Site-Specific Environmental Assessment

Rangeland Grasshopper and Mormon Cricket Suppression Program
Carson, Douglas, Lyon, Mineral and Storey Counties, Nevada

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I. Need for Proposed Action

A. Purpose and Need Statement

An infestation of grasshoppers and/or Mormon crickets (hereafter referred to collectively as grasshoppers) has been identified in Carson, Douglas, Lyon, Mineral and Storey counties. The Animal and Plant Health Inspection Service (APHIS) is evaluating the situation to determine if action is necessary to suppress the infestation to protect rangeland ecosystems and to counter the potential for the pest to spread across rangelands or into surrounding crops and communities. APHIS and Nevada Department of Agriculture are proposing a cooperative program to suppress infestations. This environmental assessment (EA) analyzes potential environmental consequences of the proposed action and its alternatives. This EA applies to a proposed suppression program that would take place in Carson, Douglas, Lyon, Mineral and Storey counties, Nevada.

Populations of grasshoppers that trigger the need for a suppression program are normally considered on a case-by-case basis. There is no specific population level that triggers APHIS participation. Participation is based on potential damage such as stressing and\or causing the mortality of native and planted range plants or adjacent crops due to the feeding habits of large numbers of grasshoppers. The benefits of treatments include the suppressing of over abundant grasshopper populations to lower adverse impacts to range plants and adjacent crops. Such would decrease the economic impact to local agricultural operations and permit normal range plant utilization by wildlife and livestock. Some populations that may not cause substantial damage to native rangeland may require treatment due to the secondary suppression benefits resulting from the high value of adjacent crops and damage to revegetation programs.

The goal of the proposed suppression program analyzed in this EA is to reduce grasshopper populations below an economic infestation level [1]in order to protect rangeland ecosystems and/or cropland adjacent to rangeland.

[1] The "economic infestation level" is a measurement of the economic losses caused by a particular population level of grasshoppers to the infested rangeland. This value is determined on a case-by-case basis with knowledge of many factors including, but not limited to, the following: economic use of available forage or crops; grasshopper species, age, and density present; rangeland productivity and composition; accessibility and cost of alternative forage; and weather patterns. In decision-making, the level of economic infestation is balanced against the cost of treating to determine an "economic threshold" below which there would not be an overall benefit for the treatment. Short-term economic benefits accrue during the years of treatments, but additional long-term benefit may accrue and be considered in deciding the total value gained by treatment. Additional losses to rangeland habitat and cultural and personal values

This EA is prepared in accordance with the requirements under the National Environmental Policy Act of 1969 (NEPA) (42 United States Code (U.S.C.) § 4321 *et. seq.*) and the NEPA procedural requirements promulgated by the Council on Environmental Quality, United States Department of Agriculture (USDA), and APHIS.

B. Background Discussion

In rangeland ecosystem areas of the United States, grasshopper populations can build up to levels of economic infestation despite even the best land management and other efforts to prevent outbreaks. At such a time, a rapid and effective response may be requested and needed to reduce the destruction of rangeland vegetation. In some cases, a response is also needed to prevent grasshopper migration to cropland adjacent to rangeland.

APHIS conducts surveys for grasshopper populations on rangeland in the Western United States, provides technical assistance on grasshopper management to landowners/managers and cooperatively suppresses grasshoppers when direct intervention is requested by a Federal land management agency or a State agriculture department (on behalf of a State, a local government, or a private group or individual) as deemed necessary. The need for rapid and effective suppression of grasshoppers when an outbreak occurs limits the options available to APHIS. The application of an insecticide within all or part of the outbreak area is the response available to APHIS to rapidly suppress or reduce (but not eradicate) grasshopper populations and effectively protect rangeland.

In June 2002, APHIS completed an Environmental Impact Statement (EIS) document concerning suppression of grasshopper populations in 17 Western States (Rangeland Grasshopper and Mormon Cricket Suppression Program, Environmental Impact Statement, June 21, 2002). The EIS described the actions available to APHIS to reduce the destruction caused by grasshopper populations in 17 States (Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington and Wyoming).

APHIS' authority for cooperation in this suppression program is based on Section 417 of the Plant Protection Act of 2000 (7 U.S.C. § 7717). Nevada Revised Statutes 561.245 provides the authority to cooperate with and enter into contracts or agreements with the Federal government.

Nevada Revised Statutes 555.260.5 – 555.470 are laws on the custom application of pesticides and restricted use pesticides. These contain the

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(e.g., aesthetics and cultural resources), although a part of decision-making, are not part of the economic values in determining the necessity of treatment.

requirements for a license to apply pesticides and certification to use and sell restricted use pesticides.

In April 2014, APHIS and the Forest Service (FS) signed a Memorandum of Understanding (MOU) detailing cooperative efforts between the two groups on suppression of grasshoppers on national forest system lands (Document #14-8100-0573-MU, April 22, 2014). This MOU clarifies that APHIS would prepare and issue to the public site-specific environmental documents that evaluate potential impacts associated with proposed measures to suppress economically damaging grasshopper populations. The MOU also states that these documents would be prepared under the APHIS NEPA implementing procedures with cooperation and input from the Forest Service.

The MOU further states that the responsible FS official would request in writing the inclusion of appropriate lands in the APHIS suppression project when treatment on national forest land is necessary. The FS must also approve a Pesticide Use Proposal (Form FS-2100-2) for APHIS to treat infestations. According to the provisions of the MOU, APHIS can begin treatments after APHIS issues an appropriate decision document and FS approves the pesticide use proposal.

In October 2015, APHIS and the Bureau of Land Management (BLM) signed a Memorandum of Understanding (MOU) detailing cooperative efforts between the two groups on suppression of grasshoppers on BLM system lands (Document # 15-8100-0870-MU, October 15, 2015). This MOU clarifies that APHIS would prepare and issue to the public site-specific environmental documents that evaluate potential impacts associated with proposed measures to suppress economically damaging grasshopper populations. The MOU also states that these documents would be prepared under the APHIS NEPA implementing procedures with cooperation and input from BLM.

The MOU further states that the responsible BLM official would request in writing the inclusion of appropriate lands in the APHIS suppression project when treatment on BLM land is necessary. The BLM must also approve a pesticide use proposal for APHIS to treat infestations. According to the provisions of the MOU, APHIS can begin treatments after APHIS issues an appropriate document and BLM approves the pesticide use proposal.

In June 2010, APHIS and the Bureau of Indian Affairs (BIA) signed a Memorandum of Understanding (MOU) detailing cooperative efforts between the two groups on suppression of grasshoppers on BIA system lands (Document# 10-8100-0941-MU, June 14, 2010). This MOU clarifies that APHIS would prepare and issue to the public site-specific environmental documents that evaluate potential impacts associated with the proposed measures to suppress economically damaging grasshopper populations. The

MOU also states that these documents would be prepared under the APHIS NEPA implementing procedures with cooperation and input from the BIA.

The MOU further states that the responsible BIA official would request in writing the inclusion of appropriate lands in the APHIS suppression project when treatment on BIA land is necessary. The BIA must also approve a pesticide use proposal for APHIS to treat infestations. According to the provisions of the MOU, APHIS can begin treatments after APHIS issues an appropriate document and the BIA approves the pesticide use proposal.

C. About This Process

The EA process for grasshopper management is complicated by the fact that there is very little time between requests for treatment and the need for APHIS to take action with respect to those requests. Fall and winter surveys help to determine general areas, among the scores of millions of acres that potentially could be affected, where grasshopper infestations may occur in the spring. There is considerable uncertainty, however, in the forecasts, so that framing specific proposals for analysis under NEPA would waste limited resources. At the same time, the program strives to alert the public in a timely manner to its more concrete treatment plans and avoid or minimize harm to the environment in implementing those plans.

The 2002 EIS provides a solid analytical and regulatory foundation; however, it may not be enough to satisfy NEPA completely for actual treatment proposals, and the "conventional" EA process will seldom, if ever, meet the program's timeframe of need. Thus, a two-stage NEPA process has been designed to accommodate such situations. For the first stage, this EA will analyze aspects of environmental quality that could be affected by grasshopper treatment in Carson, Douglas, Lyon, Mineral and Storey counties. This EA and finding of no significant impact (FONSI) will be made available to the public for a 30-day comment period. If comments are received during the comment period, they will be addressed in stage 2 of the process. For stage 2, when the program receives a treatment request and determines that treatment is necessary, the specific site within Carson, Douglas, Lyon, Mineral and Storey counties will be extensively examined to determine if environmental issues exist that were not covered in this EA. This stage is intended mainly to insure that significant impacts in the specific treatment will not be experienced. A supplemental determination will be prepared to document this finding and would also address any comments received on this EA. Supplemental determinations prepared for specific treatment sites will be provided to all parties who comment on this EA.

II. Alternatives

The alternatives presented in the 2002 EIS and considered for the proposed action in this EA are: (A) no action; (B) insecticide applications at conventional rates and

complete area coverage and (C) reduced agent area treatments (RAATs). Each of these alternatives, their control methods, and their potential impacts were described and analyzed in detail in the 2002 EIS. Copies of the complete 2002 EIS document are available for review at USDA APHIS PPQ, 8775 Technology Way, Reno, Nevada 89521. It is also available at: www.aphis.usda.gov/plant_health/ea/grasshopper_cricket.html

The 2002 EIS is intended to support grasshopper suppression programs that could occur in 17 Western States (Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington and Wyoming). The 2002 EIS outlines the importance of grasshoppers as a natural part of the rangeland ecosystem. Grasshopper outbreaks can compete with livestock for rangeland forage and cause devastating damage to crops and rangeland ecosystems. Rather than opting for a specific proposed action from the alternatives presented, the 2002 EIS analyzes in detail the environmental impacts associated with each programmatic action alternative related to grasshopper suppression based on new information and technologies.

All insecticides used by APHIS for grasshopper and Mormon cricket suppression are used in accordance with all applicable product label instructions and restrictions. Representative product specimen labels can be accessed at the Crop Data Management Systems, Inc. website at www.cdms.net/manuf/manuf.asp. Labels for actual products used in suppression programs would vary, depending on supply issues. All insecticide treatments conducted by APHIS would be implemented in accordance with APHIS' treatment guidelines, included as Appendix A to this EA.

A. No Action Alternative

Under Alternative A, the no action alternative, APHIS would not fund or participate in any program to suppress grasshopper infestations. Under this alternative, APHIS may opt to provide limited technical assistance, but any suppression program would be implemented by a Federal land management agency, a State agriculture department, a local government, or a private group or individual.

B. Insecticide Applications at Conventional Rates and Complete Area Coverage Alternative

Alternative B, insecticide applications at conventional rates and complete area coverage is generally the approach that APHIS has used for many years. Under this alternative, carbaryl, diflubenzuron (Diflubenzuron®), or malathion would be employed. Carbaryl and malathion are insecticides that have traditionally been used by APHIS. The insect growth regulator, diflubenzuron, is also included in this alternative. Applications would cover all treatable sites within

the infested area (total or blanket coverage) per label directions. The application rates under this alternative are as follows:

- 16.0 fluid ounces (0.50 pound active ingredient (lb a.i.)) of carbaryl spray per acre;
- 10.0 pounds (0.50 lb a.i.) of 5% carbaryl bait per acre;
- 1.0 fluid ounce (0.016 lb a.i.) of diflubenzuron per acre; or
- 8.0 fluid ounces (0.62 lb a.i.) of malathion per acre.

In accordance with EPA regulations, these insecticides may be applied at lower rates than those listed above. Additionally, coverage may be reduced to less than the full area coverage, resulting in lesser effects to nontarget organisms.

The potential generalized environmental effects of the application of carbaryl, diflubenzuron, and malathion under this alternative are discussed in detail in the 2002 EIS (Environmental Consequences of Alternative 2: Insecticide Applications at Conventional Rates and Complete Area Coverage, pp. 38-48). A description of anticipated site-specific impacts from this alternative may be found in Part IV of this document.

C. Reduced Agent Area Treatments (RAATs) Alternative

Alternative C, RAATs, is a recently developed grasshopper suppression method in which the rate of insecticide may be reduced from conventional levels, and/or treated swaths are alternated with swaths that are not directly treated. The RAATs strategy relies on the effects of an insecticide to suppress grasshoppers within treated swaths while conserving grasshopper predators and parasites in swaths not directly treated. Carbaryl, diflubenzuron or malathion would be considered under this alternative at the following application rates:

- 8.0 fluid ounces (0.25 lb a.i.) of carbaryl spray per acre
- 10.0 pounds (0.20 lb a.i.) of 2 percent carbaryl bait per acre
- 0.75 fluid ounce (0.012 lb a.i.) of diflubenzuron per acre
- 4.0 fluid ounces (0.31 lb a.i.) of malathion per acre
- 10.0 pounds (0.20 lb of active ingredient) 2 or 5 percent carbaryl bait per acre applied by skipping multiple swaths (2 or more)
- 1.0 fluid ounce (0.016 lb of active ingredient) of diflubenzuron per acre applied in alternate or every third swath(s)

The area not directly treated (the untreated swath) under the RAATs approach is not standardized. In the past, the area infested with grasshoppers that remains untreated has ranged from 20 to 67 percent. The 2002 EIS analyzed the reduced pesticide application rates associated with the RAATs approach but assumed pesticide coverage on 100 percent of the area as a worst-case assumption. The reason for this is there is no way to predict how much area would actually be left untreated as a result of the specific action requiring this EA. Rather than

suppress grasshopper populations to the greatest extent possible, the goal of this alternative is to suppress grasshopper populations to a desired level.

The potential environmental effects of application of carbaryl, diflubenzuron and malathion under this alternative are discussed in detail in the 2002 EIS (Environmental Consequences of Alternative 3: Reduced Agent Area Treatments (RAATs), pp. 49–57). A description of anticipated site-specific impacts from this proposed treatment may be found in Part IV of this document.

"The 0.20 lb. a.i. of carbaryl bait was assessed in the 2002 EIS primarily as a tool for grasshopper control. Although that rate may be sufficient for suppression of some species of grasshoppers in some situations, the very heavy Mormon cricket populations encountered in the current Nevada outbreaks would often require the 0.50 lb. a.i. rate. Aerial applications of carbaryl bait under this alternative would be made at no more than 50% of any treatment block receiving direct application. Although this strategy involves leaving variable amounts of land not directly treated, the risk assessment conducted for the 2002 EIS assumed 100 percent area coverage because not all possible scenarios could be analyzed."

III. Affected Environment

A. Description of Affected Environment

The proposed suppression program area included in the EA encompasses 4,394,240 acres (6,866 sq. mi.) within Western Nevada. Approximately 70% of the land area is classified as Federal with the remainder State and private. Most of the area is high desert and mountain country. The lowest elevation is approximately 4,000 feet and 12,000 feet is approximately the highest. A map of the program suppression area is attached hereto as Appendix B. The actual program area that may be treated will be determined by surveys done in early spring.

The area is semi-arid and the majority of the precipitation falls from October to June, as a result of Pacific storms. The precipitation varies from 4 inches a year in the valleys to over 20 inches a year in the mountains. Normally, the area is snow free from June to October, but snow fall can occur at any time.
The soils are in climatic groups including desert, semi desert, upland mountain and high mountain with some irrigated soils. Agriculture areas include native and improved rangeland, pasture and cropland. Treatment guidelines in Appendix A would be followed to provide the least effect on soils.

Major waterways include, but are not limited to: Truckee River and its tributaries, Carson River and its tributaries, Walker River and its tributaries, Buckeye Creek, Pine Nut Creek, Desert Creek, Bodie Creek and Cory Creek.

In addition, there are other important smaller streams. Lakes and reservoirs include: Lake Tahoe, Walker Lake, Lahontan Reservoir, Rhodes Salt marsh, Washoe Lake and Topaz Lake.

Recreation activities vary considerably throughout the area. Primary activities include hunting, fishing, off-road vehicle use, hiking, backpacking, rockhounding and horseback riding. Related uses are camping, sightseeing, photography and nature study. Overall, primary use is low except in developed recreation sites and along major reservoirs. Major recreational areas in this Region include: Indian Creek Reservoir, Walker Lake, Mount Rose, Dayton State Park, Lahontan Reservoir, Fort Churchill State Park, Davis Creek Park, Topaz Lake, Bowers Mansion State Park, and Lake Tahoe. The water resources provide water for wildlife, wild horses/burros, and domestic livestock use as well as habitat for wildlife.

The Fernley and Mason Valley Wildlife Management areas are located in the assessment area. Portions of the Humboldt-Toiyabe National Forest is also within the area.

The principle rangeland vegetation in the area is: Bitterbrush, Big Sagebrush, Indian ricegrass, Winterfat, Greasewood, Horsebrush, Rabbitbrush, Paintbrush, Perennial bunchgrasses and Blue grasses.

B. Site-Specific Considerations

1. Human Health

Population centers within the district include the towns of Steamboat, Carson City, Virginia City, Yerington, Wellington, Gardnerville, Luning and Mina. No ULV aerial applications of malathion, carbaryl, or diflubenzuron would be conducted over these congested areas. The major schools are located within the city limits of these towns. The approximate population of the five counties is 161,330 people.

Three Indian Reservations exist within the boundaries of the district. They are: Washoe Indian Reservation, Walker River Indian Reservation and Yerington Indian Reservation.

Potential exposures to the general public from traditional application rates are infrequent and of low magnitude. These low exposures to the public pose no risk of direct toxicity, carcinogenicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. Program use of carbaryl, malathion and diflubenzuron has occurred routinely in many past programs, and there is a lack of any adverse health effects reported from these projects. Therefore, routine safety precautions as listed on chemical labels would continue to provide

adequate protection of worker health. Immunotoxic effects from carbaryl and malathion exposure are generally expected at concentrations much higher than those from grasshopper applications, but individuals with allergic or hypersensitive reactions to the insecticides or other chemicals in the formulated product could be affected. These individuals would be advised to avoid treatment areas at the time of application until the insecticide has time to dry on the treated vegetation.

2. Non-target Species

The U.S Fish and Wildlife Service (USFWS) list of endangered, threatened, candidate and proposed species of concern in Nevada is attached (Appendix C – Table 1).

Species for Federal listing, state-listed species, and/or other sensitive species identified by state or federal agencies within the area include, but are not limited to: Bald eagle, Lahontan cutthroat trout, Carson wandering skipper, Tahoe yellow cress, Webber Ivesia, Yellow-Billed Cuckoo, Hiko White River springfish, Railroad Valley springfish and Cui-ui.

a. **Bald and Golden Eagle Protection Act (BGEPA)**

The Eagle Act (16 U.S.C. Section 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal and civil penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle…[or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." "Disturb" means: "Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagles return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause a loss of productivity or nest abandonment.

USDA-APHIS-PPQ will adhere to the mitigations measures as listed in the National Bald Eagle Management Guidelines (USFWS, May 2007). Available online:

http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf

Proposed treatment areas have been tentatively identified in Western Nevada. There are species of concern in some of the treatment blocks. Should other areas warrant treatment, the local land managers will be consulted.

Game species known to occur within the general areas proposed for spraying included Mule deer, Pronghorn antelope, Mountain lion, Cottontail rabbit, Mourning dove, Sage grouse and several species of waterfowl. A number of cold and warm water game fish occur in the various lakes, streams and reservoirs in the area. Wild horses and burros are managed by the BLM on numerous herd management areas throughout the proposed suppression program area. It is anticipated that aerial control programs will not be in areas where populations of wild horses/burros are found.

A diversity of non-game wildlife occurs in the area (birds, reptiles, amphibians, and mammals) including wild horses. The greatest abundance and diversity of most species occurs in riparian and wetland habitat types.

3. Socioeconomic Issues

Recreation use is moderate over most of the affected area. There are several dispersed camping sites. Hunting seasons increase recreation use in the form of dispersed camping and general hunting activity. Hunting season occurs later in the year during a time when grasshopper populations have begun to dwindle, thus fewer are present. Hunters probably would not be affected. ATV use is fairly prevalent throughout. The presence of high densities of grasshoppers would result in fewer people engaging in recreational activities during the spring and summer within the affected areas. High grasshopper densities in a campsite detract considerably from the quality of the recreational experience. Grasshoppers tend to get into unsecured tents and food. The quality of the recreational experience for ATV users and horseback riders would also be indirectly impaired by high densities of grasshoppers. Large quantities of grasshoppers crossing roads and trails are killed by vehicle traffic, leaving windrows of dead grasshoppers in the travel way as well as providing a vehicular safety hazard by leaving slick residues on local roads. People who normally recreate in areas that are heavily infested would likely relocate to areas that are not infested. Displacement of users would be more of an inconvenience to the public than an actual effect on the recreational values of the area. Displacement would also increase pressure on other public lands as people move to new locations to camp and to engage in other recreational activities. Social capacity tolerances would be impacted. The potential for user conflict would increase, in particular as motorized recreationists displace to other already heavily used areas. Such locations would experience more pressure and may experience site degradation. Areas currently not impacted or used by

dispersed campers may become subjected to use and development as people look for areas for recreation which are not infested with grasshoppers. Small towns near the affected areas receive limited business from recreationists who visit public lands. Many local gas stations/public stores rely fairly heavily on summer business to support their operations.

Livestock grazing is one of the main uses of most of the affected area, which provides summer range for ranching operations. Permittees may run cattle, sheep and/or horses for a season that runs generally from the first of June to the end of September, weather and vegetation conditions permitting.

A substantial threat to the animal productivity of these rangeland areas is the proliferation of grasshopper populations. These insects have been serious pests in the Western States since early settlement. Weather conditions favoring the hatching and survival of large numbers of grasshoppers can cause outbreak populations, resulting in damage to vegetation. The consequences may reduce grazing for livestock and result in loss of food and habitat for wildlife. Livestock grazing on public lands contributes important cultural and social values to the area. Intertwined with the economic aspects of livestock operations are the lifestyles and culture that have co-evolved with Western ranching. Rural social values and lifestyles, in conjunction with the long heritage of ranching and farming continue to this day, dating back to the earliest pioneers in Nevada, who shaped the communities and enterprises that make up much of Nevada. The rural Western lifestyle also contributes to tourism in the area, presenting to travelers a flavor of the West through tourist-oriented goods and services, photography of sheep bands or cattle in pastoral settings and scheduled events.

Ranchers displaced from public lands due to early loss of forage from grasshopper damage would be forced to search for other rangeland, to sell their livestock prematurely or to purchase feed hay. This would affect other ranchers (non-permittees) by increasing demand, and consequently, cost for hay and/or pasture in the area. This would have a beneficial effect on those providing the hay or range, and a negative impact on other ranchers who use these same resources throughout the area. In addition, grazing on private lands resulting from this impact would compound the effects to vegetation of recent drought conditions over the last four years (e.g., continual heavy utilization by grasshoppers, wildlife and wildfire), resulting in longer-term impacts (e.g., decline or loss of some preferred forage species) on grazing forage production on these lands. The lack of treatment would result in the eventual magnification of grasshopper problems resulting in increased suppression efforts, increased suppression costs and the expansion of suppression needs onto lands where such options are limited. For example, control needs on crop lands where chemical options are restricted because of pesticide label restrictions. Under the no action alternative, farmers would experience economic losses. The suppression of grasshoppers in the affected area would have beneficial economic impacts to local landowner, farmers and beekeepers. Crops near infested lands would be

protected from devastating migrating hordes, resulting in higher crop production; hence, increased monetary returns.

4. Cultural Resources and Events

Federal and public lands that are a part of the Region's visual and cultural resources include the Humboldt-Toiyabe National Forest, Mason Valley and Fernley Wildlife Management Areas, Topaz Lake, Lahontan Reservoir, Fort Churchill, Mormon Station, Dayton and Nevada Beach State Parks. The Lahontan State Recreation Area is located in Lyon County.

A broad variety and number of activities have occurred, are occurring or would occur throughout the area of concern that affects cultural resources. These activities and any cumulative impacts associated with them would occur regardless of whether or not grasshoppers are treated.

Use of motorized equipment off existing roads could impact surface artifacts by damaging them or displacing them in their overall juxtaposition with other artifacts. Maintaining the integrity of a historical site is important to understanding the significance of the site and the artifacts found therein. Non-treatment of infested land would likely later result in more intensive and extensive treatment of that infested land. Most of the non-public lands that would be affected have already been heavily disturbed and any artifacts on them likely impacted. Consequently, it is unlikely that additional carbaryl bait treatments would result in additional impacts on cultural properties.

With no treatment of grasshoppers on public lands, aerial application of insecticides off public lands would likely increase. However, most if not all of the areas likely to be treated have been heavily disturbed in the past, and any artifacts on them likely impacted. Consequently, it is unlikely that these aerial treatments would result in additional impacts on cultural properties.

Motorized vehicles (pick-up trucks and/or ATV's) may be used to treat portions of the affected areas. This would create a risk of impacting cultural properties. The risk is small given that the off-road use of vehicles would create only minor soil disturbance, and the areas involved are not likely to contain significant sites of which public officials are not already aware. Known sites would be avoided to mitigate impacts. Any sites located during treatment activities would be reported, and avoided during continuing operations. Past similar grasshopper treatments throughout the state have not resulted in any known impacts to cultural properties.

In addition to the treatments proposed under this alternative, a broad variety and number of activities throughout the project area could affect, or have affected, cultural resources. These activities and any cumulative impacts associated with them would occur, regardless of whether or not grasshoppers are treated. No

direct, indirect or change in cumulative impacts on cultural resources in the area would occur due to implementation of the treatment alternative.

To ensure that historical or cultural sites, monuments, buildings or artifacts of special concern are not adversely affected by program treatments, APHIS would confer with BLM, Forest Service or other appropriate land management agency or cultural resource specialists on a local level to protect these areas of special concern. APHIS also would confer with the appropriate tribal authority and with the BIA office at a local level to ensure that the timing and location of planned program treatments do not coincide or conflict with cultural events or observances, such as sundances, on tribal lands.

5. Special Considerations for Certain Populations

a. Executive Order No. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order (E.O.) 12898, Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations, was signed by President Clinton on February 11, 1994 (59 *Federal Register* (FR) 7269). This E.O. requires each Federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. Consistent with this E.O., APHIS would consider the potential for disproportionately high and adverse human health or environmental effects on minority populations and low-income populations for any of its actions related to grasshopper suppression programs.

The human populations at most sites in grasshopper programs is diverse and lacks any special characteristics that implicate greater risks of adverse effects for any minority or low-income populations. A demographic review in the APHIS EIS 2002 revealed certain areas with large populations, Spanish-speaking populations and some with large American Indian tribal populations. Low-income farmers and ranchers would comprise, by far, the largest group affected by APHIS program efforts in this area of concern.

When planning a site-specific action related to grasshopper infestations, APHIS considers the potential for disproportionately high and adverse human health or environmental impacts of its actions on minority and low-income populations before any proposed action. In doing so, APHIS program managers would work closely with representatives of these populations in the locale of planned actions through public meetings.

APHIS intervention to locally suppress damaging grasshopper infestations would stand to greatly benefit, rather than harm, low-income farmers and ranchers by helping them to control grasshopper threats to their livelihood. Suppressing grasshopper infestations on adjacent public or private range lands

would increase inexpensive available forage for their livestock and would significantly decrease economic losses to their crop lands by invading grasshoppers. Such would obviate the need to perform additional expensive crop pesticide treatments or to provide supplemental feed to their livestock which would further impact low-income individuals.

In past grasshopper programs, the U.S. Department of the Interior's (USDI) Bureau of Land Management or Bureau of Indian Affairs have notified the appropriate APHIS State Plant Health Directors when any new or potentially threatening grasshopper infestation is discovered on BLM lands or tribal lands held in trust and administered by BIA. Thus, APHIS has cooperated with BIA when grasshopper programs occur on Indian tribal lands. For local Indian populations, APHIS program managers would work with BIA and local tribal councils to communicate information to tribal organizations and representatives when programs have the potential to impact the environment of their communities, lands or cultural resources. In past grasshopper programs, APHIS has worked cooperatively with American Indian groups and would continue to do so in the future.

b. Executive Order No. 13045, Protection of Children from Environmental Health Risks and Safety Risks

The increased scientific knowledge about the environmental health risks and safety risks associated with hazardous substance exposures to children and recognition of these issues in Congress and Federal agencies brought about legislation and other requirements to protect the health and safety of children. On April 21, 1997, President Clinton signed E.O. 13045, Protection of Children from Environmental Health Risks and Safety Risks (62 FR 19885). This E.O. requires each Federal agency, consistent with its mission, to identify and assess environmental health risks and safety risks that may disproportionately affect children and to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. APHIS has developed agency guidance for its programs to follow to ensure the protection of children (USDA, APHIS, 1999).

Treatments used for grasshopper programs are primarily conducted on open rangelands where children would not be expected to be present during treatment or enter during the restricted entry period after treatment. Based on review of the insecticides and their use in programs, the risk assessment concludes that the likelihood of children being exposed to insecticides from a grasshopper program is very slight and that no disproportionate adverse effects to children are anticipated over the negligible effects to the general population.

IV. Environmental Consequences

Each alternative described in this EA potentially has adverse environmental effects. The general environmental impacts of each alternative are discussed in

detail in the 2002 EIS. The specific impacts of the alternatives are highly dependent upon the particular action and location of infestation. The principal concerns associated with the alternatives that include insecticide application are: (1) the potential effects of the three pesticide options on human health (including subpopulations that might be at increased risk); and (2) impacts of pesticides on nontarget organisms (including threatened and endangered species). Assessments of the relative risk of each pesticide option are discussed in detail in the 2002 EIS document.

A. Environmental Consequences of the Alternatives

Site-specific environmental consequences of the alternatives are discussed in this section.

1. No Action Alternative

Under this alternative, APHIS would not fund or participate in any program to suppress grasshoppers. If APHIS does not participate in any grasshopper suppression program, Federal land management agencies, State agriculture departments, local governments, or private groups or individuals may not effectively combat outbreaks in a coordinated effort. In these situations, grasshopper outbreaks could develop and spread unimpeded.

Grasshoppers in unsuppressed outbreaks would consume agricultural and non-agricultural plants. The damage caused by grasshopper outbreaks could also pose a risk to rare, threatened, or endangered flora and fauna that often have a low number of individuals and limited distribution. Habitat loss for birds and other wildlife and rangeland susceptibility to invasion by non-native plants are among the consequences that would likely occur should existing vegetation be removed by grasshoppers. Loss of plant cover due to grasshopper consumption would occur. Plant cover may protect the soil from the drying effects of the sun and plant root systems hold the soil in place that may otherwise be eroded or lost to erosion.

Another potential scenario, if APHIS does not participate in any grasshopper suppression programs, is that some Federal land management agencies, State agriculture departments, local governments, or private groups or individuals may attempt to conduct widespread grasshopper programs. Without the technical assistance and program coordination that APHIS can provide to grasshopper programs, it is possible that a large amount of insecticides, including those APHIS considers too environmentally harsh but labeled for rangeland use, could be applied, reapplied, and perhaps misapplied in an effort to suppress or even locally eradicate grasshopper populations. It is not possible to accurately predict the environmental consequences of the no action alternative because the type and amount of insecticides that could be used in this scenario are unknown.

2. Insecticide Applications at Conventional Rates and Complete Area Coverage Alternative

Under Alternative 2, APHIS would participate in grasshopper programs with the option of using one of the insecticides carbaryl, diflubenzuron, or malathion, depending upon the various factors related to the grasshopper outbreak and the site-specific characteristics. The use of an insecticide would occur at the conventional rates. With only rare exceptions, APHIS would apply a single treatment in an outbreak year to affected rangeland areas in an attempt to suppress grasshopper outbreak populations by a range of 35 to 98 percent, depending upon the insecticide used.

Carbaryl

Carbaryl is of moderate acute oral toxicity to humans. The mode of toxic action of carbaryl occurs through inhibition of acetylcholinesterase (AChE) function in the nervous system. This inhibition is reversible over time if exposure to carbaryl ceases. The Environmental Protection Agency (EPA) states no information is available on the carcinogenic effects of carbaryl in humans and has not classified carbaryl for carcinogenicity (EPA, 1999).

Potential exposures to the general public from conventional application rates are infrequent and of low magnitude. These low exposures to the public pose no risk of direct toxicity, carcinogenicity, neurotoxicity, genotoxicity, reproductive toxicity or developmental toxicity. The potential for adverse effects to workers is negligible if proper safety procedures are followed, including wearing the required personal protective equipment (PPE). Therefore, routine safety precautions are expected to provide adequate worker health protection.

Carbaryl is of moderate acute oral toxicity to mammals (McEwen *et al*., 1996a). Carbaryl applied at Alternative 2 rates is unlikely to be directly toxic to upland birds, mammals or reptiles. Field studies have shown that carbaryl applied as either ultra-low-volume (ULV) spray or bait at Alternative 2 rates posed little risk to kill deer (McEwen *et al*., 1996a), vesper sparrows (McEwen *et al*., 1996a; Adams *et al*., 1994), or golden eagles (McEwen *et al*., 1996b) in the treatment areas. AChE inhibition at 40 to 60 percent can affect coordination, behavior and foraging ability in vertebrates. Multi-year studies conducted at several grasshopper treatment areas have shown AChE inhibition at levels of no more that 40 percent with most at less than 20 percent (McEwen *et al*., 1996a). Carbaryl is not subject to significant bioaccumulation due to its low water solubility and low octanol-water partition coefficient (Dobroski *et al*., 1985).

Carbaryl will most likely affect non-target insects that are exposed to ULV carbaryl spray or that consume carbaryl bait within the grasshopper treatment area. Field studies have shown that affected insect populations can recover rapidly and generally have suffered no long-term effects, including

some insects that are particularly sensitive to carbaryl, such as bees (Catangui *et al*., 1996). The use of carbaryl in bait form generally has considerable environmental advantages over liquid insecticide applications: bait is easier than liquid spray applications to direct toward the target area, bait is more specific to grasshoppers and bait affects fewer non-target organisms than sprays (Quinn, 1996).

Should carbaryl enter water, there is the potential to affect the aquatic invertebrate assemblage, especially amphipods. Field studies with carbaryl concluded that there was no biologically significant effect on aquatic resources, although invertebrate downstream drift increased for a short period after treatment due to toxic effects (Beyers *et al*., 1995). Carbaryl is moderately toxic to most fish (Mayer and Ellersieck, 1986).

Diflubenzuron

The acute oral toxicity of diflubenzuron formulations to humans ranges from very slight to slight. The most sensitive indicator of exposure and effects of diflubenzuron in humans is the formation of methemoglobin (a compound in blood responsible for the transport of oxygen) in blood.

Potential exposures to the general public from Alternative 2 rates are infrequent and of low magnitude. These low exposures to the public pose no risk of methemoglobinemia (a condition where the heme iron in blood is chemically oxidized and lacks the ability to properly transport oxygen), direct toxicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. Potential worker exposures are higher than the general public but are not expected to pose any risk of adverse health effects.

Because diflubenzuron is a chitin inhibitor that disrupts insects from forming their exoskeleton, organisms without a chitinous exoskeleton, such as mammals, fish, and plants are largely unaffected by diflubenzuron. In addition, adult insects, including wild and cultivated bees, would be mostly unaffected by diflubenzuron applications (Schroeder *et al*., 1980; Emmett and Archer, 1980). Among birds, nestling growth rates, behavior data, and survival of wild American kestrels in diflubenzuron treated areas showed no significant differences among kestrels in treated areas and untreated areas (McEwen *et al*., 1996b). The acute oral toxicity of diflubenzuron to mammals ranges from very slight to slight. Little, if any, bioaccumulation of diflubenzuron would be expected (Opdycke *et al*., 1982).

Diflubenzuron is most likely to affect immature terrestrial insects and early life stages of aquatic invertebrates (Eisler, 2000). While this would reduce the prey base within the treatment area for organisms that feed on insects, adult insects, including grasshoppers, would remain available as prey items. Many of the aquatic organisms most susceptible to diflubenzuron are marine organisms that would not be exposed to rangeland treatments. Freshwater

invertebrate populations would be reduced if exposed to diflubenzuron, but these decreases would be expected to be temporary given the rapid regeneration time of many aquatic invertebrates.

Malathion

Malathion is of slight acute oral toxicity to humans. The mode of toxic action of malathion occurs through inhibition of AChE function in the nervous system. Unlike carbaryl, AChE inhibition from malathion is not readily reversible over time if exposure ceases. However, strong inhibition of AChE from malathion occurs only when chemical oxidation results in formation of the metabolite malaoxon. Human metabolism of malathion favors hydroxylation and seldom produces much malaoxon.

Potential exposures to the general public from conventional application rates are infrequent and of low magnitude. These low exposures to the public pose no risk of direct toxicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. Potential worker exposures are higher, but still have little potential for adverse health effects except under accidental scenarios. Therefore, routine safety precautions are expected to continue to provide adequate protection of worker health.

EPA has recently reviewed the potential for carcinogenic effects from malathion. EPA's classification describes malathion as having a suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential (EPA, 2000). This indicates that any carcinogenic potential of malathion cannot be quantified based upon EPA's weight of evidence determination in this classification. The low exposures to malathion from program applications would not be expected to pose carcinogenic risks to workers or the general public.

Malathion is of slight acute oral toxicity to mammals. There is little possibility of toxicity-induced mortality of upland birds, mammals or reptiles, and no direct toxic effects have been observed in field studies. Malathion is not directly toxic to vertebrates at the concentrations used for grasshopper suppression, but it may be possible that sub-lethal effects to nervous system functions caused by AChE inhibition may lead directly to decreased survival. AChE inhibition at 40 to 60 percent can affect coordination, behavior and foraging ability in vertebrates. Multi-year studies at several grasshopper treatment areas have shown AChE inhibition at levels of no more than 40 percent with most at less than 20 percent (McEwen *et al*., 1996a). Field studies of birds within malathion treatment areas showed that, in general, the total number of birds and bird reproduction were not different from untreated areas (McEwen *et al*., 1996a). Malathion does not bioaccumulate (HSDB, 1990; Tsuda *et al*., 1989).

Malathion will most likely affect non-target insects within a treatment area. Large reductions in some insect populations would be expected after a

malathion treatment under Alternative 2. While the number of insects would be diminished, there would be some insects remaining. The remaining insects would be available prey items for insectivorous organisms, and those insects with short generation times may soon increase.

Malathion is highly toxic to some fish and aquatic invertebrates; however, malathion concentrations in water, as a result of grasshopper treatments, are expected to present a low risk to aquatic organisms, especially those organisms with short generation times.

The implementation of pesticide label instructions and restrictions and the APHIS treatment guidelines will reduce potential impacts from the program use of insecticides (see Appendix A treatment guidelines).

3. Reduced Area Agent Treatments (RAATs) Alternative

Under Alternative 3, the insecticide carbaryl, diflubenzuron or malathion would be used at a reduced rate and over reduced areas of coverage. Rarely would APHIS apply more than a single treatment to an area per year. The maximum insecticide application rate under the RAATs' strategy is reduced 50 percent from the conventional rates for carbaryl and malathion and 25 percent from the Alternative 2 rate for diflubenzuron. Although this strategy involves leaving variable amounts of land not directly treated, the risk assessment conducted for the 2002 EIS assumed 100 percent area coverage because not all possible scenarios could be analyzed. However, when utilized in grasshopper suppression, the amount of untreated area in RAATs often ranges from 20 to 67 percent of the total infested area but can be adjusted to meet site-specific needs.

Carbaryl

Potential exposures to the general public and workers from RAATs application rates are lower than those from conventional application rates, and adverse effects decrease commensurately with decreased magnitude of exposure. These low exposures to the public pose no risk of direct toxicity, carcinogenicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. The potential for adverse effects to workers is negligible if proper safety procedures are followed, including wearing the required PPE. Routine safety precautions are expected to provide adequate protection of worker health at the lower application rates under RAATs.

Direct toxicity of carbaryl to birds, mammals, and reptiles is unlikely in swaths treated with carbaryl under a RAATs approach. Carbaryl bait also has minimal potential for direct effects on birds and mammals. Field studies indicated that bee populations did not decline after carbaryl bait treatments, and American kestrels were unaffected by bait applications made at a RAATs rate (George *et al.*, 1992). Using alternating swaths will furthermore reduce adverse effects because organisms that are in untreated swaths will be mostly unexposed to carbaryl.

Carbaryl applied at a RAATs rate has the potential to affect invertebrates in aquatic ecosystems. However, these affects would be less than effects expected under Alternative 2. Fish are not likely to be affected at any concentrations that could be expected under Alternative 3.

Carbaryl will most likely affect non-target insects that are exposed to liquid carbaryl or that consume carbaryl bait. While carbaryl applied at a RAATs rate will reduce susceptible insect populations, the decrease will be less than under Alternative 2 rates. Carbaryl ULV applications applied in alternate swaths have been shown to affect terrestrial arthropods less than malathion applied in a similar fashion.

Diflubenzuron

Potential exposures and adverse effects to the general public and workers from RAATs application rates are commensurately less than conventional application rates. These low exposures to the public pose no risk of methemoglobinemia, direct toxicity, neurotoxicity, genotoxicity, reproductive toxicity or developmental toxicity. Potential worker exposures pose negligible risk of adverse health effects.

Because diflubenzuron is a chitin inhibitor that disrupts insects from forming their exoskeleton, organisms without a chitinous exoskeleton, such as mammals, fish and plants are largely unaffected by diflubenzuron. Diflubenzuron exposures at Alternative 3 rates are not hazardous to terrestrial mammals, birds and other vertebrates. Insects in untreated swaths would have little to no exposure, and adult insects in the treated swaths are not susceptible to diflubenzuron's mode of action. The indirect effects to insectivores would be negligible as not all insects in the treatment area will be affected by diflubenzuron.

Diflubenzuron is most likely to affect immature terrestrial insects and, if it enters water, will affect early life stages of aquatic invertebrates. While diflubenzuron would reduce insects within the treatment area, insects in untreated swaths would have little to no exposure. Many of the aquatic organisms most susceptible to diflubenzuron are marine organisms that would not be exposed to rangeland treatments. Freshwater invertebrate populations would be reduced if exposed to diflubenzuron, but these decreases may be temporary given the rapid regeneration time of many aquatic invertebrates.

Malathion

Potential exposures to the general public and workers from RAATs application rates are of a commensurately lower magnitude than conventional rates. These low exposures to the public pose no risk of direct

toxicity, neurotoxicity, genotoxicity, reproductive toxicity or developmental toxicity.

Potential risks to workers are negligible if proper safety procedures are adhered to, including the use of required PPE. The low exposures to malathion from program applications are not expected to pose any carcinogenic risks to workers or the general public.

Malathion applied at a RAATs rate will cause mortalities to susceptible insects. Organisms in untreated areas will be mostly unaffected. Field applications of malathion at a RAATs rate and applied in alternate swaths resulted in less reduction in non-target organisms than would occur in blanket treatments. Birds in RAATs areas were not substantially affected. Should malathion applied at RAATs rates enter water, it is most likely to affect aquatic invertebrates. However, these effects would soon be compensated for by the surviving organisms, given the rapid generation time of most aquatic invertebrates and the rapid degradation of malathion in most water bodies.

The implementation of pesticide label instructions and restrictions and the APHIS treatment guidelines will reduce potential impacts from the program use of insecticides (see Appendix A treatment guidelines).

B. Other Environmental Considerations

1. Cumulative Impacts

Cumulative impact, as defined in the CEQ NEPA implementing regulations (40 CFR § 1508.7) "… is the impact on the environment which results from the incremental impact of the action when added to the past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

The Bureau of Land Management could apply herbicides for the control of federal noxious weeds throughout some of the potential grasshopper suppression areas. The timing of such treatments should not coincide, so there would be little reason to suspect that any adverse synergistic chemical effects would occur. In any event, before any APHIS program, discussions would be held with land-managing officials to ensure that the two programs would not cause increased injurious effects to any treatment area.

Private agricultural entities could apply herbicides or insecticides to their cropland during times which could coincide with APHIS programs. APHIS' policy requires that grasshoppers may only be treated on private rangelands, so that cumulative impacts would not result.

2. Executive Order No. 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The human population at most sites in grasshopper programs is diverse and lacks any special characteristics that implicate greater risks of adverse effects for any minority or low-income populations. A demographic review in the APHIS EIS 2002 revealed certain areas with large populations, Spanish-speaking populations and some with large American Indian tribal populations. Low-income farmers and ranchers would comprise, by far, the largest group affected by APHIS program efforts in this area of concern.

When planning a site-specific action related to grasshopper infestations, APHIS considers the potential for disproportionately high and adverse human health or environmental impacts of its actions on minority and low-income populations before any proposed action. In doing so, APHIS program managers would work closely with representatives of these populations in the locale of planned actions through public meetings.

APHIS intervention to locally suppress damaging grasshopper infestations would stand to greatly benefit, rather than harm, low-income farmers and ranchers by helping them to control grasshopper threats to their livelihood. Suppressing grasshopper infestations on adjacent public or private rangelands would increase inexpensive available forage for their livestock and would significantly decrease economic losses to their crop lands by invading grasshoppers. Such would obviate the need to perform additional expensive crop pesticide treatments or to provide supplemental feed to their livestock which would further impact low-income individuals.

In past grasshopper programs, the U.S. Department of the Interior's (USDI) Bureau of Land Management or Bureau of Indian Affairs have notified the appropriate APHIS State Plant Health Director when any new or potentially threatening grasshopper infestation is discovered on BLM lands or tribal lands held in trust and administered by BIA. Thus, APHIS has cooperated with BIA when grasshopper programs occur on Indian tribal lands. For local Indian populations, APHIS program managers would work with BIA and local tribal councils to communicate information to tribal organizations and representatives when programs have the potential to impact the environment of their communities, lands or cultural resources. In past grasshopper programs, APHIS has worked cooperatively with American Indian groups and would continue to do so in the future.

3. Executive Order No. 13045, Protection of Children from Environmental Health Risks and Safety Risks

The human health risk assessment for the 2002 EIS analyzed the effects of exposure to children from the three insecticides. Based on review of the insecticides and their use in the grasshopper program, the risk assessment

concluded that the likelihood of children being exposed to insecticides is very slight and that no disproportionate adverse effects to children are anticipated over the negligible effects to the general population. Treatments are conducted on open rangelands where children would not be expected to be present during treatment or to enter should there be any restricted entry period after treatment.

Impacts on children would be minimized by the implementation of the Treatment Guidelines:

Aerial Broadcast Applications of Liquid Insecticides

- Notify all residents in treatment areas, or their designated representatives, prior to proposed operations. Advise them of the control method to be used, the proposed method of application, and precautions to be taken (e.g., advise parents to keep children and pets indoors during ULV treatment). Refer to label recommendations related to restricted entry period.

- No treatments would occur over congested urban areas. For all flights over congested areas, the contractor must submit a plan to the appropriate FAA District Office and this office must approve of the plan; a letter of authorization signed by city or town authorities must accompany each plan. Whenever possible, plan aerial ferrying and turnaround routes to avoid flights over congested areas, bodies of water, and other sensitive areas that are not to be treated.

Aerial Application of Dry Insecticidal Bait

- Do not apply within 500 feet of any school or recreational facility.

Ultra-Low-Volume Aerial Application of Liquid Insecticides

- Do not spray while school buses are operating in the treatment area.

- Do not apply within 500 feet of any school or recreational facility.

Based on the analysis and the protection measures, we have determined that there would be no significant impact within any potential treatment zone of the area of concern.

4. Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds

In accordance with various environmental statutes, APHIS routinely conducts programs in a manner that minimizes impact to the environment, including any impact to migratory birds. In January 2001, President Clinton signed E.O. 13186 to ensure that all government programs protect migratory birds to the

extent practicable. To further its purposes, the E.O. requires each agency with a potential to impact migratory birds to enter into a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS). In compliance with the E.O., APHIS is currently working with USFWS to develop such an MOU.

5. Endangered Species Act

APHIS has met with the U.S. Fish and Wildlife Service, Nevada Fish and Wildlife Office to discuss section 7 consultation as required by the Endangered Species Act of 1973 and we are involved in local consultation. Included in Appendix C is the U.S. Fish and Wildlife Service listing of Nevada endangered, threatened, proposed, and candidate species (Table 1).

The 1995 biological opinion issued by USFWS lists the mitigations to be followed by APHIS when conducting a suppression program to control grasshoppers with insecticides other than diflubenzuron. This list is included in Appendix C (Table 2). Mitigation measures for use of malathion and carbaryl for new listings (since 1995) of threatened, endangered and proposed species that have not been included in formal Section 7 consultation are also included in Appendix C (Table 3). Mitigation measures as required by USFWS for threatened, endangered, and proposed species incorporating the use of diflubenzuron on grasshopper suppression programs are included in Table 3.

APHIS is not required to develop mitigation buffer zones for candidate or other species of concern. The Columbia spotted frog (Great Basin population) (*Rana luteiventris*), a candidate species, is located within our proposed treatment areas for 2016. However, candidate species receive no legal protection under the Act, but consideration of this species will be discussed with the local land managers prior to any treatments to assist in conservation efforts. Local program consultation with the requesting agency would determine if mitigation measures would allow a suppression program to be done.

The most recent national biological opinion on the grasshopper program issued by USFWS was for the 1996 program. APHIS prepared a biological assessment for the 1998 program, but no biological opinion was prepared because control programs were not anticipated that year. In following years, no biological assessment was prepared since control programs were not anticipated. A biological assessment for the Rangeland Grasshopper and Mormon Cricket Suppression Program is currently under way, but the process for its completion and consideration by USFWS would not be concluded in time for the 2016 season. In order to comply with the Section 7 requirements APHIS or the cooperating Federal land managing agency would conduct ongoing informal consultations with USFWS, locally. The 1996 biological opinion and 1998 biological assessment would be used as a basis for these local consultations and are incorporated into this EA by reference.

6. Monitoring

Monitoring involves the evaluation of various aspects of the grasshopper suppression programs. There are three aspects of the program that may be monitored. The first is the efficacy of the treatment. APHIS would determine how effective the applications of an insecticide has been in suppressing the grasshopper population within a treatment area and would report the results in a Work Achievement Report to the Western Hub.

The second area included in monitoring is safety. This includes ensuring the safety of the program personnel through medical monitoring conducted specifically to determine risks of a hazardous material. (See APHIS Safety and Health Manual (USDA, APHIS, 1998) available online at: www.aphis.usda.gov/mb/aseu/shes/shes-manual.html).

The third area of monitoring is environmental monitoring. APHIS Directive 5640.1 commits APHIS to a policy of monitoring the effects of Federal programs on the environment. Environmental monitoring includes such activities as checking to make sure the insecticides are applied in accordance with the labels and that sensitive sites and organisms are protected. The environmental monitoring recommended for grasshopper suppression programs involves monitoring sensitive sites such as bodies of water used for human consumption or recreation or which have wildlife value, habitats of endangered and threatened species, habitats of other sensitive wildlife species, edible crops and any sites for which the public has expressed concern or where humans might congregate (e.g., schools, parks, hospitals).

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V. Literature Cited

Adams, J.S., Knight, R.L., McEwen, L.C., and George, T.L., 1994. Survival and growth of nestling vesper sparrow exposed to experimental food reductions. The Condor 96:739-748.

Beyers, D.W., Farmer, M.S., and Sikoski, P.J., 1995. Effects of rangeland aerial application of Sevin-4-Oil® on fish and aquatic invertebrate drift in the Little Missouri River, North Dakota. Archives of Environmental Contamination and Toxicology 28:27-34.

Beyers, D.W., and McEwen, L.C., 1996. Grasshopper treatment effects on aquatic Communities. *In* U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1996. Grasshopper Integrated Pest Management User Handbook, Tech. Bul. No. 1809. Sec. III.6. Washington, DC.

Catangui, M.A., Fuller, B.W., and Walz, A.W., 1996. Impact of Dimilin® on non-target Arthropods and its efficacy against rangeland grasshoppers. *In* U.S. Department Of Agriculture, Animal and Plant Health Inspection Service, 1996. Grasshopper Integrated Pest Management User Handbook, Tech.Bul.No. 1809. Sec. VII.3. Washington, DC.

Dobroski, C.J., O'Neill, E.J., Donohue, J.M., and Curley, W.H. 1985. Carbaryl: A profile of its behavior in the environment. Roy F. Weston, Inc., West Chester, PA, and V.J. Ciccone and Associates, Inc., Woodbridge, VA.

Eisler, R., 2000. Handbook of chemical risk assessment: health hazards to humans, plants, and animals. Lewis Publishers, New York.

Emmett, B.J., and Archer, B.M., 1980. The toxicity of diflubenzuron to honeybees (*Apis melifera* L.) colonies in apple orchards. Plant Pathology 29:637-183.

EPA – see U.S. Environmental Protection Agency

George, T.L., McEwen, L.C. and Fowler, A. 1992. Effects of a carbaryl bait Treatment on non-target wildlife. Environmental Entomology, 21(b), 1239-1247.

Hazardous Substance Database, 1990. On-line database. National Library of Medicine, Bethesda, MD.

HSDB – see Hazardous Substances Database

Mayer, F.L., Jr., and Ellersieck, M.C., 1986. Manual of acute toxicity: interpretation and Database for 410 chemicals and 66 species of freshwater animals. Resource Publication 160. Department of the Interior, Fish and Wildlife Service, Washington, D.C.

McEwen, L.C., Althouse, C.M., and Peterson, B.E., 1996a. Direct and indirect effects of grasshopper integrated pest management (GHIPM) chemicals and biologicals on non-target animal life. *In* U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1996. Grasshopper Integrated Pest Management User Handbook, Tech. Bul. No. 1809. Sec. III.2. Washington, D.C.

McEwen, L.C., Petersen, B.E., and Althouse, C.M., 1996b. Bioindicator species for evaluation potential effects of pesticides on threatened and endangered wildlife, *In* U.S. Department of agriculture, Animal and Plant Health Inspection Service, 1996. Grasshopper Integrated Pest Management User Handbook, Tech. Bul. No. 1809. Sec. II.7. Washington, D.C.

Opdycke, J.C., Miller, R.W., and Menzer, R.E., 1982. Metabolism and fate of Diflubenzuron in swine. Journal of Agricultural Food and Chemistry 30:1223-1227.

Quinn, M.A., 1996. Impact of control programs on non-target arthropods. *In* U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1996. Grasshopper Integrated Pest Management User Handbook, Tech.Bul.No. 1809. Sec. III.3. Washington, DC.

Robinson W.S., and Johansen, C.A., 1978. Effects of control chemicals for Douglas-fir Tussock moth *Orgyia pseodotsugata* (McDonnough) on forest pollination (Lepidoptera: lymantriidae) Melanderia 30:10-56.

Schroeder, W.J., Sutton, R.A., and Beavers, L.B., 1980. *Diaprepes abbreviatus*: Fate of diflubenzuron and effect on non-target pest and beneficial species after application to citrus for weevil control. J. Econ. Entomol. 73:637-638.

Tsuda, T., Aoiki, S., Kojima, M., and Harada, H., 1989. Bioconcentration and excretion Of diazinon, IBP, malathion, and fenitrothion by willow shiner. Toxicology And Environmental Chemistry 24:185-190.

USDA – see U.S. Department of Agriculture

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1998. Safety and health manual. Safety, Health, and Environmental Staff, Riverdale, MD. February 28, 1998. [online] available: http://www.aphis.usda.gov/mb/aseu/shes/shes-manual.html.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 1999. APHIS Directive 5600.3, Evaluating APHIS programs and activities for ensuring protection of children from environmental health risks and safety risks. September 3, 1999. U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Riverdale, MD. [online] available: http://www.aphis.usda.gov/library/directives.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service, 2002. Rangeland Grasshopper and Mormon Cricket Suppression program. Final environment impact statement – 2002. Literature referenced but not cited listed in 2002 FEIS http://www.aphis.gov/plant_health/ea/grasshopper_cricket.shtml

U.S. Environmental Protection Agency, 1993. Carcinogenicity peer review of carbaryl, 1-napthyl n-methylcarbamate. MRID 421889-01, 02. Memorandum from Ray Landolt, Toxicological Branch II, October 7, 1993, 35 pp.

U.S. Environmental Protection Agency. *Integrated Risk Information System (IRIS) on Carbaryl*. National Center for Environmental Assessment, Office of Research and Development, Washington, DC. 1999.

U.S. Environmental Protection Agency, 2000. Cancer Assessment Document #2. Evaluation of the carcinogenic potential of malathion. Report of the 12 April 2000 meeting and its 29 attachments. April 28, 2000. U.S. Environmental Protection Agency, Washington , DC.

VI. Listing of Agencies and Persons Consulted (Past and Present)

Jeff Knight
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Nevada Department of Agriculture
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Sparks, NV 89431

Native Aquatic Species Coordinator
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Reno, NV 89502

Randall Sharp
US Forest Service
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Sparks, NV 89431

Charles Brown
National Grasshopper Program Manager
USDA APHIS PPQ
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Eric S. Miskow
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Carson City, NV 89706-5245

Lee Ann Carranza (Assistant Field Supervisor)
Todd Gilmore
Kerensa King
Chad Mellison
Marcy Haworth
Fish and Wildlife Biologists
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1340 Financial Blvd. Suite 234
Reno, NV 89502

Appendix A
APHIS Rangeland Grasshopper and Mormon Cricket Suppression Program
FY-2016 Treatment Guidelines

The objectives of the APHIS Rangeland Grasshopper and Mormon Cricket Suppression Program are to 1) conduct surveys in 17 Western States; 2) provide technical assistance to land managers; and 3) when funds permit, suppress economically damaging grasshopper and Mormon cricket outbreaks on Federal, Tribal, State, and/or private rangeland. The Plant Protection Act of 2000 provides APHIS the authority to take these actions.

General Guidelines for Grasshopper / Mormon Cricket Treatments

1. All treatments must be in accordance with:
    a. the Plant Protection Act of 2000;
    b. applicable environmental laws and policies such as: the National Environmental Policy Act, the Endangered Species Act, the Federal Insecticide, Fungicide, and Rodenticide Act, and the Clean Water Act (including National Pollutant Discharge Elimination System requirements – if applicable);
    c. applicable state laws;
    d. APHIS Directives pertaining to the proposed action;
    e. Memoranda of Understanding with other Federal agencies.

2. Subject to the availability of funds, upon request of the administering agency or the agriculture department of an affected State, APHIS, to protect rangeland, shall immediately treat Federal, State, or private lands that are infested with grasshoppers or Mormon crickets at levels of economic infestation, unless APHIS determines that delaying treatment will not cause greater economic damage to adjacent owners of rangeland. In carrying out this section, APHIS shall work in conjunction with other Federal, State, Tribal, and private prevention, control, or suppression efforts to protect rangeland.

3. Prior to the treatment season, conduct meetings or provide guidance that allows for public participation in the decision making process. In addition, notify Federal, State and Tribal land managers and private landowners of the potential for grasshopper and Mormon cricket outbreaks on their lands. Request that the land manager / land owner advise APHIS of any sensitive sites that may exist in the proposed treatment areas.

4. Consultation with local Tribal representatives will take place prior to treatment programs to fully inform the Tribes of possible actions APHIS may take on Tribal lands.

5. On APHIS run suppression programs, the Federal government will bear the cost of treatment up to 100 percent on Federal and Tribal Trust land, 50 percent of the cost on State land, and 33 percent of cost on private land. There is an additional 16.15% charged to any funds received by APHIS for federal involvement with suppression treatments.

6. Land managers are responsible for the overall management of rangeland under their control to prevent or reduce the severity of grasshopper and Mormon cricket outbreaks. Land managers are encouraged to have implemented Integrated Pest Management Systems prior to requesting a treatment. In the absence of available funding or in the

place of APHIS funding, the Federal land management agency, Tribal authority or other party/ies may opt to reimburse APHIS for suppression treatments. Interagency agreements or reimbursement agreements must be completed prior to the start of treatments which will be charged thereto.

7. There are situations where APHIS may be requested to treat rangeland that also includes areas where crops are being grown (typically less than 10 percent of the treatment area). In those situations the crop owner pays the entire treatment costs on the croplands.

   NOTE: the insecticide being considered must be labeled for that crop as well as rangeland.

8. In some cases, rangeland treatments may be conducted by other ederal agencies (e.g., Forest Service, Bureau of Land Management, or Bureau of Indian Affairs) or by non-federal entities (e.g., Grazing Association or County Pest District). APHIS may choose to assist these groups in a variety of ways, such as:
   a. loaning equipment(an agreement may be required):
   b. contributing in-kind services such as surveys to determine insect species, instars, and infestation levels;
   c. monitoring for effectiveness of the treatment;
   d. giving technical guidance.

9. In areas considered for treatment, State-registered beekeepers and organic producers shall be notified in advance of proposed treatments. If necessary, non-treated buffer zones can be established.

<u>Operational Procedures</u>

GENERAL PROCEDURES FOR ALL AERIAL AND GROUND APPLICATIONS

1. Follow all applicable Federal, State, Tribal and local laws and regulations in conducting grasshopper and Mormon cricket suppression treatments.

2. Notify residents within treatment areas, or their designated representatives, prior to proposed operations. Advise them of control method to be used, proposed method of application, and precautions to be taken.

3. One of the following insecticides that are labeled for rangeland use can be used for a suppression treatment of grasshoppers and Mormon crickets:
   a) Carbaryl
      a. solid bait
      b. ultra low volume spray
   b) Diflubenzuron ultra low volume spay
   c) Malathion ultra low volume spray

4. Do not apply insecticides directly to water bodies (defined herein as reservoirs, lakes, ponds, pools left by seasonal streams, springs, wetlands, and perennial streams and rivers).

   Furthermore, provide the following buffers for water bodies:
   - 500-foot buffer with aerial liquid insecticide.
   - 200 foot buffer with ground liquid insecticide.
   - 200-foot buffer with aerial bait.
   - 50-foot buffer with ground bait.

5. Instruct program personnel in the safe use of equipment, materials and procedures; supervise to ensure procedures are properly followed.

6. Conduct mixing, loading, and unloading in an approved area where an accidental spill would not contaminate a water body.

7. Each suppression program will have a Contracting Officer's Repersentative (COR) OR a Treatment Manager on site. Each State will have at least one COR available to assist the Contracting Officer (CO) in GH/MC suppression programs.

   NOTE: A Treatment Manager is an individual that the COR has delegated authority to oversee the actual suppression treatment; someone who is on the treatment site and overseeing/coordinating the treatment and communicating with the COR. No specific training is required, but knowledge of the Aerial Application Manaual and treatment experience is critical; attendace to the Aerial Applicators Workshop is very beneficial.

8. Each suppression program will conduct environmental monitoring as outlined in the 2016 Environmental Monitoring Plan.

   APHIS will assess and monitor rangeland treatments for the efficacy of the treatment, to verify that a suppression treatment program has properly been implemented and assure that any environmentally sensitive sites were protected.

9. APHIS reporting requirements associated with grasshopper / Mormon cricket suppression treatments can be found in the APHIS Grasshopper Program Guidebook: http://www.aphis.usda.gov/import_export/plants/manuals/domestic/downloads/grasshopper.pdf

SPECIFIC PROCEDURES FOR AERIAL APPLICATIONS

1. APHIS Aerial treatment contracts will adhere to the 2016 Statement of Work.

2. Minimize the potential for drift and volatilization by not using ULV sprays when the following conditions exist in the spray area:

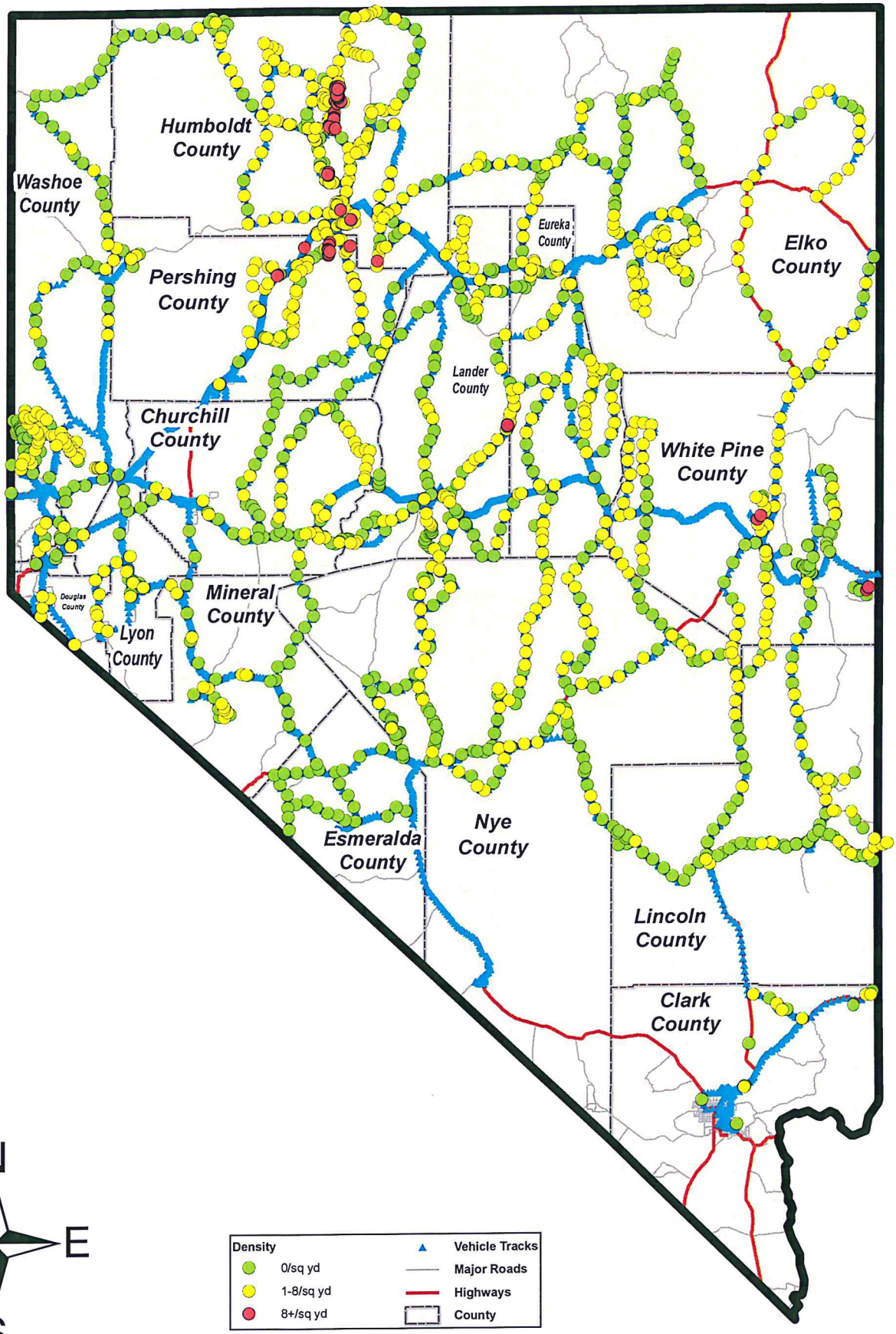
a. Wind velocity exceeds 10 miles per hour (unless state law requires lower wind speed);
b. Rain is falling or is imminent;
c. Dew is present over large areas within the treatment block;
d. There is air turbulence that could affect the spray deposition;
e. Temperature inversions (ground temperature higher than air temperature) develop and deposition onto the ground is effected.

3. Weather conditions will be monitored and documented during application and treatment will be suspended when conditions could jeopardize the correct spray placement or pilot safety.

4. Application aircraft will fly at a median altitude of 1 to 1.5 times the aircraft's wingspan.

5. Whenever possible, plan aerial ferrying and turnaround routes to avoid flights over congested areas, water bodies, and other sensitive areas that are not to be treated.

2015 Grasshopper Survey Cumulative



Data and map produced by the Nevada Department of Agriculture, Cooperative Agricultral Pest Survey (CAPS) program.
Coordinate System: World Mercator, WGS 1984
Date Created: September 14, 2015

2015 Mormon Cricket Survey Cumulative

United States Department of Interior
Fish and Wildlife Service

Project name: Nevada T&E 2015 -- created on January 28, 2015 02:51

Official Species List

Provided by:

Nevada Fish and Wildlife Office
1340 FINANCIAL BOULEVARD, SUITE 234
RENO, NV 89502
(775) 861-6300
http://www.fws.gov/nevada/

Expect additional Species list documents from the following office(s):

Carlsbad Fish and Wildlife Office
2177 SALK AVENUE - SUITE 250
CARLSBAD, CA 92008
(760) 431-9440
http://www.fws.gov/carlsbad/

Klamath Falls Fish and Wildlife Office
1936 CALIFORNIA AVENUE
KLAMATH FALLS, OR 97601
(541) 885-8481

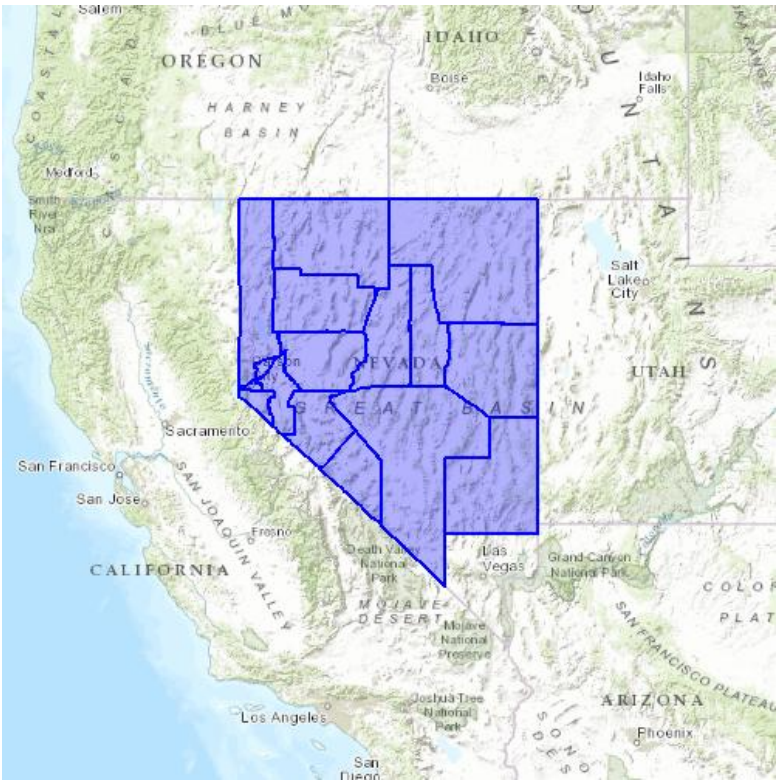
Consultation Code: 08ENVD00-2015-SLI-0150
Event Code: 08ENVD00-2016-E-00182

Project Type: INVASIVE SPECIES CONTROL

Project Name: Nevada T&E 2015 -- created on January 28, 2015 02:51
Project Description: aphis grasshopper/cricket planning documents

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Carson City, NV | Churchill, NV | Douglas, NV | Elko, NV | Esmeralda, NV | Eureka, NV | Humboldt, NV | Lander, NV | Lincoln, NV | Lyon, NV | Mineral, NV | Nye, NV | Pershing, NV | Storey, NV | Washoe, NV | White Pine, NV

Endangered Species Act Species List

There are a total of 42 threatened, endangered, or candidate species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	**Status**	**Has Critical Habitat**	**Condition(s)**
relict leopard Frog *(Lithobates onca)*	Candidate		
Sierra Nevada Yellow-legged Frog *(Rana sierrae)*	Endangered	Proposed	
Birds			
Southwestern Willow flycatcher *(Empidonax traillii extimus)* Population: Entire	Endangered	Final designated	
Yellow-Billed Cuckoo *(Coccyzus americanus)* Population: Western U.S. DPS	Threatened	Proposed	
Yuma Clapper rail *(Rallus longirostris yumanensis)* Population: Entire	Endangered		
Conifers and Cycads			
Whitebark pine *(Pinus albicaulis)*	Candidate		
Fishes			
Ash Meadows Amargosa pupfish	Endangered	Final designated	

(Cyprinodon nevadensis mionectes) Population: Entire			
Ash Meadows Speckled dace *(Rhinichthys osculus nevadensis)* Population: Entire	Endangered	Final designated	
Big Spring spinedace *(Lepidomeda mollispinis pratensis)* Population: Entire	Threatened	Final designated	
Bull Trout *(Salvelinus confluentus)* Population: U.S.A., conterminous, lower 48 states	Threatened	Final designated	
Clover Valley Speckled dace *(Rhinichthys osculus oligoporus)* Population: Entire	Endangered		
cui-ui *(Chasmistes cujus)* Population: Entire	Endangered		
Desert dace *(Eremichthys acros)* Population: Entire	Threatened	Final designated	
Devils Hole pupfish *(Cyprinodon diabolis)* Population: Entire	Endangered		
Hiko White River springfish *(Crenichthys baileyi grandis)* Population: Entire	Endangered	Final designated	
Independence Valley Speckled dace *(Rhinichthys osculus lethoporus)* Population: Entire	Endangered		
Lahontan cutthroat trout *(Oncorhynchus clarkii henshawi)*	Threatened		

Population: Entire			
Moapa dace *(Moapa coriacea)* Population: Entire	Endangered		
Pahranagat Roundtail chub *(Gila robusta jordani)* Population: Entire	Endangered		
Pahrump poolfish *(Empetrichthys latos)* Population: Entire	Endangered		
Paiute cutthroat trout *(Oncorhynchus clarkii seleniris)* Population: Entire	Threatened		
Railroad Valley springfish *(Crenichthys nevadae)* Population: Entire	Threatened	Final designated	
Razorback sucker *(Xyrauchen texanus)* Population: Entire	Endangered	Final designated	
Virgin River Chub *(Gila seminuda (=robusta))* Population: Entire	Endangered	Final designated	
Warm Springs pupfish *(Cyprinodon nevadensis pectoralis)* Population: Entire	Endangered		
Warner sucker *(Catostomus warnerensis)* Population: Entire	Threatened	Final designated	
White River spinedace *(Lepidomeda albivallis)*	Endangered	Final designated	

Population: Entire			
White River springfish *(Crenichthys baileyi baileyi)* Population: Entire	Endangered	Final designated	
Woundfin *(Plagopterus argentissimus)* Population: Entire, except EXPN	Endangered	Final designated	
Flowering Plants			
Amargosa niterwort *(Nitrophila mohavensis)*	Endangered	Final designated	
Ash Meadows blazingstar *(Mentzelia leucophylla)*	Threatened	Final designated	
Ash Meadows gumplant *(Grindelia fraxinipratensis)*	Threatened	Final designated	
Ash Meadows ivesia *(Ivesia kingii var. eremica)*	Threatened	Final designated	
Ash Meadows milk-vetch *(Astragalus phoenix)*	Threatened	Final designated	
Ash Meadows sunray *(Enceliopsis nudicaulis var. corrugata)*	Threatened	Final designated	
spring-loving centaury *(Zeltnera namophila)*	Threatened	Final designated	
Steamboat buckwheat *(Eriogonum ovalifolium var. williamsiae)*	Endangered		
Ute ladies'-tresses *(Spiranthes diluvialis)*	Threatened		
Webber Ivesia *(Ivesia webberi)*	Threatened	Proposed	

Insects			
Ash Meadows naucorid *(Ambrysus amargosus)* Population: Entire	Threatened	Final designated	
Carson wandering skipper *(Pseudocopaeodes eunus obscurus)* Population: Entire	Endangered		
Reptiles			
Desert tortoise *(Gopherus agassizii)* Population: Entire, except in Sonoran Desert	Threatened	Final designated	

Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Birds	**Critical Habitat Type**
Southwestern Willow flycatcher *(Empidonax traillii extimus)* Population: Entire	Final designated
Yellow-Billed Cuckoo *(Coccyzus americanus)* Population: Western U.S. DPS	Proposed
Fishes	
Ash Meadows Amargosa pupfish *(Cyprinodon nevadensis mionectes)* Population: Entire	Final designated
Ash Meadows Speckled dace *(Rhinichthys osculus nevadensis)* Population: Entire	Final designated
Big Spring spinedace *(Lepidomeda mollispinis pratensis)* Population: Entire	Final designated
Bull Trout *(Salvelinus confluentus)* Population: U.S.A., conterminous, lower 48 states	Final designated
Desert dace *(Eremichthys acros)* Population: Entire	Final designated
Hiko White River springfish *(Crenichthys baileyi grandis)* Population: Entire	Final designated
Railroad Valley springfish *(Crenichthys*	Final designated

nevadae) Population: Entire	
Warner sucker *(Catostomus warnerensis)* Population: Entire	Final designated
White River spinedace *(Lepidomeda albivallis)* Population: Entire	Final designated
White River springfish *(Crenichthys baileyi baileyi)* Population: Entire	Final designated
Flowering Plants	
Ash Meadows blazingstar *(Mentzelia leucophylla)*	Final designated
Ash Meadows gumplant *(Grindelia fraxinipratensis)*	Final designated
Ash Meadows ivesia *(Ivesia kingii var. eremica)*	Final designated
Ash Meadows milk-vetch *(Astragalus phoenix)*	Final designated
Ash Meadows sunray *(Enceliopsis nudicaulis var. corrugata)*	Final designated
spring-loving centaury *(Zeltnera namophila)*	Final designated
Webber Ivesia *(Ivesia webberi)*	Proposed
Insects	
Ash Meadows naucorid *(Ambrysus amargosus)* Population: Entire	Final designated

Reptiles	
Desert tortoise *(Gopherus agassizii)* Population: Entire, except in Sonoran Desert	Final designated

Part I
Grasshopper and Mormon Cricket Control Program Protection Measures Agreed to by APHIS to Protect Threatened, Endangered, or Proposed Species

Mammals

Common Name	Scientific Name	Listing Status	States
A. Black-footed ferret	*Mustela nigripes*	E, EXPN	CO, KS, MT, ND, NE, SD, UT, WY
Program personnel will consult with applicable Federal and/or State agencies in regard to the presence of black-footed ferrets prior to beginning any control programs. Each documented and verified occurrence of interest to the program will be considered and plans for adequate protection adopted in consultation with the local Fish and Wildlife Service (Service) field offices.			
B. Utah prairie dog	*Cynomys parvidens*	T	UT
Malathion and acephate will not be used within ¼ mile of any Utah prairie dog town.			
C. Hualapai Mexican vole	*Microtus mexicanus hualpaiensis*	E	AZ
One-quarter mile no malathion or acephate treatment buffer around occupied areas. Contact the local Service office prior to program operations in Mohave County.			
D. Mexican long-nosed bat	*Leptonycteris nivalis*	E	NM, TX
Sanborn's long-nosed bat	*Leptonycteris sanborni*	No Data	No Data. AZ, NM ????
Lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	E	AZ, NM
No jeopardy foreseen because of low risk from pesticides to be used and prey base not expected to be significantly effected. Unquantifiable anticipated incidental take as a result of off-roand vehicles use for surveys and application of carbaryl bait. Reasonable and prudent measures and terms and conditions provided to reduce take of the species.			

Birds			
Common Name	Scientific Name	Listing Status	States
A. Whooping crane	*Grus americana*	E, EXPN	CO, ID, DS, MT, ND, NE, NM, OK, SD, TX, UT, WY
APHIS shall ensure that no whooping cranes have wandered into a proposed spray treatment or bait treatment area.			
B. Bald eagle	*Haliaeetus leucocephalus*	T	All 17 western States
Maintain a 1-mile radius treatment-free zone (including Nosema) around active bald eagle eyries found on rivers or lakes with no flyovers of this area by contract pilots. A 2.5 mile no-aerial ULV spray zone will be maintained upstream and downstream from the nest site as a forage area. This will include a 0.25 mile buffer along each side of the rivers. Lakes will be protected by a 0.25 no-aerial ULV spray buffer if they are considered foraging areas of the bald eagle.			
C. Peregrine falcon	*Falco peregrinus anatum*	DM	All 17 western States
This species has been delisted but is being monitored for the first 5 years.			
D. Northern aplomado falcon	*Falco femoralis septentrionalis*	E	TX
APHIS will contact the local Service office at least 5 days prior to grasshopper program activities to determine if nesting sites are known and coordinate necessary measures to protect nests and foraging areas.			

E. Piping plover	*Charadrius melodus*	T.	CO, KS, MT, ND, NE, OK, SD, TX
No aerial ULV pesticides will be used within 0.25 mile of water bodies where piping plovers are known to nest. Where carbaryl bran bait or Nosema is used, a 500-foot no-treatment zone around nesting areas of piping plovers should be maintained. Piping plover habitat will be determined in consultation with local Service field offices.			
F. Western snowy plover	*Charadrius alexandrinus nivosus*	T	CA, WA, OR
No aerial ULV pesticides should be applied within 0.25 mile of the edges of known snowy plover nesting areas. Carbaryl bran bait or Nosema may be used to within 500 feet of these areas. Within the 500 foot buffer, no treatments will be made.			
G. Interior least tern	*Sterna antillarum*	E	CO, KS, MT, ND, NE, NM, OK, SD, TX
No aerial ULV application should be applied 2.5 miles up and down river to prevent abandonment of nesting least tern colonies due to aircraft flyovers and a possible decrease of the fishery forage base due to accidental aquatic applications. A 0.25 mile no-aerial ULV application buffer on each side of the river and around other bodies of water containing least tern colonies also should be observed. A 500 foot no-treatment zone around nesting colonies also should be observed. Interior least tern habitat will be determined in consultation with the local Service field offices.			
H. Yuma clapper rail	*Rallus longirostris yumanensis*	E	AZ, CA
Maintain a 0.25 mile no aerial ULV application buffer and a 500 foot no application buffer for carbaryl bran bait and Nosema around nesting and foraging areas.			

I. Black-capped vireo	*Vireo atricapillus*	E	KS, OK, TX

Before APHIS control programs are initiated in Oklahoma, a concerted effort should be made to identify nesting areas of this species. The Service recommends that APHIS personnel contact our Service field office in Tulsa, which can assist in identifying specific nesting habitat. The Department of Biology, Central State University, Edmond, OK also can provide further assistance in this effort. Contact the Austin, TX field office for actions near black-capped vireo habitat in Callahan and Taylor Counties, TX.

Exclusion of aerial ULV spray application in habitat normally used for foraging and nesting by this species as identified above.

J. California brown pelican	*Pelecanus occidentalis californicus*	E	CA, OR, TX, WA

Maintain a 0.25 mile no aerial application buffer around established nests or roost sites. A 500 foot buffer will apply for carbaryl bran bait or Nosema.

K. Southwestern willow flycatcher	*Empidonax traillii extimus*	E	AZ, CA, CO, NM, TX, UT

No ULV application of insecticides should occur within 0.25 mile of the edge of occupied habitat. A buffer of 500 feet should be maintained where no application of carbaryl bran bait or Nosema is applied.

L. Mexican spotted owl	*Strix occidentalis lucida*	T	AZ, CO, NM, TX, UT

APHIS will confer with the local Service office at least 5 days prior to grasshopper control activities in any of the counties known to contain Mexican spotted owls in northeastern Arizona, southwestern Colorado, and Utah to determine if protective measures are needed.

M. Cactus ferruginous pygmy-owl	*Glaucidium brasilianum cactorum*	E	AZ

APHIS will confer with the local Service office at least 5 days prior to any grasshopper program activities to determine of protective measures are needed. APHIS will adopt the preprogram conference procedures. If it is determined during site specific conferences that the grasshopper control program may jeopardize the continued existence of this species or result in the adverse modification of the species' proposed critical habitat, the Service will offer advisory recommendations to avoid or minimize any adverse effects.

Fish			
Group A			
Common Name	Scientific Name	Listing Status	States
Bonytail chub	*Gila elegans*	E	AZ, CA, CO, NV, UT
Colorado pikeminnow (=squawfish)	*Ptychocheilus lucius*	E, EXPN	E = AZ, CA, CO, UT, WY. EXPN = AZ
Cui-ui	*Chasmistes cujus*	E	NV
Gila trout	*Oncorhynchus gilae*	E	AZ, NM
Greenback cutthroat trout	*Oncorhynchus stomias*	T	CO
Humpback chub	*Gila cypha*	E	AZ, CO, UT
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	T	CA, NV, OR, UT
Pallid sturgeon	*Scaphirhynchus albus*	E	KS, MT, ND, SD
Only carbaryl bran bait or Nosema (no aerial application of ULV pesticides) will be used within 0.25 mile of occupied habitats.			
Group B			
Apache trout	*Oncorhynchus apache*	T	AZ
Big Spring spinedace	*Lepidomed mollispinis pratensis*	T	NV
Borax Lake chub	*Gila boraxobius*	E	OR
Chihuahua chub	*Gila nigrescens*	T	NM
Desert dace	*Eremichthys acros*	T	NV
Foskett speckled dace	*Rhinichthys osculus ssp.*	T	OR
Gila topminnow (now includes Yaqi)	*Poeciliopsis occidentalis*	E	AZ, NM
Hilko White River springfish	*Crenichthys baileyi grandis*	E	NV
Hutton tui chub	*Gila bicolor spp.*	T	OR
June sucker	*Chasmistes liorus*	E	UT
Kendall Warm Springs dace	*Rhinichthys osculus thermalis*	T	WY
Little Colorado spinedace	*Lepidomeda vitta*	T	AZ
Modoc sucker	*Catostomus microps*	E	CA
Pahrump killfish (poolfish)	*Empetrichthys latos*	E, AT	NV

Pahranagat roundtail chub	*Gila robusta jordani*	E	NV
Pecos bluntnose shiner	*Notropis simus pecosensis*	T	NM
Pecos gambusia	*Gambusia nobilis*	E	NM, TX
Spikedace	*Meda fulgida*	T	AZ, NM
Virgin River chub	*Gila robusta seminuda*	E	AZ, NV, UT
Virgin spinedace ? Also listed under C ?	*Lepidomeda mollispinis pratensis*	T	NV
Warner sucker	*Catostomus warnerensis*	T	OR
White River springfish	*Crenichthys baileyi baileyi*	E	NV
Woundfin	*Plagopterus argentissimus*	E, EXPN	E = AZ, NM, NV, UT EXPN = AZ, NM
No aerial ULV application of malathion should be applied within 1 mile of occupied habitat. A 0.25 no-aerial ULV application of carbaryl and acephate also should be adhered to.			
Group C			
Arkansas River shiner	*Notropis girardi*	T	KS, NM, OK, TX
Ash Meadows Amargosa pupfish	*Cyprinodon nevadensis mionectes*	E	NV
Ash Meadows speckled dace	*Rhinichthys osculus nevadensis*	E	NV
Clover Valley specked dace	*Rhinichthys osculus oligoporus*	E	NV
Delta smelt	*Hypomesus transpacificus*	T	CA
Desert pupfish	*Cyprinodon macularius*	E	AZ, CA
Devil's Hole pupfish	*Cyprinodon diabolis*	E	NV
Independence Valley speckled dace	*Rhinichthys osculus lethorporus*	E	NV
Leopard darter	*Percina pantherina*	T	OK
Loach minnow.	*Tiaroga cobitis*	T	AZ, NM
Lost River sucker	*Deltistes luxatus*	E	CA, OR
Railroad Valley springfish	*Crenichthys nevadae*	T	NV
Rio Grande silvery minnow	*Hybognathus amarus*	E	NM, TX
Shortnose sucker	*Chasmiste brevirostris*	E	CA, OR
Virgin spinedace ? Also listed under B ?	*Lepidomeda mollispinis pratensis*	T	NV

Warm Springs pupfish	*Cyprinodon nevadensis pectoralis*	E	NV
White sturgeon	*Aipenser transmontanus*	E	ID, MT
Yaqui topminnow (Now included with Gila topminnow)	*Poeciliopsus occidentalis sonoriensis*	E	AZ, NM

Buffers around areas of occurrence of 0.5 mile for the use of malathion and 0.25 mile for the use a aerially applied carbaryl and acephate. Within the buffers, only carbaryl bait or Nosema will be used.

Group D			
Yaqui chub	*Gila purpurea*	E	AZ
Neosho madtom	*Noturus placidus*	T	KS, OK
Moapa dace	*Moapa coriacea*	E	NV

No aerial ULV application of malathion should be applied within 0.5 mile of the habitat. A 0.25 mile buffer should be applied for the use of acephate and carbaryl, and a 500 foot no-treatment zone should be used for carbaryl bran bait.

Group E			
Razorback sucker	*Xyrauchen texanus*	E	AZ, CA, CO, NM, NV, UT, WY

Maintain a 0.25 mile no-aerial application buffer around known habitats. Within buffer, carbaryl bran bait or Nosema may be used within 500 feet of the water.

Group F			
Sacramento splittail	*Pogonichthys*	T	CA

No aerial applications of malathion within 0.5 mile, or aerial applications of acephate or carbaryl within 0.25 mile of Suisun Bay and the San Francisco Bay-Sacramento-San Joaquin River estuary in Sacramento and San Joaquin Counties. Within this buffer, carbaryl bran bait or Nosema may be used within 500 feet of the water.

Reptiles

Common Name	Scientific Name	Listing Status	States
A. Desert tortoise	*Gopherus agassizii*	T, SAT	AZ, CA, NV, UT
Malathion and acephate should not be applied in the Beaver Dam Slope of Washington County, Utah (both inside and outside of the designated critical habitat).			
B. Flat-tailed horned lizard	*Phyrnosoma mcallii*	No Data	No Data
APHIS will maintain a 0.25 mile buffer for ULV aerial applications and a 500 foot buffer for carbaryl bran bait around known habitats.			
C. New Mexican ridge-nosed rattlesnake	*Crotalus willardi obscurus*	T	NM
If required to treat for grasshoppers above 6,000 foot elevation, local consultation with the Service will be conducted at least 5 days prior to grasshopper program activities to determine protection measures and specific areas that should be protected.			

Amphibians

Common Name	Scientific Name	Listing Status	States
A. Wyoming toad	*Bufo hemiophrys baxteri*	E	WY
A 0.25 mile no-aerial ULV application buffer shall be maintained on each side of the Little Laramie River in Albany county, Wyoming. To determine specific boundaries of the area, APHIS should contact the Helena, MT Endangered Species Field Office, as well as the Wyoming Game and Fish, prior to any control program within the historic range of the Wyoming toad.			

B. Sonora tiger salamander	*Ambystoma tigrinum stebbinsi*	E	AZ

APHIS should not make aerial applications of malathion within 0.5 mile of occupied habitat of the salamander. Buffers of 0.25 mile for acephate and carbaryl aerial applications also should be maintained, and within the buffers only carbaryl bran bait or Nosema should be used.

C. California red-legged frog	*Rana aurora draytonii*	T	CA

No pesticides (acephate, carbaryl, carbaryl bran bait, or malathion) or Nosema should be applied within 1 mile of occupied habitat of the species.

Crustaceans

Common Name	Scientific Name	Listing Status	States
Shasta crayfish	*Pacifastacus fortis*	E	CA
Socorro isopod	*Thermosphaeroma thermosphilus*	E	NM
Vernal pool fairy shrimp	*Branchinecta lynchi*	T	CA, OR

No aerial ULV application of malathion or carbaryl should be applied within 1 mile of the habitat.

A 0.25 mile buffer should be applied for the use of acephate, and a 500 foot no-treatment zone should be used where carbaryl bran bait is used inside the no-spray buffer areas.

Snails			
Common Name	Scientific Name	Listing Status	States
A. Bruneau Hot Springs snail	Pyrgulopsis bruneauensis	E	ID
No pesticide should be broadcast aerially within 0,25 mile of Hot Creek in Owyhee County, Idaho. This is located at T. 8 S., R. 6 E, sections 2,3, and 4; and T. 7 S., R. 6 E., sections, 33, 34, and 35.			
B. Socorro springsnail	*Pyrgulopsis neomexicana*	E	NM
Alamosa springsnail	Tryonia alamosae	E	NM
No pesticide should be applied aerially within 0.25 mile of the habitat. A 500 foot buffer would apply to carbaryl bran bait and Nosema.			
C. Ouachita rock pocketbook	*Arkansia wheeleri*	E	OK
No aerial application of malathion or carbaryl within 0.25 mile of habitat or within 500 feet of water for aerial application of acephate.			
D. Banbury Springs limpet or lanx	*Lanx sp.*	E	ID
Bliss Rapids snail	*Taylorconcha serpenticola*	T	ID
Idaho springsnail	*Fontelicella idahoensis*	E	ID
Kanab ambersnail	*Oxyloma haydeni ssp. kanabensis*	E	AZ, UT
Snake River physa snail	*Physa natricina*	E	ID
Utah valvata	*Valvata utahensis*	E	ID
Malathion should not be used within 0.5 mile of populations. A 0.25 mile buffer should be used for carbaryl and acephate, and a 500 foot buffer should be maintained for the use of carbaryl bran bait or Nosema.			

Insects			
Common Name	Scientific Name	Listing Status	States
A. Pawnee montane skipper	*Hesperia leonardus montana*	T	CO
No aerial application of pesticides within 0.25 mile of habitat.			
B. American burying beetle	*Nicrophorus americanus*	E	NE, SD
Contact local office of the Service at least 5 days prior to program activities to determine specific habitat locations and develop adequate protection measures and treatment methods.			
C. Ash Meadows naucorid	*Ambrysus amargosus*	T	NV
No application within 0.25 mile of critical habitat.			

Plants			
Common Name	Scientific Name	Listing Status	States
Group A			
Arizona hedgehog cactus	*Echinocereus triglochidiatus var. arizonicus*	E	AZ
Aerial ULV application of pesticides will not be used within 0.25 of the occupied habitat.			
Group B.			
Applegate's milk-vetch	*Astragalus applegatei*	E	OR
Arizona agave	*Agave arizonica*	E	AZ
Arizona cliffrose	*Purshia subintegra*	E	AZ
Arizona willow	*Salix arizonica*	No Data	No Data
Ash Meadows blazing-star	*Mentzelia leucophylla*	T	NV
Ash Meadows gumplant	*Grindelia fraxinopratensis*	T	CA, NV
Ash Meadows ivesia	*Ivesia kingii var. eremica*	T	NV
Ash Meadows milk-vetch	*Astragalus phoenix*	T	NV
Autumn buttercup	*Ranunculus acrifornis var. aestivalis*	E	UT
Barneby reed-mustard	*Schoenocrambe barnebyi*	E	UT
Barneby ridge-cress	*Lepidium barnebyanum*	E	UT
Blowout penstemon	*Penstemon haydenii*	E	NE, WY
Brady pincushion cactus	*Pediocactus bradyi*	E	AZ
Clay-loving wild buckwheat	*Eriogonum pelinophilum*	E	CO
Clay phacelia	*Phacelia argillacea*	T	UT
Clay reed-mustard	*Schoenocrambe argillacea*	T	UT
Cochise pincushion cactus	*Coryphantha robbinsorum*	T	AZ
Dudley Bluffs bladderpod	*Lesquerella congesta*	T	CO

Dudley Bluffs twinpod	*Physaria obcordata*	T	CO
Dwarf bear-poppy	*Arctomecon humilis*	E	UT
Gypsum wild-buckwheat	*Eriogonum gypsophilum*	T	NM
Heliotrope milk-vetch	*Astragalus montii*	T	UT
Holy Ghost ipomopsis	*Ipomopsis sancti-spiritus*	E	NM
Jones cycladenia	*Cycladenia humilis var. jonesii*	T	AZ, UT
Knowlton cactus	*Pediocactus knowltonii*	E	CO, NM
Kodachrome bladderpod	*Lesquerella tumulosa*	E	UT
Kuenzler hedgehog cactus	*Echinocereus dendleri var. kuenzleri*	E	NM
Last Chance townsendia	*Townsendia aprica*	T	UT
Lee pincushion cactus	*Coryphantha sneedii var. leei*	T	NM
Lloyd's hedgehog cactus	*Echinocereus lloydii*	DR (Delisted)	NM, TX
Maguire daisy	*Erigeron maguirei (var. maguirei)??*	T	UT
Malheur wire-lettuce	*Stephanomeria malheurensis*	E	OR
Mancos milk-vetch	*Astragalus humillimus*	E	CO, NM
Mead's milkweed	*Asclepias meadii*	T	KS
Mesa Verde cactus	*Sclerocactus mesa-verdae*	T	CO, NM
North Park phacelia	*Phacelia formosula*	E	CO
Oserhout milk-vetch	*Astragalus osterhoutii*	E	CO
Parish's alkali grass	*Puccinellia parishii*	No Data	No Data. CA, NM ?????
Peebles Navajo cactus	*Pediocactus peeblesianus var. peebleesianus*	E	AZ
Penland alpine fen mustard	*Eutrema penlandii*	T	CO
Penland beardtongue	*Penstemon penlandii*	T	CO
Rhizome (Zuni) fleabane	*Erigeron rhizomatus*	T	NM
Sacramento Mountains thistle	*Cirsium vinaceum*	T	NM
Sacramento prickly-poppy	*Argemone pleiacantha var. pinnatisecta*	E	NM

San Rafael cactus	*Pediocactus despainii*	E	UT
Siler pincushion cactus	*Pediocactus (=Echinocactus = Utahia) sileri*	T	AZ, UT
Slender orcutt grass	*Orcuttia tenuis*	T	CA
Sneed pincushion cactus	*Coryphantha sneedii var. sneedii*	E	NM. TX
Sodaville milk-vetch	*Astragalus lentiginosus var. sesquimetralis*	No Data	No Data. NV ????
Spring-loving/centaury	*Centaurium namophilum*	T	CA, NV
Steamboat buckwheat	*Eriogonum ovalifolium*	E	NV
Toad-flax cress	*Glaucocarpum suffrutescens*	No Data	No Data. UT ????
Uinta basin hookless cactus	*Sclerocactus glaucus*	T	CO, UT
Ute ladies'-tresses	*Spiranthes diluvialis*	T	CO, ID, MT, NE, UT, WA, WY
Water howellia	*Howellia aquatilis*	T	CA, ID, MT, OR, WA
Welsh's milkweed	*Asclepias welshii*	T	AZ, UT
Western prairie fringed orchid	*Platanthera praeclara*	T	KS, ND, NE, OK
Winkler cactus	*Pediocactus winkleri*	T	UT
Wright's fishhook cactus	*Sclerocactus wrightae*	E	UT

Aerial applications of pesticides will not be used within 3 miles of these species occupied habitats. Within the 3 mile buffer, only carbaryl bran bait or Nosema will be used.

Group C			
Navajo sedge	*Carex specuicola*	T	AZ, UT

No applications of carbaryl bran bait within 200 feet of springs and no aerial application of ULV pesticides within 500 feet of springs of occupied habitat.

Group D			
Amargosa niterwort	*Nitrophila mohavensis*	E	CA, NV
Ash Meadows sunray	*Enceliopsis nudicalis var. corrugata*	T	NV

No applications of ULV insecticides will be made within 3 miles designated critical habitat. Within the 3 mile buffer, only carbaryl bran bait or Nosema will be used.

Group E			
Canelo Hills ladies'-tresses	*Spiranthes delitescens*	E	AZ
Huachuca water umbel	*Lilaeopsis schaffneriana*	E	AZ
No applications of ULV insecticides will be made within 3 miles of known populations. Within the 3 mile buffer, only carbaryl bran bait or Nosema will be used. Carbaryl bran bait will not be used within 20 yards of known populations of these species.			

Part II
Species With "No Effect" or "No Jeopardy" Determinations Without Buffers or Other Measures

Mammals

Common Name	Scientific Name	Listing Status	States
Gray wolf	*Canus lupus*	E	CO, ID, MT, ND, SD, WA, WY
Grizzly bear	*Ursus arctos horribilis*	T	CO, ID, MT, WA, WY
Mount Graham red squirrel	*Tamiasciurus hudsonicus grahamensis*	E	AZ
Woodland caribou	*Rangifer tarandus caribou*	E	ID, WA

Birds

Aleutian Canada goose	*Branta canadensis leucopareia*	DM (Delisted)	CA, OR, WA
California condor	*Gymnogyps californianus*	E, EXPN	E = CA EXPN = AZ, UT
Marbled murrelet	*Brachyramphus marmoratus marmoratus*	T	CA, OR, WA
Northern spotted owl	*Strix occidentalis caurina*	T	CA, OR, WA
Red-cockaded woodpecker	*Picoides (=Dendrocopos) borealis*	E	OK, TX

Fish			
Common Name	Scientific Name	Listing Status	States
Beautiful shiner	*Cyprinella formosa*	T	AZ, NM
Yaqui catfish	*Ictalurus pricei*	T	AZ
Insects			
Uncompahgre fritillary	*Boloria acrocnema*	E	CO
Plants			
MacFarlane's four-o'clock	*Mirabilis macfarlanii*	T	ID, OR
Maguire primrose	*Primula maguirei*	T	UT
Marsh sandwort	*Arenaria paludicola*	E	CA, OR, WA
San Francisco Peaks groundsel	*Senecio franciscanu*	T	AZ
Sentry milk-vetch	*Astragalus cremnophylax var. cremnophylax*	E	AZ
Todsen's pennyroyal	*Hedeoma todsenii*	E	NM

Appendix C
Table 3

Local Mitigation Measures Agreed to by USFWS and APHIS PPQ in 2004

Table 2. General Direct and Indirect Effects of Proposed Insecticides and Proposed Avoidance/mitigation Measures for Non-target Listed Animal and Plant Species

Non-Target Listed Species and Species Groups	Status	Toxicity Levels Direct Effects			Indirect Effects	Avoidance or Mitigation Measures	Counties[2]
		Malathion	Carbaryl	Dimilin			
BIRDS							
Southwestern willow flycatcher	E	N/A[3]	N/A[3]	Low	A,B,C	3,10	Clark, Lincoln, Nye
Bald eagle	T	N/A[3]	N/A[3]	Low	No Indirect Effects	5	Carson City, Churchill, Clark, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lander, Lincoln, Lyon, Mineral, Nye, Pershing, Storey, Washoe, White Pine
Yuma clapper rail[1]	E	Low	Low	Low	A,B,C	7	Clark
REPTILE							
Desert tortoise	T, CH	N/A[3]	N/A[3]	Slight	A,B,C	1	Clark, Esmeralda, Lincoln, Nye
FISH							
Warner sucker[1]	T, CH	Moderate to High	Very High	Slight	A,B,C	2	Washoe
Cui-ui	E	N/A[3]	N/A[3]	Slight	A,B,C,F	8	Storey, Washoe
White River springfish	E, CH	N/A[3]	N/A[3]	Slight	A,B,C,F	8	Lincoln
Hiko White River springfish	E, CH	N/A[3]	N/A[3]	Slight	AB,C,F	8	Lincoln, Mineral
Railroad Valley springfish	T, CH	N/A[3]	N/A[3]	Slight	A,B,C	8	Mineral, Nye
Devils Hole pupfish	E	N/A[3]	N/A[3]	Slight	A,B,C	8	Clark, Nye
Ash Meadows Amargosa pupfish	E, CH	N/A[3]	N/A[3]	Slight	A,B,C	8	Nye
Warm Springs pupfish	E	N/A[3]	N/A[3]	Slight	A,B,C	8	Nye
Pahrump poolfish	E	N/A[3]	N/A[3]	Slight	A,B,C	8	Clark, White Pine
Desert dace	T, CH	N/A[3]	N/A[3]	Slight	A,B,C,F	8	Humboldt
Humpback chub	E	N/A[3]	N/A[3]	Slight	A,B,C	8	Clark
Bonytail chub	E, CH	N/A[3]	N/A[3]	Slight	A,B,C,	8	Clark
Pahranagat roundtail chub	E	N/A[3]	N/A[3]	Slight	A,B,C,F	8	Lincoln
Virgin River chub	E, CH	N/A[3]	N/A[3]	Slight	A,B,C,F	8	Clark
White River spinedace[1]	E, CH	Moderate to High	Very High	Slight	A,B,C	2	Nye, White Pine
Big Spring spinedace	T, CH	N/A[3]	N/A[3]	Slight	A,B,C,F	8	Lincoln
Moapa dace	E	N/A[3]	N/A[3]	Slight	A,B,C	8	Clark

Table 2. General Direct and Indirect Effects of Proposed Insecticides and Proposed Avoidance/mitigation Measures for Non-target Listed Animal and Plant Species

Non-Target Listed Species and Species Groups	Status	Toxicity Levels Direct Effects			Indirect Effects	Avoidance or Mitigation Measures	Counties[2]
		Malathion	Carbaryl	Dimilin			
Lahontan cutthroat	T	N/A[3]	N/A[3]	Slight	A,B,C	8	Carson City, Churchill, Clark, Douglas, Elko, Eureka, Humboldt, Lander, Lyon, Mineral, Nye, Storey, Washoe,
Woundfin	E, CH	N/A[3]	N/A[3]	Slight	A,B,C,F	8	Clark
Colorado pikeminnow	E	N/A[3]	N/A[3]	Slight	A,B,C	8	Clark
Independence Valley speckled dace	E	N/A[3]	N/A[3]	Slight	A,B,C,F	8	Elko
Ash Meadows speckled dace	E, CH	N/A[3]	N/A[3]	Slight	A,B,C	8	Nye
Clover Valley speckled dace	E	N/A[3]	N/A[3]	Slight	A,B,C,E	8	Elko
Bull trout[1]	T	Moderate to High	Very High	Slight	A,B,C	2	Elko
Razorback sucker	E, CH	N/A[3]	N/A[3]	Slight	A,B,C	8	Clark
INVERTEBRATES							
Ash Meadows	T, CH	N/A[3]	N/A[3]	Very High larval stages	B,C	4	Nye
Carson wandering skipper[1]	E	Very High	Very High	Very High larval stages	B,C	2	Carson City, Washoe
PLANTS							
Ash Meadows milkvetch	T, CH	N/A[3]	N/A[3]	Moderate to Low	D,E	6	Nye
Spring-loving centaury	T, CH	N/A[3]	N/A[3]	Moderate to Low	D,E	6	Nye
Ash Meadows sunray	T, CH	N/A[3]	N/A[3]	Moderate to Low	D,E	6	Nye
Steamboat buckwheat	E	N/A[3]	N/A[3]	Moderate to Low	D,E	6	Washoe
Ash Meadows gumplant	T, CH	N/A[3]	N/A[3]	Moderate to Low	D,E	6	Nye
Ash Meadows ivesia	T, CH	N/A[3]	N/A[3]	Moderate to Low	D,E	6	Nye
Ash Meadows blazing star	T, CH	N/A[3]	N/A[3]	Moderate to Low	D,E	6	Nye
Amargosa niterwort	E, CH	N/A[3]	N/A[3]	Moderate to Low	D,E	6	Nye
Ute lady's tresses[1]	T	Very High	Very High	Moderate	D,E	9	Lincoln

Table 2. General Direct and Indirect Effects of Proposed Insecticides and Proposed Avoidance/mitigation Measures for Non-target Listed Animal and Plant Species

Non-Target Listed Species and Species Groups	Status	Toxicity Levels Direct Effects			Indirect Effects	Avoidance or Mitigation Measures	Counties[2]
		Malathion	Carbaryl	Dimilin			

[1]Other listed/proposed species that occur in Nevada, but were not previously addressed in the 1987 BO for USDA-APHIS-PPQ's 1987 Rangeland Grasshopper Cooperative Management Program or its amendments.
[2]County(ies) where animal or plant species may be present.
[3]N/A = Not Applicable; applies to insecticides that were covered under the 1987 National programmatic BO or its amendments.
E = Endangered; T = Threatened; PT = Proposed Threatened; CH = Critical Habitat

Indirect Effects
A. General loss of prey.
B. Limited mobility of young to move out of treated area during nesting season.
C. Ingestion of chemicals from vegetation and insects could affect survival or reproductive fitness.
D. Loss of important pollinators.
E. Loss of seed dispersal agents.
F. Exposure to chemicals from offsite transport via snow-melt or irrigation drainage.

Avoidance/Mitigation Measures
1. No aerial application of Dimilin®, malathion, or carbaryl within 1 mile of desert tortoise occupied habitat. In accordance with 1987 National programmatic BO for USDA-APHIS-PPQ's 1987 Rangeland Grasshopper Cooperative Management Program and its 1990 amendment, the USFWS's Southern Nevada Field Office will be given a 5 day notice prior to conducting aerial application of insecticides in occupied desert tortoise habitat.
2. No aerial application of Dimilin®, within 1 mile or malathion or carbaryl within 0.25 mile of occupied habitat.
3. A buffer of 500 feet should be maintained where no application of carbaryl bran bait is applied.
4. No aerial application of Dimilin® within 1 mile of occupied habitat.
5. Maintain a 1 mile radius treatment-free zone around active bald eagle eyries found on rivers or lakes with no flyovers of this area by contract pilots. A 2.5 mile no-aerial spray zone will be maintained upstream and downstream from the nest site as a forage area. This will include a 0.25 mile buffer along each side of the rivers. Lakes will be protected by a 0.25 mile no aerial spray buffer if they are considered foraging areas of the bald eagle.
6. Aerial application of Dimilin® will not be used within 3 miles of species occupied habitat.
7. No aerial application of Dimilin® within 1 mile or malathion or carbaryl within 0.25 mile of the edge of nesting and foraging habitat.
8. No aerial application of Dimilin® within 1 mile of occupied habitat.
9. No aerial application of insecticides within 3 miles of the species occupied habitat. Within the 3 mile buffer only carbaryl bran bait will be used.
10. No aerial application of Dimilin® within 1 mile or malation or carbaryl within 0.25 mile of the edges of occupied habitat.

PROPOSED MONITORING PLAN

Our environmental monitoring team has developed a draft environmental monitoring plan for the proposed 2015 rangeland grasshopper/cricket suppression program. USDA-APHIS-PPQ Directive 5640.1 dated April 19, 2002, directs the agency to fulfill the mandates of NEPA, ESA, the Federal Insecticide, Fungicide and Rodenticide Act, and other statutes that require monitoring the effects of their actions on the environment. Environmental monitoring is an integral component of the avoidance/mitigation measures outlined in the *PROPOSED AVOIDANCE/MITIGATION MEASURES* section. The primary goal of this environmental monitoring plan is to provide data which can be used to evaluate the effectiveness of the avoidance/mitigation measures proposed to protect the listed species outlined in the *LISTED SPECIES* section.

The monitoring methods proposed for the 2015 rangeland grasshopper/cricket suppression program include monitoring aerial applications of the liquid and bait forms of the insecticides used and for drift at selected sensitive sites primarily by collecting dye card, water and vegetation samples.

FINDING OF NO SIGNIFICANT IMPACT
FOR
CARSON, DOUGLAS, LYON, MINERAL AND STOREY COUNTIES
2016 APHIS RANGELAND GRASSHOPPER/
MORMON CRICKET SUPPRESSION PROGRAM
ENVIRONMENTAL ASSESSMENT NO: NV-03-16

The U.S. Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) has prepared an environmental assessment (EA) that analyzes alternatives for suppressing grasshopper and Mormon cricket outbreaks on rangeland in Carson, Douglas, Lyon, Mineral and Storey counties, Nevada. The EA, incorporated by reference in this document, is available for review at USDA, APHIS, PPQ, 8775 Technology Way, Reno, NV 89521 and APHIS, 4700 River Road, Riverdale, MD 20737-1228.

The EA includes an analysis of the potential impacts of three alternatives: (1) No Action, (2) Insecticide Applications at Conventional Rates and Complete Area Coverage, and (3) Reduced Agent Area Treatments (RAATs). The alternative methods analyzed included chemical control by malathion, carbaryl and diflubenzuron sprays, carbaryl ground and aerial bait and no action. The environmental impacts of each method and potential mitigation measures are described in the attached Environmental Assessment (EA). The operational procedures and mitigation measures identified in the attached EA would ensure that no significant adverse environmental impacts other than those identified in the APHIS EIS 2002 would occur to the human environment. The alternative selected is the Reduced Agent Area Treatments (RAATs).

Reasons for the finding of no significant impact include:

1. Human Health: Potential exposures to the general public from traditional application rates are infrequent and of low magnitude. These low exposures to the public pose no risk of direct toxicity, carcinogenicity, neurotoxicity, genotoxicity, reproductive toxicity, or developmental toxicity. Program use of carbaryl, malathion and diflubenzuron has occurred routinely in many past programs, and there is a lack of any adverse health effects reported from these projects.

2. Non-targets: APHIS Directive 5640.1 commits APHIS to a policy of monitoring the effects of Federal programs on the environment. Environmental monitoring includes such activities as checking to make sure the insecticides are applied in accordance with the labels, and that sensitive sites and organisms are protected. The environmental monitoring recommended for grasshopper suppression programs involves monitoring sensitive sites such as bodies of water used for human consumption or recreation or which have wildlife value, habitats of endangered and threatened species, habitats of other sensitive wildlife species, edible crops, and any sites for which the public has expressed concern or where humans might congregate (e.g., schools, parks, hospitals).

3. Threatened, endangered or proposed species would not be adversely affected under any alternative. No unstable or limited range wildlife population would be adversely affected.

The Carson, Douglas, Lyon, Mineral and Storey counties' analysis has disclosed the following species of concern in the vicinity of the treatment areas: Bald eagle, Lahontan cutthroat trout, Carson wandering skipper, Tahoe yellow cress, Webber Ivesia, Yellow-Billed Cuckoo, Hiko White River springfish, Railroad Valley springfish and Cui-ui. A complete list is attached in Appendix C, Table 1.

The location of these species or their habitat, rate of spray, spray materials to be used and protection and mitigation measures will be discussed with the local land managers prior to commencement of any treatment to ensure that no adverse effects to these species or their habitat from the treatment project occur. We are also in consultation with U.S. Fish and Wildlife Service and once APHIS receives a concurrence letter from them, we will provide an addendum to this EA, should there be any changes.

4. Socioeconomic issues have been considered and are addressed in the body of the EA. It is determined that grasshopper treatment would not adversely affect socioeconomic issues.

5. Cultural resources and events have been considered and are addressed in the body of the EA. It is determined that grasshopper treatment would not adversely affect cultural resources and events.

6. Executive Orders – 12898 (low income and minorities), 13045 (children), and 13186 (migratory birds).

The time between the receipt of a request for treatment and the start of a suppression program is very short. In order to inform the public and give them time to submit comments on the proposed program, APHIS is making this EA available at this time. Once a treatment request is received and it has been determined that a suppression program will take place, APHIS will extensively examine the treatment site to determine if environmental issues exist that were not covered in the EA. If changes need to be made to the EA or FONSI, APHIS will prepare an addendum to the EA describing the changes and/or additional site-specific issues that were not covered in the EA. This addendum will be provided to all parties that commented on the EA.

Based on the analysis of potential environmental impacts contained in the EA, the implementation of the treatment guidelines (containing the operational procedures) and the protection measures for endangered and threatened species, I have determined that the proposed suppression program will not significantly impact the quality of the human environment.

2/11/16
Date

Dawn Holzer
Acting State Plant Health Director