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Memorandum

To: Assistant Regional Director, Region 1, Portland, Oregon.
(Attn: Larry Salata-Endangered Species)

From: Field Supervisor, Bend Field Office, Bend, Oregon Nancy Gilbert

Subject: Biological Opinion on the Effects of the Issuance of an Enhancement of Survival Permit Under Section 10(a)(1)(A) of the Endangered Species Act of 1973, as Amended, to the Oregon Department of Fish and Wildlife (ODFW)

This documents the biological opinion of the U.S. Fish and Wildlife Service (Service) in accordance with Section 7 of the Endangered Species Act of 1973 (Act) as amended (16 U.S.C. 1531 *et seq.*), regarding potential effects to the threatened Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) from the proposed issuance of an enhancement of survival permit in association with the programmatic Safe Harbor Agreement for Lahontan cutthroat trout in the Northwest Geographic Management Unit (GMU), Malheur and Harney Counties, Oregon. The ODFW has applied for an enhancement of survival permit under section 10(a)(1)(A) of the Act to address potential impacts to the federally listed as threatened Lahontan cutthroat trout. The permit application includes a proposed programmatic Safe Harbor Agreement between ODFW and the Service with a term of 30 years. The proposed Safe Harbor Agreement will encourage landowners to voluntarily create, enhance, restore, and maintain habitat to benefit Lahontan cutthroat trout. The permit would authorize the incidental take of the threatened Lahontan cutthroat trout.

This biological opinion is based upon: 1) information provided in the Service's 1995 "Recovery Plan for Lahontan Cutthroat Trout" (Fish and Wildlife Service 1995); 2) the "Lahontan Subbasin Fish Management Plan" prepared by the ODFW (Hanson et al. 1993); 3) the Lahontan Cutthroat Trout 5-Year Review: Summary and Evaluation (Fish and Wildlife Service 2009); 4) the final

Safe Harbor Agreement; and 5) the application from ODFW requesting an enhancement of survival permit. A complete administrative record of this consultation is maintained in the Bend Field Office.

Description of the Proposed Action

The Service proposes to issue an enhancement of survival permit, pursuant to section 10(a)(1)(A) of the Act, to ODFW and to enter into a Safe Harbor Agreement. ODFW is the agency responsible for the restoration and management of fish and wildlife resources within Oregon's land and waters. The permit application includes the draft programmatic Safe Harbor Agreement for Lahontan cutthroat trout on private lands within the Northwest GMU between ODFW and the Service. ODFW would hold the incidental take permit and enroll landowners (Cooperators) into the Safe Harbor Agreement through Cooperative Agreements and by issuing Certificates of Inclusion to each cooperator. The purpose of the proposed Safe Harbor Agreement is to encourage private landowners to voluntarily create, enhance, maintain, and restore Lahontan cutthroat trout habitat to allow for the reintroduction and long-term recovery of Lahontan cutthroat trout within this GMU.

The area covered by this Safe Harbor Agreement ('enrolled lands') includes only the Oregon portion of the Northwest Geographic Management Unit for Lahontan cutthroat trout (see attached Map 1.). (In November 2005, a similar Safe Harbor Agreement was completed with the Nevada Department of Wildlife addressing the Nevada portion of the Quinn River basin and the Black Rock Desert basin.) The Northwest Geographic Management Unit encompasses both the Quinn River and Coyote Lake basins found in southeast Oregon. The Safe Harbor Agreement will also cover Lahontan cutthroat trout populations in the Alvord basin in Oregon. The potential enrollment properties may be any private lands associated with a perennial stream inside the borders of these hydrologic basins. The potential covered lands represent many Northern Great Basin vegetative communities as well as irrigated agricultural crops such as meadow hay and alfalfa.

The Safe Harbor Agreement encourages proactive conservation efforts by private landowners. ODFW intends to enroll into the Safe Harbor Agreement private landowners who are willing to allow the introduction or expansion of Lahontan cutthroat trout within their private lands and waters through individual conservation agreements. Landowners will also voluntarily commit to engage in conservation practices that may include: control of herd stocking rates and seasons; livestock exclusion; off-site water development; alternative haying; crop selection modification; fertilizer management; modification of irrigation practices; road or trail management (including improved crossings or fish passage structures); riparian vegetation plantings; rehabilitation projects; and stream habitat improvement projects. In return for voluntary conservation commitments, the Safe Harbor Agreement will extend assurances to the landowners, which will allow future alteration or modification of their enrolled property to its original baseline conditions at the time of enrollment. The intent of the Safe Harbor Agreement is to provide a net conservation benefit for Lahontan cutthroat trout. Implementation of this Safe Harbor Agreement is an important step towards recovery for Lahontan cutthroat trout.

Under this Safe Harbor Agreement, ODFW will be the administrator and enroll individual landowners via Certificates of Inclusion and Cooperative Agreements. Upon signing of a Cooperative Agreement, ODFW will issue a Certificate of Inclusion to a Cooperator authorizing incidental take of Lahontan cutthroat trout on the Cooperator's lands. ODFW will provide copies of all draft Cooperative Agreements to the Service for review and concurrence with the recommended activities/actions, baselines, and biological assessments as well as copies of all Certificates of Inclusions and Cooperative Agreements executed during that calendar year. Also, ODFW will provide an annual report which consists of: 1) a narrative describing the number of Cooperators and the amount of habitat potentially maintained, enhanced, or restored as a result of the management actions and/or conservation measures performed under each Cooperative Agreement; 2) a summary of the location(s) and circumstance(s) where incidental take of Lahontan cutthroat trout was anticipated; the amount of habitat taken back to baseline; when the take occurred, and whether it was the result of a completed Cooperative Agreement or early termination; 3) a summary of any interim take of Lahontan cutthroat trout which may have occurred which will include the location of the Cooperator, the amount of take that occurred, and the management action or conservation measure under which it occurred. (Interim take defined as any Lahontan cutthroat trout or amount of habitat that is taken above returning the property to baseline.); 4) a narrative explanation and results of all compliance monitoring activities for each enrolled property; 5) a narrative explanation and copies of any biological monitoring for each enrolled property within the Northwest GMU; and 6) a summary of actions of any Cooperators who are in non-compliance with the terms and conditions of their Cooperative Agreement or Certificate of Inclusion, and the measures employed to remediate the non-compliance will also be provided to the Service. ODFW will recommend procedures/actions Cooperators may implement to avoid future take based on any take which occurred as described in past annual reports and provide notification of non-compliance. Individual Cooperators enrolled in the program will comply with their individual Cooperative Agreement and provide reasonable access to his or her property for ODFW and the Service, or their representatives.

The Safe Harbor Agreement becomes effective upon issuance of the section 10(a)(1)(A) Enhancement of Survival Permit and will be in effect for 30 years. This time frame allows enough time to implement fully functional networked Lahontan cutthroat trout populations within a watershed or basin. Given the probable species response time to the planned conservation measures, the Service estimates it may take five years of implementing this Safe Harbor Agreement to fully reach a net conservation benefit for the species, although some level of benefits will likely occur within a shorter time period. ODFW may enroll Cooperators under Cooperative Agreements from the date this Safe Harbor Agreement and Permit becomes effective until 10 years prior to their termination. Obligations under Cooperative Agreements will be in effect variable lengths of time depending on the property covered and the agreement of the Cooperator and ODFW. However, the minimum duration of obligations will be for 10 years.

Consistent with the Safe Harbor Policy (64 FR 32717), the enhancement of survival permit will authorize incidental take of above-baseline conditions of any Lahontan cutthroat trout or habitat as a result of lawful activities on enrolled lands. Customary management activities may include but are not limited to: livestock management which includes number of livestock, season of livestock use (timing), type of livestock, stocking rates, frequency of grazing, and livestock

water supply; and agricultural actions which includes crop planting and harvest, irrigation timing, duration, volume, run-off management, water sources, and diversions.

To return the enrolled property to baseline conditions, a Cooperator must demonstrate that baseline conditions were maintained and that activities necessary to achieve a net conservation benefit were carried out for the duration of the Safe Harbor Agreement. At the end of the Cooperative Agreement term, and before a Cooperative Agreement expires, a Cooperator may reduce Lahontan cutthroat trout numbers or habitat to the established baseline to avoid accruing additional take under the Act. However, no species or habitat shall be impacted until the Cooperator has given ODFW, the Service, or their representatives prior notice of at least 30-days so that individual Lahontan cutthroat trout may be relocated.

Compliance and biological monitoring will be conducted for each Cooperative Agreement. Compliance monitoring will be conducted by ODFW with assistance from the Service. Compliance monitoring obligations include visiting enrolled properties to ensure compliance with the Cooperative Agreement, including any obligations of the Cooperators and maintenance of baseline responsibilities. Biological monitoring will be conducted by both ODFW and the Service through a biological evaluation and yearly monitoring. Prior to completing a Cooperative Agreement and Certificate of Inclusion for any enrolled property ODFW will complete a detailed biological evaluation of that property to determine baseline conditions in cooperation with the private landowner and the Service. The biological evaluation of the given property will determine baseline conditions which will include but is not limited to an evaluation of aquatic habitat quality and suitability, a characterization of species present including non-native species, if any, and a determination of customary management actions being practiced, and the conservation measures needed. Following the placement of Lahontan cutthroat trout on enrolled lands or when Lahontan cutthroat trout are otherwise known to be present, ODFW, the Service, and/or the Northwest GMU team will monitor Lahontan cutthroat trout by visiting occupied enrolled lands at least annually to ascertain Lahontan cutthroat trout presence, monitor aquatic habitat quality, and to evaluate the efficacy of current management activities and conservation measures.

Status of the Species
Lahontan cutthroat trout

Status and Distribution

Lahontan cutthroat trout is an inland subspecies of cutthroat trout endemic to the physiographic Lahontan basin of northern Nevada, eastern California, and southern Oregon (Fish and Wildlife Service 1995). It was initially listed as endangered under the Endangered Species Conservation Act of 1969 based on evidence of destruction and drastic modification of their habitat and hybridization with introduced trout species (35 *Federal Register* 13520). The species was reclassified as threatened with a 4(d) rule in 1975. The threatened designation allowed the Service to promulgate regulations which facilitate management actions and allow regulated angling (40 *Federal Register* 29864). Critical habitat has not been designated for Lahontan cutthroat trout.

Lahontan cutthroat trout is one of 14 recognized subspecies of cutthroat trout in the western United States. 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). Subspeciation of cutthroat trout occurred during the desiccation of the Great Basin and Intermountain Region since the end of the Pleistocene. The distribution and differentiation among Lahontan cutthroat trout populations indicates their presence in most historic range prior to the last major Pleistocene glaciation (Behnke 1981; Loudenslager and Gall 1980). Following its high water level, Lake Lahontan rapidly desiccated to contemporary levels by about 8,000 years ago, isolating cutthroat populations in the northwestern (Willow Creek, Whitehorse Creek, Quinn River and Black Rock Desert) and eastern (Humboldt River) basins from those in the western (Truckee, Carson, and Walker rivers) basins.

Lahontan cutthroat trout evolved in a range of habitat types, from cold-water, high elevation streams to warmer, more alkaline lake environments. It is likely that localized, natural events historically caused the local extirpation of small populations of Lahontan cutthroat trout. Those events included landslides and rock falls, fires, droughts and debris flows that restricted movements. Lahontan cutthroat trout population persistence is associated with the ability to maintain connectivity among populations, i.e., networked populations. A networked system is defined as an interconnected stream(s) and/or stream-lake system in which individuals can migrate from or disperse into areas from which fish have been extirpated (Ray et al. 2000). This ability to disperse and repopulate habitats allows populations to persist (Neville-Arsenault 2003; Rieman and Dunham 2000; Ray et al. 2000; Dunham et al. 1997). Periodic repopulation by upstream or downstream sources enabled Lahontan cutthroat trout to survive extreme circumstances and provided for genetic exchange (Neville-Arsenault 2003).

Northwest Geographic Management Unit of Lahontan cutthroat trout

Lahontan cutthroat trout were historically common in the Quinn River, Blackrock and Little Humboldt subbasins of the Humboldt River system. Lahontan cutthroat trout currently within the Northwest GMU only survive as small populations in the isolated headwaters of streams in many mountain ranges in Nevada and Oregon. The Blackrock drainage alone may have had as many as 46 streams occupied by Lahontan cutthroat trout. Presently, Lahontan cutthroat trout are thought to occupy only 15 percent of their historic stream habitat in the Quinn River and Blackrock drainages. The populations have declined due to habitat loss, hybridization with nonnative salmonids and recent extended periods of drought. In January of 1995, the Service issued the recovery plan for the Lahontan cutthroat trout. ODFW completed a "Lahontan Subbasin Management Plan" for Oregon in 1993 (Hanson et al. 1993), which was followed by Nevada Department of Wildlife's (NDOW) "Lahontan Cutthroat Trout species Management Plan for the Quinn River/Black Rock and Humboldt River Sub-basins" in 1999.

To facilitate recovery of Lahontan cutthroat trout, the Northwest GMU working group was formed in 1999. Members of the team are comprised of personnel from the Service, NDOW, ODFW, Bureau of Land Management, U.S. Forest Service, and University of Nevada, Reno. Expanding on the tasks identified in the 1995 Recovery Plan, the team has been working to restore habitat and networked populations based upon the results of recent research. Recovery actions in the Northwest GMU are a high priority for both the Service and ODFW.

The severe range-wide decline in occupied habitat and numbers of Lahontan cutthroat trout is attributable to a range of factors including: hybridization and competition with nonnative trout species; loss of spawning habitat due to water diversions; pollution from mining; blockage of streams by dams; channelization; dewatering for irrigation and urban water needs; drought; and watershed degradation due to overgrazing by domestic livestock and wild horses (Chaney et al. 1990). The major impacts to Lahontan cutthroat trout habitat in Oregon are attributed to fragmented habitat due to irrigated farming and livestock grazing and nonnative fish competition and predation.

Drought conditions from 1987 to 1994 caused significant declines in many populations within the Great Basin. Good water years from 1995 through 1999 improved the abundance of Lahontan cutthroat trout in many streams. However, drought conditions through the present may have reversed this trend. These populations remain subject to the vagaries of drought, flood, habitat fragmentation, and other environmental conditions.

Life History

Lahontan cutthroat trout inhabit lakes and streams, but are obligatory stream spawners. Intermittent tributary streams are frequently used as spawning sites (Coffin 1981). Spawning generally occurs from April through July, depending on stream flow, elevation, and water temperature (Behnke 1992). Eggs are deposited in 0.25 to 0.5 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 bank-line areas and utilize small gravel/cobble for cover. By early fall the small (2-3 inch) fingerlings may school together in shallow pools.

Optimum Lahontan cutthroat trout habitat is 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 daily temperature fluctuations of 25-35 degrees Fahrenheit (^{o}F) (14-20 degrees Celsius [^{o}C]). Dunham et al. (1997) note that most Lahontan cutthroat trout populations have a distribution limit corresponding closely to maximum summer temperatures of 78.8 ^{o}F (26 ^{o}C), which was similar to results of laboratory experiments on thermal tolerances. Populations in less than optimal habitat may be present, but with reduced numbers and age classes.

Lahontan cutthroat trout are opportunistic feeders. In small streams they feed on terrestrial and aquatic insects, which are caught in the drift. Fish larger than 8 inches that are found in larger water bodies will turn to a fish diet where available (Sigler and Sigler 1987). In most areas within historic Lahontan basin, other native fish species are present to enhance Lahontan cutthroat trout's diet, but historically in Summit Lake and Coyote Lake basins, Lahontan cutthroat trout was the only fish present. In 1971 observations indicated that two cyprinid species of fish had become established in Summit Lake, potentially establishing a forage/prey base for this lacustrine population. However, recent observations indicate that the competitive nature of these species is impairing the success of Lahontan cutthroat trout in Summit Lake (Fish and Wildlife Service 2009).

Population Dynamics

Historically, Lahontan cutthroat trout occurred in what were considered networked populations or metapopulations (Ray et al. 2000; Fish and Wildlife Service 1995), which refers to a collection of discrete local breeding populations. In northern Nevada and southeastern Oregon, Lahontan cutthroat trout occupy elevations correlated with latitude and longitude suggesting potential influence of climatic gradients. Distribution of Lahontan cutthroat trout closely corresponds to a mean July air temperature of 18 degrees Celsius (Dunham et al. 1999). The potential for networked populations to persist despite local catastrophes has long been recognized (Huffaker 1958). Networked populations are those where individuals experience different environmental conditions at different locations but are capable of moving between these locations at sufficient rates to modulate population fluctuations that might otherwise lead to local extinction (Ray et al. 2000). The presence of several subpopulations increases the probability that at least one will survive through periods of disturbance and consequently protect the genetic variation available for adaptation to change.

Loss of connectivity within the Quinn River and Coyote Lakes basins during the past 100 years has isolated most of the local populations. Research indicates that isolation of Lahontan cutthroat trout populations increases the risk of local extinctions (Ray et al. 2000; Dunham et al. 1997). All of the Lahontan cutthroat trout populations within the action area are in isolated stream segments with no connection to other populations.

Due to the high risk of extinction of the isolated streams, habitat complexity throughout interconnected stream systems may be one of the most important factors to consider in reducing extinction probabilities of Lahontan cutthroat trout populations. One task of the Safe Harbor Agreement consists of implementing recovery strategies for Lahontan cutthroat trout such as facilitating establishment of networked populations. Numbers of Lahontan cutthroat trout available for translocation to enhance stream networked populations are currently low. Pure Lahontan cutthroat trout strains are being or have been introduced into suitable habitat within some stream reaches and may be used in repopulating rehabilitated streams.

Environmental Baseline

The action area occurs within the Oregon portion of the Northwest GMU for Lahontan cutthroat trout. Several reaches of the existing Lahontan cutthroat trout streams within the Oregon portion of the Northwest GMU occur on private lands with at least a portion within a perennial reach. Lahontan cutthroat trout access many miles of publicly owned stream habitats through private land areas. Private lands may include Lahontan cutthroat trout spawning areas, and migration corridors. The private lands which are included in the Safe Harbor Agreement will be considered in the baseline conditions of the included property.

Although habitat quality and complexity within the action area is not entirely suitable, most of the streams occupied by Lahontan cutthroat trout and those potentially occupied by Lahontan cutthroat trout have improved. This improvement is due in large part to the Federal land management agencies which have changed their management focus. Actions include reducing hot (late summer to fall) season grazing, focusing on riparian health instead of single species management, increasing wild horse gathers which reduces impact and increasing fencing and

off-site watering. The results of these actions are that riparian habitat has begun to recover from the impacts of decades of poor grazing practices.

The Northwest GMU team has been working toward recovery of Lahontan cutthroat trout by connecting isolated streams to serve as spawning habitat, migration corridors, and over wintering habitat. In the McDermitt Creek basin temporary barriers for completion of a restoration project, have been constructed and removal of the competitive, nonnative trout has primarily been completed. Additional work is needed to assure all non-native rainbow trout have been removed. Once the nonnative species have been eliminated, pure strain Lahontan cutthroat trout from the isolated populations will be reintroduced, the temporary barriers will be removed, and a networked population will be complete resulting in a total of approximately 55 miles of connected habitat (Fish and Wildlife Service 2009). The populations that will benefit from this networked population are McDermitt, Sage, Line Canyon, Indian, and Corral Creeks. Connection of these networked populations will be accomplished in conjunction with implementation of this proposed Safe Harbor Agreement.

Although restoration of networked populations is not needed in all streams, additional habitat restoration may be implemented in Willow Creek, Whitehorse Creek, Antelope Creek, Little McCoy Creek, Mosquito Creek, Willow Creek (Steens), Cottonwood Creek, Big Alvord Creek, Little Alvord Creek, Pike Creek, Denio Creek, Van Horne Creek and other streams tributary to occupied Lahontan cutthroat trout habitat.

Effects of the Action

Many of the effects of this action will be beneficial for Lahontan cutthroat trout. The Safe Harbor Agreement encourages proactive conservation efforts by non-Federal landowners while providing them certainty that future property-use restrictions will not be imposed if those efforts attract Lahontan cutthroat trout to their enrolled property or result in increased numbers or distributions of listed species already present. In return for voluntary conservation commitments, the Cooperative Agreements will extend assurances to the landowner, which will allow future alteration or modification of the enrolled property to its original baseline conditions. Without this cooperative government/private effort, Lahontan cutthroat trout would not otherwise occupy important recovery habitats in the foreseeable future.

The conservation measures associated with this Safe Harbor Agreement will contribute, directly and/or indirectly, to recovery of Lahontan cutthroat trout. Private lands comprise only a small portion of the stream habitats within the recovery stream systems. However, Lahontan cutthroat trout use private land areas to access many miles of publicly owned stream habitats that are currently not useable. These private lands encompass streams needed for both the isolated populations as well as networked populations. Currently, Lahontan cutthroat trout are only found in isolated upper reaches of streams on public lands due to habitat conditions, competition with other fish, and hybridization with introduced rainbow trout. Landowner participation in this Safe Harbor Agreement will open areas to reintroduction, expansion, and enhancement of habitat for Lahontan cutthroat trout populations needed to protect the species' genetic material. It will also help to implement networked populations and increase numbers of Lahontan cutthroat trout for use in stocking networked populations. Additionally, private lands will be needed for

Lahontan cutthroat trout spawning areas, migration corridors, and healthy population dynamics within the networked areas. The areas on private lands described above will be needed for Lahontan cutthroat trout recovery and as such will be considered part of the as agreed-to baseline conditions.

Implementation of this Safe Harbor Agreement is expected to result in increased numbers of Lahontan cutthroat trout and the baseline habitat needed to maintain healthy networked populations. Additionally, it should result in habitat in excess of the established baseline for each enrolled property. If all the landowners return their property to baseline conditions after 30 years, which is not expected, populations will still exist within public lands that have become linked due to conservation activities, and within private lands which serve as migration corridors, spawning habitat, and over wintering habitat. Isolated populations that were part of the baseline will have been utilized for repopulating the networked areas, and will still exist. Delisting of Lahontan cutthroat trout within this GMU may be realized during the 30 year permit timeline, depending on how quickly landowners sign up, habitat conditions stabilize, and Lahontan cutthroat trout numbers increase.

Customary management actions considered covered under the Permit for which take may be authorized on the enrolled lands are livestock management which includes number of livestock, season of livestock use (timing), type of livestock, stocking rates, frequency of grazing, and livestock water supply; agricultural actions which includes crop planting and harvest, irrigation timing, duration, volume, run-off management, and water source and diversions. These management actions may result in takings of Lahontan cutthroat trout, but take should be minimized by implementing the conservation measures that will be included in the Cooperative Agreement. Incidental take covered by the Certificates of Inclusion does not include any take that drops the number of Lahontan cutthroat trout or occupied habitat, or habitat needed for metapopulation connectivity and/or migration patterns under various water years below the established baseline. Lahontan cutthroat trout expansion into these private lands and associated public lands may allow reconnection of streams previously unused by Lahontan cutthroat trout, achieving the networked populations vital to Lahontan cutthroat trout long-term recovery.

Conservation measures that may be implemented on enrolled properties to assist with the recovery of Lahontan cutthroat trout will be as varied as the types of lands and landowner. The conservation measures to be implemented will be specific to each individual's baseline, habitat conditions, and management needs. Conservation measures implemented by the landowner to manage livestock grazing to meet a desired habitat goal may contain the following elements: control of stocking rates (Number/density of animals per unit area), manipulation of grazing season, and/or changes in duration, frequency and livestock types. Other measures may include livestock exclusion fencing, off-site water development and herding strategies.

Private landowners actively farming to produce an agricultural crop will have the opportunity to implement a multitude of conservation measures to improve habitat conditions for Lahontan cutthroat trout. Agricultural conservation measures could include crop selection, establishment of riparian buffer zones, and fertilizer and land disturbance (plowing and tilling) management. Manipulations in flow diversion timing, duration, and volume may be implemented as well as runoff minimization practices.

These grazing and agricultural mitigation measures may be utilized to minimize sediment production, algae blooms, water temperature increases, and water quality degradation, as well as to provide for increases in stream flows and improvements in riparian habitat conditions. Several additional conservation measures that may be implemented include road or trail management (including improved crossings or fish passage structures), riparian vegetation plantings, rehabilitation projects, and stream habitat improvement projects. Other options may exist that are not apparent until a willing landowner and biologist have the opportunity to exchange ideas. The overall goal is to produce conservation measures that are mutually beneficial to the cooperator and the long-term existence of Lahontan cutthroat trout. As conservation measures are formulated, they will be included in that landowner's specific Cooperative Agreement. The conservation measures will be designed to benefit Lahontan cutthroat trout or its habitat and thus are not expected to result in any take associated with them.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the 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. We are unaware of any non-federal actions affecting Lahontan cutthroat trout that are reasonably certain to occur in the action area.

Conclusion

After reviewing the current status of Lahontan cutthroat trout, the environmental baseline of the species in the action area, the effects of the proposed Safe Harbor Agreement, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of Lahontan cutthroat trout, and should provide a net conservation benefit to the species. No critical habitat has been designated for this species, therefore none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered or threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking under the Act

provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Service so that they become binding conditions of any permit issued to ODFW as appropriate, for the exemption in section 7(o)(2) to apply. The Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Service fails to assume and implement the terms and conditions, or fails to require ODFW to adhere to terms and conditions the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Service must report the progress of the action and its impact on the species as specified in the incidental take statement. [50 CFR §402.14(i)(3)]

Amount or Extent of Take

The Service anticipates that few Lahontan cutthroat trout may be taken through injury or mortality during implementation of the customary management actions covered under the Safe Harbor Agreement. It is the intention of the Safe Harbor Agreement that any take from the customary management actions will be minimized by implementing the conservation measures to be included in the Cooperative Agreements. Few Lahontan cutthroat trout may be taken from implementation of the conservation measures which may include habitat restoration, livestock exclusion fencing, off-site water development, establishment of riparian buffer zones, manipulations in flow diversion timing, duration, and volume, improved road crossings, and construction of fish passage structures. Because of the uncertainties of how many Lahontan cutthroat trout may occur on the enrolled lands over the term of the Safe Harbor Agreement and when and where they may be affected by routine ranching and farming activities, we cannot estimate the numbers of individuals that are likely to be killed or injured during these activities.

The Service anticipates incidental take of Lahontan cutthroat trout will be difficult to detect due to difficulty in recovering individual dead or impaired specimens from a stream environment. However, the following level of take could occur when a property is returned to its baseline condition at the end of each Cooperative Agreement and prior to expiration of the permit because:

1. All Lahontan cutthroat trout above baseline on enrolled lands may be harmed or harassed when being removed from the Cooperator's property; and

2. Any Lahontan cutthroat trout may be harmed and harassed if they return to the enrolled land after they have been relocated if the habitat has been altered and is no longer suitable.

The Service expects this level of incidental take to be minimal because habitat will continue to be maintained and networked populations will be able to move within different streams within the network. Properties identified as needed for spawning areas, migration corridors and healthy population dynamics within the networked areas will be considered baseline and not altered or destroyed. The private lands that may be returned to baseline will have provided access to many miles of public lands that will serve as networked populations and will not be affected because public lands are not covered by the proposed Safe Harbor Agreement.

Effect of Take

In the accompanying biological opinion, the Service determined that the maximum level of incidental take authorized under the proposed Safe Harbor Agreement and permit is not likely to result in jeopardy to the species. No critical habitat has been designated for this species, therefore no destruction or adverse modification of critical habitat will occur.

Reasonable and Prudent Measure

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of Lahontan cutthroat trout:

1. The Service shall ensure that measures in the Safe Harbor Agreement and all terms and conditions of the accompanying section 10(a)(1)(A) enhancement of survival permit are implemented.

Term and Condition

In order to be exempt from the prohibitions of section 9 of the Act, the Service must comply with the following term and condition, which implements the reasonable and prudent measure described above. This term and condition is non-discretionary.

1. The Service will work with ODFW and Cooperators to implement all measures in the Safe Harbor Agreement and terms and conditions of the accompanying section 10(a)(1)(A) enhancement of survival permit.

The Service believes that an un-quantified, but minimal number of Lahontan cutthroat trout will be incidentally taken as a result of the proposed action. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Service must immediately provide an explanation of the causes of the taking and review the need for possible modification of the reasonable and prudent measures.

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 minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plan, or to develop information. The process of developing a Safe Harbor Agreement necessitates the incorporation of this approach into the agreement process. Accordingly, the Service has no additional recommendations at this time.

Re-initiation Notice

This concludes formal consultation on the proposed issuance of a section 10(a)(1)(A) enhancement of survival permit to ODFW. As required by 50 CFR 402.16 re-initiation of 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; 2) new information reveals effects of the agency action that may affect listed species 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 adverse effect to the listed species that was not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by this action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

If you have any questions regarding this biological opinion or future conservation efforts for the Lahontan cutthroat trout, please contact Alan Mauer or me at (541) 383-7146.

LITERATURE CITED:

Behnke, R.J. 1979. Monograph of the native trouts of the genus Salmo of eastern North America. Unpub. Man. 215p.

Behnke, R.J. 1981. Systematic and zoogeographical interpretation of Great Basin trouts. Pages 95-124 in R.J. Naiman and D.L. Soltz, eds. Fishes in North American Deserts. Wiley Interscience, John Wiley & Sons. New York. 552p.

Behnke, R.J. 1992. Native trout of North America. American Fisheries Society, Monograph 6, Bethesda, Md.

Chaney, E., W. Elmore, and W.S. Platts. 1990. Livestock grazing on western riparian areas. Report prepared for U.S. Environmental Protection Agency by Northwest Resource Information Center, Inc., Eagle, Idaho. 45 p.

Coffin, P.D. 1981. Distribution and life history of the Lahontan/Humboldt cutthroat trout, Humboldt River drainage basin. Nevada Dept. of Wildlife. Reno, NV. Fed. Aid Proj. F-20-17, Study IX, Job No. 1-P-1. 69 p.

Dunham, J.B., G.L. Vinyard, and B.E. Rieman. 1997. Habitat fragmentation and extinction risk of Lahontan cutthroat trout. North American Journal of Fisheries Management 17:1126-1133.

Dunham, J.B., M.M. Peacock, B.E. Rieman, R.E. Schroeter, and G.L. Vinyard. 1999. Local and Geographic Variability in the Distribution of Stream-Living Lahontan Cutthroat Trout. Transactions of the American Fisheries Society 128:875–889

Fish and Wildlife Service. 1995. Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) Recovery Plan. Portland, Oregon. 147 pp.

Fish and Wildlife Service. 2009. Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) 5-Year Review: Summary and Evaluation. Reno, NV.

Hanson, M.L., W. Bowers, and R. Perkins. 1993. Lahontan Subbasins Fish Management Plan. Oregon Department of Fish and Wildlife.

Hickman, T., and R.F. Raleigh. 1982. Habitat suitability index models: Cutthroat trout. WS/OBS-82/10.5. WELUT, Fort Collins, Colorado. 38 pp.

Huffaker, C.B. 1958. Experimental studies on predation: dispersion factors and predator-prey oscillations. Hilgardia 27, 343–383.

Loudenslager, E.J. and G.A.E. Gall. 1980. Geographic patterns of protein variation and subspeciation in cutthroat trout, Salmo clarki. Syst. Zool. 29:27-42.

Neville-Arsenault, H. 2003. Genetic assessment of complex dynamics of an interior salmonid metapopulation. Doctoral dissertation. University of Nevada, Reno.

Peacock, M.M., and V. Kirchoff. 2004. Assessing the conservation value of hybridized cutthroat trout populations in the Quinn River drainage, Nevada. Transactions of the American Fisheries Society 133:309–325

Ray, C.M., M.M. Peacock, and J.B. Dunham. 2000. Population structure and persistence of Lahontan cutthroat trout: results from a comparative study of isolated and networked streams. Interim Report for cooperative agreement FWS 14-48-0001-95646. 26 pp.

Rieman, B.E. and J.B. Dunham. 2000. Metapopulations and salmonids: a synthesis of life history patterns and empirical observations. Ecology of Freshwater Fishes 9 (1-2):51-64.

Sigler, W.F., and J.W. Sigler. 1987. Fishes of the Great Basin a natural history. University of Nevada Press, Reno, Nv.

Map 1. Oregon Lahontan Cutthroat Trout Safe Harbor Agreement Area.