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December 5, 2003
File No.1-5-03-F-294

Memorandum

To: Clinton R. Oke, Assistant Field Manager, Renewable Resources, Elko Field Office, Bureau of Land Management, Elko, Nevada

From: Field Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Programmatic Biological Opinion for the Elko Fire Management Plan

This memorandum responds to your memorandum dated September 3, 2003, and received on September 8, 2003, requesting concurrence from the U.S. Fish and Wildlife Service (Service), pursuant to section 7 of the Endangered Species Act of 1973 (Act), as amended, that the proposed Elko/Wells Resource Management Plan Fire Management Amendment (FMA) may affect, but is not likely to adversely affect the endangered Clover Valley speckled dace (*Rhinichthys osculus oligoporus*), the endangered Independence Valley speckled dace (*Rhinichthys osculus lethoporus*), the threatened Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) (LCT), and the Columbia spotted frog (*Rana luteiventris*), a candidate species. Consistent with the "Memorandum of Agreement, Endangered Species Act Section 7 Programmatic Consultations and Coordination among Bureau of Land Management, Forest Service, National Marine Fisheries Service, and U.S. Fish and Wildlife Service, August 30, 2000", candidate species have been included with this consultation. Candidate species receive no legal protection under the Act, but could be proposed for listing in the near future. This document represents the Service's biological opinion on the effects of the proposed action on the endangered, threatened, and candidate species mentioned above.

This biological opinion is based on information provided in the August, 2003, biological assessment (BA) for the Elko/Wells Resource Management Plan Fire Management Amendment, the May, 2003, Environmental Assessment (EA) for the Elko/Wells Resource Management Plan Fire Management Amendment, and other information available to the Service. A complete administrative record of this consultation is available on file at the Nevada Fish and Wildlife Office.

Due to the evolving nature of our guidance on programmatic consultations and the fact that this FMA authorizes projects which could adversely affect listed species and their habitats, we do not concur with your determination that the proposed action is not likely to adversely affect the endangered Clover Valley speckled dace, the endangered Independence Valley speckled dace, the threatened LCT, and the Columbia spotted frog, a candidate species. However, due to the

early coordination and cooperation between the BLM and the Service, the information provided in the BA is sufficient to proceed with our biological opinion.

Consultation History

Through informal expedited consultations, the Federal agencies responsible for wildland fire suppression and the Service developed interim guidelines for the use of aerial application of fire retardants and foams to address an unforeseen emergency under the Endangered Species Act. In addition to the implementation of interim guidelines, the federal wildland fire suppression agencies agreed to undertake follow-up field studies to monitor residual effects of fire retardants in the environment from the 1999 and 2000 fire seasons. The federal wildland fire suppression agencies requested concurrence with these guidelines from the Service on April 19, 2000 (Appendix 2 in BA). The Service concurred with these guidelines on April 20, 2000 (Appendix 3 in BA). It was agreed that these guidelines would remain in effect until December 31, 2000, with possible extension through 2001. In addition, the federal agencies would be required to complete a programmatic consultation on the use of fire retardant chemicals utilizing the results of these studies. On April 20, 2000 the BLM National Office of Fire and Aviation issued Instruction Memorandum No. OF&A 2000-011 (Appendix 4 in BA) requiring the use of these guidelines.

On February 27, 2001, the federal wildland fire suppression agencies submitted a Biological Assessment/Evaluation of Aerially Delivered Fire Retardant Guidelines to the Service (Appendix 5 in BA). Since the results of studies to evaluate the effects of retardants would not be available until early 2003, the federal agencies requested that the guidelines remain in effect through the 2003 fire season. In a letter dated June 6, 2001, the Service agreed that the guidelines provide appropriate measures to protect aquatic species, further stating that if the guidelines are followed, adverse effects to listed aquatic species are not likely to occur. The Service further agreed that in those situations where the guidelines cannot be fully implemented, it is possible that retardants could reach waterways where threatened or endangered species are present and adverse effects could occur. In such situations, the emergency consultation procedures described at 50 CFR 402.05 should be used. The Service agreed with the determination stated in the biological assessment/evaluation that implementing the guidelines may affect, but is not likely to adversely affect, federally threatened or endangered species. The Service agreed to extend their concurrence on the use of the guidelines through December 31, 2002 (Appendix 6 in BA).

A meeting was held on November 20, 2001 between the EFO and the Service to initiate early coordination/informal consultation for the proposed Fire Management Amendment. The Service responded to the EFO's December 14, 2001, request for a species list on December 26, 2001 (File No.1-5-02-SP-098), which, in addition to the listed species above, included the threatened bald eagle (*Haliaeetus leucocephalus*), the threatened bull trout (*Salvelinus confluentus*), the proposed threatened mountain plover (*Charadrius montanus*), and the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), a candidate species. During a November 20, 2001, meeting between the Elko Field Office (EFO) and the Service, we agreed not to consult on bull trout because they are found on lands administered by the Humboldt-Toiyabe National Forest and the Boise District BLM and are not within the proposed project area. Potential habitat occurs in the project area for mountain plover and western yellow-billed cuckoo, however, no

known recent sightings have occurred in the project area. Therefore, these two species were not covered in the BA. The BLM determined that there would be no effect to bald eagle from the proposed action due to the low densities found in northeastern Nevada and because they are not known to nest in the project area. The Service received a memorandum on September 25, 2003, from the Elko District requesting confirmation that the original species list you received on December 26, 2001, for the Elko/Wells Resource Management Plan Fire Management Amendment, is still valid. We reviewed the list and responded on October 7, 2003, that the list is still valid and will remain so for another 90 days (File No. 1-5-04-SP-001).

In accordance with the August 30, 2000, interagency Memorandum of Agreement for Programmatic Section 7 Consultations and Coordination, a consultation agreement was developed to define the process, products, actions, and timeframes and to serve as the guiding document for both BLM and the Service throughout the consultation process. This consultation agreement was approved on September 9, 2002 (Appendix 7 in BA).

As part of the early coordination process, the EFO also developed draft Standard Operating Procedures (SOP's) for species protection to be included as part of the proposed action for the Fire Management Amendment. The EFO incorporated the Service's comments to the draft SOP's in January, 2002. These SOP's are designed to be consistent with the national guidelines issued in April, 2000, as amended, with respect to application and use of fire retardants and suppressant foams. They will be referred to for species management in initial attack agreements between the EFO and adjoining BLM districts or other State or Federal agencies.

BIOLOGICAL OPINION

Description of the Proposed Action

A. Action Area

The project area is the Bureau of Land Management Elko/Wells District which is located in northeastern Nevada and includes Elko County and portions of Eureka and Lander counties. The Elko/Wells District encompasses approximately 12.5 million acres, of which the District manages 7.5 million acres. Adjacent counties include Humboldt, Lander, Eureka, and White Pine in Nevada, Box Elder and Tooele in Utah, and Cassia, Twin Falls, and Owyhee in Idaho. The Elko District covers the area encompassed by Township 26 North to Township 47 North and from Range 44 East to Range 70 East, Mount Diablo Base and Meridian.

Average annual precipitation in the project area ranges from 6 to 30 inches depending on elevation. Temperatures range from an average minimum of 13° F in the winter to an average maximum of 90° F in the summer. The action area has a complex topography made of fault-block mountains rising above dry, sediment-floored basins. Four hydrologic basins (Snake River, Humboldt River, Central Basin, and Great Salt Lake) are encompassed in the action area with peak flows occurring during April, May, and June. Typical soils are fine with large amounts of clay and small amounts of organic matter with high pH and salinity levels. A wide variety of land uses occur in the area including power lines, gas pipelines, oil and gas wells,

mining operations, development, cultural and historic sites, municipal watersheds, Wilderness Study Areas, livestock grazing, recreation, wild horses, and wildlife habitat. Diverse vegetation communities including wetland and riparian, sagebrush/perennial grassland, mountain brush, pinyon-juniper forests, aspen stands, and mixed conifer forests occur throughout the Elko District. Fish and wildlife communities are also diverse including 81 species of mammals, 246 species of birds, 28 species of reptiles and amphibians, and 53 endemic fish species.

B. Purpose and Need

The Fire Management Amendment (FMA) was prepared to address the need for an integrated approach to fire management on public lands administered by the EFO. The current Elko and Wells Resource Management Plans do not specifically address fire management issues in a comprehensive way, therefore, the EFO prepared the FMA to address fire management concerns. The FMA consists of four key components to manage the occurrence and severity of fires on the District: 1) general fire management; 2) fire prevention; 3) fire response; and 4) fire rehabilitation.

C. Proposed Action

General fire management encompasses the general guidance of the FMA and other guiding documents to protect and maximize the safety of fire personnel and the public, achieve resource management objectives, and improve the long-term management of fire. Fire prevention will be maximized by manipulating vegetation and fuels reduction through the use of prescribed burns, fuel breaks, mechanical treatments, herbicide use, green strips, and thinning to reduce wildfire fuel hazards. Fire response strategies vary depending on the management objectives for the different habitat types and areas of the Elko District. Fire response measures will range from aerial monitoring to low impact confinement to full scale containment and control strategies. The full range of fire response strategies can be found in Table 2B-6 in the EA. When a fire response occurs in threatened or endangered species habitat, certain SOP's will be utilized for the protection of the species and their habitat. The purpose for rehabilitation is to emulate historic or pre-fire ecosystem structure, functionality, diversity, and dynamics consistent with approved land management plans. If that is not feasible, a healthy and stable ecosystem must be restored in which native species are well represented. Post fire emergency stabilization and rehabilitation activities are guided by the Interagency Burn Area Emergency Stabilization and Rehabilitation Handbook, the Standards for Rangeland Health, and Guidelines for Grazing Management (43 CFR 4180.1).

The amount and types of strategies for general fire management practices, fire prevention, fire response, and post fire emergency stabilization and rehabilitation will be continually reevaluated through an adaptive management process based on existing and future guidelines and standard operating procedures developed for resource protection. If the proposed plan is implemented, site specific project plans and National Environmental Policy Act documents will be developed with public participation, for each location or group of locations, under the criteria listed in the Fire Management Implementation Procedures found in the EA for this proposed action. The activity plans, including site specific environmental analysis by an interdisciplinary team, will identify issues at the ecological or vegetative site level. If it is determined that a particular

project will have an adverse affect on a listed species, the EFO will initiate consultation with the Service.

During wildfire suppression activities, firefighter and public safety is the first priority. Unless a threat to human life or property exists, the SOP's found in the Conservation Recommendations section will apply to the four listed species covered in this consultation. Guidelines for Aerial Application of Retardants and Foams in Aquatic Environments were established by the National Office of Fire and Aviation. A biological assessment/biological evaluation for these guidelines and the corresponding concurrence letter from the Service's Washington D.C. Office can be found in Appendix 8 in the BA. Exceptions to the guidelines include: 1) deviations are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat; 2) when alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, the most accurate method of delivery will be used in order to minimize placement of retardant or foam in the waterway; and 3) when the potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines. If it is determined appropriate to deviate from these guidelines, based on one or more of the exceptions listed above, the unit administrator shall determine whether there have been any adverse effects to any listed species or their habitat. If it is determined that there were adverse affects to listed species or their habitat, then the BLM will initiate emergency consultation with the Service as required by 50 CFR 402.05.

STATUS OF THE SPECIES

Independence Valley and Clover Valley Speckled Dace

Independence and Clover Valley speckled dace were concurrently listed as endangered pursuant to the Act on October 10, 1989 (USFWS 1989). A recovery plan was written for both species in 1998 (USFWS 1998). The decline of these fishes has been attributed to their limited distribution, habitat disturbances, and introduction of non-native fishes.

No other freshwater fish occupies a more widely distributed or variety of habitats than the speckled dace species (Moyle 1976). They are found throughout all major western drainage systems from the Colorado River south to Sonora, Mexico (Moyle, 1976). Speckled dace primarily inhabit cool, flowing permanent streams and rivers. They are also successful in a variety of other areas such as warm permanent streams, lakes, outflows of desert springs, and warm intermittent streams. Throughout their range they are found primarily among rocks in riffles in streams and on rocky or sandy bottoms stirred by wave action in lakes.

Speckled dace are divided into twelve species and numerous subspecies, many of which are still undescribed. Speckled dace have a variety of common names such as western dace, pacific dace, dusky dace, etc. (Moyle 1976). The word dace is derived from a Middle English word that gave rise to dart. *Rhinichthys* means snout-fish and *osculus*, refers to the small mouth. Speckled dace tend to be small [≤ 90 millimeters (mm) total length (TL), 3.5 in]

species and are distinguished by subterminal mouths, small scales, thick tails (caudal peduncle), and slender bodies.

Color is a highly variable shade of olive, but usually consists of dark blotches on the rear half of the fish that often combine to form a dark lateral (side) band (Moyle 1976). The bases of the fins of both sexes turn orange to red during the breeding season and males may or may not develop tubercles (bumps) on the pectoral fins (side fins behind gills).

Both endangered subspecies are thought to be derived from an ancestral form of speckled dace similar to the Lahontan speckled dace (*Rhinichthys osculus robustus*) found in the Humboldt River system immediately to the north. Though a connection between the valleys was thought to have occurred during the Pleistocene, no evidence of any recent connection has been found so presumably these subspecies have been separated for many years (Hubbs et al. 1974, Hubbs and Miller 1972).

Though the Clover Valley speckled dace and Independence Valley speckled dace were first collected in 1934 and 1965, respectively, neither was described as a separate subspecies until 1972 (Hubbs and Miller 1972). Both have less developed lateral line (sensory organ) systems and typically lack a frenum (piece of skin connecting the lips and snout) and whiskers which distinguish these subspecies from the Lahontan speckled dace. Both are also more extensively speckled with black than the Lahontan speckled dace, but the Independence Valley speckled dace's black pigmentation tends to extend further downward on the tail than the Clover Valley speckled dace. The Independence Valley speckled dace tends to be smaller [$\leq$ 40 mm TL (1.6 in)] than the Clover Valley speckled dace [$\geq$ 55 mm TL (2.2 in)] and has a relatively longer head and larger eye. It differs further from the Clover Valley speckled dace in having fewer pectoral fin rays (supports) and a straighter, more slanted mouth. The Clover Valley speckled dace has a more rounded head and its entire body is bulkier. A more detailed description of both dace may be found in Hubbs et al. (1974) and Hubbs and Miller (1972).

Generally, speckled dace are characterized as diurnal (active during the daytime), bottom browsers that feed primarily on small invertebrates (such as aquatic insects), plant material, and zooplankton (floating, microscopic aquatic animals). This feeding pattern is further reflected by their subterminal mouth and short intestine; however, they will feed on large, flying insects at the waters surface and occasionally on eggs and larvae of other minnows when available. Several studies have documented seasonal diet changes (Jhingram 1948, Miller 1951); dace most often eat algae and detritus in the fall, bottom dwelling insects in winter and spring, and flying insects in the summer. Based on the habitat they occupy, the Clover Valley and Independence Valley speckled dace probably have similar food preferences.

Specific reproductive patterns of the Clover and Independence Valley speckled dace subspecies have not been examined. Generally, speckled dace mature in their second summer. They are capable of spawning throughout the summer, but peak activity usually occurs in the months of June and July at water temperatures of 18 degrees Celsius (65 degrees Fahrenheit) (Sigler and Sigler 1979, Moyle 1976). Males congregate in spawning

areas from which they remove debris to expose a bare patch of rock or gravel. The female is surrounded by males when entering a spawning area. Eggs are deposited underneath rocks, into spaces in gravel, or close to the bottom and fertilized (Sigler and Sigler 1979, Moyle 1976). Eggs hatch in six days on average, and larval fish, or fry, remain in the gravel for seven to eight days. After emerging from the gravel, the fry tend to concentrate in the warm shallows of streams.

Environmental Baseline

Details of Clover Valley speckled dace seasonal habitat requirements, population size, distribution over time, reproductive potential, and available habitat are unknown because they occur on private property and access to conduct studies has not been permitted by the landowners.

Clover Valley speckled dace are found primarily in reservoirs and outflows of three spring systems: Clover Valley Warm Springs, Wright Ranch Spring, and Bradish Spring. There does not appear to be any associated marshes with these springs, only the outflows that have been heavily modified. The introduction of rainbow trout (*Oncorhynchus mykiss*) appears to have affected the speckled dace in the past.

Clover Valley Warm Springs

This spring, also known as Clover Spring, was first examined in 1934. Although no fish were observed at that time, they may have been inactive and difficult to see due to freezing air temperatures the previous night (Hubbs et al. 1974). Thirty years later the spring was reexamined and sizeable populations were observed in the deep reservoir while fish were uncommon in the outflow ditch. The following year in 1965, no fish were seen in the clear water of the reservoir, main spring inlet, main outflow ditch, or in the smaller springs and outflows in the meadows downstream. Only young fish were found in the inflow between the main spring and reservoir. Introduced rainbow trout, stocked prior to the second visit, appeared to be forcing the dace into areas not previously occupied. Warm Springs was intensively seined in both May and September of 1983, and no fish were found (Vinyard 1984). The absence of the dace was attributed to the new modifications of the irrigation ditches and the presence of rainbow trout. In 1988, University of Nevada, Reno and FWS personnel rediscovered the dace in the main outflow ditch approximately 300 meters (m) [1,000 feet (ft)] downstream of the reservoir. Dace were also observed in the outflow ditches by Nevada Department of Wildlife (NDOW) and Service personnel in October 1994.

In October 1995, NDOW surveyed the Warm Springs area and the two outflows for distribution and population numbers of Clover Valley speckled dace (Stein 1995). There are two outflows for this spring; presumably the original channel and an irrigation ditch. At the time of the survey, water was being diverted down the original channel. In order to adequately survey the original channel it was divided into two distinct reaches. In reach 1 measuring 859.5 m (2820.0 ft), 120 dace averaging 43 mm TL (1.7 in) were captured in a 7.6 m (25 ft) transect. The resulting population estimate for reach 1 was 13,500 dace with a maximum total length of 76 mm (3.0 in). In reach 2 which measured approximately 1767.8

m (5800 ft), two separate transects were sampled (Stein 1995). An average of 45 dace were captured for every transect shocked resulting in a population estimate of 10,440 dace for the second reach. The fish measured an average 38 mm TL (1.5 in) with the maximum sized fish being 64 mm (2.5 in).

Wright Ranch Spring

When first collected in the spring system in 1934, dace were scarce and mostly small; only one adult was collected (Hubbs et al. 1974). Trout were stocked in the spring, and the water was used for irrigation of hay meadows. The landowner at the time stated that the dace had been larger and more abundant in previous years. Anecdotal data from the current landowner suggests that dace have been present in this spring, once called Fish Spring, since the late 1860s. He also states that dace have been present on the property since its purchase in 1954 and are easily seen during the summer, but disappear in the winter. In 1965, a year of heavy precipitation, the dace population had returned to previous levels of abundance with adult fish more common; trout were not in evidence (Hubbs et al. 1974). In May and September of 1983, dace were fairly common with 16 dace captured in the outflow and 82 in the reservoir (Vinyard 1984). University of Nevada, Reno and Service personnel visiting the spring in 1988 observed only one small dace in the reservoir along with four large trout. Access to the property which not been obtained since 1988, was recently granted.

NDOW visited this site on October 17, 1995, and visually estimated a total of 1,500 dace in the pond at Wright Ranch Spring (Stein 1995). The three outflows from the pond are: the northern most outflow, the middle outflow (presumably the original channel), and the southern most outflow. A total of 79 speckled dace were captured in one transect of the northernmost outflow averaging 34 mm (1.3 in) TL (maximum length 43 mm, 1.7 in). The outflow length was calculated to be 1,219 m long (4,000 ft) resulting in a population estimate of 12,640 dace for this outflow (Stein 1995). The middle outflow/original channel had very little flowing water and was choked with vegetation. No fish were visually detected or contacted via sampling in the middle outflow. The southern most irrigation ditch had a large volume of standing water present within it. A visual survey showed dace were present here but in low numbers. The population estimate for the southern ditch was 500 fish within the first 500 m (1640.5 ft) of reach (Stein 1995).

Bradish Spring

Bradish Spring was not considered dace habitat in the early literature, because Hubbs et al. (1974) did not report fish in this spring during their visits to the valley. Possible explanations are: 1) This spring was not checked during these visits, and though modified it represents a natural basin with a native population; 2) this population is comprised of fish stocked from the Wright Ranch Spring; or 3) this population is composed of dace from the Wright Ranch Spring that entered the spring through the irrigation system and outflow channel. No evidence (i.e., papers, memos, communication with State, Federal, or local contacts) exists that indicates these fish were stocked. It seems more plausible that this spring was overlooked during the initial surveys due to its small area and remote location. For these

reasons, the population at this spring will be considered a historical population for recovery purposes.

Bradish Spring was first surveyed by observation in May 1983, and no fish were seen (Vinyard 1984). In August 1983, a total of 56 speckled dace were caught using unbaited minnow traps. High numbers of fish were also observed in September 1983 (Vinyard 1984). Fish were still common in 1988 when the spring was reexamined (McNatt in litt. 1988). Though dace still probably occur in Bradish Spring, no distribution and population data are available.

Independence Valley speckled dace are found in a temperate, permanent desert stream/marsh fed by numerous springs. Although known as Independence Valley Warm Springs, these springs are not cited as thermal waters (Garside and Schilling 1979, Hose and Taylor 1974). The speckled dace are found primarily in the shallow water of the marsh of this spring system among the sedges and grasses. It is believed that they also occupied the stream, but were forced out due to predation by non-native fish species such as rainbow trout, largemouth bass (*Micropterus salmoides*), and bluegill (*Lepomis macrochirus*). No data exist on the flow velocities or temperatures of the habitat currently occupied by Independence Valley speckled dace, but preliminary data show the speckled dace inhabit a large portion of the marsh as well as two seep areas northeast of the marsh.

It is believed that the historical range of the Independence Valley speckled dace was throughout the spring system and its associated marsh. In 1965, the first survey conducted for this fish found them to be scarce and secretive in the spring system (Hubbs et al. 1974). Vinyard (1984) conducted an intensive survey in 1983, and only 33 Independence Valley speckled dace were minnow trapped from the lower marsh. NDOW surveyed the area in 1992 and captured only one speckled dace in the shallowest area of the marsh (Heinrich 1993). In October 1994, NDOW and Service personnel collected and released 5 individuals and observed approximately 20 more in the extensive marsh area.

Effects of the Proposed Action

The effects of the proposed action on Clover Valley and Independence Valley Speckled dace are covered in the effects section of this consultation.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to occur in the action area. Future Federal actions are subject to consultation requirements established in section 7 of the Act, and, therefore, are not considered cumulative to the proposed action.

All of the occupied and historic habitat is on private land. These two species are susceptible to habitat loss or degradation due to altered spring flow and the introduction of nonnative species.

STATUS OF THE SPECIES

Lahontan Cutthroat Trout

Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) (LCT) was listed by the Service in 1970 (USFWS 1970) as endangered. Subsequently, LCT were reclassified as threatened in 1975 to permit a State regulated sport harvest of these fish (USFWS 1975). There is no designated critical habitat for LCT (USFWS 1995). LCT is an inland subspecies (one of 14 recognized subspecies of cutthroat trout in the Western United States) of cutthroat trout endemic to the Lahontan basin of northern Nevada, eastern California, and southern Oregon.

Cutthroat trout have the most extensive range of any inland trout species of western North America, and occur in anadromous, non-anadromous, fluvial, and lacustrine populations (Behnke 1979). Differentiation of the species into approximately 14 recognized subspecies occurred during subsequent general desiccation and isolation of the Great Basin and Inter-mountain Regions since the end of the Pleistocene, and indicates presence of cutthroat trout in most of their historic range prior to the last major Pleistocene glacial advance (Behnke 1981, Loudenslager and Gall 1980).

Ancestral LCT probably colonized the pluvial Lake Lahontan system over 35,000 years ago (Gerstung 1988, Coffin 1983, Trotter 1987), and perhaps as early as the Pliocene (Taylor and Smith 1981), although the precise event of entry and origin of original stocks are unclear (Behnke 1979, Loudenslager and Gall 1980). The high stand of Lake Lahontan occurred about 14,000 years ago, when the lake itself covered approximately 8,500 square miles (22,100 km^2) in a drainage basin of about 45,000 square miles (117,000 km^2) (La Rivers 1962, Thompson et al. 1986, USFWS 1995). Following its high stand, Lake Lahontan rapidly desiccated to contemporary levels by about 8,000 years ago, isolating cutthroat trout populations in the northwestern (Quinn River and Black Rock Desert) and eastern (Humboldt River) basins from those in the western (Truckee, Carson, and Walker river) basins.

LCT historically occurred in most cold waters of the Lahontan basin of northern Nevada, eastern California, and southern Oregon including the Truckee, Carson, Walker, Susan, Humboldt, Quinn, Summit Lake/Black Rock Desert basins. They are also present in the Coyote Lake basin of southern Oregon. The Coyote Lake basin is an isolated basin with no direct connection to the Lahontan basin to the south. Little is known of the history of colonization by cutthroat trout in the Coyote Lake basin, but Behnke (1992) believed the most plausible explanation for their presence was a headwater stream transfer from the neighboring Quinn River basin.

Large freshwater and alkaline lakes, small mountain streams and lakes, small tributary streams, and major rivers were inhabited, resulting in the present highly variable subspecies. The fish occurred in Lake Tahoe, and Pyramid, Winnemucca, Summit, Donner, Walker, and Independence lakes, but disappeared from the type locality, Lake Tahoe before 1940, due primarily to blockage of spawning tributaries and the introduction of rainbow, brown, and lake trout. Subsequently they have also been extirpated and reintroduced into Pyramid and

Walker lakes. Remnant populations still remain in Independence Lake, California and Summit Lake in northwestern Nevada in the Summit Lake/Black Rock Desert basin.

An estimated 1,020 miles of historic LCT habitat once was present in the Truckee, Carson, and Walker river basins (Gerstung 1988), but only remnant LCT populations remain in a few headwater tributary streams in these basins now. Coffin (1988) estimated that only 85 stream LCT populations exist in the Humboldt River basin in 270 miles of habitat compared with an estimated historic occurrence in 2,210 stream miles. Currently LCT exist in about 155 streams and 6 lakes and reservoirs in Nevada, California, Oregon, and Utah.

Lahontan cutthroat trout inhabit lakes and streams, but are obligatory stream spawners. Small, intermittent, tributary streams and headwater reaches are sometimes used as spawning sites (Coffin 1981, Trotter 1987). Spawning generally occurs from April through July, depending upon stream flow, elevation, and water temperature (La Rivers 1962, McAfee 1966, Lea 1968, Moyle 1976). Eggs are deposited in ¼ to ½ inch gravels within riffles, pocket water, or pool crests. Spawning beds must be well oxygenated and relatively silt free for good egg survival. Fry remain in shallow shore-line areas with small gravel/cobble for hiding cover. By early fall the small (2-3") fingerling may school together in shallow pools.

Literature describes optimum LCT habitat as characterized by 1:1 pool-riffle ratios, well vegetated stable streambanks, over 25 percent cover, and a relatively silt free gravel/rubble substrate (Hickman and Raleigh 1982), but the subspecies inhabits a wide range of less than optimal habitat conditions. They tolerate higher alkalinities than other trout species and can survive wide daily temperature fluctuations of 14-20°C (25-35°F). Dunham et al. (1999) notes that most LCT populations have a distribution limit corresponding closely to maximum summer water temperatures of 26°C (78°F), and was similar to results of laboratory experiments on thermal tolerance. Populations in less than optimal habitat may be present in reduced numbers and age classes.

In some streams LCT have been observed in water temperatures exceeding 27°C (81°F). In general, LCT appear to avoid maximum water temperatures of 26°C (78°F) if possible (Dunham et al. 1999). Dunham et al. (1999) recommends that water temperatures for LCT should not equal or exceed a daily maximum of 22°C (72°F) to minimize risk of mortality and sublethal thermal stress.

LCT are opportunistic feeders. In small streams they feed on terrestrial and aquatic insects, which are caught in the drift (Coffin 1983). Fish larger than 12 inches (30.5 cm) in larger water bodies turn to a fish diet where available (Sigler and Sigler 1987). In most basins within the historic Lahontan basin, LCT have other native fish species present to enhance their diet, but in Summit Lake and the Coyote Lake basins LCT represent the only fish historically present.

Environmental Baseline

Lahontan cutthroat trout occupy a wide range of habitat types and conditions, but degradation of habitat from improper livestock grazing is a contributing factor in the decline of the species. Other factors that historically influenced the decline in the species include: 1) Hybridization, predation, and competition with introduced species; 2) commercial fishing; 3) blockage of migrations and genetic isolation due to diversion dams and other impassable structures; 4) degradation of habitat due to logging, road construction, irrigation practices, recreational use, channelization, and dewatering due to irrigation and urban demands; 5) changes in water quality and water temperature; 6) urbanization; and 7) grazing. The effects of many of these actions continue today.

Riparian habitat conditions on many LCT streams on BLM and Forest Service lands are improving with recent changes in livestock management practices during the 1980's and 1990s. LCT continue to be displaced by brook trout and hybridization with rainbow remains a significant threat throughout much of their range. Drought conditions from 1987 through 1994 caused significant declines in many populations within the Great Basin, but good water years from 1994 through 1999 improved the abundance of LCT in many streams. However, extreme drought conditions from 2000 through 2003 (precipitation 4.0 or more inches below normal) have reversed this trend. These populations remain subject to the vagaries of drought, flood, and other environmental conditions and at least 12-15 populations may have been lost rangewide since 1985. In areas where a functional metapopulation is not in place, these population losses are permanent unless LCT are reintroduced as part of an active recovery effort.

Many LCT populations historically acted as metapopulations (USFWS 1995). The term metapopulation refers to a collection of discrete local breeding populations. LCT metapopulation dynamics result when local breeding populations in tributary streams are interconnected by larger downstream habitats. Interaction among tributary populations may occur through “straying” or dispersal of resident and/or fluvial fish (Rieman and Dunhan 2000). The presence of several subpopulations increases the probability that at least one will survive through periods of disturbance, such as fire, and consequently protect the genetic variation available for adaption to change. In metapopulations, some local populations are more stable or robust than others.

Loss of connectivity among local populations within the Humboldt River basin during the past 150 years has isolated many local populations and has increased the risk of local extinctions (Dunham et al. 1997). Most LCT populations are in isolated stream segments with no connectivity with other populations and consequently have a high risk of extinction. Major subbasins in the Humboldt River drainage include; Marys River, North Fork Humboldt River, South Fork Humboldt River, East Humboldt River, South Fork Little Humboldt River, Reese River, Maggie Creek, Pine Creek, and Rock Creek, These metapopulations will require long-term improvement in habitat conditions to achieve recovery objectives.

At the turn of the century, LCT occurred in the main-stem Humboldt River downstream to near Battle Mountain. This functionally connected a number of the existing small metapopulations into a larger metapopulation. During wet water cycles this range was

probably more extensive and ranged further downstream in the Humboldt River. The last LCT was observed in the Humboldt River about 1937 (Coffin 1981).

LCT populations fluctuate significantly because of highly variable environmental conditions in the Great Basin and life history attributes of the subspecies. Because of this variability, poor habitat conditions and introductions of non-native salmonids are significant depressants to LCT populations and frequently cause localized extinctions. Such systems exhibit greatly reduced resiliency to accommodate extreme climatic events such as floods and droughts, and thereby exacerbate the effects of those events. These degraded conditions combined with variability in LCT numbers places greater importance on the quality of the habitat needed for survival and recovery of LCT.

Extensive demographic studies of LCT in 14 streams by the University of Nevada, Reno, indicate extreme year-to-year variability in numbers of each age class (ages 1-6). This variability in numbers reflects variability in recruitment and survival among years. Data from several populations indicate that recruitment is strongly associated with stream flow and that survival is a strong function of population density (Peacock et al. 1999). Recruitment of individuals to the 1-year-old age class appears to be a function of average stream flows from March through June. Low to moderate flows during the previous year correspond with high recruitment and high flows during the previous year correspond with low recruitment. Low to moderate flows in the spring immediately prior to hatching are positively correlated with recruitment of 1-year-olds in the following year for many streams (Peacock et al. 1999). Seasonal and annual changes in climatic conditions and stream discharge can lead to dramatic population expansions or contractions (Dunham 1996, Dunham et al. 1997).

There are 512 stream miles of LCT habitat in the Elko District (238 miles of public streams and 274 miles of private stream), with approximately 318 miles occupied by LCT (100 public, 218 private). Recent history shows that fire impacts to riparian habitat important to LCT have been limited. As shown in Table 1-1 of the BA, a 20-year fire history from 1980-2001 has resulted in direct wildfire impacts to 14.84 miles of public occupied LCT habitat. These impacts occurred in 1999-2001, which were the years of highest recorded fire occurrence during the 20 history. This might also suggest that implementation of a balanced approach to fire management in the Elko District; designed to reduce wildfire occurrence and severity could result in a significant reduction of potential impacts to LCT habitat.

Effects of the Proposed Action

The effects of the proposed action on LCT are covered in the effects section of this consultation.

Cumulative Effects

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to occur in the action area. Future Federal actions are subject to consultation

requirements established in section 7 of the Act, and, therefore, are not considered cumulative to the proposed action.

There are 512 stream miles of LCT habitat in the Elko District (238 miles of public streams and 274 miles of private stream), with approximately 318 miles occupied by LCT (100 public, 218 private). Since a large percentage (69 percent) of occupied streams are on private land, activities conducted on private lands, such as grazing and agriculture, could negatively impact LCT.

Dispersed recreation on Federal and private lands can also adversely impact listed species and their habitats. Camping near springs and streams impacts riparian vegetation and streambank stability, while increased vehicle traffic on poorly designed or maintained roads, road crossings, and off-road vehicle use disturbs substrate and increases sedimentation. Use of temporary horse corrals near streams while camping and packing into areas may impact small areas if corrals are on or adjacent to water.

Recreational fishing for LCT can also affect both abundance and age class distribution of the population and deplete age class structure of populations during periods of low abundance which may delay recovery of population levels. Introduction of non-native species are frequently attributed to use of live bait for fishing and unauthorized introductions of non-native gamefish species are sometimes associated with recreational fishing. Introduced species have adversely affected LCT through competition, predation, and hybridization and may contribute to disease problems.

Nevada Department of Wildlife population sampling with electro-fishing gear could harm or kill a small percentage (3 percent or less) of LCT. However, electro-fishing is a necessary component of population monitoring and adverse effects are expected to be short-term in nature unless the population is at extremely low levels. The electro-fishing program only occurs on a periodic basis over a period of years.

STATUS OF THE SPECIES

Columbia Spotted Frog

In 1989, the Service was petitioned to list the spotted frog (referred to as *Rana pretiosa*) under the Endangered Species Act of 1973, as amended (ESA) (USFWS 1989). The Service ruled on April 23, 1993 that the listing of the spotted frog was warranted but precluded and designated it a candidate for listing with a priority 3 for the Great Basin population, but was precluded from listing due to higher priority species (USFWS 1993). The major impetus behind the petition was the reduction in distribution apparently associated with impacts from water developments and the introduction of nonnative species in Nevada.

On September 19, 1997 (USFWS 1997), the service downgraded the priority status for the Great Basin population of Columbia spotted frogs to a priority 9, thus relieving the pressure to list the population while efforts to develop and implement specific conservation measures were ongoing. As of January 8, 2001 (USFWS 2001), however, the priority ranking has been

raised back to a priority 3 because of increased threats to the species. A conservation agreement and strategy has been developed for both the Toiyabe and Northeast subpopulations of the Columbia spotted frog (USFWS 2003).

Other Nevada Columbia spotted frog populations are located in the eastern portion of White Pine County at the Nevada/Utah border and are geographically and genetically associated with the West Desert population in Utah. These frogs were withdrawn from Federal candidate status in April 1998 in a decision based upon the reduction and/or elimination of threats to this population and completion of a conservation agreement (UDWR 1998) which represents a ten year commitment for on-going protection and management.

The service acknowledges species-specific genetic and geographic differences in spotted frogs based on Green (1991), Green et al. (1996, 1997) and Bos and Sites (2001), which defines populations in western Washington and Oregon and northeastern California as Oregon spotted frogs (*Rana pretiosa*) and the remainder of the populations as Columbia spotted frogs (*Rana luteiventris*). Based on further geographic and genetic characterization, spotted frogs in Idaho, eastern Oregon, and Nevada are part of the Great Basin population of Columbia spotted frogs. A small population on the eastern border of White Pine County, Nevada and Toole County, Utah, has been determined through morphometric and allozyme data (Green et al. 1996, 1997) to be part of the West Desert population of Columbia spotted frogs and is not part of the Great Basin population discussed in this document.

Columbia spotted frogs currently are found in central (Nye County) and northeast (Elko and Eureka counties) Nevada, usually persisting at elevations between 5600 and 8700 feet (1700 and 2650 meters), although they have been recorded historically in a broader range (Reaser 2000). Based upon geography, Columbia spotted frogs in Nevada can be grouped further into three well-defined subpopulations: (1) a large subpopulation located across the Jarbidge and Independence Ranges and the Tuscarora Mountains located in the northern portion of Elko County and northern portion of Eureka County (Jarbidge-Independence subpopulation); (2) an isolated subpopulation located in the Ruby Mountains in the southeastern portion of Elko county (Ruby Mountains subpopulation); and (3) an isolated subpopulation in the Toiyabe Range of central Nevada in Nye County (Toiyabe Range subpopulation).

Preliminary genetic analyses of Columbia spotted frogs from the Toiyabe Range suggest that these frogs are distinct from frogs in the Ruby Mountain and Jarbidge-Independence Range population areas (Green et al.1996, 1997). Genetic (mtDNA) differences between the Toiyabe Range frogs and the Ruby Mountain frogs are less distinct than those between the Toiyabe Range frogs and the Jarbidge-Independence Range frogs, but this relationship may be an artifact of similar temporal and spatial isolation (Reaser 2000).

Two elements are considered regarding the potential recognition of a population segment as a species under the Endangered Species Act: discreteness and significance. A population segment could be considered discrete if it is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Scientific evidence would be considered to determine the population segment's significance to the species to which it belongs (e.g., evidence that it differs markedly from other

populations of the species in its genetic characteristics). These two elements were considered prior to addressing the Toiyabe subpopulation of spotted frogs for conservation action apart from the Jarbidge-Independence and Ruby Mountains subpopulations.

The Columbia spotted frog belongs to the anuran family of true frogs, Ranidae. Twenty-three species of ranids are native to the United States. The four true frogs native to Nevada are the Columbia spotted frog (*Rana luteiventris*), the northern leopard frog (*Rana pipiens*), the relict leopard frog (*Rana onca*), and the mountain yellow-legged frog (*Rana muscosa*). Two additional frogs have been successfully introduced into Nevada. These are the red-legged frog (*Rana auranora*) from California and the bullfrog (*Rana catesbeiana*) from east of the Rockies.

Ranids typically are characterized as slim-waisted, long-legged, smooth-skinned jumpers with webbed hind feet and usually with a pair of dorsolateral folds (glandular folds) that extend from behind the eyes to the lower back. Adult Columbia spotted frogs in Nevada measure approximately 5.6 cm from snout to vent, with females being larger than males. Dorsal color and pattern include a light brown, dark brown, or gray, with small spots. Ventral coloration can differ among geographic population units and may range from yellow to salmon, however, very young individuals may have very pale, almost white, ventral surfaces. The throat and the ventral region are sometimes mottled. The head may have a dark mask with a light stripe on the upper jaw and the eyes are turned slightly upward. Male frogs have swollen thumbs with darkened bases.

Columbia spotted frogs are similar to and often are mistaken for leopard frogs. Specific characteristics that distinguish the Columbia spotted frogs from the leopard frog include: rough skin, shorter limbs (the heel of the hind limb when adpressed seldom reaches the nostrils), larger webs between the toes, smaller typanum, and the smooth round eyes which are turned slightly upward. Distinguishing characteristics of the leopard frog are very large conspicuous spots and a mostly white ventral surface compared to the pigmented ventral surfaces of adult Columbia spotted frogs (Stebbins 1985).

Columbia spotted frogs in Nevada are found closely associated with slow-moving or ponded surface waters, in clear waters with little shade (Reaser 1997). Reproducing populations were found in habitats characterized by springs, floating vegetation, and larger bodies of pooled water (e.g., oxbows, lakes, stock ponds, beaver-created ponds, springs, seeps in wet meadows, backwaters) (IDFG et al. 1995, Reaser 1997). A deep silt or muck substrate may be required for hibernation and torpor (Morris and Tanner 1969). Females may lay only one egg mass per year; yearly fluctuations in the sizes of egg masses are extreme (UDWR 1998). Successful egg production and the viability and metamorphosis of spotted frogs are susceptible to habitat variables such as temperature, depth, and pH of water, cover, and the presence/absence of predators (e.g., fishes and bullfrogs) (Morris and Tanner 1969, Munger et al. 1996, Reaser 1996).

Environmental Baseline

The elimination, fragmentation, and/or degradation of any use area (e.g., adult foraging range, winter hibernaculum, breeding pool) will have a negative proximate effect on local populations units because of the wide use of riparian areas by adult frogs (Munger et al. 1996, Patla and Peterson 1996, Reaser 1996). These effects on metapopulations may result in widespread declines. If corridors between population units are eliminated, dispersal from one population unit to another cannot occur (Lande and Barrowclough 1987, Hovingh 1990, Gotelli 1995).

In the Great Basin, Columbia spotted frogs are found in naturally fragmented habitats that are seasonally xeric, resource-limited, and often ephemeral. Such habitats are sensitive to disturbance, both natural and human-caused (Soulé 1983), thus increasing the chance of stochastic extirpation for its inhabitants (Lande and Barrowclough 1987).

Ruby Mountain Subpopulation: The Ruby Mountains possess suitable spotted frog habitat that is disjunct from other suitable habitat. The Ruby Mountain subpopulation is considered discrete. This subpopulation may be considered significant to the species as a whole because it occupies a unique and unusual ecological setting and its loss would result in a substantial modification of the species' range.

The Ruby Mountain subpopulation occurs in the South Fork of the Humboldt River drainage, specifically on National Forest lands in the Green Mountain, Smith, Corral, and Rattlesnake Creek watersheds. This subpopulation is geographically isolated from the Jarbidge - Independence subpopulation area to the north and from the Toiyabe subpopulation area to the southwest by the discontinuity of the Humboldt River. The South Fork of the Humboldt River valley was extensively developed for irrigated agriculture, reducing stream flows by diversion and resulting in large scale habitat fragmentation. The recent completion of the South Fork Reservoir, with a corresponding dam, further reduced the potential for connectivity between these subpopulations.

Preliminary evaluation of recent and historic survey data suggests at least one conservation unit containing two population units and three isolated population units are found in the Ruby Mountain subpopulation area (Table 1). The single conservation unit and the three isolated population units are listed below:

Smith Creek Conservation Unit: The Smith Creek Conservation Unit consists of several ponded locations in the Middle Fork and South Fork of Smith Creek, South Fork of the Humboldt River.

Isolated population units: Corral Creek, South Fork of Green Creek, and Rattlesnake Creek.

Jarbidge - Independence Subpopulation: The Jarbidge - Independence subpopulation area includes watersheds in both the Humboldt River and Snake River basins, and is the largest of Nevada's three subpopulation areas in both area and number of population units. Geographically and genetically, the Jarbidge - Independence subpopulation area is likely part of a larger subpopulation extending up into southern Idaho (Reaser 2000). Spotted frog

population units in the Jarbidge - Independence subpopulation area are found on public and National Forest lands, and, to a lesser extent, privately-owned land.

Preliminary evaluation of recent and historic survey data suggests at least eight conservation units may be present in the Jarbidge - Independence subpopulation area (Table 1). Each conservation unit is described below:

Merritt Creek Conservation Unit: This conservation unit is in the Bruneau River drainage and consists of six population units. The Ramsey Draw population unit is thought to have the largest population of these units (Table 1).

North Fork of the Humboldt River Conservation Unit: This conservation unit consists of approximately three population units (Table 1).

Pie Creek Conservation Unit: This conservation unit is in the North Fork of the Humboldt River basin, but is considered isolated from the *North Fork of the Humboldt River* conservation unit. An estimated five population units occur in this subwatershed; connectivity between these units is difficult to demonstrate (Table 1).

Marys River Conservation Unit: Eight population units are currently known from the Marys River and tributaries (Table 1).

Three previously undescribed population units were located in the Marys River and tributaries during 1998. These population units supported large numbers of frogs; the location of each suggests a large potential for the downstream dispersal into suitable habitat. Much of the Marys River system remains unsurveyed for Columbia spotted frogs.

Sun Creek Conservation Unit: Data are lacking on the distribution of spotted frogs in the Sun Creek Drainage, as portions of Sun Creek on private land have yet to be surveyed for this species. Frogs are present in at least two areas on National Forest lands (Table 1). This presents an opportunity for a cooperative survey on private land in the Sun Creek watershed.

Pole Creek Conservation Unit: Four known population units constitute the Pole Creek Conservation Unit (Table 1). The Orchard Creek population unit is connected to O'Neil Creek only by ephemeral flow, and therefore may be at risk for local extinction.

Doby George Conservation Unit: Spotted frogs have been found in three population units in the Doby George area in three different streams and one stock pond (Table 1).

Coleman Canyon Conservation Unit: Population units in Coleman Canyon are all on Coleman Creek (Table 1).

Bear Creek Conservation Unit: Little is known about this conservation unit. Streams are intermittent in nature, and have been determined to be "functioning at risk" by recent survey work (Table 1).

Table 1. Columbia Spotted Frog Conservation and Population Units

Ruby Mountain Subpopulation Area			
Conservation Unit: Smith Creek	Watershed: South Fork Humboldt River		
Population Unit	Type of Aquatic Habitat	Date/Amphibian Survey(s)	Land Owner
South Fork Smith Creek	Ponded, Beaver	1997	USFS H-T NF
Middle Fork Smith Creek	Ponded, Beaver	1997	USFS H-T NF
Conservation Unit: Isolated Streams, Ruby Mountains	Watershed: South Fork Humboldt River		
Corral Creek	Ponded, Beaver	1998	USFS H-T NF
South Fork Green Mountain Creek	Ponded, Beaver	1994, 1998	USFS H-T NF
Rattlesnake Creek	Ponded, Beaver	1996	USFS H-T NF
Jarbidge - Independence Subpopulation Area			
Conservation Unit: Merritt Creek	Watershed: Bruneau River		
Merritt Creek	Ponded	1996	USFS H-T NF
Ramsey Draw	Ponded, Beaver	1996	USFS H-T NF
Log Creek	Ponded	1997, 1998	USFS H-T NF
Willis Creek	Ponded	1997, 1998	USFS H-T NF
Walker Creek	Stock-Pond	1997	USFS H-T NF
Yankee Bill	Ponded	1997	USFS H-T NF
Conservation Unit: North Fork, Humboldt River	Watershed: Humboldt River		
North Fork Humboldt	Ponded, Beaver	1996	USFS H-T NF
Conservation Unit: Pie Creek	Watershed: Humboldt River		
Gance Creek	Ponded		USFS H-T NF
Mahala Creek	Pond (1)	1992	USFS H-T NF
Pie Creek	Flowing with pools	1998	BLM Elko FO
Mahala Creek 2	Unknown		Independence Mining Co.
Gance Creek 2	Unknown		Private
Conservation Unit: Marys River	Watershed: Humboldt River		
Marys River 1	Ponded & Flowing	1998	USFS H-T NF
Marys River 2	Ponded & Flowing	1998	USFS H-T NF
Draw Creek	Ponded	1979	USFS H-T NF

Table 1. Columbia Spotted Frog Conservation and Population Units

T Creek	Ponded , Spr.W/ Stock Pond	1994	BLM Elko FO
Marys River 3 & 4	Flowing & Ponded	1991	BLM Elko FO
Marys River 5	Flowing & Ponded	1996	BLM Elko FO
Currant Creek 1	Ponded	1991	BLM Elko FO
Currant Creek 2	Ponded	1989	BLM Elko FO
Conservation Unit: Sun Creek	Watershed: Salmon Falls		
Sun Creek 1	Ponded, Beaver	1993, 1996	USFS H-T NF
Sun Creek 2	Ponded, Beaver	1994, 1996	USFS H-T NF
Wildcat Creek	Stock Pond	1993, 1996	USFS H-T NF
Conservation Unit: Pole Creek	Watershed: Salmon Falls		
Pole Creek	Ponded, Beaver	1997, 1998	USFS H-T NF
O'Neil Creek	Ponded, Beaver	1997, 1998	USFS H-T NF
Orchard Creek	Ponded , Beaver	1998	USFS H-T NF
Conservation Unit: Meadow Creek	Watershed: Bruneau River		
Meadow Creek	Ponded	1996	USFS H-T NF
Left Fork Tennessee Gulch	Unknown	1989	USFS H-T NF
Tennel Creek	Unknown	1989	USFS H-T NF
Sand Creek	Ponded	1996	USFS H-T NF
Indian Johnny Creek	Unknown	1989	USFS H-T NF
Telephone Creek	Ponded	1996	USFS H-T NF
Martin Creek	Ponded	1996	USFS H-T NF
Conservation Unit: Doby George	Watershed: Owyhee River		
Doby George	Stock Pond	1992	USFS H-T NF
Cap Winn	Ponded, Beaver	1997	USFS H-T NF
Blue Jacket Creek	Unknown	1996	USFS H-T NF
Conservation Unit: Coleman Canyon	Watershed: Owyhee River		
Coleman Canyon	Ponded, Beaver	1996	USFS H-T NF
Conservation Unit: Bear Creek	Watershed: Salmon Falls Creek		
Bear Creek	Beaver Pond	1995	BLM Elko FO
Conservation Unit: Isolated Streams, Independence Range	Watershed: Owyhee River		

Table 1. Columbia Spotted Frog Conservation and Population Units

Poorman Creek	Ponded	1996	USFS H-T NF
Chipman Meadow	Stock Pond	1996	USFS H-T NF
McCall Creek	Ponded	1996	USFS H-T NF
Winters Creek	Unknown	1996	USFS H-T NF
Mill Creek	Ponded	1991, 1994	USFS H-T NF
Lost Meadows	Unknown	1996	USFS H-T NF
Clear Creek	Ponded	1996	USFS H-T NF
Riffle Creek	Pond (1)	1996	USFS H-T NF
Beaver Creek	Ponded	1996	USFS H-T NF
Upper Trail Creek	Ponded	1997	USFS H-T NF
West Fork Slaughterhouse Creek	Ponded	1998	USFS H-T NF
Haystack Creek	Stock Pond	1996, 1998	USFS H-T NF
Conservation Unit: Isolated Streams, Jarbidge Range	Watershed: Salmon Falls		
Willow Creek	Stock Pond	1977	USFS H-T NF
Cottonwood Creek	Ponded, Beaver	1996	USFS H-T NF
Wilson Creek	Ponded, Beaver	1995	BLM Elko FO/USFS H-T NF
Conservation Unit: Isolated Streams, Independence Range	Watershed: Humboldt River		
Spring Creek	Flowing w/Pools		Newmont Mining Co.
Little Jack Creek	Flowing w/Pools		Newmont Mining Co.

Effects of the Proposed Action

The effects of the proposed action on Columbia spotted frog are covered in the effects section of this consultation.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the Proposed action are not considered in this section, because they require separate consultation pursuant to section 7 of the Act.

Ongoing or reasonably foreseeable future activities on private land will continue to affect habitat but the extent of that impact is unknown at this time. BLM lands are interspersed with private parcels on which intensive grazing management will likely typify the land-use practices on these acres. Grazing of surrounding private lands could exacerbate the adverse effects described previously. Grazing on private land will likely cause further degradation and fragmentation of Columbia spotted frog habitat.

The effects of mining on receiving water systems may be a severe threat to Columbia spotted frogs, other amphibians, and aquatic organisms in localized situations. Concerns have been raised about the potential toxicological impacts of arsenic on aquatic organisms, which are known to be very sensitive to exposure to this metalloid (Miller et al. 1996). A 50 percent mortality and malformations of developing narrow-mouthed toad (*Gastrophryne carolinenis*) embryos occurred within seven days of exposure to low levels (0.04 mg/L) of arsenic in experimental studies (Eisler 1994).

Another potential effect of mining is the cumulative dewatering and water management operations for proposed and existing mining projects in the Maggie Creek subbasin. Mine dewatering could reduce water levels or flows in some springs and perennial stream reaches in the Maggie Creek Subbasin. Water level reductions in springs and potential loss of perennial stream segments could affect Columbia spotted frogs through the loss of habitat (BLM 2000).

Effects of the Proposed Action

As presented in Section 1(B) and 4.0 of the BA, the federally listed species addressed in this Biological Opinion are aquatic species. Therefore, the following analysis of the effects associated with implementation of the proposed action will focus on riparian and aquatic resources. Further analysis and discussion of the immediate-direct and long term-indirect effects of wildland fire on aquatic systems can be found in the October 2000 Biological Assessment/Evaluation of Aerially Delivered Fire Retardant Guidelines (Appendix 8 in BA). In addition to an analysis of the effects of fire suppression chemicals to aquatic species, the Biological Assessment/Evaluation also discusses the causes of fish mortality and the short-term and long-term impacts to aquatic species habitat due to wildland fire. The following four sections, as reflected in the FMA, address the direct and indirect impacts fire and fire management activities may have on riparian zones and aquatic habitats.

A. General Fire Management

The general fire management framework, if implemented, provides a strategy to maximize the safety of fire operational personnel and the public, meets management objectives outlined in the fire management categories (FMC), and aims at achieving a long-term strategy to manage fire in the Elko District. The four FMC (A-D) are described as: A) areas where wildland fire is not desired (ex. wildland-urban interface); B) areas where wildland fire is likely to cause negative effects, but these effects could be mitigated or avoided through fuels management, prescribed fire, or other strategies (ex. cheatgrass areas); C) areas where fire may be desirable to manage ecosystems, but where various factors place constraints on fire use for resource benefit (ex.

adjacent private lands); and D) areas where fire is desired under various environmental conditions and there are few constraints associated with resources or social, economic, or political considerations (ex. wilderness study areas).

The FMC have been identified and mapped for the Elko District. These designated maps are intended to be used to guide fire management activities including fire response. For example, if multiple wildfires are burning, these maps will be used to direct limited resources and help prioritize the appropriate suppression response. The identification of these categories could adversely affect listed species by allowing fires to burn where listed species or their habitats occur. The effects of general fire management are analyzed for direct and indirect fire effects on aquatic species.

Direct Effects

Fish mortalities can occur from increases in water temperatures to lethal levels, fire induced changes in pH, increased ammonium levels from smoke gases absorbed into surface waters, and increased phosphate levels leached from ash (Brown 1989, Gresswell 1999, Norris et al. 1991, Rinne 1996, Rieman and Clayton 1997, Spencer & Hauer 1991). Direct mortality of amphibians due to fire is thought to be rare and of minor importance to most populations (Russell et al. 1999, Smith 2000, Pilliod et al. 2003). Most negative effects to aquatic species after wildfire are due to the immediate loss or alteration of habitat and indirect effects.

Indirect Physical Effects

Soil degradation can result from accelerated soil erosion, loss of vegetative cover, oxidation of soil organic matter, and impairment of other soil physical, chemical, and biological properties. Stand replacement fires can contribute to soil degradation and erosion, particularly on slopes. Soil erosion reduces the chance of native regeneration because of loss of essential topsoil. Not only does this impact upland habitat through loss of cover and browse, but it also impacts riparian areas through indirect effects. Soil erosion on slopes can contribute to bank erosion in stream channels and siltation of riparian and aquatic plants. It also leads to sediment loading in streams, which can be detrimental to aquatic species (Newcombe and MacDonald 1991). Post fire erosional processes that deliver sediment to streams over long periods of time due to roads, fire lines, or the lack of re-vegetation, can have long-term negative effects on aquatic ecosystems (Lotspeich et al. 1970; DeByle and Packer 1972). However, short-term pulses of sediment and large woody debris, often associated with functioning terrestrial and aquatic ecosystems during post-fire landslides and debris flows, may be beneficial. Over time, large woody debris and sediment are moved downstream by fluvial processes, which form productive aquatic habitats (Reeves et al. 1995, Benda et al. 2003, Miller et al. 2003; Minshall 2003).

Indirect Chemical Effects

The effects of fire on a water system is hard to predict because it is so closely linked to the topography, soil and plant life of each individual site. What happens to a watershed after a fire often depends on what was happening in the watershed before the fire. Where there is steep terrain and a fire burns hot, there is potential to substantially increase sediment runoff where

erosion causes ash to flow into streams with the first rain after a fire. As nutrient-filled ash flows into streams, it changes the pH and nutrient level of the water (Karle 2000). Minshall et al. (1989) speculated that chemical toxicity from smoke or ash would cause fish mortality in second and third order streams. Ammonia and phosphorus levels have been documented to be above lethal limits to fish during fires (Spencer and Hauer 1991). Soon after a fire, and usually associated with post fire precipitation, streams adjacent to burned areas often show peak concentrations of nitrogen and phosphorous. These peaks, however, generally don't last for more than two weeks (Fredriksen 1971; Brown et al. 1973). As vegetation reestablishes itself in the burned area, fewer nutrients are available to be flushed into streams because the plants are taking up the nutrients for growth and they are stabilizing the soil which decreases erosion rates.

Indirect Biological Effects

Most indirect effects to organisms in the stream environment are due to post-fire erosional processes. Periphyton biomass has been documented to decrease initially after a fire but then increases due to increased light availability and increased temperature (Minshall et al. 1990). Periphyton biomass would hypothetically decrease gradually to pre-fire levels as riparian vegetation reestablishes itself and increases stream shading (Minshall et al. 1989). Stream size also had an effect with small stream sizes being influenced more than larger stream sizes (Robinson et al. 1994). No studies have been conducted on the long-term effects of fire on periphyton communities.

The effects of fire on macroinvertebrates has been well studied since the early 1980's (La Point et al. 1983; Minshall et al. 1989; Roby 1989; Minshall et al. 1990; Richards and Minshall 1992; Jones et al. 1993; Lawrence and Minshall 1994; Robinson et al. 1994; Minshall et al. 1995; Mihuc et al. 1996; Minshall et al. 1997; Minshall 2003; Spencer et al. 2003). Macroinvertebrate communities are strongly influenced by substrate instability associated with post-fire erosional processes. Effects include changes in functional feeding groups (La Point 1983), more annual variation (Richards and Minshall 1992), abundance, diversity, and species richness (Roby 1989; Lawrence and Minshall 1994; Minshall et al. 1995; Mihuc et al. 1996; Minshall 2003). Changes can persist for many years. Roby (1989) found that diversity was lower in burned streams compared to reference streams nine years after a fire. Species best adapted to post fire stream conditions can be characterized as those which prefer a broad range of physical habitat (Mihuc et al. 1996). Taxa which require specialized habitat needs respond much slower to disturbances such as fire (Mihuc et al. 1996).

Studies have shown that post fire hydrologic events can extirpate local fish populations (Novak and White 1990; Propst et al. 1992; Bozek and Young 1994; Rinne 1996; Rieman et al. 1997). Recolonization rates depend on the proximity and relative location of refugia, access from refugia to disturbed areas (i.e. no fish barriers), and the occurrence of complex life history traits and overlapping generations (Gresswell 1999; Dunham et al. 2003). Isolated fish populations are at a much higher risk of extinction because they cannot recolonize after a large disturbance (Rinne 1996). Additionally, effects on small headwater streams are more severe because entire drainages are burned at these smaller spatial scales, in contrast to larger stream orders, where relatively small proportions of the drainage burn. Few studies in the western United States on the effects of fires on amphibians have been conducted. However, Pilliod et al. (2003) suggest that the major

indirect effects to amphibians include increased solar radiation and temperature, sedimentation and substrate composition, changing hydroperiods, and the loss of duff and litter which are important habitats for many amphibians.

The most effective way to reduce the negative effects of fires on aquatic systems is to protect the evolutionary capacity of these systems to disturbance (Bisson et al. 2003). Restoring physical connections among aquatic habitats may be the most effective and efficient step in restoring or maintaining the productivity and resilience of many aquatic populations (Bisson et al. 2003; Dunham et al. 2003; Rieman et al. 2003, Rieman and Clayton 1997, Pilliod et al. 2003). The focus should be to protect aquatic communities in areas where they remain robust and restore habitat structure and life history complexity of native species where aquatic ecosystems have been degraded (Gresswell 1999). However, where restoring connectivity between aquatic populations is not feasible, active management to reduce the impacts of fires and fire suppression actions may be an important short-term conservation strategy (Brown et al. 2001; Rieman et al. 2003). Immediate stabilization and rehabilitation following fire is essential to reducing the effects erosion can have on aquatic species. This is of particular concern in stream and aquatic habitats with Lahontan cutthroat trout, speckled dace, and Columbia spotted frog.

B. Fire Prevention

Removal of vegetation through prescribed burning, mechanical, chemical, and biological methods are used on the District as a fire prevention measure to reduce or remove fuel loads. These activities are conducted in upland habitats, and the benefits and restrictions of such actions are discussed in the EA (Chapter 2). Vegetation removal for fire prevention does not occur in riparian habitats on the District. However, mechanical impacts may occur in riparian areas during a fire when fire lines and firebreaks are needed to protect human life or property. There is a chance that a prescribed burn may become uncontrollable and have unintended impacts to riparian and aquatic ecosystems. Impacts of riparian vegetation removal may include: loss of threatened and endangered species habitat, direct loss of listed species, increases in water temperatures, and decreased water quality (temporary or long-term). In many cases, riparian vegetation removal would be avoided or impacts reduced by limiting traffic on the fire line to reduce erosion, avoiding occupied listed species habitats, limiting the fire line width to the minimum necessary, and rehabilitating the area following fire suppression.

C. Fire Suppression

Fire suppression methods include the construction of fire lines, back burning, application of water from pumps or aerial drops, the use of fire retardants and suppressant foams, construction and use of helicopter landings, material storage and refueling areas, and fire camps. The effects to aquatic species and their habitat include increased erosion and overland flow from fire line construction, increased risk of mass failure from mechanical fire line construction on landslide prone terrain, and temporary reduction or cessation of flows in small streams when drafting or dipping water. Fire camps, helibases, and other operational facilities have the potential to adversely effect aquatic species from harassment or unintentional introductions of fuel and other chemicals to waterways. Back burning has similar effects as wildfire including increasing the risk of erosion and impair riparian areas, especially if ignition is conducting in the riparian areas.

Fire retardants and suppressant foams are known to be toxic to aquatic species (Adams and Simmons 1999, Buhl and Hamilton 1998, Gaikowski et al. 1996, Norris and Webb 1989). The surfactant portion of foam suppressants has been studied and was determined to be detrimental to aquatic life because it decreases water tension, thereby decreasing the aquatic organism's ability to obtain life-sustaining oxygen (Sanchez et al. 1991, Lewis and Suprenant 1983, McDonald et al. 1997). The toxic component of retardant chemicals in aquatic systems is ammonia (McDonald et al. 1996), and fish are less tolerant than are macroinvertebrates. Ammonia (NH_3) is highly soluble and typically results when fertilizers or retardants are added to water. When ammonia dissolves in water, a chemical equilibrium is maintained between NH_3, which is the more toxic form, and ionized ammonia (NH_4^+). The chemical balance between these 2 forms of ammonia is determined by pH, temperature, and total ammonia concentration.

The toxicity of some chemicals is known to be photoenhanced in the presence of natural solar ultraviolet light (UV) (Oris and Giesy, 1985, Pelletier et al., 1997). Toxicity of some chemicals used in fire retardants, such as, sodium ferrocyanide (a corrosion inhibitor), may increase with exposure to UV. Recent studies of the interactive effects of UV and fire retardant chemicals on three aquatic species, juvenile rainbow trout, Southern leopard frog (*Rana sphenocephala*) tadpoles, and boreal toads (*Bufo boreas*) showed a significant increase in mortality when exposed to UV light and fire retardants in the laboratory (Little and Calfee 2000, Calfee and Little 2003).

Fire retardant chemicals and suppressant foams are typically applied to ridge top vegetation and adjacent to natural fire barriers such as roads, meadows, and rock outcrops. In most instances, aquatic environments are located in canyon bottoms which are difficult to reach with large fixed-wing aircraft. Therefore, aquatic environments are not areas where fire chemicals are typically applied. Retardant is never intentionally dropped into surface waters. However, factors such as firefighter or public safety, or structure protection may require the use of retardant directly adjacent to aquatic areas. When this is necessary, the retardant is typically applied perpendicular to the stream channel.

Since the SOP's for species protection restrict retardant application within 300 feet or greater from surface waters, the risk of retardant harming aquatic species is significantly reduced. In addition, the implementation of the proposed action would further reduce the potential occurrence of fire and fire suppression activities within habitat of listed species. The twenty year history of fire occurrence in the Elko District shows 14.84 miles of public occupied LCT habitat impacted by fire. These impacts have occurred during the past three years of highest fire occurrence. Because SOP's restrict application of fire suppression chemicals within 300 feet of riparian areas (unless there is a threat to human life or property), there have been no instances where fire suppression chemicals have been applied in a manner that caused them to enter directly or indirectly into the water. Therefore, the potential for adverse impacts to listed species from fire retardant chemicals through implementation of the proposed action is extremely low.

D. Fire Rehabilitation

Effects due to most post-fire rehabilitation and stabilization treatments are thought to be minimal. It is expected that implementing post-fire rehabilitation and stabilization treatments together with

the SOP's listed in the Conservation Recommendations section will help ensure listed species are not adversely impacted. However, some rehabilitation treatments such as culvert replacement, road rehabilitation or obliteration, or transporting fish out of burned drainages to eliminate negative effects from post-fire hydrologic processes may have adverse effects. Although the potential exists for direct species losses due to rehabilitation treatments, these losses are predicted to be significantly less than the direct and/or indirect impacts of habitat losses due to wildfire occurrences within sensitive habitat.

Conclusion

After reviewing the current status of the Clover Valley Speckled dace, Independence Valley Speckled dace, and Lahontan cutthroat trout, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed action will not jeopardize the continued existence of the Clover Valley Speckled dace, Independence Valley Speckled dace, and Lahontan cutthroat trout. After reviewing the current status of Columbia spotted frogs, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the proposed action will not lead the Service to list the Columbia spotted frog as threatened or endangered. Adverse effects are expected under the proposed action, primarily through fire suppression activities, burned area rehabilitation and stabilization treatments, and fuels treatments. However, if the SOP's are followed, the Service is involved on burned area rehabilitation and stabilization teams, and fuels treatments are consulted on an individual basis, adverse effects from these activities can be minimized.

Incidental Take

No exemption from Section 9 of the Act is granted in this biological opinion. BLM's implementation of the FMP is likely to adversely affect listed species. However, the proposed action, by itself, is one of multiple steps in the FMP. The likelihood of incidental take, and the identification of reasonable and prudent measures and terms and conditions to minimize such take, will be addressed in project level, and possibly programmatic level consultations. Any incidental take and measures to reduce such take cannot be effectively identified at the level of proposed action because of the uncertainty of wildland fire, broad geographic scope, and the lack of site specific information. Rather, incidental take and reasonable and prudent measures may be identified adequately through subsequent actions subject to section 7 consultations at the project and/or programmatic scale.

Reporting Requirements

Upon locating dead, injured, or sick threatened or endangered species, initial notification must be made to the Service's Division of Law Enforcement Senior Resident Agent Barry Jordan in Reno, Nevada at telephone number 775-861-6360 and the Nevada Fish and Wildlife Office within three (3) working days. Instructions for proper handling and disposition of such specimens will be issued by the Division of Law Enforcement. Care must be taken in handling sick or injured endangered, threatened, or candidate species to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. In conjunction

with the care of sick and injured fish or wildlife, the preservation of biological materials from a dead specimen, the BLM has the responsibility to ensure that information relative to the date, time, and location of the wildlife, when found, and possible cause of injury or death of each must be recorded and provided to the Service.

The Elko Field Office shall submit a report to the Service on or before (December 1) of each year in which fire management activities occurred within occupied habitat. For the listed and candidate species covered under this consultation, the report shall include: 1) the amount of potential and/or occupied habitat affected by wildfire (i.e. stream miles burned, percentage of drainage burned, fire severity map); 2) to the extent possible, the number of individuals killed from direct and indirect effects of wildfire; 3) any habitat and/or population monitoring efforts from past wildfire events; 4) a copy of the burned area emergency stabilization and rehabilitation plan; 5) implementation and effectiveness monitoring of burned area emergency stabilization and rehabilitation treatments; 6) implementation and effectiveness monitoring of the SOP's; 7) recommendations for enhancing the effectiveness of the SOP's; and 8) any recommendations for additional SOP's. The first report shall be due to the Service on (December 1**,** 2004). The address for the Nevada Fish and Wildlife Office is:

Field Supervisor
U.S. Fish and Wildlife Service
1340 Financial Boulevard, Suite 234
Reno, Nevada 89502
Telephone: (775) 861-6300

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to implement recovery actions, to help implement recovery plans, to develop information, or otherwise further the purposes of the Act.

For the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations. The following conservation recommendations were developed by the BLM in cooperation with the Service:

A. Lahontan Cutthroat Trout

Unless a threat to human life or property exists, the following standard operating procedures for species protection will apply to all streams occupied by LCT and native habitats identified as having recovery potential[1]:

1 The Humboldt Distinct Population Segment (DPS) Team will use the 1995 LCT Recovery Plan and the most recent data to develop a list and/or map which specifically identifies stream segments currently occupied by LCT and native ranges identified as having recovery potential. This list and/or map will be reviewed and updated as necessary based on the most current species information.

Suppression Activities:

1. Avoid the application of retardant or foam within 300 feet of the stream channel or waterway[2].

   Exceptions:

   - When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy air tanker).

   - Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.

   - When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines[3].

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2 Aerial application and use of retardants and foams will be consistent with national policy guidelines established by the National Office of Fire and Aviation, as amended.

3 This determination will be made on a case-by-case basis by the Field Manager or the designated Field Manager representative in consultation with the Fire Management Officer, Incident Commander, Resource Advisor, and Elko Field Office Fisheries Biologist through development of the Wildfire Situation Analysis.

Emergency Consultation:
Aerial application of retardant or foam outside 300 ft of a waterway is presumed to avoid adverse effects to aquatic species. If it is determined appropriate to apply retardant or surfactant foam within 300 feet of a waterway or stream channel based on one or more of the exceptions listed above, the unit administrator shall determine whether there have been any adverse effects to LCT.

If the action agency determines there were no adverse effects to LCT or their habitats, there is no additional requirement to consult with the Service.

If the action agency determines that there were adverse effects on LCT or their habitats then the action agency must consult with the Service, as required by 50 CFR 402.05 (Emergencies).

In the case of a long duration incident, emergency consultation should be initiated as soon as practical during the event. Otherwise, post-event consultation is appropriate. The initiation of the consultation is the responsibility of the unit administrator.

2. Do not draft fill engines that have surfactant foam mixes in tanks, directly from the stream channel.

3. A containment barrier will be constructed around all pumps and fuel containers utilized within 100 feet of the stream channel to prevent petroleum products from entering the stream. The containment barrier will be of sufficient size to contain all fuel being stored or used on site.

4. Do not dump engines filled with surfactant foam mixes within 600 feet of the stream channel.

5. Do not conduct retardant mixing operations within 300 feet of the stream channel.

6. Stream flow will not be impounded or diverted by mechanical or other means in order to facilitate extraction of water from the stream for fire suppression efforts.

7. The intake end of the draft hose will be screened to prevent entry of fish species. Screen opening size will be a maximum of 3/16 inch.

8. Before each fire assignment in the Elko District, all fire suppression equipment utilized to extract water from stream or spring sources (i.e. helicopter buckets, draft hoses and screens) will be thoroughly rinsed to remove mud and debris and disinfected with a chlorine solution (one part bleach to 32 parts water, or stronger). Rinsing equipment with disinfectant solutions will not occur within 100 feet of natural water sources (streams or springs).

9. Unless specifically identified as a restricted water source[4], dipping water from streams currently occupied by LCT (including beaver ponds) by helicopter bucket is allowed only during initial attack operations (the first 24 hours following the initiation of suppression actions). Beyond initial attack, additional water needed to control and/or contain the fire will be obtained by drafting into portable dipping tanks or drafting directly into the helicopter bucket in accordance with the above standard operating procedures. Water levels in the pond or pool will be monitored continuously. Water extraction will not exceed the ability of the stream inflow to maintain water levels that exist at the time initial attack efforts began. If the water level drops below this predetermined level, all water removal will cease immediately until water levels are recharged.

10. For streams currently occupied by LCT, extraction of water from beaver ponds or pools will not be allowed if stream inflow is minimal (i.e. during drought situations) and extraction of water would lower the existing pond or pool level.

11. Fire control lines will not cross or terminate at the stream channel. Control lines will terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives based on fire behavior, vegetation/fuel types, and fire fighter safety.

12. Access roads and/or fords will not be constructed across the stream channel.

13. New roads or mechanical fire control lines will not be constructed and existing roads will not be improved within 300 feet of the stream channel unless authorized by the Field Manager or the designated Field Manager representative.

Rehabilitation Measures:

1. An assessment of the impacts of fire and fire suppression activities to LCT habitat will be completed by an interdisciplinary team of resource specialists, including the Elko Field Office Fisheries Biologist and Hydrologist, representatives from the Service, and representatives from the Nevada Department of Wildlife. Based on this assessment, appropriate rehabilitation measures will be identified consistent with Departmental Emergency Stabilization and Rehabilitation Handbook guidance, including but not limited to some or all of the following:

    a. Close the affected watershed and/or stream channel to livestock grazing for one or more years to allow for recovery of riparian vegetation. The appropriate length of time for closure to livestock grazing will be determined on a site specific basis based on resource data, scientific principles, and experience. Site specific monitoring will determine when

4 The Humboldt Distinct Population Segment (DPS) Team will use the 1995 LCT Recovery Plan and the most recent data to develop a list and/or map which specifically identifies stream segments currently occupied by LCT where dipping water from streams (including beaver ponds) by helicopter is restricted due to specific meta-population concerns. This list and/or map will be reviewed annually and updated as necessary based on the most current species information.

resource objectives have been achieved on specific burned areas. Site specific vegetative recovery objectives will be identified by the interdisciplinary review team and included in the Notice of Closure to Livestock Grazing issued in accordance with 43 CFR 4110.3-3.

b. Reconstruct damaged fences and/or construct new fences to ensure protection of the stream channel from grazing. In Wilderness Study Areas, fence construction and/or reconstruction will be in accordance with Interim Management Policy Guidelines.

c. Monitor stream and riparian habitats to allow for comparison of post-fire impacts to existing baseline information.

d. Where determined necessary by the interdisciplinary review team, install appropriate erosion control structures (i.e. erosion matting and/or straw bale structures, straw wattles, etc.) to mitigate overland flow effects to the stream channel.

e. Where determined necessary by the interdisciplinary review team, reseed and/or replant riparian/wetland areas with native plant species to facilitate re-establishment of perennial vegetation, minimize potential channel erosion, and allow for recovery of riparian functionality.

f. Rehabilitate improved roads located within 300 feet of the stream channel as determined necessary to mitigate potential sedimentation into the stream channel.

g. Implement appropriate integrated noxious weed control measures where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.

h. Where determined necessary by the interdisciplinary review team, initiate temporary road closures for at least one year to protect and stabilize burned areas and associated watersheds. An interdisciplinary assessment will be conducted after the first year to determine if road closures are still needed.

B. <u>Columbia Spotted Frog</u>

B. Unless a threat to human life exists, the following standard operating procedures for species protection will apply to riparian and/or wetland habitats currently occupied by Columbia spotted frog:

<u>Suppression Activities:</u>

1. Avoid the application of retardant or foam within 300 feet of the stream channel or waterway[1.]

   Exceptions:

   - When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy air tanker).

   - Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.

   - When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines[2.]

If and when the Columbia spotted frog is listed as threatened or endangered, or proposed for listing, the following Emergency Consultation guidelines would apply:

Aerial application of retardant or foam outside 300 ft of a waterway is presumed to avoid adverse effects to aquatic species. If it is determined appropriate to apply retardant or surfactant foam within 300 feet of a waterway or stream channel based on one or more of the exceptions listed above, the unit administrator shall determine whether there have been any adverse effects to Columbia spotted frog.

If the action agency determines there were no adverse effects to Columbia spotted frog or their habitats, there is no additional requirement to consult with the Service.

If the action agency determines that there were adverse effects on Columbia spotted frog or their habitats then the action agency must consult with the Service, as required by 50 CFR 402.05 (Emergencies).

In the case of a long duration incident, emergency consultation should be initiated as soon as practical during the event. Otherwise, post-event consultation is appropriate. The initiation of the consultation is the responsibility of the unit administrator.

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1 Aerial application and use of retardants and foams will be consistent with national policy guidelines established by the National Office of Fire and Aviation, as amended.

2 This determination will be made on a case-by-case basis by the Field Manager or the designated Field Manager representative in consultation with the Fire Management Officer, Incident Commander, Resource Advisor, and Elko Field Office Fisheries Biologist through development of the Wildfire Situation Analysis.

2. Do not draft fill engines that have surfactant foam mixes in tanks, directly from the stream channel or spring/pond.

3. A containment barrier will be constructed around all pumps and fuel containers utilized within 100 feet of the stream channel or spring/pond to prevent petroleum products from entering the stream. The containment barrier will be of sufficient size to contain all fuel being stored or used on site.

4. Do not dump engines filled with surfactant foam mixes within 600 feet of the stream channel or spring/pond.

5. Do not conduct retardant mixing operations within 300 feet of the stream channel or spring/pond.

6. Fire control lines will not cross or terminate at the stream channel or spring/pond. Control lines will terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives based on fire behavior, vegetation/fuel types, and fire fighter safety.

7. Stream flow will not be impounded or diverted by mechanical or other means in order to facilitate extraction of water from the stream for fire suppression efforts.

8. Access roads and/or fords will not be constructed across the stream channel.

9. The intake end of the draft hose will be screened to prevent entry of spotted frog tadpoles. Screen opening size will be a maximum of 3/16 inch.

10. When drafting from beaver ponds or spring/ponds, drafting will occur only in open water areas free of dense aquatic vegetation where egg masses or spotted frog tad poles may concentrate.

11. Dipping water from beaver ponds or spring/ponds by helicopter bucket is allowed only during initial attack operations (the first 24 hours following the initiation of suppression actions). Beyond initial attack, additional water needed to control and/or contain the fire will be obtained by drafting into portable dipping tanks or drafting directly into the helicopter bucket in accordance with the above standard operating procedures. Water levels in the beaver pond or spring/pond will be monitored continuously. Water extraction will not exceed the ability of the stream or spring inflow to maintain water levels which exist at the time initial attack efforts began. If the water level drops below this predetermined level, all water removal will cease immediately until water levels are recharged.

12. Extraction of water from beaver ponds or spring/ponds will not be allowed if stream or spring inflow is minimal (i.e. during drought situations) and extraction of water would lower the existing pond level.

13. Before each fire assignment in the Elko District, all fire suppression equipment utilized to extract water from stream or spring sources (i.e. helicopter buckets, draft hoses and screens) will be thoroughly rinsed to remove mud and debris and disinfected with a chlorine solution (one part bleach to 32 parts water, or stronger). Rinsing equipment with disinfectant solutions will not occur within 100 feet of natural water sources (streams or springs).

Rehabilitation Measures:

1. An assessment of the impacts of fire and fire suppression activities to Columbia spotted frog habitat will be completed by an interdisciplinary team of resource specialists, including the Elko Field Office Fisheries Biologist and Hydrologist, representatives from the Service, and representatives from the Nevada Department of Wildlife. Based on this assessment, appropriate rehabilitation measures will be identified consistent with Departmental Emergency Stabilization and Rehabilitation Handbook guidance, including but not limited to some or all of the following:

    a. Close the affected habitat area to livestock grazing for one or more years to allow for recovery of riparian vegetation. The appropriate length of time for closure to livestock grazing will be determined on a site specific basis based on resource data, scientific principles, and experience. Site specific monitoring will determine when resource objectives have been achieved on specific burned areas. Site specific vegetative recovery objectives will be identified by the interdisciplinary review team and included in the Notice of Closure to Livestock Grazing issued in accordance with 43 CFR 4110.3-3.

    b. Reconstruct damaged fences and/or construct new fences to ensure protection of the habitat area from grazing. In Wilderness Study Areas, fence construction and/or reconstruction will be in accordance with Interim Management Policy Guidelines.

    c. Monitor stream channel or spring/pond habitats to allow for comparison of post-fire impacts to existing baseline information.

    d. Where determined necessary by the interdisciplinary review team, install appropriate erosion control structures (i.e. erosion matting and/or straw bale structures, straw wattles, etc.) to mitigate overland flow effects to the stream channel or spring/pond.

    e. Where determined necessary by the interdisciplinary review team, reseed and/or replant riparian/wetland areas with native plant species to facilitate re-establishment of perennial vegetation, minimize potential channel erosion, and allow for recovery of riparian functionality.

f. Rehabilitate improved roads located within 300 feet of the habitat area as determined necessary to mitigate potential sedimentation.

g. Implement appropriate integrated noxious weed control measures where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.

h. Where determined necessary by the interdisciplinary review team, initiate temporary road closures for at least one year to protect and stabilize burned areas and associated watersheds. An interdisciplinary assessment will be conducted after the first year to determine if road closures are still needed.

C. Independence Valley Speckled Dace

Unless a threat to human life or property exists, the following standard operating procedures for species protection will apply to the Independence Valley Warm Springs and ponds which supply water to outflow channels and marsh habitats occupied by the Independence Valley speckled dace:

The Independence Valley Warms Springs and wetlands habitat area is located entirely on private lands. The habitat area emerges from several seeps and springs along a 1-mile segment of the western edge of Independence Valley. The flows are impounded into two reservoirs. The upper, shallower reservoir overflows into the lower, deeper reservoir. The outflow from the lower reservoir flows through a channel before entering a marsh area. Several small shallow ponds exist in the marsh area. Spring heads exist both north and south of the impoundment reservoirs. Independence Valley speckled dace are not known to occur in the spring head areas or the two impoundment reservoirs. The dace are known to exist mostly in the marsh area and to a lesser extent in the outflow channel.

Suppression Activities:

1. Avoid the application of retardant or foam within 300 feet of the stream channel or waterway[1].

Exceptions:

- When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement

1 Aerial application and use of retardants and foams will be consistent with national policy guidelines established by the National Office of Fire and Aviation, as amended.

of retardant or foam in the waterway (e.g., a helicopter rather than a heavy air tanker).

- Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.

- When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines[2.]

Emergency Consultation:
Aerial application of retardant or foam outside 300 ft of a waterway is presumed to avoid adverse effects to aquatic species. If it is determined appropriate to apply retardant or surfactant foam within 300 feet of a waterway or stream channel based on one or more of the exceptions listed above, the unit administrator shall determine whether there have been any adverse effects to Independence Valley speckled dace.

If the action agency determines there were no adverse effects to Independence Valley speckled dace or their habitats, there is no additional requirement to consult with the Service.

If the action agency determines that there were adverse effects on Independence Valley speckled dace or their habitats then the action agency must consult with the Service, as required by 50 CFR 402.05 (Emergencies).

In the case of a long duration incident, emergency consultation should be initiated as soon as practical during the event. Otherwise, post-event consultation is appropriate. The initiation of the consultation is the responsibility of the unit administrator.

2. Water needed for suppression activities will be extracted from the two impoundment ponds only. Water may be extracted by helicopter bucket dipping or draft filling. Before water extraction begins, a marker (a stake with a painted line, etc.) will be placed in the outflow drainage area below the lower impoundment pond, indicating the level of water flowing from the pond. Water level in the outflow will be monitored continuously. If the water level in the outflow drops below the designated level, all water removal will cease immediately until water levels return to normal levels.

3. Surfactant foam or retardants will not be used within 300 feet of the spring sources, impoundment ponds, outflow channel, or marsh/wetland areas.

4. Do not draft fill engines that have surfactant foam mixes in tanks directly from the spring source, impoundment ponds, outflow channel, or marsh/wetland areas.

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2 This determination will be made on a case-by-case basis by the Field Manager or the designated Field Manager representative in consultation with the Fire Management Officer, Incident Commander, Resource Advisor, and Elko Field Office Fisheries Biologist through development of the Wildfire Situation Analysis.

5. The intake end of the draft hose will be screened to prevent entry of fish species. Screen opening size will be a maximum of 3/16 inch.

6. A containment barrier will be constructed around all pumps and fuel containers utilized within 100 feet of the spring source, impoundment ponds, outflow channel, or marsh/wetland areas to prevent petroleum products from entering the stream. The containment barrier will be of sufficient size to contain all fuel being stored or used on site.

7. Do not dump engines filled with surfactant foam mixes within 600 feet of the spring sources, impoundment ponds, outflow channel, or marsh/wetland areas.

8. Do not conduct retardant mixing operations within 300 feet of the spring source, impoundment ponds, outflow channel, or marsh/wetland areas.

9. Fire control lines will not cross or terminate at the spring source, impoundment ponds, outflow channel, or marsh/wetland areas. Control lines will terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives based on fire behavior, vegetation/fuel types, and fire fighter safety.

10. Before each fire assignment in the Elko District, all fire suppression equipment utilized to extract water from stream or spring sources (i.e. helicopter buckets, draft hoses and screens) will be thoroughly rinsed to remove mud and debris and disinfected with a chlorine solution (one part bleach to 32 parts water, or stronger). Rinsing equipment with disinfectant solutions will not occur within 100 feet of natural water sources (streams or springs).

Rehabilitation Measures:

The Independence Valley Warm Springs habitat area is located on private lands. A land exchange has been proposed that, if approved, would change ownership of these lands from private to public. Until ownership changes, rehabilitation measures on private lands are restricted to addressing damages due to fire suppression activities. Therefore, the following rehabilitation measures would apply, assuming private ownership of the Independence Valley Warm Springs habitat area.

1. An assessment of the impacts of fire suppression activities to Independence Valley speckled dace habitat (the Independence Valley Warm Springs wetlands is located on private lands) will be completed by an interdisciplinary team of resource specialists, including the Elko Field Office Fisheries Biologist and Hydrologist, representatives from the Service, and representatives from the Nevada Department of Wildlife. Based on this assessment, appropriate rehabilitation measures will be identified consistent with Departmental

Emergency Stabilization and Rehabilitation Handbook guidance, including but not limited to some or all of the following:

a. Reconstruct fences or other structures damaged by suppression activities.

b. Rehabilitate roads improved or created by suppression activities located within 300 feet of the habitat area as determined necessary to mitigate potential sedimentation into the habitat area.

c. Implement appropriate integrated noxious weed control measures in those areas damaged during fire suppression activities where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.

d. Re-seed or replant riparian or wetland areas damaged by suppression activities with native species as determined necessary by the interdisciplinary review team to facilitate re-establishment of perennial vegetation.

2. In addition to the above, the following rehabilitation measures would also be considered by the interdisciplinary review team charged with assessing the impacts of fire and fire suppression activities, should ownership of the Independence Valley Warm Springs habitat area change from private to public ownership:

a. Close the affected habitat area to livestock grazing for one or more years to allow for recovery of riparian/wetland vegetation. The appropriate length of time for closure to livestock grazing will be determined on a site specific basis based on resource data, scientific principles, and experience. Site specific monitoring will determine when resource objectives have been achieved on specific burned areas. Site specific vegetative recovery objectives will be identified by the interdisciplinary review team and included in the Notice of Closure to Livestock Grazing issued in accordance with 43 CFR 4110.3-3.

b. Reconstruct damaged fences and/or construct new fences to ensure protection of the habitat area from grazing.

c. Monitor riparian/wetland habitats to allow for comparison of post-fire impacts to existing baseline information.

d. Where determined necessary by the interdisciplinary review team, install appropriate erosion control structures (i.e. erosion matting and/or straw bale structures, straw wattles, etc.) to mitigate overland flow effects.

e. Where determined necessary by the interdisciplinary review team, reseed and/or replant riparian/wetland areas with native plant species to facilitate re-establishment of perennial vegetation, minimize potential effects of erosion, and allow for recovery of riparian/wetland functionality.

f. Implement appropriate integrated noxious weed control measures where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.

D. Clover Valley Speckled Dace

Unless a threat to human life exists, the following standard operating procedures for species protection will apply to spring/pond areas occupied by Clover Valley speckled dace:

Clover Valley speckled dace are known to exist in three separate spring/pond habitats all located on private lands in Clover Valley. All three habitat areas are comprised of a riparian/wetland complex consisting of a spring source, one or more impoundment ponds, and one or more outflow channels. Dace are known to inhabit the spring source areas, impoundment pond(s) and/or outflow channels.

Suppression Activities:

1. Avoid the application of retardant or foam within 300 feet of the stream channel or waterway[1.]

Exceptions:

- When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy air tanker).

- Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.

- When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines[2.]

1 Aerial application and use of retardants and foams will be consistent with national policy guidelines established by the National Office of Fire and Aviation, as amended.

2 This determination will be made on a case-by-case basis by the Field Manager or the designated Field Manager

Emergency Consultation:
Aerial application of retardant or foam outside 300 ft of a waterway is presumed to avoid adverse effects to aquatic species. If it is determined appropriate to apply retardant or surfactant foam within 300 feet of a waterway or stream channel based on one or more of the exceptions listed above, the unit administrator shall determine whether there have been any adverse effects to Clover Valley speckled dace.

If the action agency determines there were no adverse effects to Clover Valley speckled dace or their habitats, there is no additional requirement to consult with the Service.

If the action agency determines that there were adverse effects on Clover Valley speckled dace or their habitats then the action agency must consult with the Service, as required by 50 CFR 402.05 (Emergencies).

In the case of a long duration incident, emergency consultation should be initiated as soon as practical during the event. Otherwise, post-event consultation is appropriate. The initiation of the consultation is the responsibility of the unit administrator.

2. Dipping water from the impoundment ponds by helicopter bucket is allowed only during initial attack operations (the first 24 hours following the initiation of suppression actions). Beyond initial attack, additional water needed to control and contain the fire will be obtained by drafting from the pond into a portable dipping tank or drafting from the pond directly into the helicopter bucket.

3. Before drafting begins, a marker (a stake with a painted line, etc.) will be placed in the outflow drainage area indicating the level of water flowing from the pond. Water level in the outflow will be monitored continuously. If the water level in the outflow drops below the designated level, all water removal will cease immediately until water levels return to normal levels.

4. The intake end of the draft hose will be screened to prevent entry of fish species. Screen opening size will be a maximum of 3/16 inch.

5. A containment barrier will be constructed around all pumps and fuel containers utilized within 100 feet of the spring source, impoundment ponds, or outflow channel to prevent petroleum products from entering the water. The containment barrier will be of sufficient size to contain all fuel being stored or used on site.

6. Do not draft fill engines that have surfactant foam mixes in tanks directly from the spring source, impoundment ponds or outflow channel.

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representative in consultation with the Fire Management Officer, Incident Commander, Resource Advisor, and Elko Field Office Fisheries Biologist through development of the Wildfire Situation Analysis.

7. Do not dump engines filled with foam or surfactant mixes within 600 feet of the spring source, impoundment ponds, or outflow channel.

8. Do not conduct retardant mixing operations within 300 feet of the spring source, impoundment ponds, or outflow channel.

9. Fire control lines will not cross or terminate at the spring source, impoundment ponds, or outflow channel. Control lines will terminate at the edge of the riparian zone at a location determined appropriate to meet fire suppression objectives based on fire behavior, vegetation/fuel types, and fire fighter safety.

10. Before each fire assignment in the Elko District, all fire suppression equipment utilized to extract water from stream or spring sources (i.e. helicopter buckets, draft hoses and screens) will be thoroughly rinsed to remove mud and debris and disinfected with a chlorine solution (one part bleach to 32 parts water, or stronger). Rinsing equipment with disinfectant solutions will not occur within 100 feet of natural water sources (streams or springs).

Rehabilitation Measures:

All known spring/pond areas providing habitat for Clover Valley speckled dace are located on private lands. Therefore, rehabilitation measures would be limited to addressing those impacts directly related to fire suppression activities.

1. An assessment of the impacts of fire suppression activities to Clover Valley speckled dace habitat will be completed by an interdisciplinary team of resource specialists, including the Elko Field Office Fisheries Biologist and Hydrologist, representatives from the Service, and representatives from the Nevada Department of Wildlife. Based on this assessment, appropriate rehabilitation measures will be identified consistent with Departmental Emergency Stabilization and Rehabilitation Handbook guidance, including but not limited to some or all of the following:

    a. Reconstruct fences or other structures damaged by suppression activities.

    b. Rehabilitate roads improved or created by suppression activities located within 300 feet of the habitat area as determined necessary to mitigate potential sedimentation into the habitat area.

    c. Implement appropriate integrated noxious weed control measures in those areas damaged during fire suppression activities where determined necessary by the interdisciplinary review team and/or where determined appropriate through post-fire monitoring.

d. Re-seed or replant riparian or wetland areas damaged by suppression activities with native plant species as determined necessary by the interdisciplinary review team to facilitate re-establishment of perennial vegetation, minimize potential effects of erosion, and allow for recovery of riparian/wetland functionality.

REINITIATION NOTICE

This concludes formal consultation on the proposed action. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded (No exemption from Section 9 of the Act is granted in this biological opinion; therefore any incidental take associated with implementation of the FMP and not exempted through additional consultation with the Service, will require reinitiation of consultation on the FMP); (2) new information reveals effects of the proposed action that may affect listed 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 listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the proposed action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate the assistance, patience, and cooperation of your staff throughout this consultation process. If we can be of any further assistance, please contact me or Chad Mellison at (775) 861-6300.

Robert D. Williams

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