby increase their water retention for livestock watering. The refurbishment specifically included gently sloping the northern shores to facilitate potential future use by frogs. Since the refurbishment of ponds 12 and 13 and the creation of pond 14 in 2003, spotted frogs now occupy all three ponds (IDFG, unpublished data, 2006). Cattle use of approximately one-half of pond 12 was excluded in 2005 through construction of a fenced enclosure.

#### 4. Monitoring and Adaptive Management

Measures identified in the proposed action would be implemented or modified based on a process of monitoring and adaptive management, as needed to benefit frogs. Specifically, IDL and IDFG would be responsible for monitoring and reporting implementation of the Agreement and fulfillment of its provisions, including implementation of agreed-upon conservation measures and any adverse effects to spotted frogs resulting from these actions.

IDFG would monitor the population of Columbia spotted frogs in the action area as follows:

- a. Columbia spotted frog egg masses would be counted in the action area both inside and outside the exclosure. Egg masses would be counted during April and early May each year of the first five years of the Agreement. At the end of the first five years the IDFG would evaluate this population monitoring methodology. In consultation with the parties to the Agreement, the IDFG may modify this population monitoring methodology and schedule.
- b. Ponds outside the exclosure within the action area would be checked to determine if spotted frogs are present each year for the first five years of the Agreement. At the end of the first five years, the IDFG would evaluate this population monitoring methodology. In consultation with the parties to the Agreement, the IDFG may modify this population monitoring methodology and schedule.
- c. A total Columbia spotted frog population estimate in the action area would be made every five years to determine the size and structure of the population.
- d. A survey would be conducted to determine if metamorphs are present each year for the first five years of the Agreement. At the end of the first five years, the IDFG would evaluate this population monitoring methodology. In consultation with the parties to the Agreement, the IDFG may modify this population monitoring methodology and schedule.
- e. The size and depth of the six man-made ponds inside the exclosure would be measured at least every three years. This information in conjunction with egg mass counts would be analyzed to determine if the ponds need to be refurbished.
- f. Monitoring results would be analyzed to determine if the expected benefits of the conservation measures are realized and if additional measures identified in the Agreement need to be implemented.

IDL would monitor the effects of the exclosure fence and the water collection and delivery system on vegetation and hydrology within the exclosure as follows and as described in the Agreement:

- a. The Rock Creek Meadow green-line transect is designed to detect changes in species composition of the wet meadow.
- b. The Rock Creek Meadow Cross-Section Transect measures the width of the wet meadow and the presence of surface water in a series of transects and is designed to determine if the implementation of conservation measures increases the size of the wet meadow and the extent of the wetted area.
- c. The Pond 3 Meadow Cross section Transect would specifically monitor the effect of the water development system on the wet meadow immediately below pond 3.

Vegetation and spotted frog population monitoring results would be analyzed to determine if expected benefits of conservation measures are being realized. Particular attention would be directed to the density of vegetation and frog abundance and distribution. If opportunities for improvements to frog habitat are identified, then additional measures identified in the Agreement would be implemented (IDL *et al.* 2006).

## II. STATUS OF THE SPECIES

### A. Legal Status

The Service, in its 1993 Federal Register notice, presented a “warranted but precluded” finding on a proposal to list Columbia spotted frogs under the Act. The Service currently recognizes four populations based on disjunct distribution: Northern, Great Basin, Wasatch, and West Desert. Columbia spotted frogs are believed to be abundant within the northern population of the species’ range from Alaska to Wyoming (Gomez 1994). The other three disjunct populations (Great Basin, Wasatch, and West Desert) received candidate status in 1993 based on the loss of subpopulations in a number of areas in Nevada. The Great Basin population is distributed in isolated patches from eastern Oregon, through southwest Idaho, and into Nevada. At that time, the Great Basin population was given an ESA listing priority of 9; in 2001 the priority was raised to 3 (the highest listing rank possible for a subspecies), based upon the discovery of *Chytridiomycosis* in the Owyhee subpopulation, declining numbers, and the imminence of threats. Since the 1993 finding, spotted frogs have been designated as candidate species under section 4 of the Act.

Spotted frogs are classified as a priority species of special concern by the IDFG and are ranked as S2 (imperiled) by the Idaho Conservation Data Center (ICDC 2000). As of 2001, the Idaho Conservation Data Center had recorded 51 Element Occurrences (EOs) for Great Basin population of Columbia spotted frogs: one was extirpated, presence was not verified at five, and 20 had five or fewer frogs observed during the most recent survey (ICDC 2000).

### B. Description of the Species

Thompson (1913) originally divided the spotted frog *Rana pretiosa* into two subspecies, *R. p. pretiosa* and *R. p. luteiventris*. This taxonomic subdivision was generally ignored by the scientific community (58 FR 27261). Nussbaum *et al.* (1983) considered the spotted frog a monotypic species, *R. pretiosa*. Based on more recent genetic analysis, Green *et al.* (1997) divided the taxon into two distinct species, *R. pretiosa* and *R. luteiventris*. *Rana pretiosa* (the Oregon spotted frog) ranges from the extreme southwestern portion of British Columbia, Puget Sound, southwestern Washington, and the Oregon Cascades (Green *et al.* 1997). *Rana luteiventris* (the Columbia spotted frog) is found from Alaska and most of British Columbia to Washington east of the Cascades, Idaho, the Bighorn mountains of Wyoming, the Mary’s, Reese and Owyhee River basins of Nevada, the Wasatch Mountains, and the western desert of Utah (Green *et al.* 1997). Green *et al.* (1997) further sub-divided *Rana luteiventris* (the Columbia spotted frog) into at least four populations; the Northern, Great Basin, West Desert, and Wasatch. Green *et al.* (1997) determined the division of the populations based on genetic differences. The Great Basin population range includes eastern

Oregon, southwestern Idaho, and the Mary's, Reese, and Owyhee River drainages of Nevada (Green *et al.* 1997).

Great Basin population Columbia spotted frogs have a light-colored jaw stripe and are light to dark brown or olive dorsally with varying numbers of irregular black spots. The skin texture varies from smooth to rugose, they have dorsolateral folds, and coloring on young is less distinct. Ventrally, coloration ranges from white to yellow, and mottling is present to varying degrees. The hind feet are large and have webbing that extends nearly the length of the hind toes. At metamorphosis, spotted frogs range in size from 23 to 33 mm (approximately 0.88 to 1.25 inches) snout-vent-length. In their third year, they are generally large enough that gender may be determined. As adults, they can vary in size from 50 to 90 mm (2 to 3.5 inches) depending on gender and to some extent, age (Engle 2001).

### **C. Threats**

The largest known threat to spotted frogs is habitat alteration and loss, specifically loss of wetlands used for feeding, breeding, hibernating, and migrating. Reduction or loss of habitat can be attributed at least in part to recent drought conditions, spring developments, wetland degradation, water diversions, road construction, dam construction, fire, and loss of native beavers. Other threats include predation by non-native species and diseases. These threats, most of which are anthropogenic in nature, are likely playing a role in the decline of spotted frogs (Munger 2003).

Generally, spotted frog habitat degradation and fragmentation is probably a combined result of decreased riparian vegetation and water source alterations. Activities that can influence vegetation and water sources include past and current spring development, agricultural development, and heavy livestock grazing. Spotted frog habitat in Owyhee County occurs in areas where these activities are likely to occur, or where these activities have occurred in the past. The effects of habitat degradation and fragmentation include, but are not limited to: (1) the elimination of vegetation to protect frogs from predators and UV-B radiation; (2) reduction of soil moisture; (3) alterations in water temperature, chemistry, and water availability; and (4) restructuring of habitat zones through trampling, rechanneling, or degradation, causing the loss of breeding, feeding, and hibernation sites (IDFG *et al.* 1995, Munger *et al.* 1997, Reaser 1997, Munger 2003).

#### Spring Development

Springs serve an important role in spotted frog habitat. Springs provide a source of water for frog breeding, feeding, and winter refuge (IDFG *et al.* 1995). Springs provide deep, protected areas for spotted frogs in cold climates, which serve as hibernacula. Springs also provide protection from predation through underground openings (IDFG *et al.* 1995, Patla and Peterson 1996). Springs are commonly excavated to create ponds, or piped to provide water to a nearby trough for livestock. These spring developments alter the source of water in desert ecosystems, which may lead to the loss of associated riparian habitats and wetlands used by spotted frogs. Many of the springs in southern Idaho, eastern Oregon, and Nevada have been developed, making them of lesser quality for use by spotted frogs and altering the hydrological regime.

### Water Quantity

Human activities that reduce amounts of water in frog habitat reduce quality and quantity of habitat. Protection of wetland habitat from loss of water to irrigation or water development may be difficult in some situations because water developments have already occurred within much of the known habitat of spotted frogs (Munger 2003). Federal lands may have water rights that are approved for wildlife use, but these rights are often superseded by upstream or downstream water rights and may not provide sufficient flows needed by frogs. Also, most public lands are managed for multiple-use and are subject to livestock grazing, silvicultural activities, and recreation uses that may impact water quantity.

### Fragmentation

Fragmentation of habitat may be one of the most significant barriers to spotted frog recovery and population persistence (Engle and Munger 2000). Vegetation and surface water along movement corridors provide protection from high temperatures and arid environmental conditions, as well as protection from predators (Engle 2001). Loss of vegetation and/or lowering of the water table in movement corridors can pose a significant threat to frogs moving from one area to another. Recent studies in Idaho indicate that spotted frogs exhibit breeding site fidelity (Patla and Peterson 1996, Engle 2000, Engle and Munger 2000). Zones of unsuitable habitat may impede movement of frogs from hibernation sites to breeding sites. As movement corridors become more fragmented due to loss of flows and vegetation within riparian or meadow habitats, local populations will become more isolated (Engle 2000). Although a direct causal effect between livestock grazing and declines in spotted frog populations has not been demonstrated in the Owyhees, negative effects of heavy grazing on the components of habitat important to spotted frogs (that is, the vegetation, hydrology, and structure) in riparian areas have been documented (Kaufman *et al.* 1982, Kaufman and Kreuger 1984, Skovlin 1984, Schulz and Leininger 1990).

### Drought

Natural variations in environmental conditions tend to magnify the detrimental effects of anthropogenic activities, just as activities that alter vegetation and water sources may magnify the detrimental effects of natural environmental events. Multiple consecutive years of less than average precipitation may result in a reduction in the number of suitable sites available to spotted frogs (Lingo and Munger 2003). Local extinctions eliminate source populations from habitats that in normal years are available as frog habitat (Gotelli 1995, Lande and Barrowclough 1987, Schaffer 1987). These climatic events are likely to exacerbate the effects of other threats, thus increasing the possibility of stochastic extinction of subpopulations by reducing their size and potential for connectedness to other subpopulations. As movement corridors become more fragmented, due to loss of surface flows within riparian or meadow habitats, local populations become more isolated (Engle 2000). Increased fragmentation of the habitat can lead to greater loss of populations due to demographic and/or environmental stochasticity.

### Livestock Use

The potential for interaction between livestock and Columbia spotted frogs is high in areas where grazing occurs and water sources are rare. Whether the impact of livestock is negative, neutral, or positive depends on the intensity and timing of grazing and on site-specific habitat characteristics.

Grazing can lower the water table due to compaction and erosion of soil and loss of vegetation. Late season grazing that removes vegetative cover from migration corridors and breeding sites can increase the risk to newly metamorphosing frogs and migrating adults. Bank-stabilizing rushes, sedges, and willows may be replaced by weedy species and less protective grasses (Platts 1991, Clary 1995). The decrease in riparian vegetative cover reduces the humidity at ground level and may expose frogs to predators and desiccation. Removal of vegetation can affect habitat for insects which are the primary food source for frogs.

Decreased water quality and quantity resulting from livestock watering (each cow can drink 15-20 gallons of water a day) in late summer may facilitate the spread of disease if frogs are concentrated in small, isolated pools, as opposed to wide, clean wetlands. Trampling of pond banks and seeps can compress and close porous subterranean passageways to preferred hibernation sites. Water made nutrient-rich by waste from livestock can reduce oxygen content due to bacterial decomposition of organic material (Wetzel 1983) making overwintering sites less suitable.

Livestock grazing may also result in direct mortality of frogs, particularly metamorphs. The potential for direct mortality from trampling is greatest when livestock are grazing at the same time metamorphs are emerging from the ponds. Lingo and Munger (2003) speculated that grazing the margins of ponds may decrease successful metamorphosis of spotted frogs. Egg masses can be stranded in hoof prints at breeding sites, increasing the likelihood of freezing and/or predation loss. Direct trampling of breeding sites can kill an entire cohort.

Limited livestock grazing of riparian vegetation may benefit frogs. Reduced vegetation may allow pond water to receive more exposure to the sun, allowing for more primary production as a result of photosynthesis. Thinned or cropped vegetation adjacent to ponds may also facilitate frog dispersal. However, complete absence of vegetation adjacent to ponds is likely to result in increased mortality rates of dispersing frogs by predation.

#### Predation

Predation by fish, bull frogs, and other species such as reptiles, herons, and birds may not be considered a significant factor for spotted frogs under normal habitat conditions, given that these species have evolved together. However, the effects of interactions with these predators/competitors could be significant and may contribute to unsustainable losses in already reduced populations.

#### Disease

Chytrid fungus (*Chytridiomycosis*) causes a disease responsible for documented catastrophic amphibian population declines for amphibian species (Daszak 1999). Chytrids are ubiquitous fungi and are found in aquatic habitats and moist soil, where they degrade cellulose, chitin, and keratin (Powell 1993). In hot or desert regions, outbreaks generally occur during winter (hibernation) or early spring (J. Wood, USFWS, pers. comm., 2001). Humans (fieldworkers and recreationists), freshwater fish, and amphibians are known transmitters of the fungus. Chytrid fungus has been discovered within Owyhee County at Circle Pond, but has not yet been confirmed within the Sam Noble Springs spotted frog population, though it may already be present (M. Drew, IDFG, *in litt.* 2003). Like predation, fungal infection by chytrid occurs naturally but may have exaggerated effects on vulnerable populations of amphibians like spotted frogs.

### Loss of Beaver

Beavers have the potential to play an important role in maintaining and enhancing wetland ecosystems. Columbia spotted frog hibernacula have been located in beaver dams (Munger 2003). Beaver dams are commonly destroyed in southern Idaho, and their loss has caused a decrease in breeding and hibernating habitat available for Columbia spotted frogs (Engle 2002).

### Dams

The construction of dams can eliminate Columbia spotted frog habitat by inundating breeding and hibernating sites and wetland areas above dams. Construction of dams can also fragment frog populations, thereby increasing the likelihood of local subpopulation loss. Reservoirs are also likely sites for introduction of predatory fish and bullfrogs. The alteration of water flow below dams may reduce seasonal connectivity and prevent the formation of suitable pools for breeding.

### Road Construction

Road construction and crossings near Columbia spotted frog habitats can result in increased mortality due to road kill, decreased water quality, and increased habitat fragmentation by introducing a barrier to movement such as fill or a culvert. This fragmentation may be particularly detrimental in situations where the existence of a population is dependent upon immigration from other populations (Sjogren 1991).

### Fire

Wildfires historically occurred naturally throughout the west, and Columbia spotted frogs were subjected to their effects for long periods of time. Natural fires typically occur during the summer when vegetation is dry and spotted frogs are at moist feeding areas or possibly aestivating. Controlled burns conducted by land managers in the spring (to reduce fire intensity) may impact migrating or foraging frogs. Fires intended to improve habitat for big game and vegetative production for livestock often remove willows from riparian corridors, changing the natural functioning processes and temporarily removing important habitat components for spotted frogs.

### Other Factors

Other factors known to affect amphibian populations include ultraviolet radiation and environmental contaminants. Amphibians' semi-permeable skin, development of eggs and larvae in water, and dual trophic position (herbivores, then carnivores) render them susceptible to both direct and indirect effects from contaminants. Mining occurs in many areas containing Columbia spotted frogs as well as pesticide application to control insect and plant pests. High elevation historical mining areas near Silver City were found not to support spotted frogs, although they are well within the species' range.

## **D. Life History**

Columbia spotted frogs are aquatic amphibians; they need to be in or very near water at all times. As such, they occupy the ponds, watercourses, and meadow where surface water is present. Past studies have shown that frogs require habitat components serving four major life-history needs: hibernating, breeding, foraging, and migrating (IDFG *et al.* 1995, Munger 2003, Lingo and Munger 2003).

First, hibernacula with oxygenated water and sufficient interstitial spaces for frogs to seek protection are required for successful overwintering. Munger (2003) observed that five types of hibernacula may be used by Columbia spotted frogs: undercut banks, spring openings, the interior of beaver dams, water-flooded burrows associated with Geyer's willow (*Salix geyeriana*), and the bottoms of ponds (see also IDFG *et al.* 1995). Bull and Hayes (2000) found that overwintering patterns were linked to local environmental variations and observed overwintering at aquatic sites.

Second, successful frog breeding requires sites with sufficient water to allow young to complete the larval phase. After emergence from hibernacula, adults move to breeding areas in wetland/riparian areas. Breeding usually occurs in pooled water (*e.g.*, oxbows, lakes, stock ponds, beaver-created ponds, springs, seeps in wet meadows, and stream side channels) with floating vegetation and some emergent vegetation (IDFG *et al.* 1995, Reaser 1997, Munger *et al.* 1997). Successful egg production and the viability and metamorphosis of spotted frogs are susceptible to habitat variables such as water temperature, water depth, pH, desiccation, over-hanging vegetation, and the presence/absence of non-native fishes and bullfrogs (Morris and Tanner 1969, Reaser 1996, Munger *et al.* 1996). Breeding and egg deposition may take place as early as late March, and tadpoles hatch through May. Columbia spotted frogs may transform from tadpoles to frogs from June through the end of the summer season (Engle 2001).

Third, frogs require shallow pond margins and moist areas with vegetative cover for feeding habitat. Following breeding, frogs may remain at the same site or may move to other feeding areas. Frogs forage in the wet meadow and along the margins of the ponds (Engle 2001).

Finally, frogs need movement corridors containing water and vegetation for cover that allow safe travel among required habitat components. Breeding areas may be located hundreds of meters away from overwintering sites, thus the ability to move between breeding and hibernation sites is critical. Wet meadows and associated watercourses serve as dispersal corridors and are important for short-distance seasonal migrations (Engle 2001).

### **E. Population Dynamics**

Little information is available on population dynamics of Columbia spotted frogs. Females show high breeding site fidelity within the project area (Engle 2001). Female frogs produce one and only one egg mass each year, but yearly fluctuations in sizes of egg masses can be extreme (UDWR 1998). Preliminary evidence suggests the majority of offspring are produced from a small percentage of the population (Engle and Munger 2000 as cited in Engle 2001).

Columbia spotted frog populations likely conform to metapopulation theory where source and sink populations occur. Occasionally, one local population may become extirpated (sink) and subsequently be refounded by individuals from other local populations (sources) if migration distance is within the species' capability (Gill 1978).

## **F. Status and Distribution**

### **1. Rangewide**

Populations of the Columbia spotted frog (*Rana luteiventris*) are found from Alaska and British Columbia to Washington east of the Cascades, eastern Oregon, Idaho, the Bighorn Mountains of Wyoming, the Mary's, Reese, and Owyhee River systems of Nevada, the Wasatch Mountains, and the western desert of Utah (Green *et al.* 1997). Genetic evidence (Green *et al.* 1997) indicates that Columbia spotted frogs may be a single species with three subspecies or may be several weakly-differentiated species.

The action area is within the Great Basin population. As of 2001, the Idaho Conservation Data Center had recorded 51 Element Occurrences (EOs) for Great Basin population of Columbia spotted frogs: one was extirpated, presence was not verified at five, and 20 had five or fewer frogs observed during the most recent survey (ICDC 2000). While there is good information for spotted frogs within and around the project area and in the Toiyabe basin of Nevada (TSFTT 2003), substantial information for most of the rest of the Great Basin population is not available.

### **2. Idaho Portion of the Great Basin Population**

Today, Columbia spotted frogs of the Great Basin Population occur at remnant, isolated, and higher elevation sites in Nevada, southwestern Idaho, and eastern Oregon. Historically, the range of the Great Basin Population included the Raft River and Goose Creek drainages, the lower portions of which occur in Cassia County and the Owyhee Mountains in Owyhee County in southern Idaho. Recent surveys conducted in the Raft River and Goose Creek drainages in Idaho failed to locate spotted frogs (Reaser 1997, Shipman and Anderson 1997, Turner 1962).

In 1994 and 1995, the Bureau of Land Management (BLM) conducted surveys in the Jarbidge and Snake River Resource Areas in Twin Falls County, Idaho. These efforts were also unsuccessful in locating spotted frogs (McDonald 1996). However, frogs were found in Bear Creek and Shack Creek in Twin Falls County during surveys in 1997 and 2001 (J. Engle, USFWS, pers. comm., 2005).

Prior to 1993, spotted frog occurrence in the Owyhee Mountain range of southwestern Idaho was only recorded for six historical sites (Munger *et al.* 1996). However, extensive BLM-funded surveys since 1993 (Munger 2002) have led to a substantial increase in the number of sites in southwest Idaho known to be occupied by spotted frogs. Although these surveys increased the available information regarding known species locations, most of these sites support small numbers of frogs. Of the approximately 52 known EOs in 2005, fewer than 10 frogs were observed at 37 EOs at last observation (J. Engle, USFWS, pers. comm., 2005). Monitoring at 10 of the 52 occupied sites since 1997 indicates a general decline in the number of adult spotted frogs encountered (Engle 2000, Engle and Munger 2000, Lingo and Munger 2003). All known local populations in Owyhee County appear to be functionally isolated (Engle 2000, Engle and Munger 2000, Lingo and Munger 2003). The largest known EO of the Great Basin population of spotted frogs occurs in the Rock Creek drainage of Owyhee County, which includes the project area, Sam Noble Springs (Engle 2000).

## **G. Previously Consulted-on Effects**

Effects to Columbia spotted frog were previously considered in one formal consultation (#14420-2006-F-0206). This biological opinion addressed Forest Service and Bureau of Land Management stream crossing removal/replacement activities throughout Idaho. Currently, there are no known crossings within or adjacent to the project area that would be removed or replaced pursuant to this formal consultation. Although some negative impacts may occur to spotted frogs if activities were conducted within the project area, the overall anticipated effects to the species are beneficial over the long-term as a result of conservation measures identified in the opinion. The Opinion concluded that effects to spotted frogs were not expected to be significant, and the action was determined “not likely to adversely affect” spotted frogs.

## **H. Conservation Needs**

Conservation of Columbia spotted frogs requires reducing or eliminating threats to the long-term persistence of populations and their habitats, improving degraded habitat conditions, restoring many of the natural functions of riparian systems (TSFTT 2003), ensuring interactions among multiple groups to provide adequate gene flow, and allowing spotted frogs access to habitat of adequate quality. Breeding sites, overwintering sites, foraging areas, and movement/dispersal corridors need to be protected from disturbances that reduce vegetation, water quality, and water quantity (Engle 2001).

Actions identified as necessary to attain the conservation needs of spotted frogs in Owyhee County, Idaho, include the following: (1) manage livestock grazing to avoid trampling effects to spotted frog egg masses, tadpoles, metamorphs (Engle 2001); (2) manage livestock use of watercourses to minimize fouling of water by livestock waste (Munger 2003); (3) manage livestock grazing to retain adequate cover around margins of ponds and riparian areas to allow for continued use, reproduction, recruitment, and overwintering by spotted frogs and to avoid bank erosion (Munger 2003, Engle 2001); (4) minimize development of springs such that adequate surface water is retained throughout the year for spotted frogs (Munger 2003, Engle 2001); (5) allow beaver to inhabit and remain in waterways in Owyhee County to provide pools that benefit spotted frog reproduction and recruitment (Munger 2003); and (6) improve riparian and wetland meadow habitat quality and connectivity to allow genetic exchange among currently isolated groups of frogs (Engle 2001, TSFTT 2003).

## **I. Critical Habitat**

The species is not listed as threatened or endangered, and therefore no critical habitat has been proposed or designated.

## **III. ENVIRONMENTAL BASELINE**

The environmental baseline is defined as the current condition for the species in the action area considered in this Opinion, including: past and present impacts on Columbia spotted frog from all Federal, State, and private actions; other human activities in the action area; the anticipated effects

of proposed Federal activities in the action area that have already undergone consultation under section 7 of the ESA; and the impacts of non-Federal actions that are contemporaneous with the action considered in this Opinion.

## **A. Habitat Conditions**

The action area includes lands within and outside the enclosure identified in the description of the action area.

### **1. Outside the Enclosure**

The 576 acres (233 ha) of State land outside the enclosure consist of gently rolling uplands ranging in elevation from 5,700 to 5,900 feet (1,737 to 1,798 m). Soils are finer textured loams in the draws, becoming coarser on the ridges with occasional boulders and rock outcrops. The boulder and rock outcrops are more common on the south and west sides of the parcel (IDL *et al.* 2006).

There are four man-made ponds and one trough on the Big Field parcel outside the enclosure that were developed from natural springs and created for livestock watering (Figure 1). Three of these ponds (12, 13, and 14) are known to be currently occupied by Columbia spotted frogs (IDFG, unpublished data, 2006). The vegetative community and visual characteristics of the ponds appear to be vigorous and healthy after the spring and before livestock use occurs, which is usually in August. Spotted frog habitat conditions for ponds outside the enclosure are degraded after a season of livestock use. Bank trampling and consumption and destruction of vegetation along pond margins are clearly evident (Ted Koch, USFWS, pers. comm., 2005). These degraded conditions were also present inside the enclosure prior to completion of the fence and exclusion of livestock use (see Factors Affecting the Species in the Action Area below).

Juniper (*Juniperus scopulorum*) occurs throughout the area. It is a major component of the overstory on the higher ridge tops and side slopes of the deeper draws. In some areas, it is now expanding out onto the deeper loamy soils in the draw bottoms and into the open meadows. Junipers are encroaching on the springhead that supplies pond 14. All the upland sites are considered to be in good to excellent ecological condition. The mahogany is mature and decadent with little reproduction. Bitterbrush and sagebrush, where not influenced by juniper, are vigorous and self-maintaining (IDL *et al.* 2006).

### **2. Inside the Enclosure**

There are 104 acres (42 ha) fenced into an enclosure and leased to the IDFG. Two sagebrush communities are represented within the enclosure. The upland silver sage community covers about 26 percent (27 acres or 11 ha) of the enclosure and occurs as a band in varying widths between the wet meadow and the big sage upland. The big sagebrush community is on the side slopes and ridges mostly in the southern half of the enclosure. It covers about 43 percent (45 acres or 18 ha) of the enclosure and includes almost all the junipers that are fenced into the enclosure. A few remnant aspens (*Populus tremuloides*) are found in one location immediately west of ponds 1 and 1a (Figure 1) in the sagebrush community (IDL *et al.* 2006).

The wet meadow area within the enclosure is a series of riparian ribbons along the bottoms of drainages which connect the ponds to Rock Creek and continues along Rock Creek off the State

land. The meadow area is considered to be late successional status with a good or high stability rating (IDL *et al.* 2006). Although successional status and stability increased between 2000 and 2004, this is not enough to confirm a trend. Plant vigor, based on leaf width and length, seed head production, and woody shrubs, appears to be on an upward trend. The meadow covers about 32 acres (31 percent) of the enclosure (IDL *et al.* 2006).

Vegetation surveys conducted by IDL show that the dominant species along Rock Creek are sedges, especially water sedge (*Carex aquatilis*) and Nebraska sedge (*Carex nebrascensis*), and baltic rush (*Juncus balticus*). Grasses, although not dominant, include mannagrass (*Glyceria spp.*), Timothy (*Phleum pratense*), and Kentucky bluegrass (*Poa pratensis*). Abundance of grasses and forbs increases in dryer areas. Dominant grasses included Canada reedgrass (*Calamagrostis Canadensis*), Timothy, Kentucky bluegrass, and meadow barley (*Hordeum brachyantherum*). Dominant forbs found mixed with these grasses included potentilla, groundsel (*Senecio spp.*), and aster (*Aster spp.*) (IDL *et al.* 2006).

Cheatgrass (*Bromus tectorum*) is present in a portion of the eastern end of the area that was previously burned but is not dominant and does not appear to be spreading to new sites. Rocky mountain juniper is increasing in some upland areas and encroaching into the fringes of the meadow (IDL and IDFG 2004). Junipers are encroaching on pond 10.

## **B. Status of the Species in the Action Area**

The population of Columbia spotted frogs within the action area is likely part of a metapopulation occupying Rock Creek and its tributaries. The wet meadow (area within the enclosure) is a linkage zone potentially connecting the frog population at Sam Noble Springs with frog populations in Rock Creek and its tributaries (Engle 2000). The action area is occupied year-round by Columbia spotted frogs and provides habitat meeting all spotted frog life history requirements (Engle 2000).

At Sam Noble Springs, spotted frogs hibernate in the springheads and emerge in April. Breeding and egg deposition take place in the six ponds fed by Sam Noble Springs during late April and tadpoles hatch during May. Columbia spotted frogs transform from tadpoles to frogs from late July into September. Frogs forage in the wet meadow and along the margins of the ponds and watercourses. The wet meadow and associated watercourses serve as dispersal corridors and are important for short-distance seasonal migrations from hibernacula in the springs to foraging and breeding habitat in the ponds, wet meadow, and associated watercourses (Engle 2001).

The Sam Noble Springs population exists primarily on the lands addressed by this Agreement and is one of the largest known local populations of the species in Owyhee County (Engle 2000). All six ponds within the Sam Noble Springs enclosure are occupied by Columbia spotted frogs, as are most of the associated springheads and riparian habitats, at least seasonally. Evidence of reproduction is documented in all ponds within the enclosure nearly every year (IDFG, unpublished data, 2006). In 2006, spotted frogs were observed for the first time in Ponds 12, 13, and 14 outside of the enclosure (Figure 1, Table 2). Furthermore, evidence of reproduction (tadpoles) was present at ponds 12 and 13 (IDFG, unpublished data, 2006).

**Table 2: Columbia spotted frog counts for ponds at Sam Noble Springs (Munger *in litt.* 2006 and IDFG, unpublished data, 2006)**

Year	PONDS										TOTAL
	1	1a	2	3	4	10	11	12	13	14	
1998	32	40	16	33	15	8					144
1999	17	35	8	17	28	8					113
2000	17	25	13	20	8	11					94
2001	25	20	14	13	12	14					98
2002	20	9	10	14	15	12					80
2003	24	9	8	6	3	15					65
2004	15	8	15	11	6	14					69
2005	19	4	11	20	13	12					79
2006*	25	4	7	15	7	9	0	2	14	24	67

\* Values for 2006 have not been completely analyzed. One survey was completed at each pond with new occurrences (11–14); total enumeration of frogs at these ponds was not attempted and total captures are reported. The total reported for 2006 is only from ponds 1 through 10 and is derived from a Lincoln-Peterson estimate. Ponds 11 through 14 have not been surveyed in every year.

For years other than 2006 in Table 2, numbers provided are a mix of total captures and population estimates, therefore, strict comparisons of numbers/estimates between or among years may not be appropriate. The numbers in Table 2 above are provided only as a general indicator of population trend and relative abundance. It should be noted that the numbers reported in Table 2 for ponds 1 through 10 in 2006 result from early spring counts. Reporting early spring counts is what is currently accepted as the appropriate protocol for spotted frog monitoring. However, late spring counts at these ponds resulted in a Lincoln-Peterson population estimate of 98 spotted frogs (IDFG, unpublished data, 2006), so early season counts may underestimate the true population size.

In 2006, spotted frog numbers for ponds 1 through 10 in 2006 are Lincoln-Peterson depletion population estimates (Heyer *et al.* 1994) and do not include frogs less than 40 mm, snout-to-vent length. In 2006, a total of 67 spotted frogs was calculated for ponds within the enclosure (ponds 1 through 10). This estimate was similar to those obtained for the enclosed area since 2003, when the enclosure was constructed. An additional 40 frogs were captured outside the enclosure (ponds 11 through 14); a Lincoln-Peterson population estimate was not calculated for these ponds. Ponds outside the enclosure have not been annually surveyed, so comparisons between 2006 and previous surveys are not possible.

The Sam Noble Springs EO previously supported approximately 350 adult frogs, as estimated in the 1990s (Engle 2000). Recent data indicate a declining, variable trend in abundance (Table 2). The apparent increase in spotted frog distribution and increase in densities in 2006 may be related to high precipitation levels as compared to the previous eight years and/or improved habitat conditions within the enclosure. Enclosure fencing has been in place since 2003 and vegetation has re-established and/or become more vigorous around all ponds within the enclosure. Relative to estimates from the 1990s, however, frog numbers at Sam Noble Springs still appear to be depressed.

### **C. Factors Affecting the Species in the Action Area**

Factors currently affecting Columbia spotted frogs at Sam Noble Springs include: livestock use, vegetative condition, water quantity and quality, and predation.

#### **Livestock Use**

Livestock use in the Big Field outside the enclosure may occur for a total of 30 days from late July through October. Livestock use on the parcel begins about the same time Columbia spotted frogs are transforming from tadpoles to young frogs (metamorphs). The amount of overlap depends on the timing of grazing and phenology of frog emergence. From late July through October, the upland vegetation is curing rapidly or has cured and very little green forage exists in the Big Field except for the wet meadows. Livestock tend to congregate in the wet meadows due to the green vegetation and the presence of water. There is some evidence that fewer young frogs are produced at ponds intensively used by livestock at the same time emergence is taking place (Lingo and Munger 2003). Half of pond 12 was fenced in 2006, and direct livestock effects to vegetation or frogs inhabiting this pond have been reduced.

#### **Vegetative Condition**

Prior to enclosure construction in 2003, livestock removed a large portion of the vegetation in the wet meadow and reduced vegetative cover in habitat used by frogs for foraging, dispersal, and seasonal migrations. This loss of cover likely reduced the quality and suitability of frog habitat in the wet meadow and the area around the ponds. Vegetative cover protects frogs from desiccation and predators and provides habitat for insects that are the primary food source for frogs. Removal of vegetation slows the ecological process of accumulation of organic matter in the wet meadow. The lack of organic matter accumulation may have reduced the ability of the wet meadow to hold water, thereby decreasing the size and duration of the wet area in the meadow that was utilized by frogs. Livestock consumption of water likely reduced the amount of water available in the ponds, watercourses, and wet meadow, thereby reducing the amount of suitable frog habitat.

Since the enclosure fence has been in place, vegetation within the fenced area has begun to regenerate. Willows have re-established in certain areas around ponds 1A and 1, as well as along the riparian corridor downstream of pond 4. Submergent, emergent, and pond-side vegetation is present in and around all ponds within the enclosure. The wetland meadow vegetation is in the process of recovering, and there are few bare patches that lack vegetation. Outside the enclosure, the condition of the vegetation has improved from that described above for pre-enclosure conditions due to a shortened period of use by livestock. Ponds outside the enclosure (11 through 14) lack pond-side vegetation and support less emergent vegetation compared to ponds inside the enclosure.

#### **Water Quantity and Quality**

Vegetation and surface water along movement corridors provide protection from high temperatures and arid environmental conditions, as well as protection from predators (Engle 2001). Loss of vegetation and/or lowering of the water table in movement corridors can pose a significant threat to frogs moving from one area to another. Fragmentation and loss of habitat can prevent frogs moving between hibernation, breeding, and feeding sites, and may prevent colonization of potentially suitable sites.

Within Sam Noble Springs, water is withdrawn downstream of pond 3 within the enclosure and transported to trough 15 outside the enclosure for livestock use between late July and the end of October. The amount of water withdrawn is limited to that which is required to initially fill trough 15 and subsequently replace quantities consumed by livestock or lost to evaporation during the period of livestock use. The water collection and delivery system does not operate outside the window of livestock use. Ponds within the enclosure are not subject to water quality impacts from the introduction of livestock waste, however, those outside the enclosure (ponds 11-14) will continue to be. Columbia spotted frog tolerance for water quality impacts from livestock or other sources is unknown.

### **Predation**

Garter snakes are common in ponds throughout the action area. On occasion, garter snakes have been observed with frogs in their mouths or gullets (Engle 2001). Garter snakes are also known to prey upon larval spotted frogs (Munger 2003). Avian and mammalian predators are also likely present and may have some influence on frog populations in the project area.

## **IV. EFFECTS OF THE ACTION**

### **A. Direct and Indirect Effects**

Direct effects are those that result from the proposed action and immediately affect the species or its habitat. Indirect effects are caused by or will result from the proposed action, are later in time, and are reasonably certain to occur.

#### **1. Outside the Enclosure**

*Livestock grazing:* Livestock grazing would continue to occur outside the enclosure at about the same rate as prior to the proposed action. Although the number of AUMs will be reduced by 43 percent, this reduction compensates for the number of AUMs formerly supported by the 104 ac (42 ha) enclosure. Annual removal of vegetation in upland areas by grazing livestock will continue to result in reduced shade and cover for migrating spotted frogs. This may result in mortality of metamorphs and adult frogs as they disperse from ponds. The proposed action would shorten the period of grazing on the Big Field to 30 days, which would likely result in increased vegetation remaining in upland areas after livestock are removed for the season and thereby reduce adverse effects to spotted frogs associated with dispersal-related mortality.

Spotted frogs in ponds outside the enclosure (ponds 11 through 14) would continue to be at risk of impacts from livestock, including trampling, reduced shade and cover, reduced prey base, reduced water quality, and reduced water quantity. Egg masses and tadpoles may be trampled by livestock where they have access to ponds. Grazing livestock would reduce the amount of vegetation present at the margins of the ponds, which reduces the amount of cover available to all age classes of spotted frogs and increases their vulnerability to predators. Reduced vegetation along pond margins also reduces the amount of shade available, which may expose frogs to increased heat stress, and likely reduces the number and diversity of insects (prey base). Livestock access to the ponds would reduce their water quality due to increased turbidity from livestock standing and walking in the ponds, and fouling from livestock waste. Livestock would also consume water from the ponds,

thereby reducing the amount of water available for spotted frogs. Partial fencing of pond 12 has reduced these adverse effects to frogs occupying that pond; a similar reduction in effect to spotted frogs occupying pond 14 is expected when pond 14 is partially fenced.

In addition, reducing the number of AUMs outside the enclosure by 43 percent would likely reduce water demand by livestock from trough 15, although the reduction in AUMs only compensates for the number of livestock formerly supported by the excluded area. Since the wetland meadow is now excluded, livestock grazing is likely to be more diffuse and result in less demand for water from trough 15 and therefore from the excluded area. Since frogs depend heavily on available surface water, especially in late summer when livestock graze in the action area, making more water available for frogs in most of the occupied habitat is expected to provide benefits for frogs. Quantifying this benefit, and the potential reduction in water use resulting from implementing the proposed action, is difficult because of a lack of data on the number of livestock consuming water in the area now excluded from livestock grazing and the total amount of water emanating from springs in the area now excluded from livestock grazing. A more detailed discussion of this topic is provided in the Environmental Assessment for this project (USFWS 2006).

*Pond Refurbishment:* The proposed action would protect and enhance spotted frog habitat on the west end of the action area. A new pond (14) was created in 2003 on the west end of the action area, which spotted frogs have recently colonized (IDFG, unpublished data, 2006). In addition, ponds 12 and 13 have been refurbished (Table 1) to provide adequate water for livestock, and have been reconstructed to provide suitable habitat (sloping shores) for spotted frogs. Future maintenance of the livestock ponds outside the enclosure will require occasional excavation with heavy equipment. Livestock ponds must be maintained at a certain depth to hold water all season long, and annual deposition into the ponds gradually decreases their depth over time. Excavation activities would remove silt deposits and vegetation from the bottom of the ponds to make them deeper. Frogs not captured prior to excavation are likely to experience injury, if not death, as result of operation of the mechanized equipment. This activity is likely to result in adverse effects to frogs at occupied ponds (ponds 12, 13, and 14) outside the enclosure. Although the IDFG and IDL may use the protocols described below for pond refurbishing within the enclosure to reduce impacts from pond refurbishment outside the enclosure, the proposed action does not require this. Therefore, these effects analyses assume that such activities will not occur for pond refurbishment outside the enclosure. Pond refurbishment would likely occur infrequently throughout the term of the proposed action, so adverse effects of pond refurbishment, would be infrequent and of relatively short duration. Effects of this action would be reduced by the contouring of one side of the pond so that it slopes gradually and is thereby conducive to use by spotted frogs.

*Pond Fencing:* The proposed action includes fencing a portion of pond 14 and all of its springhead to protect spotted frogs from livestock impacts. Overall, this conservation measure is intended to increase frog abundance at the west end of the enrolled land by providing habitat suitable for all life-history stages of spotted frogs. Although not specifically part of the proposed action, pond 12 was partially fenced to exclude livestock access in 2005. The fences around ponds 12 and 14 will benefit spotted frogs by reducing all livestock impacts and allowing increased vegetation regeneration along a portion of the bank and in that portion of the pond. Increased vegetation in these areas will enhance shade, cover, and prey base availability for spotted frogs and likely contribute to increased rates of survival and reproduction. The fences would also eliminate

potential trampling impacts for egg masses and tadpoles in portions of both ponds. Fencing ponds may increase the potential for movement of frogs within occupied frog habitat on and adjacent to the action area, particularly since pond 14 is on the property boundary and linked with wetlands on the adjacent parcel.

*Vegetation Management:* The proposed action includes limited vegetation management outside the enclosure, as needed to benefit spotted frogs. For example, junipers that are encroaching on the springs and wet meadow may be removed. In addition, any noxious plant species that are detected outside the enclosure would be aggressively chemically treated until they are eradicated, as required under State law. We do not expect adverse effects to spotted frogs from these limited vegetation management activities. Juniper removal would occur in upland areas. No noxious aquatic plants are known to occur within Sam Noble Springs. The only noxious plant species detected to date is whitetop, which occurs in upland areas. Chemical treatment of the whitetop occurrences is conducted using hand-sprayers, so drift or leaching of toxic compounds into nearby ponds is unlikely. The net effect of these vegetation management actions should be beneficial to spotted frogs. Juniper removal would improve spring flow, ground water moisture, and the extent of the wet meadow vegetation, thereby improving spotted frog habitat. Preventing establishment of noxious plant species should preserve plant biodiversity and the structure of native vegetation on-site, which in turn should preserve the insect prey base for spotted frogs.

*Frog Population Monitoring:* Some adverse effects are likely to occur as a result of monitoring and surveying for spotted frogs. Individuals would be captured, handled, and PIT-tagged as required by the Agreement. In addition, mortality, as a result of monitoring, may occur. Each frog within the action area has the potential of being captured and handled up to four times every year as a result of monitoring. However, an individual frog would only be PIT-tagged once.

## **2. Inside the Enclosure**

*Elimination of Livestock Grazing:* The proposed action would, for approximately 22 years, continue to eliminate livestock grazing within the 104 acre (42 ha) enclosure, except as needed for conservation purposes. Continued elimination of livestock grazing in the enclosure is likely to have several direct beneficial effects on Columbia spotted frogs. In the absence of annual close cropping and trampling of wetland vegetation, the amount of cover, food, and therefore foraging and sheltering habitat for spotted frog metamorphs, sub-adults, and adults are expected to increase to undisturbed levels. These improvements in habitat should improve survival of all age classes of frogs by reducing mortality from predators, desiccation, and heat stress due to lack of cover. Re-establishment of submergent, emergent, and pond-side vegetation should also increase insect populations, thereby providing a larger prey base for spotted frogs and reducing intraspecific competition for food.

The Service anticipates that continued elimination of livestock access would also improve water quality and quantity of ponds within the enclosure. Increased nutrient and other potential contaminant inputs (fouling) resulting from livestock waste in ponds have been eliminated, as has turbidity resulting from livestock walking in ponds. Improved water quality is expected to beneficially affect frogs.

Precluding livestock access to ponds has and will continue to increase the amount of water available to frogs in the ponds and surrounding wetlands. Livestock consume water and transfer water from the ponds to the adjacent upland areas or atmosphere through run-off and evaporation from their wet bodies. In addition, historical livestock access to the ponds and surrounding wetlands compacted soils, resulting in a reduced capacity for water retention. Continuing to exclude livestock from the 104 ac (42 ha) wetland complex would allow the wetland soils to regain their natural structure and function. In the absence of livestock grazing, organic matter recruitment to the wet meadow within the enclosure should increase. In turn, accumulation of organic matter should increase the capacity of the wet meadow to hold and release water over time. As a result, surface water flow should increase and persist for a longer period of time each year. The anticipated net result of these changes is an increase in the extent, duration, and quality of Columbia spotted frog habitat through maintenance and improvement of year-round habitat and migratory corridors.

The Service expects the proposed action would further benefit spotted frogs by improving connectivity between Sam Noble Springs and Rock Creek. The combination of improved vegetative cover, increased capacity of the wet meadow to store and release water, and increased water availability resulting from reducing livestock consumption should increase the duration and extent of surface flow of water in the wet meadow. This should result in improved conditions compared to the past. Increased surface water availability later in the season would enhance the likelihood of connecting spotted frog populations within the action area. It is possible that over time, water would flow through the entire wet meadow for a longer period of the year and connect it to flowing water in a Rock Creek tributary outside the action area. Increased frog movements among occupied sites would facilitate genetic exchange and expand the current distribution by allowing colonization of historically occupied and unoccupied sites to a greater extent than in the recent past.

*Water Withdrawal (Ponds 3 and 4):* Operation of the water collection and delivery system, which withdraws water downstream of pond 3 and upstream of pond 4 and delivers it to trough 15 (Figure 1), could result in adverse effects to spotted frogs by reducing the size of the wet meadow below pond 3 and/or altering the vegetation composition of the wet meadow by reducing the amount of subsurface water. Adverse effects to spotted frogs could result, including reduced foraging habitat, reduced rearing area for young emerging from ponds 3 and 4, and loss of connectivity between ponds 3 and 4. Impacts of the water collection system have been and will continue to be minimized by operating it only during the time that livestock are grazing in the Big Field (30 days cumulative from late July through October each year), and by equipping the collection system with float valves so the water is only withdrawn to compensate for the amount consumed by livestock and lost to evaporation. The system does not collect water when not in use, and is designed to return water to the wet meadow immediately down slope of the collection area.

Compared with historical use of the wetland meadow and ponds within the enclosure, the overall effect of the water collection and delivery system is anticipated to be beneficial to spotted frogs. Prior to the construction of the enclosure fence, livestock congregated in the ponds and wetland meadow and substantially degraded frog habitat. Operation of the water collection and delivery system would continue to provide a livestock water source away from the enclosure fence, likely resulting in reduced trampling and grazing impacts to the wetland vegetation along the fenceline.

*Pond Refurbishment:* The proposed action would also maintain or improve Columbia spotted frog breeding and reproduction through a monitoring and adaptive management approach to ensure maintenance of high-quality frog habitat. Based on this adaptive management approach, ponds inside the enclosure may be refurbished periodically to optimize their depth and surface area to increase breeding habitat. Ponds would be reconstructed with gently sloping sides to increase the size of the littoral zone for tadpoles and basking adults. Increasing the depth of the ponds may also provide additional hibernacula and improve over-winter survival. Prior to excavation, all frogs would be captured and held until the pond is refurbished and turbidity subsides (approximately 24 hours). Spotted frogs would be returned to the rehabilitated ponds the day after the work is completed. Although these measures would result in temporary disturbance and may result in injury, they should nearly eliminate mortality of frogs due to excavation. Frogs not captured prior to excavation however, are likely to experience injury, if not death, as result of the mechanized equipment. Pond refurbishment would likely occur infrequently throughout the term of the proposed action, so adverse effects of pond refurbishment, would be infrequent and of relatively short duration.

*Vegetation Management:* The proposed action is intended to benefit frogs by manipulating vegetation to improve frog habitat. Vegetation management actions, potential impacts, and likely benefits to spotted frogs are identical to those that were previously described for areas outside the enclosure (see above).

*Frog Population Monitoring:* The proposed action is intended to benefit frogs by providing additional information about population numbers, trends, and distribution of individuals. Potential negative impacts to spotted frogs from this activity are identical to those that were previously described for areas outside the enclosure (see above).

*Wetland Vegetation Monitoring:* There is some risk of disturbance to frogs resulting from monitoring wetland vegetation. There are currently three transects established in the wetland meadow or riparian areas, and annual surveys are ongoing. Spotted frogs have been documented in or near all three transects. Spotted frogs in the vicinity of the transects during vegetation monitoring will likely alter their behavior to avoid detection by surveyors. The impacts of this activity are expected to be minimal since it is low frequency (once a year), short duration (part of one day), and small extent (human presence likely to cause temporary avoidance behavior only of individuals in their immediate vicinity).

## **B. Effects of Interrelated or Interdependent Actions**

The Service did not identify any interrelated or interdependent actions associated with implementing the proposed Agreement.

## **V. CUMULATIVE EFFECTS**

Cumulative effects considered in this Opinion are the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area. Future Federal actions that are

unrelated to the proposed action are not considered in this Opinion because they require separate consultation under section 7 of the ESA.

Public recreation, in the form of hiking, wildlife viewing, and hunting, is likely to continue within the project area. These activities pose some risk to frogs through disturbance of behavior, some trampling, and minor and isolated habitat degradation. None are expected to change the status and distribution of the species in the action area. No other actions potentially affecting spotted frogs have been identified.

## **VI. CONCLUSION**

The Service has reviewed the current status of the Great Basin population of Columbia spotted frogs, the environmental baseline in the action area, effects of the proposed action, and cumulative effects, and it is our conclusion that the proposed action is not likely to jeopardize the continued existence of Columbia spotted frogs. The Service expects the population levels, distribution, and reproduction of spotted frogs within the action area would improve as a result of the proposed action. No critical habitat has been designated for the species, therefore none would be affected.

### **A. Sam Noble Springs Population**

Spotted frog habitat quality has been, and will continue to be, enhanced due to exclusion of livestock. Future pond refurbishment would increase the amount of available breeding, rearing, and foraging habitat. Partial fencing of two ponds outside the enclosure would allow habitat restoration for frogs through limited access by livestock. Limited juniper removal would maintain spring outflows and noxious plant control would maintain vegetative diversity. The shortened period of grazing (30 days cumulative) relative to past practices would allow some restoration of upland habitat. Monitoring of spotted frog populations and wetland vegetation would provide information on the status and trends of frogs and wetland health and allow adaptive management practices to be employed to maximize the benefits realized for spotted frogs. Implementation of the Agreement is expected to improve connectivity between frogs in Sam Noble Springs and those of the Rock Creek subpopulation, resulting in a greater likelihood of long-term persistence of the species in Owyhee County.

Within the Sam Noble Springs population, local spotted frog densities and distribution in the action area are not expected to be significantly reduced by proposed activities in any given year. Proposed maintenance and restoration activities, such as the continued livestock enclosure, and future pond maintenance and vegetation management, are expected to result in long-term benefits to Columbia spotted frogs at Sam Noble Springs and in the Rock Creek subpopulation through improvements to habitat condition and survival and reproduction rates of frogs within the action area. Overall, the expected effect of implementing the Agreement is a reduction in threats and adverse effects to Columbia spotted frogs on the 680 acre (275 ha) action area, resulting from altered livestock grazing management practices, and increased spotted frog distribution and abundance on the enrolled lands. The long-term conservation of the species would be enhanced by the Agreement and offset and exceed the temporary, short-term adverse effects of certain activities (*i.e.*, pond

maintenance, frog surveys). Such short-term adverse effects would be minimized by design criteria incorporated into the proposed action.

## **B. Great Basin Population**

The Great Basin population of Columbia spotted frogs consists of populations in Nevada, Oregon, and Idaho. Population data across the Great Basin are not available, therefore precise quantification of the effect of the proposed action at Sam Noble Springs is not possible. The adverse effects on the Sam Noble Springs population are anticipated to be minor to the Great Basin population of Columbia spotted frogs. We expect the long-term benefits of implementing conservation commitments in the proposed action area to greatly outweigh any minor adverse effects of measures included in the proposed action. Strengthening and protecting a local population protects a species from extirpation. It is not clear, given the lack of information about the larger population, whether increased numbers and distribution at Sam Noble Springs will have a measurable effect on the status of spotted frogs in the Great Basin.

## **VII. INCIDENTAL TAKE STATEMENT**

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without specific exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of take in the ESA means an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying these species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Service and the State fail to assume and implement the terms and conditions the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the State must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

### **A. Amount or Extent of Take**

The Service anticipates that take would occur primarily in the form of harm and harassment, although some lethal take or injury may also occur. We expect the following take to result from implementing the proposed action.

## 1. Outside the Exclosure

*Livestock Impacts:* Livestock use of ponds may result in harassment, direct mortality, and harm to spotted frogs. Harassment of spotted frogs is likely to result from livestock walking in and around ponds causing disruption of normal feeding, breeding, and sheltering behaviors of tadpoles, metamorphs, and adults as frogs move to avoid contact with livestock or spend increased time sheltering instead of feeding, breeding, or basking. Livestock use may also result in mortality of eggs and tadpoles as a result of trampling. Livestock use of ponds is also likely to result in harm to spotted frogs through degradation of water quality and removal or trampling of submergent, emergent, and pond-side vegetation. Impaired water quality of ponds from turbidity and fouling from livestock waste may result in reduced reproductive success and survival of all life stages of spotted frogs. Reduced vegetation in and adjacent to ponds may result in increased mortality from predation or desiccation, and decreased survival due to reduced prey availability. This take would occur annually for 30 days at ponds 12, 13, and 14 only, until pond 11 becomes occupied or the former become unoccupied. The three ponds outside the exclosure that are occupied by spotted frogs represent 33 percent of the ponds available to frogs within the action area; the number of spotted frogs currently present in these ponds represent approximately 41 percent of the entire Sam Noble Springs population.

Since we have little evidence of livestock causing direct mortality to egg masses or tadpoles, we assume that most of the take resulting from livestock access to ponds will be in the form of harassment and harm. We also assume that all frogs within these three ponds could be harassed and harmed by livestock, though it is possible only a subset of them will actually be taken. Spotted frogs occupying ponds 12 and 14 will be subjected to lower levels of harm and harassment relative to frogs in pond 13 because they are (pond 12), or will be (pond 14), partially fenced to exclude livestock. While the frogs in these ponds will still experience reduced water quality and some harassment, the amount of harm experienced will be reduced because the fences will allow regeneration of submergent, emergent, and pond-side vegetation and will prevent livestock access within in the fenced area.

Livestock use of upland areas outside the exclosure may result in harm to spotted frogs through removal or cropping of vegetation. Reduced amounts of upland vegetation or altered vegetation structure or density may cause increased mortality of dispersing metamorphs and adults due to predation or desiccation. The proposed action contains design criteria which reduce the number of AUMs allowed on-site by 43 percent (from 254 to 144 AUMs), which will provide for the same amount of livestock use in the area outside the exclosure as was provided prior to construction of the exclosure. This take would occur annually for the time period between initiation of grazing and initiation of spotted frog hibernation, estimated here as approximately 90 days each year from August through October.

While the 144 AUMs are only allowed on-site for a total of 30 days each year between late July and October, we expect any harm to spotted frogs resulting from removal or cropping of vegetation to last beyond the period in which livestock are present. This is because the action area will not receive sufficient precipitation during the time when livestock are present and when spotted frogs hibernate to allow substantial growth or regeneration of vegetation; the habitat quality will remain as the livestock leave it until the winter rains begin. We assume that all spotted frogs dispersing through upland areas outside the exclosure will be harmed by removal or cropping of vegetation by

livestock, though it is likely not all frogs present will disperse. The amount to which this impact occurs will be variable over the 22 year lease, and partially depend on the condition of the upland habitat at the time the livestock are given access to the Big Field. The amount and extent of this form of take will be greater during periods of drought, when vegetative growth is less vigorous and livestock are still allowed 30 days of access. While dispersal may occasionally be hindered or slowed by this form and amount of take, it will likely not be precluded, however, since spotted frogs have dispersed to ponds 12, 13, and 14 outside the enclosure since their refurbishment or creation in 2003, and 2004 was considered a drought year.

*Pond Refurbishment:* Pond refurbishment may result in take in the form of harassment, direct mortality, and harm. Harassment of tadpoles, metamorphs, and adults is likely to result from capture efforts prior to initiation of excavation. Pond refurbishment may result in death of individuals that are not captured prior to initiation of excavation and subsequently get crushed or smothered. Minimization measures are contained in the proposed action and should reduce the amount of take that occurs. Those measures include refurbishing ponds only in the fall after metamorphs have emerged but before frogs are hibernating. The State may choose to capture as many frogs of all life stages (except egg masses, which would no longer be present) as possible and holding them until turbidity returns to pre-refurbishment levels, but this is not required by the proposed action. For the purposes of this take statement, we are assuming that capture and holding of spotted frogs prior to initiation of excavation will occur, and effects are identical to those described below for pond refurbishment within the enclosure.

Excavation of occupied ponds would also result in harm in the form of temporary removal of submergent and emergent vegetation. This loss of cover is likely to result in a temporary increase in mortality of tadpoles, metamorphs, and adults from predation. Pond refurbishment outside the enclosure would occur infrequently, and only as needed. It is estimated that refurbishment of ponds 11 through 14 may be required up to three times during the proposed action (22 years). For pond maintenance outside the enclosure, incidental take is unquantifiable for numbers of individuals, therefore, take authorization is provided in terms of acreage excavated. Incidental take for pond maintenance is authorized for up 0.1 hectares (0.25 acres) of occupied habitat excavated every five years. This periodicity reflects the occasional need to refurbish ponds; excavation should not be required annually. In addition, pond maintenance (excavation) will be required infrequently and the primary disturbance (displacement of frogs and disruption of normal behavior patterns) will be temporary.

*Monitoring:* Monitoring of spotted frog populations may result in take in the form of harassment, death, and injury. The current survey protocol requires capture, handling, and pit tagging of all individuals greater than 40 mm snout-to-vent length, and requires at least three to four site visits to each pond. Each visit takes approximately two hours, for a total of eight hours spent at each pond each year for population monitoring. This take will likely occur annually at all occupied ponds outside the enclosure; such take will occur to all metamorphs and adult frogs present at each pond. Capture and pit tagging of spotted frogs may occasionally result in death of an individual as a result of capture and/or subsequent stress; no more than two mortalities are anticipated from this source of take in any given year. Incidental take in the form of harassment is anticipated for all individuals solely for the purpose of annual surveys. We expect injury and mortality to be rare, no more than two individuals annually.

## 2. Inside the Exclosure

*Water Withdrawal:* Take in the form of harm and harassment from reduced foraging and sheltering habitat downstream of pond 3 may occur as a result of the water withdrawn below pond 3. Due to the water withdrawal, less water will be available for frogs downstream of pond 3 compared to natural conditions. The reduction in water downstream of pond 3 may result in changes in plant composition from the current wetland/wet meadow community to a more xeric or upland community. Such a change would reduce the amount of habitat available for feeding and sheltering, making it necessary for spotted frogs to travel greater distances to obtain feeding and sheltering resources. Increased movements or dispersal would increase the risk of injury and death from predation and desiccation. The amount of water withdrawn from the wetland and the extent of the effects are uncertain, and dependent on the amount of water consumed by livestock from trough 15 and the amount of water in the trough lost to evaporation. Quantifying the amount of habitat altered as a result of the water withdrawal is not possible, but should be linked to the number of days livestock are present on-site or the number of days the water collection system operates each year (no more than 30 days). The proposed action contains design features to address the uncertainty in effects analyzed for the water withdrawal by monitoring the wetland vegetation composition downstream of the point of water withdrawal. The monitoring plan is described above in section I.B.4. Monitoring and Adaptive Management, and in the Agreement (IDL *et al.* 2006).

Effects of operating the water withdrawal system should be reduced relative to effects that would occur without the proposed action. Under the proposed action, less water would be withdrawn from pond 3 than was consumed by livestock prior to construction of the exclosure. It is estimated that removal of 110 AUMs from within the exclosure resulted in a water savings of at least 10 to 22 percent, depending on the amount of spring outflow (IDL *et al.* 2006). This estimate of water savings does not take into account the amount of water consumed by livestock that originates within the exclosure and is piped to trough 15 outside the exclosure. It is expected that the amount of water consumed at trough 15 will be a small fraction of water that was consumed by livestock prior to excluding them from the exclosure (IDL *et al.* 2006). In addition, water will be withdrawn from pond 3 only when livestock are present in the Big Field, no more than 30 total days between late July and October each year. Thus, the effects of the water withdrawal on spotted frogs will be temporary.

*Pond Refurbishment:* Take in the form of harm and harassment during pond maintenance, refurbishment, or excavation. Excavation of occupied ponds may result in disturbance to spotted frog feeding and sheltering patterns, and the temporary loss of vegetation may alter their movements. This activity may also result in death of individuals that are not captured prior to initiation of excavation and subsequently get crushed or smothered during excavation. Minimization measures are contained in the proposed action and should reduce the amount of take. Those measures include refurbishing ponds only in the fall after metamorphs have emerged but before frogs are hibernating, and capturing as many frogs of all life stages as possible and holding them until turbidity returns to pre-refurbishment levels.

For pond maintenance within the exclosure, incidental take is unquantifiable for numbers of individuals, therefore, take authorization is provided in terms of acreage excavated. Incidental take for pond maintenance is authorized for up 0.2 hectares (0.5 acres) of occupied habitat excavated per year; this area is approximately 0.4 percent of the total exclosure. This amount of take is unlikely to

occur in consecutive years because the Agreement states that ponds would be scheduled for maintenance in a manner that would minimize impacts to Columbia spotted frog populations and habitat. Take associated with pond maintenance would be further reduced by capture of as many spotted frogs as possible prior to initiation of excavation and holding until turbidity has returned to normal. While this action (capture and holding) would result in take in the form of temporary harassment, it avoids take in the form of death, and this level of take is authorized through the acreage restriction described above. In addition, pond maintenance (excavation) will be required infrequently and the primary disturbance (displacement of frogs and disruption of normal behavior patterns) will be temporary.

*Monitoring:* Anticipated take from spotted frog population monitoring is identical to that described above for ponds outside the enclosure. In addition, vegetation monitoring may result in harassment and injury of spotted frogs. Metamorphs and adult frogs may alter their normal feeding, breeding, or sheltering behaviors to avoid surveyors. This form of take is likely to occur annually, for approximately eight hours on one day, and vegetation surveys would occur later in the season, after metamorphosis has occurred. Harassment would be limited only to those frogs that occur in the immediate vicinity of surveyors and would likely be very short in duration. The number of individuals impacted from this type of take is impossible to quantify. For annual vegetation surveys, incidental take in the form of harassment is anticipated for all individuals solely for the purpose of surveys. We expect injury and mortality to be rare, no more than two individuals annually.

## **B. Effect of the Take**

Should Columbia spotted frog be listed under the ESA, the IDL and IDFG would be exempted from the prohibitions of section 9 of the Act for take resulting from their otherwise lawful activities (survey and monitoring, livestock grazing, water withdrawal, pond maintenance, and vegetation manipulation) on enrolled lands. By excluding livestock access to the 104 acre (42 ha) wetland area, the Agreement is likely to result in a reduction of take relative to that which has occurred in the past and also result in improved habitat conditions for spotted frogs within the enclosure, thereby resulting in a net conservation benefit to the species. Limited take would still be authorized to allow implementation of conservation commitments and monitoring within the 104 acre (42 ha) wetland area, and to allow continued livestock grazing and land management activities outside the enclosure. We expect implementation of the conservation measures included in the proposed action to result in an overall population expansion and thereby benefit the species, despite the amount of take authorized by this opinion.

The Service recognizes that the level of take outlined above is consistent with the overall goal of precluding the need to list the species, and that if the Conservation Measures were implemented on other necessary properties, where appropriate, there would be no need to list the species.

## **C. Reasonable and Prudent Measures**

The proposed action/Agreement is designed to minimize take, therefore, no additional reasonable and prudent measures are needed.

#### **D. Terms and Conditions**

There are no terms and conditions associated with this Opinion because no reasonable and prudent measures are needed.

#### **E. Monitoring and Reporting**

The Service and the State must carry out the following monitoring and reporting of incidental take resulting from project implementation. This monitoring and reporting is non-discretionary.

The IDL and IDFG shall be responsible for monitoring and reporting related to implementation of the Agreement and fulfillment of its provisions, including implementation of agreed-upon conservation measures and take authorized by the permit. The Service may assist in monitoring and may enter the action area to ascertain compliance with the Agreement.

The IDL and IDFG shall notify the Service of any new Columbia spotted frog sightings or occupied sites within seven working days. Upon locating any dead, injured, or sick spotted frog individuals, the IDL or IDFG shall, within three working days, notify the Fish and Wildlife Service's Snake River Basin Fish and Wildlife Office (208-378-5243). The notification shall include the date, time, and location of the specimen, a photograph, cause of death, if known, and any other pertinent information. Care should be taken in handling dead specimens to preserve biological material in the best possible state for later analysis.

The IDL would be responsible for completion of an annual report on Agreement implementation by 30 January each year. Information in annual reports would include, but is not limited to, results of monitoring identified above, any observed mortalities, and situations in which mortalities were observed. Copies of the report would be made available to all Parties.

IDL and IDFG shall refer to permit number TE-109603-0 in all correspondence and reports concerning permit activities. Any questions you may have about this permit should be directed to the Field Supervisor, U.S. Fish and Wildlife Service, Snake River Basin Office, 1387 S. Vinnell Way, Room 368, Boise, Idaho 83709 or at the above mentioned number.

### **VIII. CONSERVATION RECOMMENDATIONS**

Section 7(a)(1) of the ESA requires Federal Agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities intended to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

No conservation recommendations are provided here because the intent of the proposed action is to promote the conservation of Columbia spotted frogs within the action area; additional recommendations are not necessary.

## **IX. REINITIATION NOTICE**

This concludes the conference for issuance of a section 10(a)(1)(A) Enhancement of Survival Permit for Columbia spotted frogs in Sam Noble Springs, Owyhee County, Idaho. You may ask the Service to confirm the conference opinion as a biological opinion issued through formal consultation if the Columbia spotted frog is listed or critical habitat designated. The request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service would confirm the conference opinion as the biological opinion on the project and no further section 7 consultation would be necessary.

After listing and/or designation of critical habitat for Columbia spotted frogs, should either occur, and any subsequent adoption of this conference opinion, the Federal agency shall request reinitiation of consultation if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect the species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action (50 CFR §402.16). In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation of section 7 consultation.

The incidental take statement provided in this conference opinion does not become effective until the species is listed and the conference opinion is adopted as the biological opinion issued through formal consultation. At that time, the project would be reviewed to determine whether any take of Columbia spotted frogs has occurred. Modifications of the opinion and incidental take statement may be appropriate to reflect that take. No take of Columbia spotted frogs may occur between the listing of Columbia spotted frogs and the adoption of the conference opinion through formal consultation, or the completion of a subsequent formal consultation.

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#### **PERSONAL COMMUNICATIONS**

- Duffner, T. 2004. Resource Supervisor, Idaho Department of Lands, Boise, Idaho. Subject: Description of vegetation on Sam Noble Springs parcel. Dated October 30, 2004.

Engle, J.C. 2005. Biologist, U.S. Fish and Wildlife Service, Boise, Idaho. Subject: Columbia spotted frog survey results for Bear and Shack Creeks and current overall population status of Great Basin population in Idaho. Dated January 13, 2005.

Koch, T.E. 2005. Biologist, U.S. Fish and Wildlife Service, Boise, Idaho. Subject: Repeated field observations of areas of heaviest livestock use on the Sam Noble Springs parcel from 1999-2004. Dated May 2005.

Wood, J. 2001. Biologist, U.S. Fish and Wildlife Service, Boise, Idaho. Subject: Timing of Chytrid fungus outbreaks in arid regions. Dated May 31, 2001.