



United States Department of the Interior

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BUREAU OF LAND MANAGEMENT

Surprise Field Office
PO Box 460
Cedarville, CA 96104
www.ca.blm.gov/surprise

In Reply Refer To:
4700(CA-370)

October 2, 2003

Dear Interested Party:

Enclosed, for your review, is a copy of the Buckhorn and Coppersmith Wild Horse Herd Management Areas Capture Plan Environmental Assessment (EA No. CA-370-03-27).

The purpose of these documents is to analyze the impacts of removing wild horses to the Appropriate Management Levels in the two HMA's.

Please submit any comments you may have to the Bureau of Land Management, Surprise Field Office, Post Office Box 460, Cedarville, CA 96104. Comments must be received by November 3, 2003.

Thank you for your interest in our wild horse and burro program.

Sincerely,

Owen Billingsley
Surprise Field Manager

Enclosures

**BUCKHORN and COPPERSMITH
WILD HORSE HERD MANAGEMENT AREAS
CAPTURE PLAN
ENVIRONMENTAL ASSESSMENT**

CA-370-03-27

September 2003

SURPRISE FIELD OFFICE

Purpose and Need for Action

The Buckhorn HMA is located in Washoe County, Nevada and Lassen County, California on the tables from Duck Flat in Nevada west to Cottonwood Mountain in California. The HMA consists of approximately 67,500 acres of public lands and 9,275 acres of private lands for a total of approximately 76,775 acres. Elevations range from 4700 feet on Duck Flat to 7240 feet on Cottonwood Mountain. The Twin Peaks Herd Management Area is located to the south of the Buckhorn HMA. The Tuledad Allotment fence separates the two areas.

The Coppersmith HMA is located in Lassen County, California and Washoe County, Nevada on the slopes and tables from Duck Lake west to the Warner Mountains. The HMA consists of approximately 61,850 acres of public lands and 11,720 acres of private lands for a total of approximately 73,570 acres. Elevations range from 4700 feet on Duck Lake to 8000 feet on the south end of the Warner Mountains. The Twin Peaks Herd Management Area is located to the south of the Buckhorn HMA. The Tuledad Allotment fence separates the two areas.

The purpose of this environmental assessment is to analyze the impacts of the potential methods that may be used to meet the established wild horse appropriate management level on the resources within the Buckhorn and Coppersmith Wild Horse Herd Management Areas (HMA). Appropriate Management Levels (AML) of a maximum of 85 wild horses in the Buckhorn HMA and 75 wild horses in the Coppersmith HMA were established through the Wild Horse Gather and Removal, Buckhorn and Coppersmith Herd Management Areas decision of November 1995, as assessed in environmental assessment #CA-370-94-08. The AML's for the Buckhorn and Coppersmith HMA's were established using monitoring and observations of conditions since 1987. No additional information has been found that would indicate a need to adjust the established appropriate management level for the Buckhorn or the Coppersmith HMAs.

The chief goal of managing wild horses within Appropriate Management Levels is to achieve a thriving natural ecological balance of resources, while maintaining a healthy and viable population of wild horses. The key limiting factors for wild horses within this HMA's are: 1) the increasingly heavy use of public and private riparian areas by wild horses, and 2) the egress of wild horses from the Coppersmith HMA into areas not identified in the land use plan as areas where wild horses are to be managed. Wild horses from the two HMAs were last gathered in 1997. A total of 48 horses (29 adults and 19 foals) were removed from the Buckhorn HMA and a total of 30 horses (19 adults and 11 foals) were removed from the Coppersmith HMA. The last aerial census of the Buckhorn and Coppersmith Wild Horse Herd Management Areas was conducted in May of 2001. A total of 162 horses were seen in the Buckhorn HMA, and a total of 92 horses were seen in the Coppersmith HMA. See Appendix A.

Additional objectives include: collecting information on herd characteristics, determining herd health, and conducting fertility control research. All activities would be conducted according to a specified set of standardized operating procedures (SOP's) (Appendix B).

Conformance with Existing Land Use Plans

The Tuledad/Home Camp Management Framework Plan (MFP)/Final Grazing Environmental Impact Statement (EIS) and Record of Decision directs the management of the project area. The MFP requires the BLM to protect and maintain no less than 100 horses in the Tuledad Planning Unit (including both the Buckhorn and Coppersmith HMA's), and to ensure that this population is viable and self-sustaining.

The Proposed Action is in conformance with these plans and consistent with federal, state, and local laws, regulations, and plans to the maximum extent possible.

Relationship to Statutes, Regulations, Policies, Plans, or Other Environmental Analysis

The Buckhorn and Coppersmith Herd Management Area Plans (HMAP) were signed in 1984. These documents, the November 1995 decision, and the Tuledad/Home Camp Management Framework Plan guide the management of the two HMAs. The Management Framework Plan provides general management direction, the November 1995 decision established the AML, and the HMAP provides specific management parameters on such variables as conformation, color of animal to be managed, and sex and age structure.

The Surprise Field Office is supporting research aimed at controlling the reproduction rate of wild horses through a collaborative effort to develop an immuno-contraceptive vaccine. The vaccine is a safe, humane and inexpensive tool, when used with management prescriptions, and may reduce the frequency of gathering excess wild horses. Studies have been conducted on a varied group of HMAs in Nevada and these studies will be utilized to develop management strategies implementing fertility control treatment. The analysis of the use of this vaccine on wild horses in the Buckhorn and Coppersmith HMAs is part of Alternative 1.

The Tuledad/Home MFP; the Wild Horse Gather and Removal, Buckhorn and Coppersmith Herd Management Areas decision of November 1995; environmental assessment #CA-370-94-08; and the Buckhorn and Coppersmith Herd Management Area Plans are available in the Surprise Field Office for public review.

Alternatives

The Proposed Action and the Alternatives represent a reasonable range of alternatives based on the issues and goals identified. Common to all alternatives, except the No Action Alternative, is the collection of genetic information from animals captured. This data would be used to determine if actions are necessary to increase genetic variability in the herd. Actions may include the periodic introduction of new animals into the population to expand the genetic base of the herd. It is anticipated that the Action Alternatives, if selected, would be implemented in the fall of 2003. Complete removal of wild horses was considered; however, this would not be in conformance with the Tuledad/Home Camp Land Use Plan or the Wild Horse and Burro Act of 1971 (PL 92-195, as amended).

The Wild Horse Population Model Version 3.2, developed by Dr. Steven Jenkins, Associate Professor, University of Nevada, Reno was used to predict populations under each alternative considered in this document.

Alternative 1 (Proposed Action)

The Proposed Action is based on the BLM's 2001 Wild Horse Strategy and includes gathering all HMA's to reach AML's over a ten- year period. The plan outlines a four- year gather cycle to manage wild horses Bureau wide. The Strategy is to implement population management for each HMA where wild horses will be managed in a range from 40% below AML, to AML. The AML is the maximum number of wild horses for the HMA. For the Buckhorn and Coppersmith Herds, it is planned to implement a three to four year gather cycle, with each removal reducing the population of animals down to 40% below AML.

Part of the Proposed Action would be to capture approximately 90% of the wild horses from the two HMA's. All of the approximately 424 animals gathered would be examined to determine sex, age, and color, acquire blood samples for genetic analysis, and assess herd health (pregnancy, parasite loading, physical condition, etc.). Of the 424 animals that are captured, approximately 362 would be permanently removed from the HMA's, and approximately 62 animals would be selected to be returned to the HMA's to meet the minimum recommended numbers. The age, sex, temperament, and physical condition of the returned animals would be recorded to track future population trends. Determination of which horses would be returned to the range would be based on an analysis of existing population characteristics and post gather data for age, sex ratio, and colors. A balanced representation of age classes would be returned to the range. The excess wild horses would be prepared for adoption.

The following Table 1 shows the current population estimate obtained from 1989, 1995, and 1997 gather data. This data was used to determine the estimated number of wild horses to be removed from the HMA's.

Table I – Buckhorn and Coppersmith HMA's

HMA	Estimated 2003 Population	Estimated Number to Remove	Appropriate Management Level	Estimated Number to Remain
Buckhorn	219	160	85	59
Coppersmith	252	202	75	50

Multiple capture sites (traps) may be used to capture wild horses from this HMA. Whenever possible, capture sites would be located in previously disturbed areas. All capture and handling activities would be conducted in accordance with the Standard Operating Procedures (SOP's) described in Appendix B. Selection of capture techniques would be based on several factors such as the season of removal, condition of animals, herd health, and environmental considerations.

In addition, the BLM would conduct immuno-contraceptive research. Of the 62 animals that would be selected for return to the HMA, approximately 9 (15%) would be foals, 26 would be studs, and 27 would be mares. The Proposed Action would include the treatment of all of the released mares that are 2 years and older with a revised immuno-contraceptive vaccine, Porcine Zona Pellucida (PZP). It is anticipated that this vaccine would inhibit reproduction of captured, treated, and released mares for approximately two breeding seasons. All treated mares would be freeze marked on the left shoulder to enable researchers to positively identify animals in the research project during the data collection phase. Monitoring would include, as a minimum helicopter flights to be conducted in Years 2 through 4 to locate treated mares and determine efficacy. The flight to be scheduled in year 4 has an objective of determining the percentage of mares that have returned to fertility. In addition, field monitoring will be routinely conducted as part of other regular monitoring activities.

The Surprise Field Office will assure that treated mares (as identified by the shoulder freeze marking) do not enter the adoption market for a minimum of three years following treatment. A field data sheet will be forwarded to the field from the National Program Office (NPO) prior to treatment. This form will be used to record all pertinent data relating to identification of each mare (including a photograph when possible), date of treatment, type of treatment (1yr, 2yr- and Adjuvant used) Herd Management Area (HMA), etc. The form and any photos will be maintained at the field office and a copy of the completed form will be sent to Ron Hall at NPO.

A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, the disposition of any unused PZP, and the number of treated mares by HMA, FO and State along with the freeze-mark applied, by HMA. In the vast majority of cases, the released mares will never be gathered sooner than the mandatory three-year holding period. In those rare instances when, due to unforeseen circumstances, treated mare(s) are removed from an HMA they will be maintained either in a BLM facility or a contracted Long Term Holding Facility until the expiration of the three-year holding period. In the event that it is necessary to remove treated mares, their removal and disposition will be coordinated through NPO. After expiration of the three-year holding period, treated animals may be placed in the adoption system.

As there is a limited amount of mixing between the Buckhorn and Coppersmith HMA's and the Twin Peaks HMA to the south, it is not anticipated that there would be a need to augment the genetic pool by the introduction of animals from other herds. However, under the Proposed Action and the Action Alternatives, data from blood drawn for genetic analysis would be used to determine actions necessary to keep the populations viable and self-sustaining. Any animals introduced into the herd would meet the general characteristics (color, size, type, etc.) as the existing population.

Alternative 2 (Proposed Action without the use of Immuno-contraceptives)

This alternative would be the same as the Proposed Action; however, BLM would not conduct immuno-contraceptive research. None of the captured and released mares would be treated to inhibit reproduction.

Alternative 3 (Selective Removal)

Wild horse management under this alternative would be to remove animals utilizing a Selective Removal Strategy based on previously established age selective removal criteria (i.e. 0-5 year olds), using the various capture techniques and processing protocols identified in the Proposed Action. Selective removal objectives target removal efforts for excess animals, based on specific segments of a given wild horse population. Selective removal under this alternative however, would not only be age based, but could also be based on other critical population variables as well (sex ratios/historic characteristics/ genetic viability/etc.). Criteria can be structured to reduce the effects of specific population issues. Issues which may be addressed with selective removal strategies include: correction of unusual population variables (skewed sex ratio, unbalanced age structure), maintenance of herd structure and composition, and maintenance of long term herd viability.

Selective removal under this alternative would be primarily aged based, removing only the younger, adoptable animals, and negating the need to place un-adoptable animals in long term holding.

Table II shows an example of selective removal using 1989, 1995, and 1997 gather data to determine current population levels and estimated removal for 0-5 age classes. For the purpose of this example, achieving AML is the major objective.

Table II – Buckhorn and Coppersmith HMA's

HMA	Current Population Estimate	AML	No. Animals 5 years & younger to remove *	Estimated Population after gather
Buckhorn	219	85	145	74
Coppersmith	252	75	171	81

*This estimate of animals that would be 0-5 years of age is derived from the age structure that remained following the gathers of this herd in 1989, 1995, and 1997. See Appendix A.

Alternative 4 (No Action)

This alternative consists of no direct management of wild horse numbers. Wild horses would be allowed to regulate their numbers naturally through predation, disease, and forage, water, and space availability.

This alternative is not in compliance with the Tuledad/Home Camp Land Use Plan and the requirements of the Wild Free-Roaming Horse and Burro Act of 1971 which mandates the Bureau to protect the range from the deterioration associated with overpopulation, and to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area. However, for comparative purposes, the No Action Alternative will be included in this analysis.

Environmental Consequences (Proposed Action & Alternatives)

Critical Elements	Affected	Critical Elements	Affected
Air Quality	Yes	Soil	Yes
Areas of Critical Environmental Concern (ACEC)	No	Waste, Hazardous or Solid	No
Cultural Resources	Yes	Water Quality, Surface and Ground	Yes
Environmental Justice	No	Wetlands/Riparian Zones	Yes
Farmlands, Prime or Unique	No	Wild and Scenic Rivers	Yes
Flood plains	No	Wilderness/WSA	Yes
Invasive, Non-native Species	Yes	Wildlife	Yes
Native American Concerns	No	Wild Horses and Burros	Yes
Recreation	Yes	Vegetation	Yes
Social and Economic	Yes	Threatened and Endangered Species	Yes

A. Watershed and Water Quality, surface and ground

Affected Environment

The majority of the Coppersmith and Buckhorn HMA's drain north and east into Duck Flat. One small portion of the Coppersmith HMA (Boot Lake, in the extreme southwest corner of the HMA) drains south into Dodge. Two small portions of the Buckhorn HMA (Rowland Spring in the extreme south and the Buffalo Hills on the extreme southeast corner of the HMA) drain into the Smoke Creek Desert.

Water sources for wild horses are well distributed in the Coppersmith and Buckhorn HMA's on most years. Ephemeral lakes and reservoirs are scattered across the areas, there are a multitude of seeps and springs, and there are several perennial creeks. Water supply is not a limiting factor for wild horses in the two HMA's. However, on the driest years, the lakes, reservoirs, and some of the seeps and springs go dry and the number watering sites become limited.

Water quality within the two HMA's is generally adequate for the identified benefit of livestock, wildlife, and wild horse water.

Environmental Consequences

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. They utilize primarily herbaceous vegetation and trample and compact soils, especially when soils are wet. As wild horse numbers increase, utilization of vegetation and trampling/compaction of soils increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is heavily used and soils are trampled and compacted, soil erosion increases and water quality and quantity are reduced.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on watershed health and water quality. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on watershed health and water quality. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on watershed health and water quality than implementation of the Proposed Action.

B. Soils and Vegetation, including Riparian/Wetlands and T&E Plant Species

Affected Environment

The Buckhorn and Coppersmith HMA's are included in the area described in the Surprise Valley-Home Camp Soil Survey, issued in April of 1974. Soils are primarily loams and clay loams from volcanic parent material on the mid and higher elevations, and droughty sandy loams on the old lake and river terraces on the lowest elevations.

The lowest elevations (below 5500') in the HMA's occur on the eastern and northern portions of the area around Surprise Valley, Duck Lake, Duck Flat, and in Tuledad Canyon. These areas are primarily deep loamy soils that support basin and Wyoming big sagebrush/Thurber's needlegrass dominated communities on the slopes, and alkali tolerant greasewood and saltgrass dominated communities on the lake flats. Wild horses winter in these areas on unusually cold and snowy winters. Large portions of these areas are private, and many are fenced, irrigated, and used for hay production.

The mid elevations (5500' to 6800') occupy the largest portion of the HMA's. These areas are loams and clay loams that support a complex mosaic of mountain big sagebrush/Idaho fescue/bluebunch wheatgrass/Thurber's needlegrass, low sagebrush/Sandberg's bluegrass, and western juniper dominated communities. Included on these elevations are small areas of heavy clay soils with rabbitbrush communities, ephemeral lakebeds with silver sagebrush and herbaceous dominated communities, rims with mountain mahogany, and a few small stands of

quaking aspen. Wild horses spend the majority of the year at these elevations, from early spring to late fall, and they often winter on these sites during warm and open winters.

The highest elevations of the HMA (6800'-8000') are limited to the upper reaches of Cottonwood Mountain and the steep slopes on the east side of the Warner Mountains. The soils on these elevations support productive mountain big sagebrush and low sagebrush communities with strong mountain brush components, including bitterbrush, serviceberry, chokecherry, bittercherry, oceanspray, snowbrush, and mountain mahogany. Some timber (white fir and ponderosa pine) and larger aspen stands are also found at these elevations.

The majority of the drainages and springs in the HMA's support herbaceous plant communities, including grasses, forbs, sedges, and rushes. Many of these systems also contain some woody riparian vegetation, including willow, rose, aspen, and chokecherry.

Wild horses from the Coppersmith HMA are also known to winter in areas outside of and to the north of the HMA on the rabbitbrush and low sagebrush tables around Snake Lake.

There are no known populations of federally listed Endangered, Threatened, Proposed, or Candidate plant species in the HMA's. However, two federally listed sensitive species do occur here, including Baker's globemallow (*Iliamna bakeri*) and Schoolcraft's cryptantha (*Cryptantha schoolcraftii*). Baker's globemallow has been found following wildfire in mountain mahogany communities in the Coppersmith Hills and around Boot Lake in the Coppersmith HMA. This species thrives for several years following wildfire before it is out-competed by other vegetation. It is suspected to be present, but dormant, in many other portions of the two HMA's that have not burned. Wild horses, as well as livestock and many species of wildlife, are known to eat this species. Schoolcraft's cryptantha occurs in both of the HMA's on very dry, nearly barren soils in Tuledad Canyon and south of Duck Lake. Wild horses do not appear to be impacting this species particularly.

Environmental Consequences

Direct, short-term impacts to vegetation and soils with implementation of the Action Alternatives (#1, #2, and #3) would include disturbance of native vegetation and soils immediately in and around temporary trap sites, holding, and processing facilities. These impacts would be a result of vehicle traffic, and the hoof action of penned horses, and can be locally severe in the immediate vicinity of the corrals or holding facilities. Generally, these activity sites would be small (less than one half acre) in size, outside of riparian and wetland zones, and away from populations of sensitive plant species. Since most trap sites are re-used during recurring wild horse gather operations, any impacts would remain site specific and isolated in nature. In addition, most trap sites are selected to enable easy access by transportation vehicles and logistical support equipment and would therefore generally be adjacent to or on roads, pullouts, water haul sites, or other flat spots that were previously disturbed. There would be no impacts of trapping or transportation activities on soils or vegetation under the No Action (Alternative #4).

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural

predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. They utilize primarily herbaceous vegetation and trample and compact soils, especially when soils are wet. As wild horse numbers increase, utilization of vegetation and trampling/compaction of soils increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity are reduced and overall ecological site conditions are reduced.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on soils and vegetation, including riparian and wetland sites and sensitive plant species populations. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on soils and vegetation, including riparian and wetland sites and sensitive plant species populations. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on soils and vegetation, including riparian and wetland sites and sensitive plant species populations, than implementation of the Proposed Action.

C. Noxious Weeds and Invasive Non-Native Species

Affected Environment

Noxious weed and invasive non-native species introduction and proliferation is a growing concern among local and regional interests. Noxious weed surveys, including invasive and non-native species, are ongoing in the HMA. Several small populations of noxious weeds have been found within the HMA's, including Scotch thistle, Russian knapweed, and yellow starthistle. With a few exceptions, these populations are associated with heavily disturbed areas along roads, around stock water areas, and around dams. All of these populations are being actively treated. The presence of several heavily traveled routes (Nevada highway 447, the Buckhorn Road, the Tuledad Canyon Road, and the Bare Creek Road), both within and adjacent to the two HMA's, increase the risk of populations of noxious weeds becoming established in the area. Vehicles and heavy equipment traveling on these routes, and crossing the associated drainages along these routes, is increasing the likelihood that Russian knapweed and several other species of noxious weeds, including Dyer's woad, yellow starthistle, perennial pepperweed, Mediterranean sage, bull thistle, and Canada thistle, will become established in the HMA's in the near future.

In addition to noxious weeds, there are growing populations of invasive non-native species, including hoary cress along jeep trails, ephemeral drainages, and in campsites; medusahead on heavy, shrink/swell clay soils; and cheatgrass in burned areas and in communities with weakened perennial understories. Most of these populations are not being actively treated.

Environmental Consequences

Direct, short-term impacts associated with the Action Alternatives include the potential to import or transport non-native species (noxious weeds) and/or spread existing noxious weed seeds and plant parts to new areas in the two HMA's. These impacts would potentially occur if contractor vehicles are carrying noxious weed seeds and plant parts when they arrive on site, or if they drive through existing infestations and spread seed into previously weed free areas, or if they feed contract horses contaminated hay before arriving on site and the seeds pass through the horses' digestive system. Feeding contaminated hay to wild horses, which are released back into the HMA's before the seeds pass through their digestive systems, could also spread noxious weeds. There are no direct impacts associated with the No Action Alternative.

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. They utilize primarily herbaceous vegetation and trample and compact soils, especially when soils are wet. As wild horse numbers increase, utilization of vegetation and trampling/compaction of soils increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity are reduced and overall ecological site conditions are reduced. Disturbed areas and areas in poor ecological condition are much more susceptible to having noxious weeds and invasive non-native species populations establish and expand in size.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would be the least likely to result in increased populations of noxious weeds and invasive non-native species. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on soils and vegetation, and would be the most likely to result in increased populations of noxious weeds and invasive non-native species. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on soils and vegetation, and a slightly higher risk of increased populations of noxious weeds and invasive non-native species, than implementation of the Proposed Action.

D. Wildlife

Affected Environment

The wide range of elevation and habitat types in the HMA's results in a wide variety of wildlife habitat types. The mosaics of low sagebrush and big sagebrush communities provide spring, summer, and fall habitat for pronghorn antelope and greater sage-grouse. The big sagebrush, mountain brush, and aspen communities on Cottonwood Mountain, the Coppersmith Hills, and

the Warner Mountains provide spring, summer, and fall habitat for mule deer and for neotropical bird species. The canyons support several species of raptors, as well as chukar and quail. The riparian systems are important for all species of wildlife, with the perennial, low elevation systems being particularly important due to their scarcity.

The Newland Reservoir/Bare Creek system in the north end of the Coppersmith HMA supports a cold-water trout fishery. Newland Reservoir, Boot Lake, Pilgrim Reservoir, and, when they have water, the numerous ephemeral lakebeds provide significant waterfowl habitat. In addition, several of the perennial to intermittent streams, including Tuledad Creek, Express Canyon, Post Canyon, and Worland Canyon, support populations of warm-water fish (dace).

There are no known federally listed Endangered, Threatened, Proposed, or Candidate wildlife species using the areas in the HMA's. However, bald eagles have been seen near Newland Reservoir in the Coppersmith HMA. In addition, greater sage-grouse, a species which has been petitioned for federal listing throughout its range, use the low sagebrush, riparian, and mountain big sagebrush communities for year-round habitat.

Environmental Consequences

Direct, short-term impacts to wildlife with implementation of the Action Alternatives (#1, #2, and #3) would consist primarily of disturbance and displacement to wildlife by the low-flying helicopter. Typically, the natural survival instinct response of wild animals to this type of disturbance results in fleeing from the perceived danger. Some mammals, reptiles, and birds may be temporarily displaced by the construction and use of temporary gather sites and holding facilities. These impacts would be temporary, with short duration, and minimal. A slight possibility exists that non-mobile or site-specific animals would be trampled. No direct impacts are associated with the No Action Alternative.

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. Wild horses compete directly with wildlife for available cover, space, forage, and water. As wild horse numbers increase, utilization of cover, space, forage, and water increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity, and the value of plant communities for wildlife habitat are reduced. Excessive wild horse numbers also have impacts on greater sage-grouse by consuming herbaceous cover needed in nesting sites, and by reducing the diversity and quantity of forbs available on uplands in the early spring and on riparian areas season-long.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on wildlife habitat, including sensitive animal species populations. Implementation of Alternative #4, the

No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on wildlife habitat, including sensitive animal species populations. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on wildlife habitat, including sensitive animal species populations, than implementation of the Proposed Action.

E. Wild Horses

Affected Environment

The Tuledad/Homecamp Management Framework Plan established the Buckhorn and Coppersmith HMA's and specified a planned management level of at least 50 wild horses for each herd. Current populations are estimated to be approximately 471 wild horses, based on a helicopter census conducted in May 2001, adjusted for the 2002 and 2003 foaling seasons. Gathers and census information indicates that the Buckhorn and Coppersmith wild horse herds increase at a fairly consistent rate of about 15% per year (See Appendix A)

The Buckhorn and Coppersmith HMA's have undergone several removals since passage of the Act. These removals have incorporated all of the removal strategies identified in the proposed action, with the exception of fertility control. The last full gather of the two HMA's was conducted in 1995.

Environmental Consequences

Long-term, the impacts of maintaining an AML designed to achieve a thriving, natural ecological balance would be a benefit to the wild horses in both the Buckhorn and the Coppersmith HMA. Under the population range derived from the AML, wild horses would be assured adequate forage and water during even the hottest and driest periods of the year.

Direct impacts to wild horses under the Action Alternatives may occur to either individual animals or the population as a whole. These impacts include handling stress associated with the herding, capture, processing, and transportation of animals from temporary trap sites to temporary holding facilities (if used), and from the trap sites or temporary holding facilities to an adoption preparation facility. Following administration of the immuno-contraceptive fertility control vaccines, as called for in the Proposed Action, minor swelling may occur at the injection site and/or an injection site injury may occur, however this is rare. The intensity of these impacts varies by individual, and is indicated by behaviors ranging from nervous agitation to physical distress. Mortality of wild horses captured during a gather does occur, however it is infrequent and typically is no more than one half to one percent of the animals captured.

Impacts that can occur after the initial stress may include spontaneous abortion in mares, and increased social displacement and conflict in studs. Spontaneous abortion following capture is very rare. Traumatic injuries that may occur typically involve biting and/or kicking that may result in bruises and minor swelling which normally does not break the skin. These impacts are

known to occur intermittently during wild horse gather operations. The frequency of occurrence of these impacts among a population varies with the individual.

Population-wide impacts can occur during or immediately following implementation of the Action Alternatives. They include the displacement of bands during capture and the associated re-dispersal, modification of herd demographics (age and sex ratios), temporary separation of members of individual bands of horses, re-establishment of bands following releases, and the removal of animals from the population. With the exception of changes to herd demographics, direct population-wide impacts over the last 20 years have proven to be temporary in nature with most, if not all, impacts disappearing within hours to several days of release. No observable effects associated with these impacts would be expected within one month of release except a heightened shyness toward human contact. Observations of animals following release have shown horses relocate themselves back to their home ranges within 12 to 24 hours of release.

The effect of removing wild horses from the population would not be expected to have a significant impact on herd dynamics or population variables, as long as the selection criteria for removal ensured a typical population structure was maintained. Obvious potential impacts on horse herds and populations from exercising poor selection criteria not based on herd dynamics include modification of age or sex ratios to favor a particular class of animal.

Selective removal as called for in Alternative 3, would remove most, if not all, of the younger animals from the population, leading to an atypical age structure for the herd. As future removals occur using selective removals, the age of the population would continue to be skewed toward the older age classes. This could be somewhat mitigated by the selection and release of younger animals during the initial and each subsequent gather.

Under the Action Alternatives, blood would be drawn for genetic analysis. This data would be used to determine actions necessary to keep the populations viable. The Proposed Action, including the use of immuno-contraception would limit the numbers of mares that would conceive and deliver foals. This would reduce the genetic variability entering the population for the two years after treatment, and after each subsequent treatment. Animals from other HMAs in Nor-Cal East, or adjacent states could be used to add to the breeding population if necessary to ensure genetic viability. Animals selected for population augmentation would be selected to adhere to the type and colors characteristic of the herd.

The Proposed Action would mitigate the potential adverse impacts on wild horse populations by establishing a procedure for determining what selective removal criteria is warranted for the herd. The flexible procedures (Appendix B SOP's) would allow for correction of any existing discrepancies in herd demographics that could predispose a population to increased chances for catastrophic impacts. The Proposed Action would also establish a standard for selection that would minimize the possibility for developing negative age or sex based selection effects to the population in the future.

Population-wide indirect impacts would not appear immediately as a tangible effect and are more difficult to quantify. Population wide indirect impacts would be associated primarily with the

use of fertility control drugs and involve reductions in short term fecundity of initially a large percentage of mares in a population, increasing herd health as AML's are achieved, and potential genetic issues regarding the control of contributions of mares to the gene pool, especially in small populations

Implementation of the Proposed Action or Alternative 2 would allow immediate achievement of AML. Alternative 3, Selective Removal, would not achieve AML during the initial gather, or within the next ten years.

If forage and available water was unlimited, it is projected that the No Action alternative would allow the populations to increase dramatically during the next 10 years (projected to over 1700 head). However, water and forage would limit this growth, and could possibly lead to large-scale die-offs, especially during drought or severe winters.

In an attempt to predict population dynamics, a computer simulation was run using the wild horse population model developed by Dr. Stephen Jenkins of the University of Nevada, Reno (Jenkins 1996). For each alternative, populations were predicted for the next 5, 10, and 15 years (see Appendix A).

F. Cultural Resources

Affected Environment

There are numerous cultural resource sites throughout the Buckhorn and Coppersmith HMA's. These range from prehistoric temporary and permanent loci to historic ranching, homesteading and trail sites. The abundance of water in seeps, springs, ephemeral lakes, and creeks resulted in the area of the two HMA's being heavily utilized by both Native American peoples and European settlers.

Environmental Consequences

Direct impacts to cultural resources are not anticipated to occur due to implementation of any of the Action Alternatives because gather sites and temporary holding facilities would be inventoried for cultural resources prior to construction. The Surprise Field Office archeologist would review all proposed and previously used gather sites and temporary holding facility locations to determine if these have had a cultural resources inventory and/or if a new inventory is required. If cultural resources were encountered at proposed gather sites or temporary holding facilities, these locations would not be utilized unless they could be modified to avoid impacts. No direct impacts are associated with Alternative #4.

Indirect impacts to cultural resources occur from increased erosion and from trampling damage in areas where there are concentrations of animals. Adverse impacts to cultural resource sites from overgrazing and trampling include modification and displacement of artifacts and features as well as erosion of organic middens containing valuable information. Areas in the vicinity of permanent and intermittent water sources (i.e., riparian areas) have the highest potential for cultural resource sites. Since wild horses concentrate in these areas, these areas are most likely to be impacted by trampling and erosion. Indirect impacts associated with each of the Alternatives

would be related to wild horse population size. Impacts would be the least with implementation of Alternative #1, the Proposed Action. Impacts are anticipated to increase with each successive Alternative, with the No Action Alternative likely to have the most negative impacts.

G. Social and Economic

Affected Environment

The Buckhorn and Coppersmith HMA's are located within the Tuledad livestock grazing allotment. This allotment is divided into two large pastures – the North Pasture, which includes all of the Coppersmith HMA, and the South Pasture, which includes all of the Buckhorn HMA. There are seven grazing permittees who are authorized to utilize up to 9,591 Animal Unit Months (AUMs) during a six-month season of use (April 1 to September 30). Cattle and sheep are rotated through nine use areas and distributed to stay within the carrying capacity of each of two pastures.

Environmental Consequences

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. Wild horses compete directly with livestock for available forage and water. As wild horse numbers increase, utilization of forage and water increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity are reduced, and the potential carrying capacity for livestock production is reduced.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on livestock operations, and on the social and economic values associated with livestock grazing.

Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on livestock operations, and on the social and economic values associated with livestock grazing. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on livestock operations, and on the social and economic values associated with livestock grazing, than implementation of the Proposed Action.

H. Wilderness and Wilderness Study Area (WSA)

Affected Environment

There are no wilderness areas in either of the HMA's. However, approximately 8,000 acres on

the south end of the Buckhorn HMA is in the Buffalo Hills Wilderness Study Area. In addition, the South Warner Wilderness Area is northeast of the Coppersmith HMA.

Environmental Consequences

Direct, short-term impacts to the wilderness values within the Buffalo Hills WSA with implementation of the Action Alternatives (#1, #2, and #3) would consist of the sight and noise of the helicopter used to herd wild horses to gather sites located outside of wilderness study area. During the time frame of the proposed gather, solitude and primitive recreation may be negatively impacted for recreationists who would be subjected to the sight and sound of the helicopter. This impact would be temporary and relatively short term in nature.

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. They utilize primarily herbaceous vegetation and trample and compact soils, especially when soils are wet. As wild horse numbers increase, utilization of vegetation and trampling/compaction of soils increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity are reduced and overall ecological site conditions are reduced. Ecological sites in degraded condition detract from the natural character of wilderness areas.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on wilderness values in the Buffalo Hills HMA. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on wilderness values in the Buffalo Hills HMA. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on wilderness values in the Buffalo Hills HMA, than implementation of the Proposed Action.

I. Wild and Scenic Rivers

Affected Environment

Portions of the Bare Creek system, of which approximately 4 miles are located in the north end of the Coppersmith HMA, have been nominated to be declared wild and scenic river reaches.

Environmental Consequences

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They congregate around water sources and trail along drainages. They utilize

primarily herbaceous vegetation and trample and compact soils, especially when soils are wet. As wild horse numbers increase, utilization of vegetation and trampling/compaction of soils increases. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity are reduced and overall ecological site conditions are reduced. Streambanks are weakened and become subject to accelerated erosion.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on wild and scenic river values along the Bare Creek system. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 900 horses in the Coppersmith HMA within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on wild and scenic river values along the Bare Creek. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on wild and scenic river values along the Bare Creek system, than implementation of the Proposed Action.

J. Recreation

Affected Environment

The two HMA's are popular destinations for hunters from both California and Nevada. The Buckhorn HMA is located in Nevada hunt zone #015 and in California hunt zone #X5b. The Coppersmith HMA is located in California hunt zones #X5b and #X3b and in Nevada hunt zone #015. Fishing occurs in the Coppersmith HMA in the Bare Creek system. Both HMA's are popular for upland game bird (chukar, quail, dove, and sage-grouse), mule deer, and pronghorn antelope hunting. There are several mule deer seasons in August, September, October, and December. Pronghorn antelope are hunted in August and September. Upland game birds have several hunting seasons between September and February.

The two HMA's are also popular for off-highway driving, camping, and wildlife/wild horse viewing. The three main roads that cross the HMA's (Buckhorn, Tuledad Canyon, and Bare Creek) are well maintained and accessible to two-wheel drive vehicles and camp trailers. These roads reach the some of the higher elevation areas and, as a result, they afford recreational users the opportunity to view mule deer, pronghorn antelope, and wild horses in their summer use areas.

Environmental Consequences

Direct, short-term impacts to recreation with implementation of the Action Alternatives (#1, #2, and #3) would consist primarily of disturbance of hunting activities by the low-flying helicopter. These impacts would be temporary, with short duration, and minimal. No direct impacts are associated with the No Action Alternative.

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. Wild horses compete directly

with wildlife for available cover, space, forage, and water. As wild horse numbers increase, utilization of cover, space, forage, and water increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity, and the value of plant communities for wildlife habitat are reduced. As the amount and quality of habitat is reduced, wildlife populations are also reduced, and opportunities for hunting and wildlife viewing are reduced. Conversely, as wild horse numbers increase, the likelihood of recreational users seeing wild horses from the main roads and trails increases.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on recreation involving hunting and wildlife viewing. However, wild horse viewing opportunities would be decreased. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on recreation involving hunting and wildlife viewing and the greatest positive impact on recreation involving wildhorse viewing. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on hunting and wildlife viewing, than implementation of the Proposed Action.

K. Air Quality

Affected Environment

Air quality in the two HMA's is normally very good. Travel on the roads, especially along the relatively high-speed Buckhorn, Tuledad Canyon, and Bare Creek gravel roads, causes dust seasonally (May through November). In addition, smoke from wild fires is occasionally present, generally in August and September.

Environmental Consequences

Direct impacts associated with the Action Alternatives, would consist of an increase in dust as wild horses are herded to temporary gather site(s) and transported by stock trailer(s) to a temporary holding facility. Dust caused by a concentration of animals at the temporary gather site(s) and at the temporary holding facility would be controlled by watering the areas as needed, to keep dust to a minimum. In addition, there would be an increase in vehicle traffic as excess wild horses are transported from the temporary holding site to a BLM adoption preparation/holding facility. These impacts would be temporary, with a short duration, and minimal. No direct or indirect impacts would occur with Alternative #4.

Cumulative Impacts (Proposed Action & Alternatives)

Cumulative impacts are impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless

of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Implementation of the Action Alternatives would reduce the wild horse population to AML in the Buckhorn and Coppersmith HMA's which would help promote a thriving natural ecological balance. With implementation of the Proposed Action and Alternative 2, this effect would be immediate. With implementation of Alternative 3, this would occur within 10 to 15 years. The achievement and maintenance of AML would result in an increase in vegetation density, vigor, reproduction, productivity, diversity, and forage availability. Subsequent removals would maintain animal populations in a thriving natural ecological balance and would contribute to maintaining ecological sites in good condition.

Adverse impacts to vegetation with implementation of the Action Alternatives would include disturbance of small quantities of native vegetation and soils immediately in and around temporary trap sites, holding, and processing facilities. Impacts created by vehicle traffic, and hoof action of penned horses, can be locally severe in the immediate vicinity of these facilities, and the impacts would re-occur each time horses were gathered. Since most trap sites and holding facilities are re-used during recurring wild horse gather operations, any impacts would remain site specific and isolated in nature. In addition, most trap sites or holding facilities are selected to enable easy access by transportation vehicles and logistical support equipment and would therefore generally be adjacent to or on roads, pullouts, water haul sites, or other flat spots that were previously disturbed. These common practices would minimize the cumulative effects of these impacts.

The removal of animals to and the subsequent maintenance of AML would allow reduced utilization of riparian and upland habitats on a year-long basis. This management coupled with a livestock grazing program which is based on the physiological needs of the vegetation would result in improved rangeland health.

Under the No Action Alternative, the cumulative impacts of large numbers of wild horses would increase each year that horses are not gathered. These impacts would affect all of the resources that depend on stable soils and intact vegetative communities, including wildlife, wildlife viewing, and hunting, wilderness and wild and scenic rivers, cultural resources, water quality, and the social and economic values associated with livestock grazing.

The Surprise Field Office would continue to identify any adverse impacts as they occur, and mitigate them as needed on a project specific basis to maintain habitat and herd quality. The Proposed Action would contribute to the cumulative impacts of future actions by maintaining the herd at AML, and establishing a process whereby biological and/or genetic issues associated with herd or habitat fragmentation would become apparent sooner and mitigating measures implemented more quickly.

Mitigation Measures

The Proposed Action and Alternatives incorporate proven standard operating procedures that

have been developed over time. These SOP's (Appendix B) represent the "best methods" for reducing impacts associated with gathering, handling, and transporting wild horses, and collecting herd data.

Additional mitigation measures have been incorporated into the alternatives.

Consultation and Coordination

List of Preparers

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Northwest Great Basin Association

9-03

**BUCKHORN and COPPERSMITH
WILD HORSE HERD MANAGEMENT AREAS
CAPTURE PLAN
ENVIRONMENTAL ASSESSMENT**

CA-370-03-27

September 2003

SURPRISE FIELD OFFICE

Purpose and Need for Action

The Buckhorn HMA is located in Washoe County, Nevada and Lassen County, California on the tables from Duck Flat in Nevada west to Cottonwood Mountain in California. The HMA consists of approximately 67,500 acres of public lands and 9,275 acres of private lands for a total of approximately 76,775 acres. Elevations range from 4700 feet on Duck Flat to 7240 feet on Cottonwood Mountain. The Twin Peaks Herd Management Area is located to the south of the Buckhorn HMA. The Tuledad Allotment fence separates the two areas.

The Coppersmith HMA is located in Lassen County, California and Washoe County, Nevada on the slopes and tables from Duck Lake west to the Warner Mountains. The HMA consists of approximately 61,850 acres of public lands and 11,720 acres of private lands for a total of approximately 73,570 acres. Elevations range from 4700 feet on Duck Lake to 8000 feet on the south end of the Warner Mountains. The Twin Peaks Herd Management Area is located to the south of the Buckhorn HMA. The Tuledad Allotment fence separates the two areas.

The purpose of this environmental assessment is to analyze the impacts of the potential methods that may be used to meet the established wild horse appropriate management level on the resources within the Buckhorn and Coppersmith Wild Horse Herd Management Areas (HMA). Appropriate Management Levels (AML) of a maximum of 85 wild horses in the Buckhorn HMA and 75 wild horses in the Coppersmith HMA were established through the Wild Horse Gather and Removal, Buckhorn and Coppersmith Herd Management Areas decision of November 1995, as assessed in environmental assessment #CA-370-94-08. The AML's for the Buckhorn and Coppersmith HMA's were established using monitoring and observations of conditions since 1987. No additional information has been found that would indicate a need to adjust the established appropriate management level for the Buckhorn or the Coppersmith HMAs.

The chief goal of managing wild horses within Appropriate Management Levels is to achieve a thriving natural ecological balance of resources, while maintaining a healthy and viable population of wild horses. The key limiting factors for wild horses within this HMA's are: 1) the increasingly heavy use of public and private riparian areas by wild horses, and 2) the egress of wild horses from the Coppersmith HMA into areas not identified in the land use plan as areas where wild horses are to be managed. Wild horses from the two HMAs were last gathered in 1997. A total of 48 horses (29 adults and 19 foals) were removed from the Buckhorn HMA and a total of 30 horses (19 adults and 11 foals) were removed from the Coppersmith HMA. The last aerial census of the Buckhorn and Coppersmith Wild Horse Herd Management Areas was conducted in May of 2001. A total of 162 horses were seen in the Buckhorn HMA, and a total of 92 horses were seen in the Coppersmith HMA. See Appendix A.

Additional objectives include: collecting information on herd characteristics, determining herd health, and conducting fertility control research. All activities would be conducted according to a specified set of standardized operating procedures (SOP's) (Appendix B).

Conformance with Existing Land Use Plans

The Tuledad/Home Camp Management Framework Plan (MFP)/Final Grazing Environmental Impact Statement (EIS) and Record of Decision directs the management of the project area. The MFP requires the BLM to protect and maintain no less than 100 horses in the Tuledad Planning Unit (including both the Buckhorn and Coppersmith HMA's), and to ensure that this population is viable and self-sustaining.

The Proposed Action is in conformance with these plans and consistent with federal, state, and local laws, regulations, and plans to the maximum extent possible.

Relationship to Statutes, Regulations, Policies, Plans, or Other Environmental Analysis

The Buckhorn and Coppersmith Herd Management Area Plans (HMAP) were signed in 1984. These documents, the November 1995 decision, and the Tuledad/Home Camp Management Framework Plan guide the management of the two HMAs. The Management Framework Plan provides general management direction, the November 1995 decision established the AML, and the HMAP provides specific management parameters on such variables as conformation, color of animal to be managed, and sex and age structure.

The HMAP for the two herds specify the selection criteria to be used when deciding which animals will be returned to the HMA's, in priority order, as follows:

Buckhorn HMA

1. **Quality:** Based on the commonly accepted conformation standards for a light saddle horse, without regard to a particular breed.
2. **Color:** All colors will be acceptable for the HMA. However, preference towards paints, sorrels, palominos, grays, and roans will be given. Generally working away from blacks and bays. Dark or black hooves will be preferred over light or white hooves.
3. **Size:** A fifteen hand or taller horse is preferred.

Coppersmith HMA

1. **Quality:** Based on the commonly accepted conformation standards for a light saddle horse, without regard to a particular breed.
2. **Size:** A fifteen hand or taller horse is preferred. However, quality will always take priority over size.
3. **Color:** The only color selection criteria will be for dark or black hooves, working away from white hooves.

The Surprise Field Office is supporting research aimed at controlling the reproduction rate of wild horses through a collaborative effort to develop an immuno-contraceptive vaccine. The vaccine is a safe, humane and inexpensive tool, when used with management prescriptions, and may reduce the frequency of gathering excess wild horses. Studies have been conducted on a varied group of HMAs in Nevada and these studies will be utilized to develop management strategies implementing fertility control treatment. The analysis of the use of this vaccine on

wild horses in the Buckhorn and Coppersmith HMAs is part of Alternative 1.

The Tuledad/Home MFP; the Wild Horse Gather and Removal, Buckhorn and Coppersmith Herd Management Areas decision of November 1995; environmental assessment #CA-370-94-08; and the Buckhorn and Coppersmith Herd Management Area Plans are available in the Surprise Field Office for public review.

Alternatives

The Proposed Action and the Alternatives represent a reasonable range of alternatives based on the issues and goals identified. Common to all alternatives, except the No Action Alternative, is the collection of genetic information from animals captured. This data would be used to determine if actions are necessary to increase genetic variability in the herd. Actions may include the periodic introduction of new animals into the population to expand the genetic base of the herd. It is anticipated that the Action Alternatives, if selected, would be implemented in the fall of 2003. Complete removal of wild horses was considered; however, this would not be in conformance with the Tuledad/Home Camp Land Use Plan or the Wild Horse and Burro Act of 1971 (PL 92-195, as amended).

The Wild Horse Population Model Version 3.2, developed by Dr. Steven Jenkins, Associate Professor, University of Nevada, Reno was used to predict populations under each alternative considered in this document.

Alternative 1 (Proposed Action)

The Proposed Action is based on the BLM's 2001 Wild Horse Strategy, which is to implement population management for each HMA where wild horses will be managed to stay within the Appropriate Management Levels (AML). For the Buckhorn and Coppersmith Herds, it is planned to implement a three to four year gather cycle, so that herds do not have to be gathered annually. These two herds reproduce at a rate of 15% to 20% each year. Therefore, the Proposed Action is to reduce each of the herds to 40% below AML. This would ensure that wild horse numbers do not exceed the AML for either of the two herds between gathers.

Part of the Proposed Action would be to capture approximately 90% of the wild horses from the two HMA's. All of the approximately 424 animals gathered would be examined to determine sex, age, and color, acquire blood samples for genetic analysis, and assess herd health (pregnancy, parasite loading, physical condition, etc.). Of the 424 animals that are captured, approximately 362 would be permanently removed from the HMA's, and approximately 62 animals would be selected to be returned to the HMA's to meet the minimum recommended numbers. The age, sex, temperament, and physical condition of the returned animals would be recorded to track future population trends. Determination of which horses would be returned to the range would be based on an analysis of existing population characteristics and post gather data for age and sex ratio, coupled with the quality, color, and size selection criteria from the HMAP's. A balanced representation of age classes would be returned to the range. The excess wild horses would be prepared for adoption.

The following Table 1 shows the current population estimate obtained from 1989, 1995, and 1997 gather data. This data was used to determine the estimated number of wild horses to be removed from the HMA's.

Table I – Buckhorn and Coppersmith HMA's

HMA	Estimated 2003 Population	Estimated Number to Remove	Appropriate Management Level *	Estimated Number to Remain
Buckhorn	219	160	85	59
Coppersmith	252	202	75	50

*Includes adults and foals.

Multiple capture sites (traps) may be used to capture wild horses from this HMA. Whenever possible, capture sites would be located in previously disturbed areas. All capture and handling activities would be conducted in accordance with the Standard Operating Procedures (SOP's) described in Appendix B. Selection of capture techniques would be based on several factors such as the season of removal, condition of animals, herd health, and environmental considerations.

In addition, the BLM would conduct immuno-contraceptive research. Of the 62 animals that would be selected for return to the HMA, approximately 9 (15%) would be foals, 26 would be studs, and 27 would be mares. The Proposed Action would include the treatment of all of the released mares that are 2 years and older with a revised immuno-contraceptive vaccine, Porcine Zona Pellucida (PZP). It is anticipated that this vaccine would inhibit reproduction of captured, treated, and released mares for approximately two breeding seasons. All treated mares would be freeze marked on the left hip with two letters assigned by NPO for tracking purposes to enable researchers to positively identify animals in the research project during the data collection phase. Monitoring would include, as a minimum helicopter flights to be conducted in Years 2 through 4 to locate treated mares and determine efficacy. The flight to be scheduled in year 4 has an objective of determining the percentage of mares that have returned to fertility. In addition, field monitoring will be routinely conducted as part of other regular monitoring activities.

The Surprise Field Office will assure that treated mares (as identified by the hip freeze marking) do not enter the adoption market for a minimum of three years following treatment. A field data sheet will be forwarded to the field from the National Program Office (NPO) prior to treatment. This form will be used to record all pertinent data relating to identification of each mare (including a photograph when possible), date of treatment, type of treatment (1yr, 2yr- and Adjuvant used) Herd Management Area (HMA), etc. The form and any photos will be maintained at the field office and a copy of the completed form will be sent to Ron Hall at NPO.

A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, the disposition of any unused PZP, and the number of treated mares by HMA, FO and State

along with the freeze-mark applied, by HMA. In the vast majority of cases, the released mares will never be gathered sooner than the mandatory three-year holding period. In those rare instances when, due to unforeseen circumstances, treated mare(s) are removed from an HMA they will be maintained either in a BLM facility or a contracted Long Term Holding Facility until the expiration of the three-year holding period. In the event that it is necessary to remove treated mares, their removal and disposition will be coordinated through NPO. After expiration of the three-year holding period, treated animals may be placed in the adoption system.

The Buckhorn HMAP provides for the occasional introduction of wild horses from other wild horse herds, when needed. As there is a limited amount of mixing between the Buckhorn and Coppersmith HMA's and the Twin Peaks HMA to the south, it is not anticipated that there would be a need to augment the genetic pool by the introduction of animals from other herds. However, under the Proposed Action and the Action Alternatives, data from blood drawn for genetic analysis would be used to determine actions necessary to keep the populations viable and self-sustaining. Any animals introduced into the herd would meet the general characteristics (color, size, type, etc.) as the existing population.

Alternative 2 (Proposed Action without the use of Immuno-contraceptives)

This alternative would be the same as the Proposed Action; however, BLM would not conduct immuno-contraceptive research. None of the captured and released mares would be treated to inhibit reproduction.

Alternative 3 (Selective Removal)

Wild horse management under this alternative would be to remove animals utilizing a Selective Removal Strategy based on previously established age selective removal criteria (i.e. 0-5 year olds), using the various capture techniques and processing protocols identified in the Proposed Action. Selective removal objectives target removal efforts for excess animals, based on specific segments of a given wild horse population. Selective removal under this alternative however, would not only be age based, but could also be based on other critical population variables as well (sex ratios/historic characteristics/ genetic viability/etc.). Criteria can be structured to reduce the effects of specific population issues. Issues which may be addressed with selective removal strategies include: correction of unusual population variables (skewed sex ratio, unbalanced age structure), maintenance of herd structure and composition, and maintenance of long term herd viability.

Selective removal under this alternative would be primarily aged based, removing only the younger, adoptable animals, and negating the need to place un-adoptable animals in long term holding.

Table II shows an example of selective removal using 1989, 1995, and 1997 gather data to determine current population levels and estimated removal for 0-5 age classes. For the purpose of this example, achieving AML is the major objective.

Table II – Buckhorn and Coppersmith HMA's

HMA	Current Population Estimate	AML	No. Animals 5 years & younger to remove *	Estimated Population after gather
Buckhorn	219	85	145	74
Coppersmith	252	75	171	81

*This estimate of animals that would be 0-5 years of age is derived from the age structure that remained following the gathers of this herd in 1989, 1995, and 1997. See Appendix A.

Alternative 4 (No Action)

This alternative consists of no direct management of wild horse numbers. Wild horses would be allowed to regulate their numbers naturally through predation, disease, and forage, water, and space availability.

This alternative is not in compliance with the Tulead/ Home Camp Land Use Plan and the requirements of the Wild Free-Roaming Horse and Burro Act of 1971 which mandates the Bureau to protect the range from the deterioration associated with overpopulation, and to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area. However, for comparative purposes, the No Action Alternative will be included in this analysis.

Environmental Consequences (Proposed Action & Alternatives)

Critical Elements	Affected	Critical Elements	Affected
Air Quality	Yes	Soil	Yes
Areas of Critical Environmental Concern (ACEC)	No	Waste, Hazardous or Solid	No
Cultural Resources	Yes	Water Quality, Surface and Ground	Yes
Environmental Justice	No	Wetlands/Riparian Zones	Yes
Farmlands, Prime or Unique	No	Wild and Scenic Rivers	Yes
Flood plains	No	Wilderness/WSA	Yes
Invasive, Non-native Species	Yes	Wildlife	Yes
Native American Concerns	No	Wild Horses and Burros	Yes
Recreation	Yes	Vegetation	Yes
Social and Economic	Yes	Threatened and Endangered Species	Yes

A. Watershed and Water Quality, surface and ground

Affected Environment

The majority of the Coppersmith and Buckhorn HMA's drain north and east into Duck Flat. One small portion of the Coppersmith HMA (Boot Lake, in the extreme southwest corner of the HMA) drains south into Dodge. Two small portions of the Buckhorn HMA (Rowland Spring in the extreme south and the Buffalo Hills on the extreme southeast corner of the HMA) drain into the Smoke Creek Desert.

Water sources for wild horses are well distributed in the Coppersmith and Buckhorn HMA's on most years. Ephemeral lakes and reservoirs are scattered across the areas, there are a multitude of seeps and springs, and there are several perennial creeks. Water supply is not a limiting factor for wild horses in the two HMA's. However, on the driest years, the lakes, reservoirs, and some of the seeps and springs go dry and the number watering sites become limited.

Water quality within the two HMA's is generally adequate for the identified benefit of livestock, wildlife, and wild horse water.

Environmental Consequences

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. They utilize primarily herbaceous vegetation and trample and compact soils, especially when soils are wet. As wild horse numbers increase, utilization of vegetation and trampling/compaction of soils increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is heavily used and soils are trampled and compacted, soil erosion increases and water quality and quantity are reduced.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on watershed health and water quality. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on watershed health and water quality. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on watershed health and water quality than implementation of the Proposed Action.

B. Soils and Vegetation, including Riparian/Wetlands and T&E Plant Species

Affected Environment

The Buckhorn and Coppersmith HMA's are included in the area described in the Surprise Valley-Home Camp Soil Survey, issued in April of 1974. Soils are primarily loams and clay loams from volcanic parent material on the mid and higher elevations, and droughty sandy loams on the old lake and river terraces on the lowest elevations.

The lowest elevations (below 5500') in the HMA's occur on the eastern and northern portions of the area around Surprise Valley, Duck Lake, Duck Flat, and in Tuledad Canyon. These areas are primarily deep loamy soils that support basin and Wyoming big sagebrush/Thurber's needlegrass dominated communities on the slopes, and alkali tolerant greasewood and saltgrass dominated communities on the lake flats. Wild horses winter in these areas on unusually cold and snowy winters. Large portions of these areas are private, and many are fenced, irrigated, and used for hay production.

The mid elevations (5500' to 6800') occupy the largest portion of the HMA's. These areas are loams and clay loams that support a complex mosaic of mountain big sagebrush/Idaho fescue/bluebunch wheatgrass/Thurber's needlegrass, low sagebrush/Sandberg's bluegrass, and western juniper dominated communities. Included on these elevations are small areas of heavy clay soils with rabbitbrush communities, ephemeral lakebeds with silver sagebrush and herbaceous dominated communities, rims with mountain mahogany, and a few small stands of

quaking aspen. Wild horses spend the majority of the year at these elevations, from early spring to late fall, and they often winter on these sites during warm and open winters.

The highest elevations of the HMA (6800'-8000') are limited to the upper reaches of Cottonwood Mountain and the steep slopes on the east side of the Warner Mountains. The soils on these elevations support productive mountain big sagebrush and low sagebrush communities with strong mountain brush components, including bitterbrush, serviceberry, chokecherry, bittercherry, oceanspray, snowbrush, and mountain mahogany. Some timber (white fir and ponderosa pine) and larger aspen stands are also found at these elevations.

The majority of the drainages and springs in the HMA's support herbaceous plant communities, including grasses, forbs, sedges, and rushes. Many of these systems also contain some woody riparian vegetation, including willow, rose, aspen, and chokecherry.

Wild horses from the Coppersmith HMA are also known to winter in areas outside of and to the north of the HMA on the rabbitbrush and low sagebrush tables around Snake Lake.

There are no known populations of federally listed Endangered, Threatened, Proposed, or Candidate plant species in the HMA's. However, two federally listed sensitive species do occur here, including Baker's globemallow (*Iliamna bakeri*) and Schoolcraft's cryptantha (*Cryptantha schoolcraftii*). Baker's globemallow has been found following wildfire in mountain mahogany communities in the Coppersmith Hills and around Boot Lake in the Coppersmith HMA. This species thrives for several years following wildfire before it is out-competed by other vegetation. It is suspected to be present, but dormant, in many other portions of the two HMA's that have not burned. Wild horses, as well as livestock and many species of wildlife, are known to eat this species. Schoolcraft's cryptantha occurs in both of the HMA's on very dry, nearly barren soils in Tuledad Canyon and south of Duck Lake. Wild horses do not appear to be impacting this species particularly.

Environmental Consequences

Direct, short-term impacts to vegetation and soils with implementation of the Action Alternatives (#1, #2, and #3) would include disturbance of native vegetation and soils immediately in and around temporary trap sites, holding, and processing facilities. These impacts would be a result of vehicle traffic, and the hoof action of penned horses, and can be locally severe in the immediate vicinity of the corrals or holding facilities. Generally, these activity sites would be small (less than one half acre) in size, outside of riparian and wetland zones, and away from populations of sensitive plant species. Since most trap sites are re-used during recurring wild horse gather operations, any impacts would remain site specific and isolated in nature. In addition, most trap sites are selected to enable easy access by transportation vehicles and logistical support equipment and would therefore generally be adjacent to or on roads, pullouts, water haul sites, or other flat spots that were previously disturbed. There would be no impacts of trapping or transportation activities on soils or vegetation under the No Action (Alternative #4).

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural

predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. They utilize primarily herbaceous vegetation and trample and compact soils, especially when soils are wet. As wild horse numbers increase, utilization of vegetation and trampling/compaction of soils increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity are reduced and overall ecological site conditions are reduced.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on soils and vegetation, including riparian and wetland sites and sensitive plant species populations. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on soils and vegetation, including riparian and wetland sites and sensitive plant species populations. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on soils and vegetation, including riparian and wetland sites and sensitive plant species populations, than implementation of the Proposed Action.

C. Noxious Weeds and Invasive Non-Native Species

Affected Environment

Noxious weed and invasive non-native species introduction and proliferation is a growing concern among local and regional interests. Noxious weed surveys, including invasive and non-native species, are ongoing in the HMA. Several small populations of noxious weeds have been found within the HMA's, including Scotch thistle, Russian knapweed, and yellow starthistle. With a few exceptions, these populations are associated with heavily disturbed areas along roads, around stock water areas, and around dams. All of these populations are being actively treated. The presence of several heavily traveled routes (Nevada highway 447, the Buckhorn Road, the Tuledad Canyon Road, and the Bare Creek Road), both within and adjacent to the two HMA's, increase the risk of populations of noxious weeds becoming established in the area. Vehicles and heavy equipment traveling on these routes, and crossing the associated drainages along these routes, is increasing the likelihood that Russian knapweed and several other species of noxious weeds, including Dyer's woad, yellow starthistle, perennial pepperweed, Mediterranean sage, bull thistle, and Canada thistle, will become established in the HMA's in the near future.

In addition to noxious weeds, there are growing populations of invasive non-native species, including hoary cress along jeep trails, ephemeral drainages, and in campsites; medusahead on heavy, shrink/swell clay soils; and cheatgrass in burned areas and in communities with weakened perennial understories. Most of these populations are not being actively treated.

Environmental Consequences

Direct, short-term impacts associated with the Action Alternatives include the potential to import or transport non-native species (noxious weeds) and/or spread existing noxious weed seeds and plant parts to new areas in the two HMA's. These impacts would potentially occur if contractor vehicles are carrying noxious weed seeds and plant parts when they arrive on site, or if they drive through existing infestations and spread seed into previously weed free areas, or if they feed contract horses contaminated hay before arriving on site and the seeds pass through the horses' digestive system. Feeding contaminated hay to wild horses, which are released back into the HMA's before the seeds pass through their digestive systems, could also spread noxious weeds. There are no direct impacts associated with the No Action Alternative.

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. They utilize primarily herbaceous vegetation and trample and compact soils, especially when soils are wet. As wild horse numbers increase, utilization of vegetation and trampling/compaction of soils increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity are reduced and overall ecological site conditions are reduced. Disturbed areas and areas in poor ecological condition are much more susceptible to having noxious weeds and invasive non-native species populations establish and expand in size.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would be the least likely to result in increased populations of noxious weeds and invasive non-native species. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on soils and vegetation, and would be the most likely to result in increased populations of noxious weeds and invasive non-native species. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on soils and vegetation, and a slightly higher risk of increased populations of noxious weeds and invasive non-native species, than implementation of the Proposed Action.

D. Wildlife

Affected Environment

The wide range of elevation and habitat types in the HMA's results in a wide variety of wildlife habitat types. The mosaics of low sagebrush and big sagebrush communities provide spring, summer, and fall habitat for pronghorn antelope and greater sage-grouse. The big sagebrush, mountain brush, and aspen communities on Cottonwood Mountain, the Coppersmith Hills, and

the Warner Mountains provide spring, summer, and fall habitat for mule deer and for neotropical bird species. The canyons support several species of raptors, as well as chukar and quail. The riparian systems are important for all species of wildlife, with the perennial, low elevation systems being particularly important due to their scarcity.

The Newland Reservoir/Bare Creek system in the north end of the Coppersmith HMA supports a cold-water trout fishery. Newland Reservoir, Boot Lake, Pilgrim Reservoir, and, when they have water, the numerous ephemeral lakebeds provide significant waterfowl habitat. In addition, several of the perennial to intermittent streams, including Tuledad Creek, Express Canyon, Post Canyon, and Worland Canyon, support populations of warm-water fish (dace).

There are no known federally listed Endangered, Threatened, Proposed, or Candidate wildlife species using the areas in the HMA's. However, bald eagles have been seen near Newland Reservoir in the Coppersmith HMA. In addition, greater sage-grouse, a species which has been petitioned for federal listing throughout its range, use the low sagebrush, riparian, and mountain big sagebrush communities for year-round habitat.

Environmental Consequences

Direct, short-term impacts to wildlife with implementation of the Action Alternatives (#1, #2, and #3) would consist primarily of disturbance and displacement to wildlife by the low-flying helicopter. Typically, the natural survival instinct response of wild animals to this type of disturbance results in fleeing from the perceived danger. Some mammals, reptiles, and birds may be temporarily displaced by the construction and use of temporary gather sites and holding facilities. These impacts would be temporary, with short duration, and minimal. A slight possibility exists that non-mobile or site-specific animals would be trampled. No direct impacts are associated with the No Action Alternative.

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. Wild horses compete directly with wildlife for available cover, space, forage, and water. As wild horse numbers increase, utilization of cover, space, forage, and water increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity, and the value of plant communities for wildlife habitat are reduced. Excessive wild horse numbers also have impacts on greater sage-grouse by consuming herbaceous cover needed in nesting sites, and by reducing the diversity and quantity of forbs available on uplands in the early spring and on riparian areas season-long.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on wildlife habitat, including sensitive animal species populations. Implementation of Alternative #4, the

No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on wildlife habitat, including sensitive animal species populations. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on wildlife habitat, including sensitive animal species populations, than implementation of the Proposed Action.

E. Wild Horses

Affected Environment

The Tuledad/Homecamp Management Framework Plan established the Buckhorn and Coppersmith HMA's and specified a planned management level of at least 50 wild horses for each herd. Current populations are estimated to be approximately 471 wild horses, based on a helicopter census conducted in May 2001, adjusted for the 2002 and 2003 foaling seasons. Gathers and census information indicates that the Buckhorn and Coppersmith wild horse herds increase at a fairly consistent rate of about 15% per year (See Appendix A)

The Buckhorn and Coppersmith HMA's have undergone several removals since passage of the Act. These removals have incorporated all of the removal strategies identified in the proposed action, with the exception of fertility control. The last full gather of the two HMA's was conducted in 1995.

Environmental Consequences

Long-term, the impacts of maintaining an AML designed to achieve a thriving, natural ecological balance would be a benefit to the wild horses in both the Buckhorn and the Coppersmith HMA. Under the population range derived from the AML, wild horses would be assured adequate forage and water during even the hottest and driest periods of the year.

Direct impacts to wild horses under the Action Alternatives may occur to individual animals. These impacts include:

- 1) Handling stress associated with the herding, capture, processing, and transportation of animals from temporary trap sites to temporary holding facilities (if used), and from the trap sites or temporary holding facilities to an adoption preparation facility. Under the three action alternatives, wild horses gathered in the two HMA's would be transported, by truck, approximately 70 miles to the Litchfield wild horse corrals. Animals selected for return to the two HMA's would be transported by truck back to the two HMA's. The advantages of transporting all of the animals to Litchfield include access to better veterinary care for immunizations, genetic work, and treatment of injuries; access to better sorting facilities (chutes, pens, etc.) that allow for safer and more humane handling of horses; and access to larger and safer pens, water, and forage facilities for horses to be kept in while gather and processing operations are conducted.

- 2) Exposure of wild horses to domestic horse diseases, such as strangles. Domestic horses used during gather operations would be present at the capture sites. The trucks, chutes, and panels used at the capture sites have been used to handle horses in the past and may harbor

disease agents. Domestic and wild horses from other areas are also present at the Litchfield holding facility and may transmit diseases to the Buckhorn and Coppersmith wild horses, even though horses from the two herds would not be kept in the same corrals as the other horses.

Following administration of the immuno-contraceptive fertility control vaccines, as called for in the Proposed Action, minor swelling may occur at the injection site and/or an injection site injury may occur, however this is rare. The intensity of these impacts varies by individual, and is indicated by behaviors ranging from nervous agitation to physical distress. Mortality of wild horses captured during a gather does occur, however it is infrequent and typically is no more than one half to one percent of the animals captured.

Impacts that can occur after the initial stress may include spontaneous abortion in mares, and increased social displacement and conflict in studs. Spontaneous abortion following capture is very rare. Traumatic injuries that may occur typically involve biting and/or kicking that may result in bruises and minor swelling which normally does not break the skin. These impacts are known to occur intermittently during wild horse gather operations. The frequency of occurrence of these impacts among a population varies with the individual.

Population-wide impacts can occur during or immediately following implementation of the Action Alternatives. They include the displacement of bands during capture and the associated re-dispersal, modification of herd demographics (age and sex ratios), temporary separation of members of individual bands of horses, re-establishment of bands following releases, and the removal of animals from the population. With the exception of changes to herd demographics, direct population-wide impacts over the last 20 years have proven to be temporary in nature with most, if not all, impacts disappearing within hours to several days of release. No observable effects associated with these impacts would be expected within one month of release except a heightened shyness toward human contact. Observations of animals following release have shown horses relocate themselves back to their home ranges within 12 to 24 hours of release.

The effect of removing wild horses from the population would not be expected to have a significant impact on herd dynamics or population variables, as long as the selection criteria for removal ensured a typical population structure was maintained. Obvious potential impacts on horse herds and populations from exercising poor selection criteria not based on herd dynamics include modification of age or sex ratios to favor a particular class of animal.

Selective removal as called for in Alternative 3, would remove most, if not all, of the younger animals from the population, leading to an atypical age structure for the herd. As future removals occur using selective removals, the age of the population would continue to be skewed toward the older age classes. This could be somewhat mitigated by the selection and release of younger animals during the initial and each subsequent gather.

Under the Action Alternatives, blood would be drawn for genetic analysis. This data would be used to determine actions necessary to keep the populations viable. The Proposed Action, including the use of immuno-contraception would limit the numbers of mares that would conceive and deliver foals. This would reduce the genetic variability entering the population for

the two years after treatment, and after each subsequent treatment. Animals from other HMAs in Nor-Cal East, or adjacent states could be used to add to the breeding population if necessary to ensure genetic viability. Animals selected for population augmentation would be selected to adhere to the type and colors characteristic of the herd.

The Proposed Action would mitigate the potential adverse impacts on wild horse populations by establishing a procedure for determining what selective removal criteria is warranted for the herd. The flexible procedures (Appendix B SOP's) would allow for correction of any existing discrepancies in herd demographics that could predispose a population to increased chances for catastrophic impacts. The Proposed Action would also establish a standard for selection that would minimize the possibility for developing negative age or sex based selection effects to the population in the future.

Population-wide indirect impacts would not appear immediately as a tangible effect and are more difficult to quantify. Population wide indirect impacts would be associated primarily with the use of fertility control drugs and involve reductions in short term fecundity of initially a large percentage of mares in a population, increasing herd health as AML's are achieved, and potential genetic issues regarding the control of contributions of mares to the gene pool, especially in small populations

Implementation of the Proposed Action or Alternative 2 would allow immediate achievement of AML. Alternative 3, Selective Removal, would not achieve AML during the initial gather, or within the next ten years.

If forage and available water was unlimited, it is projected that the No Action alternative would allow the populations to increase dramatically during the next 10 years (projected to over 1700 head). However, water and forage would limit this growth, and could possibly lead to large-scale die-offs, especially during drought or severe winters.

In an attempt to predict population dynamics, a computer simulation was run using the wild horse population model developed by Dr. Stephen Jenkins of the University of Nevada, Reno (Jenkins 1996). For each alternative, populations were predicted for the next 5, 10, and 15 years (see Appendix A).

F. Cultural Resources

Affected Environment

There are numerous cultural resource sites throughout the Buckhorn and Coppersmith HMA's. These range from prehistoric temporary and permanent loci to historic ranching, homesteading and trail sites. The abundance of water in seeps, springs, ephemeral lakes, and creeks resulted in the area of the two HMA's being heavily utilized by both Native American peoples and European settlers.

Environmental Consequences

Direct impacts to cultural resources are not anticipated to occur due to implementation of any of

the Action Alternatives because gather sites and temporary holding facilities would be inventoried for cultural resources prior to construction. The Surprise Field Office archeologist would review all proposed and previously used gather sites and temporary holding facility locations to determine if these have had a cultural resources inventory and/or if a new inventory is required. If cultural resources were encountered at proposed gather sites or temporary holding facilities, these locations would not be utilized unless they could be modified to avoid impacts. No direct impacts are associated with Alternative #4.

Indirect impacts to cultural resources occur from increased erosion and from trampling damage in areas where there are concentrations of animals. Adverse impacts to cultural resource sites from overgrazing and trampling include modification and displacement of artifacts and features as well as erosion of organic middens containing valuable information. Areas in the vicinity of permanent and intermittent water sources (i.e., riparian areas) have the highest potential for cultural resource sites. Since wild horses concentrate in these areas, these areas are most likely to be impacted by trampling and erosion. Indirect impacts associated with each of the Alternatives would be related to wild horse population size. Impacts would be the least with implementation of Alternative #1, the Proposed Action. Impacts are anticipated to increase with each successive Alternative, with the No Action Alternative likely to have the most negative impacts.

G. Social and Economic

Affected Environment

The Buckhorn and Coppersmith HMA's are located within the Tuledad livestock grazing allotment. This allotment is divided into two large pastures – the North Pasture, which includes all of the Coppersmith HMA, and the South Pasture, which includes all of the Buckhorn HMA. There are seven grazing permittees who are authorized to utilize up to 9,591 Animal Unit Months (AUMs) during a six-month season of use (April 1 to September 30). Cattle and sheep are rotated through nine use areas and distributed to stay within the carrying capacity of each of two pastures.

Environmental Consequences

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. Wild horses compete directly with livestock for available forage and water. As wild horse numbers increase, utilization of forage and water increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity are reduced, and the potential carrying capacity for livestock production is reduced.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below

maximum AML's. As a result, Alternative #1 would have the least negative impact on livestock operations, and on the social and economic values associated with livestock grazing. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on livestock operations, and on the social and economic values associated with livestock grazing. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on livestock operations, and on the social and economic values associated with livestock grazing, than implementation of the Proposed Action.

H. Wilderness and Wilderness Study Area (WSA)

Affected Environment

There are no wilderness areas in either of the HMA's. However, approximately 8,000 acres on the south end of the Buckhorn HMA is in the Buffalo Hills Wilderness Study Area. In addition, the South Warner Wilderness Area is northeast of the Coppersmith HMA.

Environmental Consequences

Direct, short-term impacts to the wilderness values within the Buffalo Hills WSA with implementation of the Action Alternatives (#1, #2, and #3) would consist of the sight and noise of the helicopter used to herd wild horses to gather sites located outside of wilderness study area. During the time frame of the proposed gather, solitude and primitive recreation may be negatively impacted for recreationists who would be subjected to the sight and sound of the helicopter. This impact would be temporary and relatively short term in nature.

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. They utilize primarily herbaceous vegetation and trample and compact soils, especially when soils are wet. As wild horse numbers increase, utilization of vegetation and trampling/compaction of soils increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity are reduced and overall ecological site conditions are reduced. Ecological sites in degraded condition detract from the natural character of wilderness areas.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on wilderness values in the Buffalo Hills HMA. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years

(see Appendix A). As a result, Alternative #4 would have the greatest negative impact on wilderness values in the Buffalo Hills HMA. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on wilderness values in the Buffalo Hills HMA, than implementation of the Proposed Action.

I. Wild and Scenic Rivers

Affected Environment

Portions of the Bare Creek system, of which approximately 4 miles are located in the north end of the Coppersmith HMA, have been nominated to be declared wild and scenic river reaches.

Environmental Consequences

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They congregate around water sources and trail along drainages. They utilize primarily herbaceous vegetation and trample and compact soils, especially when soils are wet. As wild horse numbers increase, utilization of vegetation and trampling/compaction of soils increases. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity are reduced and overall ecological site conditions are reduced. Streambanks are weakened and become subject to accelerated erosion.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on wild and scenic river values along the Bare Creek system. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 900 horses in the Coppersmith HMA within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on wild and scenic river values along the Bare Creek. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on wild and scenic river values along the Bare Creek system, than implementation of the Proposed Action.

J. Recreation

Affected Environment

The two HMA's are popular destinations for hunters from both California and Nevada. The Buckhorn HMA is located in Nevada hunt zone #015 and in California hunt zone #X5b. The Coppersmith HMA is located in California hunt zones #X5b and #X3b and in Nevada hunt zone #015. Fishing occurs in the Coppersmith HMA in the Bare Creek system. Both HMA's are popular for upland game bird (chukar, quail, dove, and sage-grouse), mule deer, and pronghorn antelope hunting. There are several mule deer seasons in August, September, October, and December. Pronghorn antelope are hunted in August and September. Upland game birds have several hunting seasons between September and February.

The two HMA's are also popular for off-highway driving, camping, and wildlife/wild horse

viewing. The three main roads that cross the HMA's (Buckhorn, Tuledad Canyon, and Bare Creek) are well maintained and accessible to two-wheel drive vehicles and camp trailers. These roads reach the some of the higher elevation areas and, as a result, they afford recreational users the opportunity to view mule deer, pronghorn antelope, and wild horses in their summer use areas.

Environmental Consequences

Direct, short-term impacts to recreation with implementation of the Action Alternatives (#1, #2, and #3) would consist primarily of disturbance of hunting activities by the low-flying helicopter. These impacts would be temporary, with short duration, and minimal. No direct impacts are associated with the No Action Alternative.

Indirect, long-term impacts are related to the wild horse population sizes and growth rates associated with each of the Alternatives. Wild horses are large ungulates with few natural predators. They are present in native plant communities within the two HMA's year-round, and they congregate around water sources and trail along drainages. Wild horses compete directly with wildlife for available cover, space, forage, and water. As wild horse numbers increase, utilization of cover, space, forage, and water increases. These impacts are greatest where wild horses tend to congregate; however, when wild horse numbers become excessive, the impacts become noticeable on the slopes and tables at greater distances from water and trail corridors. When vegetation is used continuously, heavily, and annually, and soils are trampled and compacted, plant vigor, production, and diversity, and the value of plant communities for wildlife habitat are reduced. As the amount and quality of habitat is reduced, wildlife populations are also reduced, and opportunities for hunting and wildlife viewing are reduced. Conversely, as wild horse numbers increase, the likelihood of recreational users seeing wild horses from the main roads and trails increases.

Implementation of Alternative #1, the Proposed Action, would result in the slowest wild horse population growth rates, and the greatest period of time when wild horse numbers are at or below maximum AML's. As a result, Alternative #1 would have the least negative impact on recreation involving hunting and wildlife viewing. However, wild horse viewing opportunities would be decreased. Implementation of Alternative #4, the No Action Alternative, would result in the most rapid increase in wild horse numbers. Population modeling shows there would likely be an increase to over 1700 horses in the two HMA's within 10 years (see Appendix A). As a result, Alternative #4 would have the greatest negative impact on recreation involving hunting and wildlife viewing and the greatest positive impact on recreation involving wildhorse viewing. Implementation of either Action Alternative #2 or #3 would have a slightly higher negative impact on hunting and wildlife viewing, than implementation of the Proposed Action.

K. Air Quality

Affected Environment

Air quality in the two HMA's is normally very good. Travel on the roads, especially along the relatively high-speed Buckhorn, Tuledad Canyon, and Bare Creek gravel roads, causes dust seasonally (May through November). In addition, smoke from wild fires is occasionally present,

generally in August and September.

Environmental Consequences

Direct impacts associated with the Action Alternatives, would consist of an increase in dust as wild horses are herded to temporary gather site(s) and transported by stock trailer(s) to a temporary holding facility. Dust caused by a concentration of animals at the temporary gather site(s) and at the temporary holding facility would be controlled by watering the areas as needed, to keep dust to a minimum. In addition, there would be an increase in vehicle traffic as excess wild horses are transported from the temporary holding site to a BLM adoption preparation/holding facility. These impacts would be temporary, with a short duration, and minimal. No direct or indirect impacts would occur with Alternative #4.

Cumulative Impacts (Proposed Action & Alternatives)

Cumulative impacts are impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Implementation of the Action Alternatives would reduce the wild horse population to AML in the Buckhorn and Coppersmith HMA's which would help promote a thriving natural ecological balance. With implementation of the Proposed Action and Alternative 2, this effect would be immediate. With implementation of Alternative 3, this would occur within 10 to 15 years. The achievement and maintenance of AML would result in an increase in vegetation density, vigor, reproduction, productivity, diversity, and forage availability. Subsequent removals would maintain animal populations in a thriving natural ecological balance and would contribute to maintaining ecological sites in good condition.

Adverse impacts to vegetation with implementation of the Action Alternatives would include disturbance of small quantities of native vegetation and soils immediately in and around temporary trap sites, holding, and processing facilities. Impacts created by vehicle traffic, and hoof action of penned horses, can be locally severe in the immediate vicinity of these facilities, and the impacts would re-occur each time horses were gathered. Since most trap sites and holding facilities are re-used during recurring wild horse gather operations, any impacts would remain site specific and isolated in nature. In addition, most trap sites or holding facilities are selected to enable easy access by transportation vehicles and logistical support equipment and would therefore generally be adjacent to or on roads, pullouts, water haul sites, or other flat spots that were previously disturbed. These common practices would minimize the cumulative effects of these impacts.

The removal of animals to and the subsequent maintenance of AML would allow reduced utilization of riparian and upland habitats on a year-long basis. This management coupled with a livestock grazing program which is based on the physiological needs of the vegetation would result in improved rangeland health.

Under the No Action Alternative, the cumulative impacts of large numbers of wild horses would increase each year that horses are not gathered. These impacts would affect all of the resources that depend on stable soils and intact vegetative communities, including wildlife, wildlife viewing, and hunting, wilderness and wild and scenic rivers, cultural resources, water quality, and the social and economic values associated with livestock grazing.

The Surprise Field Office would continue to identify any adverse impacts as they occur, and mitigate them as needed on a project specific basis to maintain habitat and herd quality. The Proposed Action would contribute to the cumulative impacts of future actions by maintaining the herd at AML, and establishing a process whereby biological and/or genetic issues associated with herd or habitat fragmentation would become apparent sooner and mitigating measures implemented more quickly.

Mitigation Measures

The Proposed Action and Alternatives incorporate proven standard operating procedures that have been developed over time. These SOP's (Appendix B) represent the "best methods" for reducing impacts associated with gathering, handling, and transporting wild horses, and collecting herd data.

Additional mitigation measures have been incorporated into the alternatives.

Consultation and Coordination

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