9/30/87

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

IMPROVING ADOPTABILITY OF WILD HORSES THROUGH MANAGEMENT

PART I

MODOC WASHOE EXPERIMENTAL STEWARDSHIP WILD HORSE EXPERIMENT – 1986 STATUS REPORT

PART II

COMPUTING INCREASES FOR GATE CUT AND STRUCTURED HERDS

PART III

APPLICATION OF 1986 ESP WILD HORSE REPORT DATA AND OTHER DATA & INFORMATION FOR THE PURPOSE OF ESTIMATING FUTURE COSTS OF MANAGING TO IMPROVE WILD HORSE ADOPTABILITY

SUSANVILLE DISTRICT
CALIFORNIA
SEPTEMBER 30, 1987

REVISED APRIL 1, 1988
REVISED JULY 6, 1988

PREFACE

This document is divided into three parts, as indicated on the cover. The purpose of each part is as shown below.

PART I

Part I tells how three "Base Herds" of 50 horses each ("Base Herd" consists of those animals kept as the breeding herd) have been managed differently to evaluate three management methods. Two herds, the Buckhorn and Coppersmith have been managed to increase adoptability of "Excess Horses" ("Excess Horse" being those horses produced above those needed for the "Base Herd"). The Fox Hog Herd has been managed by "removal of excess animals" as the only management tool.

PART II

Part II computes the number of excess horses that are expected to be produced by two base herds managed differently. These two herds are examples only, not specific herds. However; computations are based on representative data collected in the Susanville District. Data includes data from Buckhorn, Coppersmith, Fox Hog and other data collected in this District.

The computed numbers of excess horses are carried into Part III for cost analysis purposes.

PART III

Part III is a cost analysis of two different methods of management.

To better understand where this document leads it may help to first read the conclusions on the last two pages of Part III. The major point is that it is very cost effective to manage for high adoptability by selection of animals for the base herd and by excessing horses at four years of age and younger.

Data from the three herds shown in Part I as well as other data was used to arrive at this basic conclusion.

PART I

MODOC/WASHOE EXPERIMENTAL STEWARDSHIP
WILD HORSE EXPERIMENT

1986 STATUS REPORT

Rick Cooper
September, 1987

MODOC/WASHOE EXPERIMENTAL STEWARDSHIP WILD HORSE EXPERIMENT

1986 Status Report

I. REVIEW

In 1983, the Modoc/Washoe Experimental Stewardship Committee endorsed the concept of experimentation with management methods for selected wild horse herds in the Stewardship Area. The Committee recommended the Susanville BLM's District Manager conduct a comparison of management methods on three wild horse herds in the Surprise Resource Area. The herds chosen were Buckhorn, Coppersmith and Fox-Hog Herd Management Areas (HMA). These HMA's were established under the Tuledad/Home Camp Management Framework Plan.

The Modoc/Washoe Wild Horse Sub-Committee formed a smaller technical group made up of people with wild horse interests. This group consisted of Jim Clapp[1/], Sharon Saare[2/], Dawn Lappin[3/] and Bill Phillips[4/].

This group developed specific management objectives for each of the three herds. The management elements to be compared for each of the herds are outlined in Table 1. A Herd Management Area Plan (HMAP) was developed reflecting the management elements for each herd. Summary sheets outlining each of the three HMAP's and general map are attached to this report. (Attachment #1)

II. IMPLEMENTATION UPDATE

This is the first narrative status report on the Wild Horse Comparison since its inception in 1983. A summary of dates and events based on calendar year will follow detailing what has been accomplished to date.

A. 1983

Prior to the completion and approval of the Plan of Action for the Wild Horse Comparison the Buckhorn HMA horses were gathered. The opportunity to begin the selection of wild horses was taken at this

1/ Jim Clapp - President of the Wild Horse Sanctuary, Shingletown, CA. In 1983, Jim Clapp was the Wild Horse Representative on Modoc/Washoe Experimental Stewardship Committee.

2/ Sharon Saare - Currently Sharon Saare acts as a BLM volunteer in wild horse matters upon special request. In 1983, Sharon was under contract to the BLM to develop a slide program on Wild Horse Management.

3/ Dawn Lappin - Current chairperson for the Wild Horse Organized Assistance and member of Susanville District Advisory Council.

4/ Bill Phillips - BLM, Susanville District Range Conservationist and Wild Horse Specialist.

time. The horses were not photo identified or freeze marked on the hip. These practices were not accepted into the Comparison's methods until the Plan was approved.

The Buckhorn horses were gathered and transported to the Litchfield facility where they were processed. Jim Clapp, Sharon Saare, and Bill Phillips selected 35 wild horses to be returned to the HMA (15 wild horses had not been captured). Approximately 50 wild horses were left in the Buckhorn HMA.

B. 1984

None of the three experimental areas were gathered in 1984.

C. 1985

The Fox-Hog and Coppersmith HMA's were scheduled for gather in 1985. The Fox-Hog HMA was dropped from the gathering plan due to funding shifts and was not gathered. The Coppersmith HMA horses were gathered in September of 1985. These horses were gathered and transported to the Litchfield facility for processing. Sharon Saare and Bill Phillips selected 48 horses for return to the HMA (two horses were not captured). Approximately 50 wild horses were left in the Coppersmith HMA. These horses were photo identified and freeze marked "X" on the left hip.

D. 1986

All three Herd Management Areas were gathered in calendar year 1986. The Fox-Hog horses were gathered in August. Since the Fox-Hog is the control herd, 50 horses were not gathered. One hundred thirty-eight (138) horses were captured and transported to the Litchfield facility for processing.

In October, the Buckhorn HMA horses were gathered. A total of 105 horses were captured and transported to the Litchfield facility. Sharon Saare and Bill Phillips selected 47 horses to be returned to the HMA (three adult mares had not been captured). Three of the wild horses returned were horses from other HMAs. These horses were all photo identified and freeze marked "O" on the left hip.

In November, the Coppersmith HMA horses were gathered. Forty-three horses were captured and transported to Litchfield, CA. Twenty-one of these horses were base herd horses. Twenty-two were unmarked.

Gene Nunn had left a total of 24 horses on the area, most of which were positively identified as base herd horses.

21 Base herd horses captured
24 Base herd horses not captured
45 Base herd horses accounted for

Bill Phillips and Rick Cooper[5/] selected four mares and one stud as replacements from the 22 unmarked horses. These five horses were mixed with the base herd horses before returning to the HMA.

As a result of the 1986 gathering effort each of the three herds were reduced in number to their approximate management level of 50 head. A good informational base for comparison of management on the three herds has been established. The following pages will illustrate the information gathered to date through the recording of personal observations.

III. OBSERVATIONS

The following narrative is based on observations made by those most actively involved in working on the comparison. Sharon Saare, Bill Phillips, Gene Nunn, Jerry Bonham[6/] and Rick Cooper have been involved in portions or all phases of the gathering, processing, selection and adoption of the wild horses in the comparison areas.

A. Fox-Hog HMA

This is the control herd for the experiment and as such it is gathered as a typical gate cut removal of horses captured.

The horses captured in 1986 were in fair to good physical condition. Some of the foals were too young for an August gather and had trouble keeping up with the adults. A September or October gather may be preferable in the future.

One hundred thirty-eight (138) horses were captured. Sixty-two percent were males and 38 percent were females. The imbalance may be attributed to past gathering practices which tend to reduce the female population more than the male population. Thirty-four percent of the horses captured were in an age class of five years and older. Sixty-six percent of the animals were in the less than five year age class.

The cost/horse to gather is relatively low in this herd. This due to the fact that the herd has not been gathered in six years and there are more excess horses to be removed. This cost per horse captured will increase when horses are gathered before they reach the high numbers recorded in 1986.

This herd has some good color characteristics with high proportion of yellow, dunn, palimino and paint horses.

5/ Rick Cooper - Surprise Resource Area Range Conservationist. Coordinator of the Wild Horse Comparison for the Stewardship Committee.

6/ Jerry Bonham - Range Technician for the Susanville District. Operates the Litchfield Wild Horse and Burro facility.

B. Coppersmith HMA

The horses gathered in this area in 1985 and 1986 were very healthy and in good physical condition.

The horses show signs of a strong quarter horse background with some draft blood mix. The herd is dominate to bay coloring with a few black horses.

This area is the toughest of the three experimental areas to gather. This is due to the areas dense juniper thickets which inhibits the gathering of wild horses. The first gather during the comparison in 1985, was somewhat easier than the 1986 capture. The horses were shy of the helicopter and trap as a result of gathering two years in a row. Because of only one breeding year the number of horses to capture was low which increased the cost/horse for capture.

Having freeze marked the horses in 1985, an evaluation of the mark in 1986 was possible. The hip mark took well on 80% of the horses. Twenty percent of the marked horses had to be marked again due to a faint or partial take by the first mark. This indicates a need for more care being taken in placing freeze marks.

C. Buckhorn HMA

The capture of wild horses in this area was relatively easy in 1983. Wild horses were captured and most were healthy and in good physical condition.

In 1986 the capture went very smooth again and the health and condition of the horses was excellent. Bill Phillips and Sharon Saare were very pleased with the conformation and condition of the mares in this herd. Both felt there were obvious differences in the conformation of horses in the Buckhorn area as opposed to the Fox-Hog horses. Bill and Sharon believed, in subsequent years, the Buckhorn stud horses could be improved upon.

The cost/horse for capture in this herd is the most representative of future gathering costs for the three herds.

When freeze marking the base herd horses, the mark was placed high on the hip of the mares and low on the hip of the studs for identification purposes when gathering.

D. Processing

Each horse in the base herd had to be vaccinated for strangles (Steptococcus Equus), once they were brought to the Litchfield facility. In addition, each horse was photo identified, aged and wormed.

The transportation of the base herd horses to the Litchfield facility, the processing and the transportation of the horses back

to the HMA are all additional cost elements compared to the base herd horses in the Fox-Hog herd.

This part of the operation was very efficient and caused a minimum amount of stress to the base herd horses. One accident did occur when a young stud broke a leg and had to be destroyed. This is the only horse to die, out of 151 base herd horses processed as a direct result of the additional handling required for the comparison.

IV. 1986 IMPLEMENTATION COSTS

The most obvious herd cost differential is the result of the capturing, handling, transporting and processing of the base herd horses in Coppersmith and Buckhorn. Costs associated with these elements do not occur in the Fox-Hog HMA. The following is a brief cost summary detailing costs/horse for capture, removal, base herd processing and helicopter use in 1986 (Attachment #2 is cost worksheets).

TABLE 2
1986 IMPLEMENTATION COSTS

Items	Coppersmith	Buckhorn	Fox-Hog
1. Horses gathered	43	105	138
2. Horses removed	17	58	138
3. Horses/helicopter hour	2.22	3.8	6.2
4. Herd gather cost	$ 8,482.00	$10,736.00	$ 9,185.00
5. Cost/horse captured (Item 4 / Item 1)	$ 197.25	$ 102.24	$ 66.56
6. Cost/horse removed (Item 4 / Item 2)	$ 499.00	$ 206.00	$ 66.56
7. Base herd processing cost	$ 2,230.00	$2,925.00	-0-
8. Processing cost/base herd horse (Item 7 / # base herd horse processed)	$ 86.00[1/]	$ 65.00[1/]	-0-
9. Total cost/herd (Item 4 + Item 7)	$10,712.00	$13,661.00	$ 9,185.00

1/ See Attachment #2 for cost worksheet.

The biggest cost difference can be seen on the cost per horse for removal. This can be attributed to three things: 1) the Buckhorn and Coppersmith herds have more horses captured than are ultimately removed, 2) the Fox-Hog herd had a very low capture cost per horse because of a high number of excess horses, and 3) the Coppersmith herd had very high costs due to a low number of excess horses. The amount of excess horses will be based on reproductive levels and on time periods between gathers. The Coppersmith HMA had been gathered just one year ago, therefore, a very low number of excess horses at a high cost. The opposite is true of Fox-Hog. This area had not been gathered for six years, therefore, very high excess at low cost. A breakdown of capture costs and processing by herd can be found in Attachment 2.

V. SUMMARY

A. Age Structure

The ability to manage a healthy and viable wild horse herd and take excess animals from the four year and younger age class is of tremendous importance to the BLM's adoption program. The reduction of excess horses in an unadoptable age class from 33 percent to 7 percent when applied to the Bureauwide Wild Horse Program would be of great cost savings. These percentages were accomplished in both Buckhorn and Coppersmith in 1986.

In the future, it is expected that all or nearly all of the horses excessed from Buckhorn and Coppersmith HMA's will be in the best age class for adoption.

B. Selection Criteria

In addition to providing a higher percentage of adoptable horses to the Adoption Program, the flexibility of management aspects is also enhanced. During the selection phase of the Program there were many situations where the selection between horses for the base herd were made on age and physical appearance. Horses with minor injuries to eyes and ears that are not highly adoptable can be used as a base herd horse if their conformation and color are acceptable. Situations like this result in long term cost savings to the BLM and fewer horses in the feed lot program.

C. Adoptability

The major objective of this experiment was to determine ways of improving adoptability in wild horse herds. The basic elements being evaluated to accomplish this are age,conformation, and color.

Conformation and color are elements which take time to develop through the genetic selection of wild horses. However, the evidence of previous selection in the Buckhorn herd was apparent in the foals gathered in 1986 compared to previous gathering.

The younger age class objective was accomplished in the Buckhorn and Coppersmith herds following the second gather. The only horses which did not meet the age objective were horses which were not captured during the first gather.

During the initial phases of the experiment adoption attempts per horse by herd has not been tracked. This part of the experiment will be most appropriate following the next gather in 1989. At this time, adoptability will be measured based on age, appearance and on adoption attempts of the four year and younger horses.

VI. ASSUMPTIONS FOR PREDICTING COSTS FOR 1989 GATHERING

This Section will be used to evaluate data collected during the implementation of this comparison and use the data to make predictions regarding costs of each herd based on its management approach. Cost estimates for the 1989 gather will be based on certain assumptions as follows:

A. All three herds will be gathered in calendar year 1989. This allows for estimates in excess horses based on reproductive data.

B. Four horses will be captured per helicopter hour for all three areas. The 1986 gather of the Buckhorn Herd best represents the anticipated needs for gathering the three herds in 1989. The Buckhorn averaged four horses per hour in 1986.

C. All other support costs will remain the same for all three herds. Any inflationary increases will be relative to each herd.

The following Table depicts anticipated costs for the 1989 gather of the experimental herds (cost worksheets are illustrated in Attachment #3).

Item	Coppersmith	Buckhorn	Fox-Hog
1. Horses gathered	110[1/]	110[1/]	30[2/]
2. Horses removed	60	60	30
3. Horses/helicopter hour	4[3/]	4[3/]	4[3/]
4. Herd gather cost	$11,193	$10,708	$4,890
5. Cost/horse captured (Item 4/Item 1)	$ 102	$ 97	$ 163
6. Cost/horse removed (Item 4/Item 2)	$ 187	$ 178	$ 163
7. Excess horse processing	$ 2,160	$ 2,160	$1,080
8. Base herd processing	$ 2,315	$ 2,315	$ ---
9. Cost/base herd horse (Item 8/Item 2)	$ 49	$ 49	$ ---
10. Total cost/herd	$15,668	$15,183	$5,970

These cost estimates are reflective of costs being incurred to conduct the experiment. Some of the management practices being conducted on the Buckhorn and Coppersmith herds result in high reproductive levels thereby more excess horses and more cost. The management practices being conducted on these two herds would not necessarily be the management elements used on other herds.

1/ The herd increase is based on the actual increase which occurred in Buckhorn HMA from 1983 to 1986.

2/ Herd increase for Fox-Hog is based on a 17% annual rate of increase.

3/ The horses capture rate per helicopter hour is based on the 1986 Buckhorn capture rate.

VII. CONCLUSION

A. Adoptability of wild horses has been increased in the Buckhorn and Coppersmith Herds by harvesting four year and younger age horses for adoption.

B. It appears the adoptability has also improved due to the selection process in the Coppersmith and Buckhorn Herds. Excess horses in these herds appear to have better conformation than the Fox-Hog horses. However, definite conclusions on this element will have to wait until 1989.

C. Costs of intensive management in the Buckhorn and Coppersmith Herds are higher than costs for the Fox-Hog herd management. The 1989 Cost Estimate Table indicates there would be a $9,000 higher cost for either Buckhorn or Coppersmith. This is the cost of management over a three year period.

D. Based on the Susanville Districts' Wild Horse Program information the intensively managed herds (Coppersmith and Buckhorn) will have approximately three unadoptable horses each. The Fox-Hog horses would have ten unadoptables due to age and five more due to conformation or deformities for a total of fifteen.

E. Based on feeding costs at BLM contract feed lot facilities it would take 295 days for the cost of feeding 12 unadoptable horses to exceed the $9,000 intensive management costs.

Calculations

1. Unadoptables

Intensive Management Herd	3
Fox-Hog Herd	15
Net	12

2. Three Year Management Cost

Intensive Management Herd	$15,000.00
Fox-Hog Herd	$ 6,000.00
Net	$ 9,000.00

3. Contract Feeding Costs

$2.55/horse day

4. 12 horses x $2.55/horse day x 295 days =

12 x $2.55 x 295 = $9,027.00

VIII DISCUSSION

The high estimate cost differential between the intensively managed herds and the Fox-Hog Herd can be attributed to the high number of producing females in the intensively managed herds. The Buckhorn and Coppersmith Herds have 35 producing females at the start of the three year period (1986) where as Fox-Hog is estimated to have only 16 producing females.

Part III of this report has a detailed example of calculated costs for a wild horse herd under gate cut management and under intensive or selective management. This example will provide a better comparison of costs in applying management principals learned in the experiment to actual management implementation in the future.

ATTACHMENT 1

Summary Sheets and Maps

SUMMARY SUSANVILLE DISTRICT
HERD MANAGEMENT AREA PLANS

Herd Management Area: Fox-Hog CA-263
Resource Area: Surprise
Management Framework Plan: Tuledad/Homecamp, 1978
Herd Management Area Plan Completed: July, 1984
Land Status: BLM 113,800 Private 5,480 Other 0 Total 119,280
Management Levals: Minimum 50 Mid-Point 63 Maximum 75
Sex Ratio of Base Herd: 15 Male/35 Female
Special Objectives:

Other Resources:

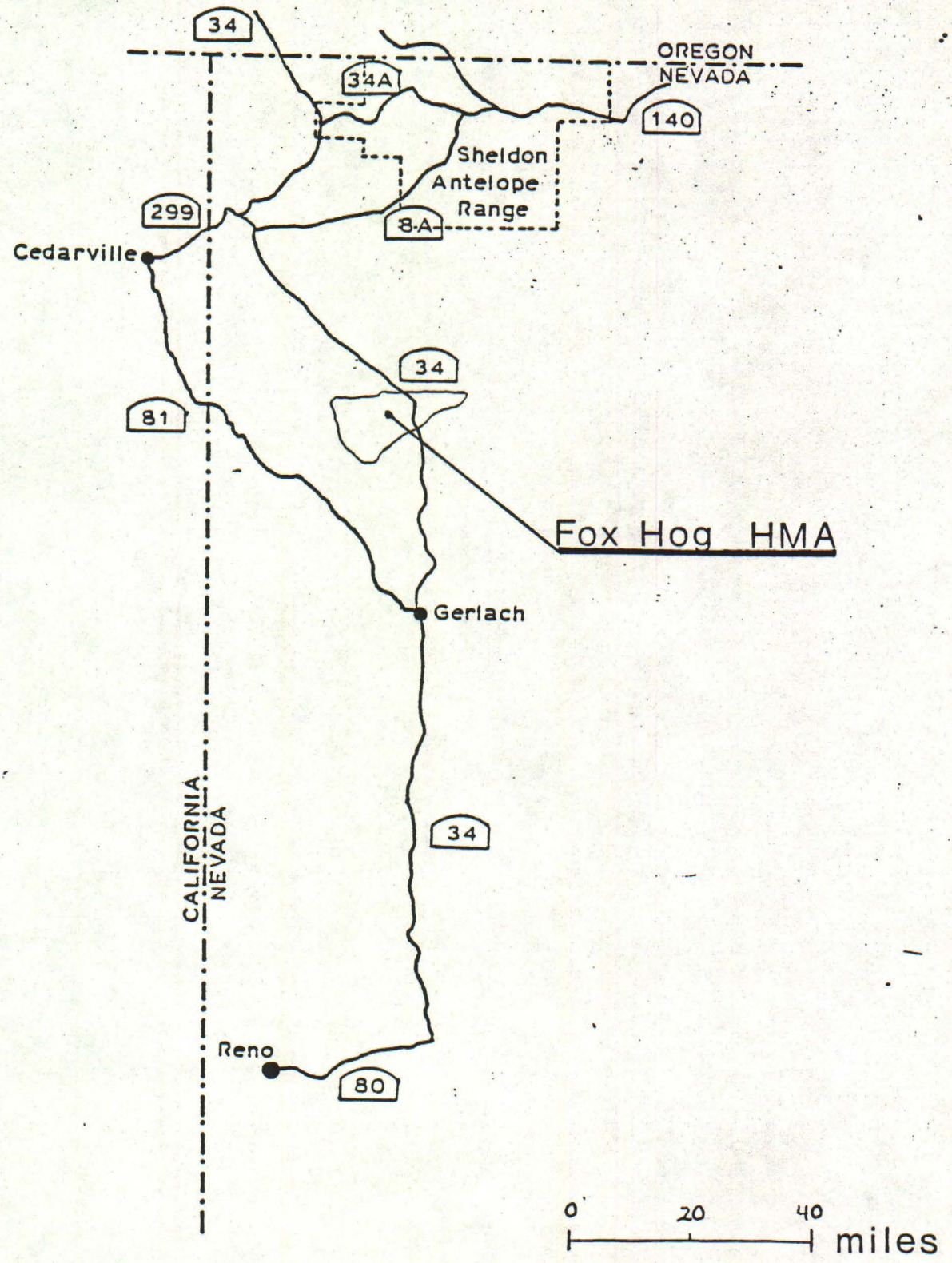
This Herd Management Area is located in the Bare Allotment. This allotment provides forage for cattle and habitat for typical Great Basin wildlife species.

Comments:

1. This herd is part of the Modoc/Washoe Experimental Stewardship Program's comparison of management methods on three HMA's in the Surprise Resource Area.

2. The Fox-Hog herd will be the control herd for the experiment. No special management will be done. Control of numbers is the only specific management objective. No selection of horses will be done on this herd.

3. This area has adequate year round water for wild horses.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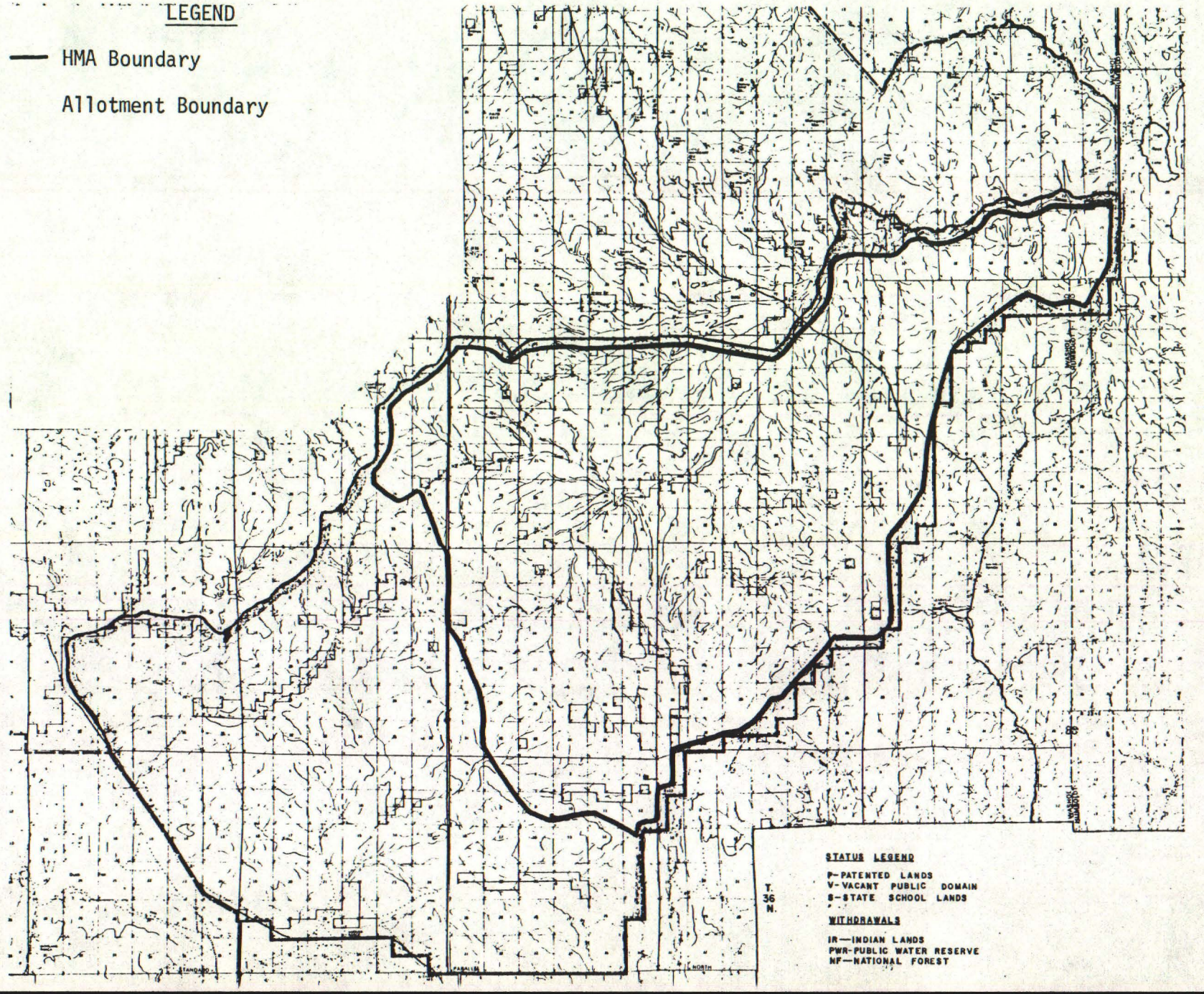


FOX HOG

HERD MANAGEMENT AREA

SUMMARY SUSANVILLE DISTRICT
HERD MANAGEMENT AREA PLANS

Herd Management Area: Coppersmith CA-261
Resource Area: Surprise
Management Framework Plan: Tuledad/Homecamp, 1978
Herd Management Area Plan Completed: July, 1984
Land Status: BLM 63,020 Private 7,740 Other 0 Total 70,760
Management Levals: Minimum 50 Mid-Point 63 Maximum 75
Sex Ratio of Base Herd: 15 Male/35 Female
Special Objectives:

1. Develop a highly adoptable horse for the Adoption Program.

   Management Action - a) Select a base herd of wild horses for return to the herd area. These horses would have characteristics which have shown adoption success. b) Excess wild horses would be removed from the 4 year and under age class.

   Evaluation - Based on adoptability success of excess wild horses from this herd.

2. Maintain a healthy and viable herd, while line breeding within the herd.

   Management Action - Replace base herd horses from the herds excess, thereby restricting the gene pool.

   Evaluation - Viability (rate of increase) will be used as an indicator of herd health. A 13% or lower rate of increase will be considered a viability problem.

Other Resources:

1. This Herd Management Area is located in the Tuledad Grazing Allotment. The allotment provides forage for cattle and sheep and habitat for typical Great Basin species.

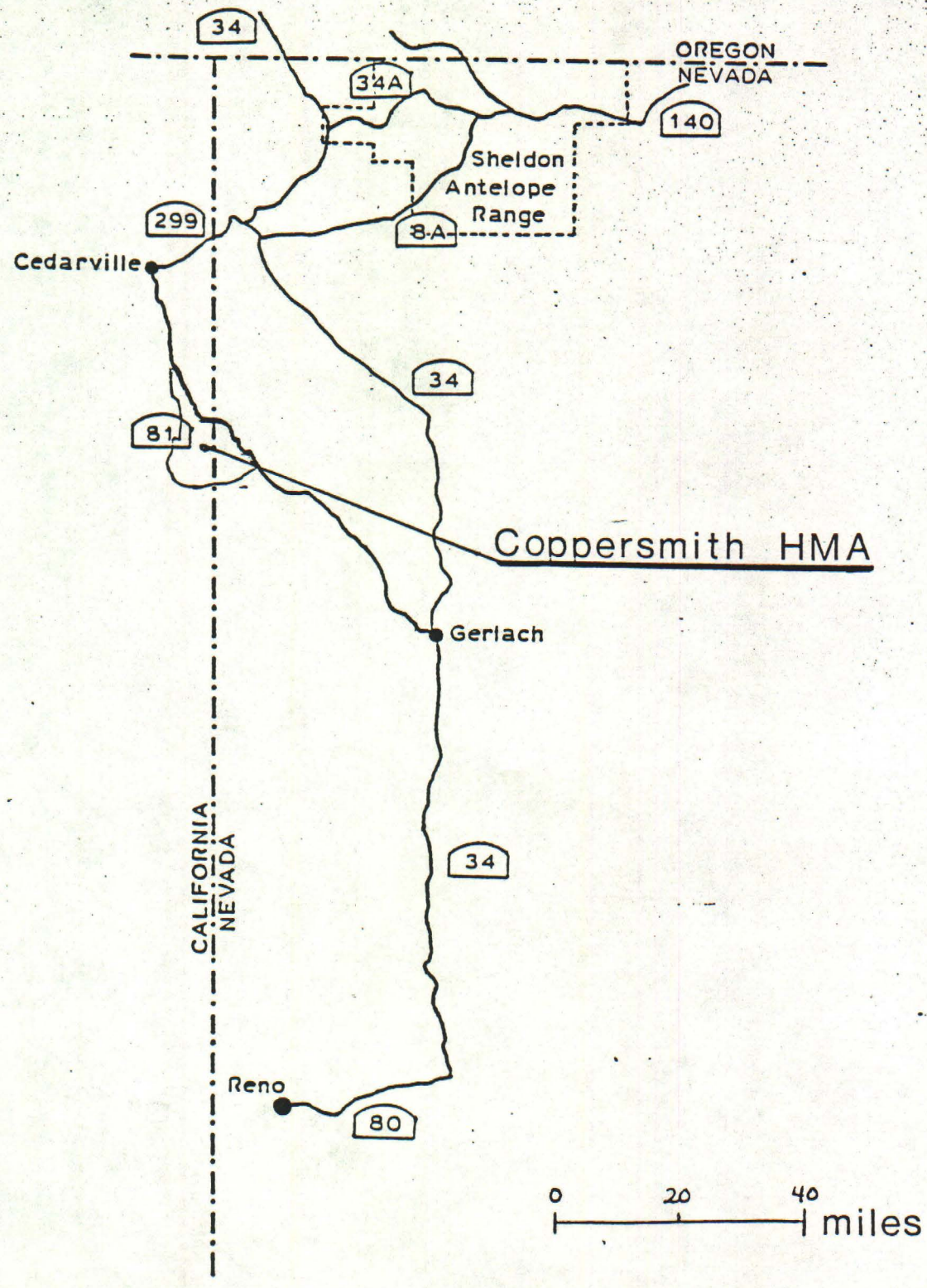
2. This area also provides critical deer winter range habitat for mule deer.

Comments:

1. Specific projects for this Herd Management Area have not been identified for these horses. Adequate water is available for wild horses in this area.

2. This herd is part of the Modoc/Washoe Experimental Stewardship Program's comparison of management methods on three HMA's in the Surprise Resource Area.

3. The base herd horses will be allowed to live out their lives in the Herd Management Area.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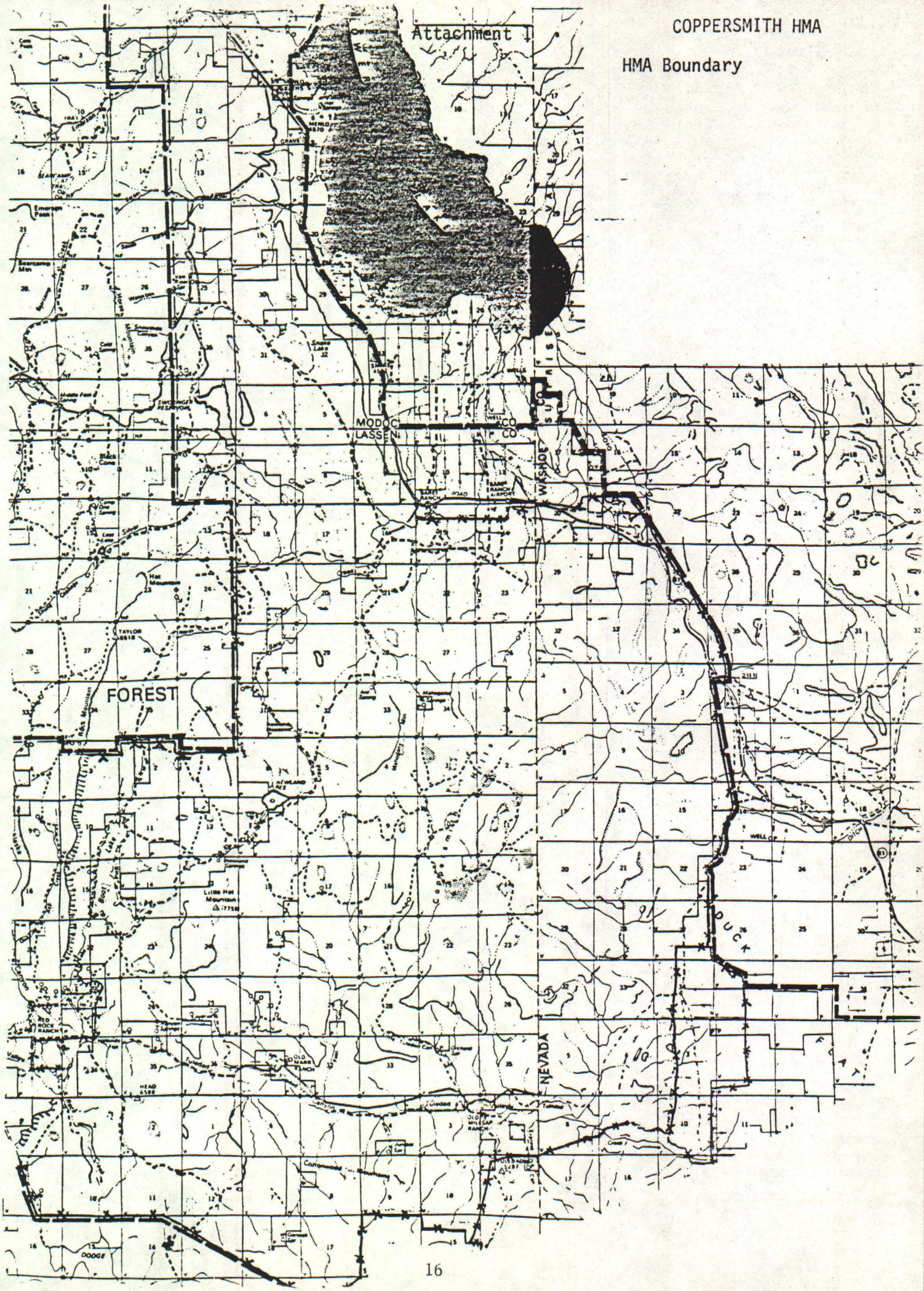

Attachment 1
COPPERSMITH HMA
HMA Boundary
MODOC
LASSEN
CO
CO
WASHOE
SURRISE
FOREST
NEVADA
PUCK

SUMMARY SUSANVILLE DISTRICT
HERD MANAGEMENT AREA PLANS

Herd Management Area: Buckhorn CA-262
Resource Area: Surprise
Management Framework Plan: Tuledad/Homecamp, 1978
Herd Management Area Plan Completed: July, 1984
Land Status: BLM 62,320 Private 3,320 Other 0 Total 65,640
Management Levals: Minimum 50 Mid-Point 63 Maximum 75
Sex Ratio of Base Herd: 15 Male/35 Female
Special Objectives:

1. Develop a highly adoptable horse for the Adoption Program.

   Management Action - a) Select a base herd of wild horses for return to the herd area. These horses would have characteristics which have shown adoption success. b) Excess wild horses would be removed from the 4 year and under age class.

   Evaluation - Based on adoptability success of excess wild horses from this herd.

2. Reduce the incidence of inbreeding problems.

   Management Action - Replace base herd horses with wild horses from other areas. This will increase the gene pool.

   Evaluation - Viability (rate of increase) will be used as an indicator as well as visual observations regarding conformation and defects. A 13% or lower rate of increase will be considered a viability problem.

Other Resources:

1. This Herd Management Area is located in the Tuledad Grazing Allotment. The allotment provides forage for cattle and sheep and habitat for typical Great Basin wildlife species.

2. In addition, this areas also provides critical deer winter range habitat for mule deer.

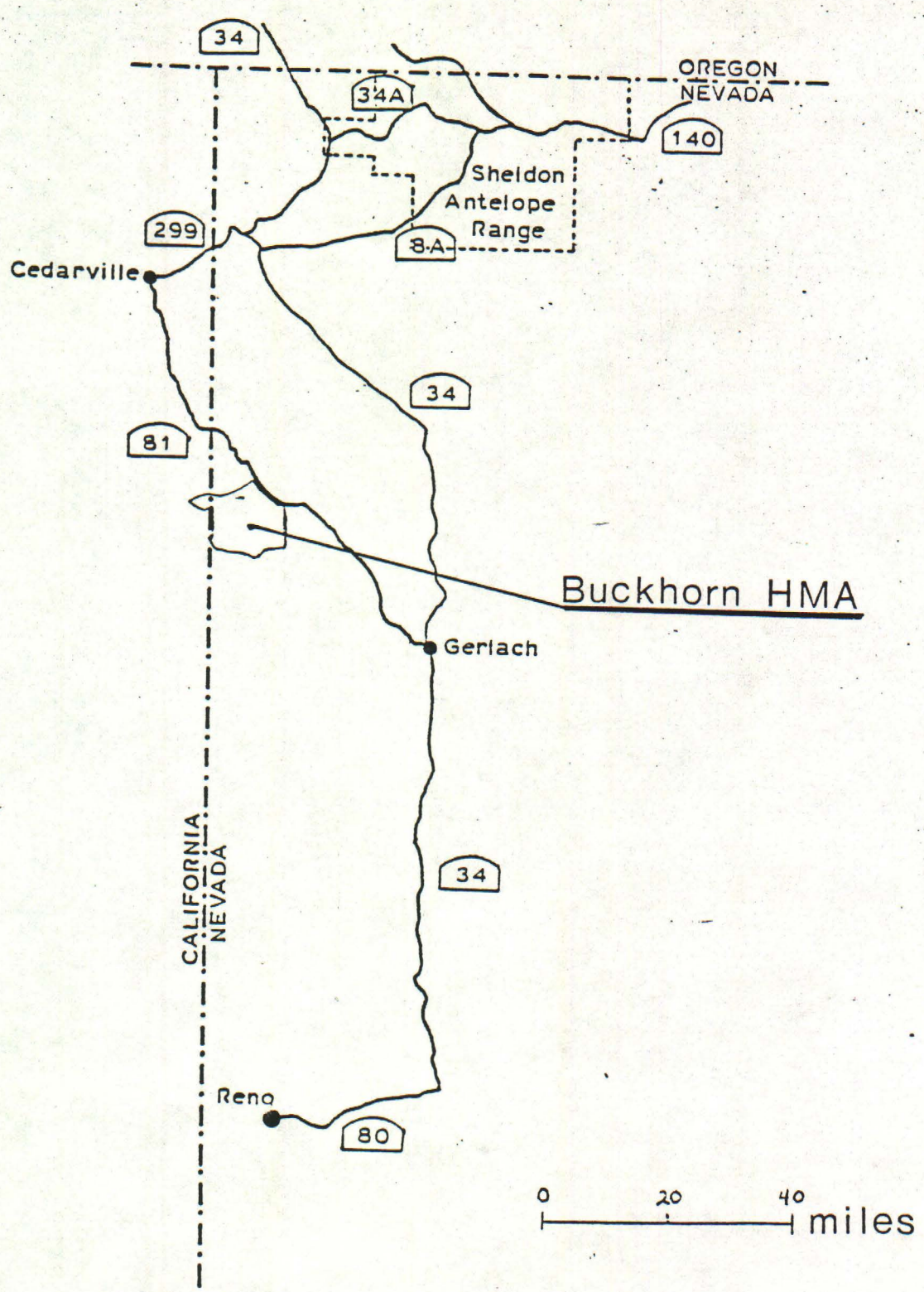
3. Wild horses will be restricted from the Cottonwood fire rehabilitation area until the 1986 grazing season.

Comments:

1. Specific projects for this Herd Management Area have not been identified for these horses. Adequate water is available for wild horses in this area.

2. This herd is part of the Modoc/Washoe Experimental Stewardship Program's comparison of management methods on three HMA's in the Surprise Resource Area.

3. The base herd horses will be allowed to live out their lives in the Herd Management Area.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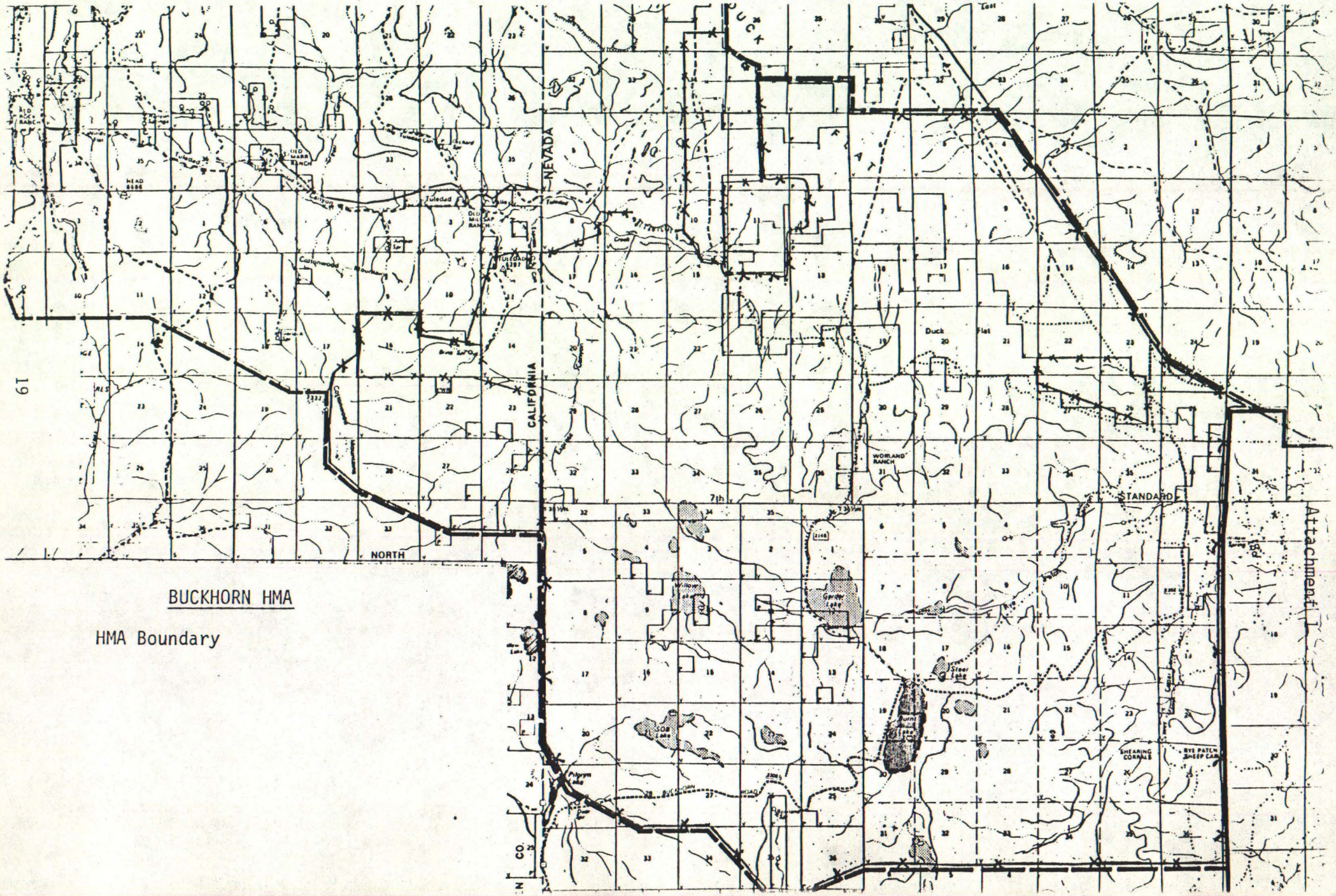

BUCKHORN HMA

HMA Boundary

Attachment 2

GATHERING COST REPORT FORM

Herd Management Area BUCKHORN Number 262

CAPTURE COST

1. Trap Set Up

a.	Equipment	168.00
b.	Labor	920.00
c.	Miscellaneous	-
	Sub Total	$1,088.00

2. Capture Costs

a.	Equipment	552.00
b.	Helicopter	6,624.00
c.	Labor	2,472.00
d.	Miscellaneous	-
	Sub Total	$9,648.00

GRAND TOTAL $10,736.00

Total Number Horses Captured	105
Cost/Horse Capture	$102.24
Horses Captured/Helicopter Hour	4(3.8)

REMOVAL COSTS

Total Number Horses Removed	52
Total Cost/Horse REmoved	$206.00

REMARKS/CALCULATIONS

Helicopter Cost - $240.00/hr (27.6 hrs)

Regular WM Cost - 2300 (190 hrs)

OT WM Cost - 3450 (Ø)

176.3hrs/WM

Attachment 2

GATHERING COST REPORT FORM

Herd Management Area COPPERSMITH Number 261

CAPTURE COST

1. Trap Set Up

a.	Equipment	345.00
b.	Labor	920.00
c.	Miscellaneous	
	Sub Total	$1,265.00

2. Capture Costs

a.	Equipment	635.00
b.	Helicopter	4,632.00
c.	Labor	1,725.00
d.	Miscellaneous (per diem)	225.00
	Sub Total	$7,217.00

GRAND TOTAL $8,482.00

Total Number Horses Captured	43
Cost/Horse Capture	$197.25
Horses Captured/Helicopter Hour	2.22

REMOVAL COSTS

Total Number Horses Removed	17
Total Cost/Horse REmoved	499.00

REMARKS/CALCULATIONS

Helicopter Cost - $240/hr (19.3 hours)

Regular WM Cost - $2300 (96 hrs)

Overtime WM Cost - $3450 (24.5 hrs)

176.3 hrs/WM

(hours used ÷ 176.3) x WM Cost = Labor Cost

Attachment 2

GATHERING COST REPORT FORM

Herd Management Area FOX HOG Number 263

CAPTURE COST

1. Trap Set Up

a.	Equipment	340.00
b.	Labor	828.00
c.	Miscellaneous	
	Sub Total	$1,168.00

2. Capture Costs

a.	Equipment	1,050.00
b.	Helicopter	5,328.00
c.	Labor	1,439.00
d.	Miscellaneous (camp food)	200.00
	Sub Total	$8,017.00

GRAND TOTAL $9,185.00

Total Number Horses Captured	138
Cost/Horse Capture	$66.56
Horses Captured/Helicopter Hour	6.2

REMOVAL COSTS

Total Number Horses Removed	138
Total Cost/Horse REmoved	$66.56

REMARKS/CALCULATIONS

Helicopter Cost - $240.00/hr (22.2 hrs)

Regular WM Cost - $2300.00 (96 hrs)

OT WM Cost - 3450.00 (10 hrs)

176.3 hrs/WM

BASE HERD PROCESSING COST REPORT FORM

Herd Management Area BUCKHORN Number 262

1. Selection

a.	Labor	95.00
b.	Misc. (Travel, Equip.)	100.00
	Sub Total	$195.00

2. Processing (Age, Brand, Shots, Worm)

a.	Labor	160.00
b.	Materials (shots, worm)	253.00
	Sub Total	$413.00

3. Transport of Horses (Both Ways)

a.	Equipment	640.00
b.	Labor	644.00
	Sub Total	$1,284.00

4. Feeding

(14 days x 45 horses) x cost/day (1.64) $1,033.00

GRAND TOTAL $2,925.00

Base herd horses total number 45
Total Cost/Base herd horse $65.00

REMARKS

Labor 28.50/hr (3 man crew)

Process 8 horses/hr

Strangles Vaccination - 3.54/shot

Wormer - 2.08/dose

Attachment 2

BASE HERD PROCESSING COST REPORT FORM

Herd Management Area COPPERSMITH Number 261

1. Selection

a. Labor	76.00
b. Misc. (Travel, Equip.)	-
Sub Total	$76.00

2. Processing (Age, Brand, Shots, Worm)

a. Labor	74.76
b. Materials (shots, worm)	118.02
Sub Total	$193.00

3. Transport of Horses (Both Ways)

a. Equipment	690.00
b. Labor	418.00
Sub Total	$1,108.00

4. Feeding

(20 days x 26 horses) x cost/day (1.64) $853.00

GRAND TOTAL $2,230.00

Base herd horses total number 26
Total Cost/Base herd horse $86.00

REMARKS

Labor - 28.50/hr (3 man crew)

Process - 8 horses/hr

Strangles Vaccination - 3.54/shot

Wormer - 2.08/dose

Attachment 3

GATHERING COST REPORT FORM

Herd Management Area BUCKHORN Number 262

CAPTURE COST

1. Trap Set Up

a.	Equipment	168.00
b.	Labor	920.00
c.	Miscellaneous	
	Sub Total	$1,088.00

2. Capture Costs

a.	Equipment	552.00
b.	Helicopter	6,600.00
c.	Labor	2,468.00
d.	Miscellaneous	
	Sub Total	$9,620.00

GRAND TOTAL $10,708

Total Number Horses Captured	110
Cost/Horse Capture	97
Horses Captured/Helicopter Hour	4

REMOVAL COSTS

Total Number Horses Removed	60
Total Cost/Horse REmoved	$178.00

REMARKS/CALCULATIONS

1. 110 horses ÷ 4 horses/hour = 27.5 hours

2. 27.5 hours x $240/hour = $6,600.00

3. 6.88 labor hours/helicopter hour
   6.88 x 27.5 = 190 hours

4. (190 hours ÷ 176.3 hours (IWM)) x 2300/WM = $2,468.00

Attachment 3

GATHERING COST REPORT FORM

Herd Management Area COPPERSMITH Number 261

CAPTURE COST

1. Trap Set Up

a.	Equipment	345.00
b.	Labor	920.00
c.	Miscellaneous	
	Sub Total	$1,265.00

2. Capture Costs

a.	Equipment	635.00
b.	Helicopter	6,600.00
c.	Labor	2,468.00
d.	Miscellaneous	225.00
	Sub Total	$9,928.00

GRAND TOTAL $11,193.00

Total Number Horses Captured	110
Cost/Horse Capture	102
Horses Captured/Helicopter Hour	4

REMOVAL COSTS

Total Number Horses Removed	60
Total Cost/Horse REmoved	$187.00

REMARKS/CALCULATIONS

Same as Buckhorn

Attachment 3

GATHERING COST REPORT FORM

Herd Management Area FOX HOG Number 263

CAPTURE COST

1. Trap Set Up

a.	Equipment	340.00
b.	Labor	828.00
c.	Miscellaneous	
	Sub Total	$1,168.00

2. Capture Costs

a.	Equipment	1,050.00
b.	Helicopter	1,800.00
c.	Labor	667.00
d.	Miscellaneous	200.00
	Sub Total	$3,717.00

GRAND TOTAL $4,885.00

Total Number Horses Captured	30
Cost/Horse Capture	$163.00
Horses Captured/Helicopter Hour	4

REMOVAL COSTS

Total Number Horses Removed	30
Total Cost/Horse REmoved	$163.00

REMARKS/CALCULATIONS

1. 30 horses ÷ 4 horses/hour = 7.50 hours
2. 7.5 hours x $240/hour = $1,800.00
3. 6.88 labor hours/helicopter hour x 7.5 helicopter hours = 52 labor hours
4. 52 labor hours ÷ 176.3 labor hours/WM = .29 WM
5. .29 WM x 2300/WM = $672.00

Attachment 3

BASE HERD PROCESSING COST REPORT FORM

Herd Management Area BUCKHORN Number 262

1. Selection

a.	Labor	100.00
b.	Misc. (Travel, Equip.)	100.00
	Sub Total	$200.00

2. Processing (Age, Brand, Shots, Worm)

a.	Labor	160.00
b.	Materials (shots, worm)	281.00
	Sub Total	$441.00

3. Transport of Horses (Both Ways)

a.	Equipment	640.00
b.	Labor	460.00
	Sub Total	$1,100.00

4. Feeding

(10 days x 50 horses) x cost/day ( ) $574.00

GRAND TOTAL $2,315.00

Base herd horses total number 50
Total Cost/Base herd horse $46.00

REMARKS

Attachment 3

BASE HERD PROCESSING COST REPORT FORM

Herd Management Area COPPERSMITH Number 261

1. Selection

a.	Labor	100.00
b.	Misc. (Travel, Equip.)	100.00
	Sub Total	$200.00

2. Processing (Age, Brand, Shots, Worm)

a.	Labor	160.00
b.	Materials (shots, worm)	281.00
	Sub Total	$441.00

3. Transport of Horses (Both Ways)

a.	Equipment	690.00
b.	Labor	418.00
	Sub Total	$1,108.00

4. Feeding

(10 days x 50 horses) x cost/day ( ) $574.00

GRAND TOTAL $2,315.00

Base herd horses total number 50
Total Cost/Base herd horse $46.00

REMARKS

PART II

COMPUTING WILD HORSE INCREASES

GATE CUT HERDS

AND

STRUCTURED HERDS

REVISED DRAFT

Bill Phillips
August 29, 1987
Rev. April 1, 1988
Rev. Jul 6, 1988

I. INTRODUCTION

In the Susanville District most of the herds have from a 15% to a 17% annual increase. On occasion this may be as high as 20%. A 15% annual increase is used for this analysis.

An example of a 15% annual increase is as follows:

> "On January 1, 1986 there are 100 horses in a herd.
> One year later on January 1, 1987 the herd has increased
> to 115 horses."

The typical herd of 100 is considered to have 50 males and 50 females.

During the year 5% or five of the 100 will die of some cause.

To have 115 horses on January 1, 1987, 20 new foals will need to have been born and survive until January 1, 1987. Five of these are needed to replace death loss and 15 are needed to make the increase.

II. Increases in Gate Cut Herds

Where horses are gathered as they come or "Gate Cut" and annual increase of 15% is common. However; annual increases vary from herd to herd and from year to year for the same herd. Any statement on annual increase is a general thing and cannot be declared as a specific, even for a given herd.

Rates of death loss, foaling rates and rates of foaling survival, factors that result in the rate of annual increase, are subject to variation from year to year.

When herds are at management level, a 50 head base herd plus off-spring will use an area that makes a nice size for gathering. This 50 head base herd will be used as the unit from which cost computations will be made later on in this paper.

For the 50 head base herd unit (25 males and 25 females) the expected increase for a four year period would be as follows:

DISPLAY NO. 1 - A 15% ANNUAL INCREASE

Start		50.0 horses
Year 1	50 x 1.15 =	57.5 horses
Year 2	x 1.15 =	66.1 horses
Year 3	x 1.15 =	76.0 horses
Year 4	x 1.15 =	87.5 horses

Round to 88 head at the end of a four year period. This is an increase of 38 horses for the four year period.

Note: This 15% annual increase has a 5% death loss included.

Note: That for calculation purposes horses are dealt with in decimal portions. At the end of the calculation these are rounded to whole numbers.

III. Calculating Foaling Rates for a Gate Cut Herd - with a 15% Annual Increase and a 5% Annual Death Loss

In order to calculate the foaling percentage taking place in a Gate Cut Herd, with a 15% rate of annual increase and a 5% annual death loss, it is first necessary to know the age structure for such a herd. Age structure can be calculated by following the increase and death loss for several years.

Display No.2 (below) shows a 5 year increase for a herd increasing at a rate of 15% per year, with a 5% annual death loss. The important calculation is the number of foals needed to accomplish the 15% annual increase. (For this calculation a herd of 100 horses has been used - 50 male and 50 female.)

DISPLAY NO. 2 - FOALS NEEDED FOR A 15% ANNUAL INCREASE WITH A 5% ANNUAL DEATH LOSS

Column	1	2	3	4
Year	Number at start of year January 1	Number at End of Year December 31 Column 1 X 1.15	Survivers From Start of Year Until End of Year Column 1 X .95	Foals Needed For 15% Increase Column 2 Minus Column 3
1	100.00	115.00	95.00	20.00
2	115.00	132.25	109.25	23.00
3	132.25	152.09	125.64	26.45
4	152.09	174.90	144.49	30.41
5	174.90	201.14	166.16	34.98

Using a survival rate of .95 per year, foals born and surviving for the 5 year period, shown on "Display No. 2", are shown on "Display No. 3" -as "Surviving Foals". Each year only .95 of the horses survive, so that the 20 foals born in Year 1 will have decreased to 16.29 horses by the end of year 5.

DISPLAY NO. 3 - SURVIVING FOALS

Animal Identification	.95 of the animals at the start of the year survive until the end of the year				
	Year 1	Year 2	Year 3	Year 4	Year 5
Year 1 foals	20.00	19.00	18.05	17.15	16.29
Year 2 foals	XXXX	23.00	21.85	20.76	19.72
Year 3 foals	XXXX	XXXX	26.45	25.13	23.87
Year 4 foals	XXXX	XXXX	XXXX	30.41	28.89
Year 5 foals	XXXX	XXXX	XXXX	XXXX	34.98

At the end of year 5 the herd would have an age structure as shown on "Display No. 4" (below).

Note: This shows the herd broken into 4 categories. These are the categories that are of importance in determining foaling rates.

DISPLAY NO. 4 - AGE STRUCTURE

Animal Identification		Number		Herd Number End of Year 5		Percent In Age Group
Year 5 foals	*	34.98	÷	201.14	=	17.39
Yearling (year 4) foals	**	28.89	÷	201.14	=	14.36
2 Years (year 3) foals	***	23.87	÷	201.14	=	11.87
3 Years and Older	****	113.40	÷	201.14	=	56.38
TOTAL		201.14				100.00

*, **, ***, See "Display No. 3 - Year 5"
**** The remainder of the herd of 201.14 horses

The percentages in each age group shown on "Display No. 3" should match the age structure of a herd with a 15% annual increase and a 5% annual death loss.

Note: that the calculations in "Display No. 3" and "Display No. 4" assume a 5% death loss in all age groups. Death loss, at least on a periodic basis, is greater for the foals and the very old. However; since periodic losses cannot be predicted no attempt has been made to enter this into the calculations.

The ages of interest for determining foaling percentages are the foals, the yearlings, those that are 2 years of age, and those that are 3 years of age and older. This breaks the females into the following groups for determining foaling percentages.

Foals and Yearlings = 0% foaling
Two (2) years old = 20% foaling
Three (3) years and over = To be calculated

Note: the 20% foaling rate for 2 year olds is based on data collected in the Susanville District.

To determine the foaling rate for the three (3) and over group certain assumptions and calculations are needed.

Assume a herd of 100 horses, on January 1, of a given year. This will be used as the starting point for calculation.

Half or 50 head of the 100 are female.

The ages of the .95 of the females that survive until foaling time (April, May, June) will be as follows:

Yearling Females
50 total females x 17.39% foals from previous year
x .95 survival = 8.26 female yearlings this year.

2 Year Old Females
50 total females x 14.36% yearlings from previous year
x .95 survival = 6.82 2 year old females this year.

3 Year and Older Females

50 total females x 68.25% (11.87% 2 year old females from previous year and 56.38% females 3 years and older last year) x .95 survival = 32.42 females 3 years and older this year.

Summary	
Yearlings	8.26 females
2 years of age	6.82 females
3 years and older	32.42 females
Total	47.50 females

These 47.50 females must produce 20 foals for the herd to have a 15% increase and allow for a 5% death loss. To accomplish this the foaling percentages shown in "Display No. 5 - Foaling Percentages" will be needed.

DISPLAY NO. 5 - FOALING PERCENTAGES

Age at Foaling Time	Number	Foaling Percentage	Number of Foals Produced
Yearlings	8.26	0.00	0.00
2 Years Old	6.82	20.00	1.36
3 Years and Older	32.42	57.50	18.64
TOTAL	47.50		20.00

The yearlings will produce no foals. The two year old females will produce 1.36 foals. The three year and over group will have a 57.50% foaling rate. This was determined by subtracting the 1.36 foals produced by the two year olds from the 20 foals needed = 18.64 foals to be produced by the three year and over group. 18.64 ÷ 32.42 in the group = 57.50%.

The herd would have 6.82 females two years of age and 32.42 females older than two years of age, for a total of 39.24 females two years of age and older. These are all the females that have any possible chance of foaling. The foaling rate of the entire group would be 20 foals ÷ 39.24 total females of foaling age = a foaling rate of 50.97%.

From these calculated foaling rates one can now move to predicting increases for a Structured Herd.

IV. Increases in a Managed Herd (Structured Herd)

The question now arises as how to apply what District data indicates as being reasonably correct about a Gate Cut Herd to a Structured Herd. The herd being structured so the base herd consists of 25 males and 25 females with off-spring being gathered and placed in the Regular Adoption Program at four years of age or younger. This allows for all excess horses to be removed at the most adoptable ages.

The original structuring of the herd is not addressed here. How this will be done will vary greatly from herd to herd depending on the mix of ages and types of horses in the herd at the time of structuring. Decisions will need to be made as to which horses to place in the base herd, which horses to place in the Regular Adoption Program, and which horses to send to a holding facility. Horses five years of age and older will be difficult to adopt so it is important to leave as many of these older horses in the base herd as possible.

Computed increases for a Structured Herd will be based on replacing a 5% death loss per year. In the past a 6% death loss per year has been used in computing change in population. However, indications are the 5% may be more correct for an average.

At each gathering some horses will be left in each age bracket below five years of age. These will be sufficient to replace those that have died since the last gathering.

For a Gate Cut Herd with a 15% annual increase and a 5% death loss per year, over a four year period, about 13 horses would have died and 50 would have been born. This was computed as follows:

DISPLAY NO. 6 - NEEDED REPLACEMENTS

Start Year	Start Number	5% Death Loss	15% Increase	Needed Foals	End Year
Year 1	50.00	2.50	7.50	10.00	57.50
Year 2	57.50	2.88	8.63	11.51	66.13
Year 3	66.13	3.31	9.92	13.23	76.04
Year 4	76.04	3.80	11.41	15.21	87.45
	Total	12.49	37.46	49.95	87.45

For a Gate Cut Herd, the calculations show that during each four year period, between gathers, that 49.95 horses will be born and that 12.49 horses will die. This is a difference of 49.95 - 12.49 or 37.46 horses. Round this to a 38 head increase for the four (4)year period.

There will need to be 12.49 replacement animals to replace the death loss for the four year period. For practical purposes round this up to 14 horses. Now a determination must be made as how to spread these 14 animals through five (5) age brackets.

In practical application the horses selected for replacement would depend on the horses available. However; for this problem the replacement horses will be spread through five (5) age brackets as follows:

DISPLAY NO. 7 - SPREAD OF REPLACEMENT HORSES

Age	Male	Female	Total
Foal	1	1	2
Yearling	1	1	2
2 Year	1	1	2
3 Years	2	2	4
4 Years	2	2	4
Total Replacements			14

Based on the replacements being spread as shown and using foaling percentages as indicated, a calculated increase for the structured herd follows. These calculations are for a base herd of 50 horses, 25 male and 25 female.

Calculated increase by year follows:

Year 1

1	2	3	4	5	6
start age Jan. 1	start number of females	foaling age about April	numbers surviving until foaling time * col. 2 x .95	percent foaling rate	foals produced col. 4 x col. 5
foal	1	yearling	.95	0.00	0.00
yearling	1	2 years	.95	20.00	0.19
2 years & older	23	3 years & older	21.85	57.50	12.56
Total	25	XXXX	23.75	XXXX	12.75

Fifty at the start of the year x .95 = 47.50 surviving Year 1.

```
  47.50  surviving Year 1
+ 12.75  off-spring for Year 1
  60.25  total at the end of Year 1 (Dec. 31)
- 50.00  at start of Year 1 (Jan. 1)
  10.25  Year 1 increase
```

10.25 increase ÷ 50 at the start of the year = 20.5% increase Year 1.

*Note that death loss is indicated here between January 1 and foaling time. This is actually the loss that occurs between foaling seasons.

Year 2

1	2	3	4	5	6
start age Jan. 1	start number of females	foaling age about April	numbers surviving until foaling time col. 2 x .95	percent foaling rate	foals produced col. 4 x col. 5
foal	* 6.38	yearling	6.06	0.00	0.00
yearling	.95	2 years	.90	20.00	0.18
2 years & older	22.80	3 years & older	21.66	57.50	12.45
Total	30.13	XXXX	28.62	XXXX	12.63

* Female foals on Jan. 1 determined by dividing Year 1 foals by 2.

60.25 horses at the start of Year 2 x .95 = 57.24 surviving Year 2.

57.24 surviving Year 2
+ 12.63 off-spring for Year 2
69.87 total at the end of Year 2 (Dec. 31)
- 60.25 at start of Year 2 (Jan. 1)
9.62 Year 2 increase

9.62 increase ÷ 60.25 at the start of the Year 2 = 15.97% increase Year 2.

Year 3

1	2	3	4	5	
start age Jan. 1	start number of females	foaling age about April	numbers surviving until foaling time col. 2 x .95	percent foaling rate	foals produced col. 4 x col. 5
foal	6.32	yearling	6.00	0.00	0.00
yearling	6.06	2 years	5.76	20.00	1.15
2 years & older	22.56	3 years & older	21.43	57.50	12.32
Total	34.94	XXXX	33.19	XXXX	13.47

69.87 horses at the start of Year 3 x .95 = 66.38 surviving Year 2.

66.38 surviving Year 3
+ 13.47 off-spring for Year 3
79.85 total at the end of Year 3 (Dec. 31)
- 69.87 at start of Year 3 (Jan. 1)
9.98 Year 3 increase

9.98 increase ÷ 69.87 at the start of the Year 3 = 14.28% increase Year 3.

Year 4

1	2	3	4	5	6
start age Jan. 1	start number of females	foaling age about April	numbers surviving until foaling time col. 2 x .95	percent foaling rate	foals produced col. 4 x col. 5
foal	6.74	yearling	6.40	0.00	0.00
yearling	6.00	2 years	5.70	20.00	1.14
2 years & older	27.19	3 years & older	25.83	57.50	14.85
Total	39.93	XXXX	37.93	XXXX	15.99

79.85 horses at the start of Year 4 x .95 = 75.86 surviving Year 4.

75.86	surviving Year 4
+ 15.99	off-spring for Year 4
91.85	total at the end of Year 4 (Dec. 31)
- 79.85	at start of Year 4 (Jan. 1)
12.00	Year 4 increase

12.00 increase Year 4 ÷ 79.85 at the start of the Year 4 = 15.03% increase Year 4.

The age structure is now back to where it was as a Gate Cut Herd. The annual rate of increase will remain at 15% until the herd is again restructured.

In the four year period of calculations the Structured Herd increased from 50 horses up to 92 horses for an increase of 42 horses. The Gate Cut Herd increased from 50 up to 88 horses in the four year period for an increase of 38 horses.

The Structured Herd produced four (4) more off-spring than did the Gate Cut Herd.

V. Comparing the Calculation for the Structured Herd Problem-Against Buckhorn

The Buckhorn Herd with a base herd consisting of 15 males and 35 females (nearly all over three years of age) was able to increase from 50 to 111 head in three foal crops.

The example of the Structured Herd shown in IV. increased from 50 horses to 80 horses in three calculated foal crops (this is an increase of 30 horses).

This can be set up for comparison as follows:

Buckhorn Herd		Example Herd
If 35 females produced and increase of 61 horses in three foal crops.	THEN	25 females should produce an increase of X horses in three foal crops

35 x = 61 times 25 or 1525

X = 1525 divided by 35 or an increase of 43.6 horses that should have been produced by the Buckhorn Herd, in three foal crops, if there had been 25 females rather than 35 females.

The herd in the example showed a calculated increase of 30 horses in three foal crops.

The difference between the Buckhorn is 43.6 minus 30.0 or 13.6 horses. This is because of the two following factors:

1. The Buckhorn Herd had more females of foal bearing age in the herd when structured.

2. Even as a Gate Cut Herd, the Buckhorn Herd was producing at more than a 15% annual increase per year.

VI. General Statement

Data from the Susanville District indicates that the annual rate of increase, in the District, often exceeds 15%. However; the 15% used for these calculations is probably representative of many situations.

For cost analysis the following increases will be used for calculation:

Gate Cut Herd	38 excess horses every 4 years
Structured Herd	42 excess horses every 4 years

The rate of annual increase can be varied, by several percentage points, by selecting replacement horses for the base herd from the foals and yearlings or by selecting replacement horses for the base herd from 2, 3, and 4 year old horses. The more foals and yearlings selected for replacements the lower the rate of annual increase.

On the ground one would expect variation from year to year in both herds.

PART III

APPLICATION OF 1986 ESP WILD HORSE REPORT DATA AND OTHER DATA AND INFORMATION FOR THE PURPOSE OF ESTIMATING FUTURE COSTS OF MANAGING TO IMPROVE WILD HORSE ADOPTABILITY

REVISED DRAFT

Bill Phillips
August 29, 1987
Rev. April 1, 1988
Rev. Jul 6, 1988

I. INTRODUCTION

The intent of this Part is to explore how data gained from the Modoc/Washoe Experimental Stewardship Program Study, comparing three different approaches of management, can be applied to the management of other wild horse herds. To make the data useful it is incorporated with other data and information gained from the on-going Susanville District Wild Horse and Burro Program, which includes management, gathering and adoption.

II. GENERAL DISCUSSION

A. Why Manage to Increase Adoptability?

The Preamble of PL 92-195 of the Wild Horse and Burro Law states:

> To require the protection, management and control of wild free-roaming horses and burros on public lands.

The Law does not define management. A definition from Webster that fits this situation is as follows:

> judicious use of a means to accomplish an end.

PL 92-195, Section 3(a) states in part:

> All Management activities shall be at the minimal feasible level and shall be carried out in consultation with the wildlife agency of the State wherein such lands are located in order to protect the natural ecological balance of all wildlife species which inhabit such lands, particularly endangered wildlife species.

It seems that an appropriate interpretation of "minimum management" would be "that level of management necessary to carry out the entire Law, considering all of the existing factors that affect the execution of the Law."

Section 3b(2)(b) of the Law provides for adoption of excess animals. This follows in order of first destroying the old, the sick, and the lame. There is no doubt that Congress gave full endorsement of Regular (not Fee Waiver) Adoption as the primary means of disposition of excess animals.

Since Congress provided for adoption (the end being that Regular Adoption be the primary way of disposition of excess horses), then it follows that Congress intended that management (a means to that end) should be accomplished.

At the present time many of the horses removed as excess horses, from the typical herd, do not fit the Regular Adoption Program and even with the Fee Waiver Program many are stacked up in Contract Feeding Centers.

The present situation considering horses, that do not move, in the Regular Adoption Program is a follows:

1. Congress chooses not to give even limited authority for sale of excess horses.

2. The Fee Waiver Program is not a viable option for the future.

3. Destruction of healthy horses, in large numbers, will meet with severe opposition.

4. Leaving the horses on the range to multiply, while providing some limited short term relief, will create a disaster of major proportions in the future. If we have a multitude of problems managing 50,000 to 60,000 horses what will happen with 100,000 or more horses.

   One purpose of the Modoc/Washoe ESP Experiment was to find how to make the Wild Horse and Burro Program accomplish the intent of Congress. The experiment deals mostly with the ability of management to bring about a high rate of success with the Regular Adoption Program.

B. Major Factors Affecting Adoptability

   1. The major factors affecting adoptability are as follows:

      a. Age

         One of the most important factors affecting the adoptability of a wild horse is age. Foals of weaning age, yearling and two year old horses are the most highly adoptable. Horses that are three or four years old are adoptable. Horses five years of age and over are difficult to adopt.

         To offer horses of a highly adoptable age, horses must be excessed before they are five years old. This means the gathering of horses of all ages, removing the younger animals to be excessed and returning the older animals to the range to produce more young.

         This also means that the entire herd must be gathered at least every four years so that horses can be excessed before they reach five years of age.

         Experience with the adoption programs in the Susanville District bears out that very few horses adopt in the Regular Adoption Program after they are four years of age.

b. Type

Horses of the light horse type (saddle horses) are most adoptable. There is also a demand for some heavy horses (draft horses).

Also, there is a good demand for light horse - heavy horse crosses where these have been recrossed to the light type so that animals are only 1/8 to 1/16 draft.

Many light horse - heavy horse crosses fall into the hard to adopt group, regardless of age. Some are adopted as foals by people that will be disappointed as the foal grows into a draft horse.

c. Appearance

Appearance plays an important part in adoption. Conformation, balance, an proportion are factors that make a horse attractive to people.

This is where draft - light horse crosses often fall short. They are not attractive to most adopters.

d. Color and Breed Characteristics

Color and breed characteristics play some role in adoptability. However, horses of any color or lacking in specific breed characteristics will adopt. Some may be just a little slower to move.

2. To produce highly adoptable horses the Coppersmith Herd and the Buckhorn Herd have been set up in a program that:

a. Harvests animals before they are five, returning the older animals to the range as a base breeding herd.

b. Selects animals for the base herd that appear to have characteristics that will be reproduced in their off-spring, to provide highly adoptable excess animals.

III. A COST COMPARISON OF MANAGING A WILD HORSE HERD BY TWO DIFFERENT METHODS

The cost of entering into a management program to increase adoptability of wild horses will vary from herd to herd. Each situation must be evaluated on it's own merits. Later in this part, an example comparing the cost of managing a herd by two different methods is shown. The example shows cost factors that need to be considered. Also some herds have other special factors that need to be considered. The two methods of management compared are referred to as the:

A. Managed Herd

This refers to management that will produce highly adoptable horses for the Regular Adoption Program. The goal is to have 100% adoptability.

B. Gate Cut Herd

This refers to management where horses are removed as they come to the trap (Gate Cut).

Cost data is based on data collected from the ESP comparison study, other data collected in the Susanville District and other data and information. Estimated costs used were arrived at by adjusting collected data to fit this particular situation.

IV. BASIC INFORMATION

A. The problem is set up to analyze costs for two (2) management approaches at three levels, as follows:

1. One level of analysis deals with District costs. Major items of analysis are gathering, processing and adoption.

2. A second level of analysis deals with the cost of feeding and caring for unadoptable animals held at contract feeding facilities.

3. The third level combines the District costs and contract feeding facility costs into one analysis.

Note: This analysis focuses on the cost of management of Herd Management Areas and on the cost of the entire program, not on individual animals.

B. Once a horse is shipped to a contract feed yard the problem shows that individual horse staying in the feed yard for two years (730 days), at a cost of $2.55 per day. This is a calculated cost of $1,861.50 for each horse going to a contract feed yard. This is by far the largest cost factor in the problem. There is no way to make an accurate estimate as to what it will be for each horse. A two year period has been used for working the problem.

C. The example is set up with a certain set of assumptions. The example can be modified for a specific herd by adjusting each cost item to fit the specific situation.

The example shows a cost item of bringing all horses for the managed herd to a central holding facility (125 miles from the trap) for the sorting process. After sorting the base herd horses are then hauled back to the range. The example shows hauling costs to be $1,062 or $21.24 per base herd horse. If the decision is made to sort horses at the trap or some place closer to the trap then a new set of costs would need to be developed. These costs could consist of hauling panels to contract extra pens or renting pens or some other arrangement. Also the safety of people working the horses and the safety of the horses being worked would need to be considered.

The above cost items show how certain decisions must be made for each specific herd managed. However, note that both of the above cost items combined (hauling both ways $1,062 and processing supplies $331 or a total of $1,393) is less than the cost of feeding and caring for one (1) horse at a contract feed yard for two (2) years.

V. HERD MANAGEMENT

Structured (Managed) Herd	Gate Cut Herd
Minimum Management Level	Minimum Management Level
50 horses - 6 months or older on January 1 of any given year.	50 horses - 6 months or older on January 1 of any given year.
Maximum Management Level	Maximum Management Level
100 horses - 6 months or older on January 1 of any given year.	100 horses - 6 months or older on January 1 of any given year.
Sex Ratio of Base Herd	Sex Ratio of Base Herd
25 males - 25 females	25 males - 25 females
Age Structure of Base Herd	Age Structure of Base Herd
All ages. See discussion pages 34 & 35 for Structured-Managed Herd	Females and males normal age structure. No specific structure.
Expected Increases	Expected Increases
Fifty (50) horses will increase to 92 horses in a 4 year period; an increase of 42 horses in 4 years. (see Part II).	15% per year - fifty (50 horses will increase to 88 horses in a 4 year period; an increase of 38 horses in 4 years. (see Part II)
Gathering	Gathering
Fall gather every 4 years. Gather all 92 horses.	Fall gather every 4 years. Gather 38 horses.
Removal	Removal
Remove 42 horses.	Remove 38 horses.
Selections for Base Herd	Selections for Base Herd
Select replacements from horses four and under. See discussion for Managed Herd page 35.	Fifty (50) base herd horses left on the range. Selection by gate cut as to which are removed.

Return to the Range	Return to the Range
Fifty (50) base herd horses returned to the range. Base herd will consist of all living horses from the base herd horses selected 4 years before and horses that have been selected to replace base herd horses that have died in the last 4 years.	Base herd horses were left on the range.
Excess Horses for Adoption	Excess Horses for Adoption
All 42 horses removed from herd will be of adoptable age.	Of the 38 horses removed from the range 37% or 14 horses are expected to be over age for adoption. Another 5 horses are expected to be unadoptable for other reasons. This leaves 19 horses for adoption.

VI. COST COMPARISON FOR EACH FOUR YEAR GATHER

Structured Managed Herd		Gate Cut Herd	
Trap set up	$ 1,173	Trap set up	$ 1,173
Helicopter		Helicopter	
Base herd		Base herd - left on range.	
50 horses at 4/hr	= 12.5 hr		
12.5 hr at $240/hr	= $ 3,000		
Excess Horses		Excess Horses	
42 horses at 4/hr	= 10.5 hr	38 horses at 4/hr	= 9.5 hr
10.5 hr at $240/hr	= $ 2,520	9.5 hr at $240/hr	= $ 2,280
Transportation		Transportation	
125 miles from trap to facility (see notes under III).		125 miles from trap to facility (see notes under III).	
Base herd		Base herd	
50 horses at $10.62 ea	= $ 531		
Excess Horses		Excess Horses	
42 horses at $10.62 ea	= $ 446	38 horses at $10.62 ea	= $ 404
Other Vehicles and Equipment		Other Vehicles and Equipment	
Base herd		Base herd - left on range.	
50 horses at $ 2.25 ea	= $ 113		
Excess Horses		Excess Horses	
42 horses at $ 2.25 ea	= $ 95	38 horses at $2.25 ea	= $ 86

Labor

Other than truck driver

Base herd
50 horses at $14.00 ea = $ 700

Excess Horses
42 horses at $14.00 ea = $ 588

Miscellaneous

Base herd
50 horses at $ 1.50 ea = $ 75

Excess Horses
42 Horses at $1.50 ea = $ 63

Processing Supplies

Base Herd
50 horses at $ 6.62 ea = $ 331

Excess Horses
42 horses at $20.25 ea = $ 851

Vet for Processing

Excess Horses
42 horses at $12.00 ea = $ 504

Processing Labor

Base herd
50 horses at $ 3.30 ea = $ 165

Excess Horses
42 horses at $ 3.60 ea = $ 151

Selection & Sorting for Return to the Range

Base herd
50 horses at $ 3.82 ea = $ 191

Feeding & Care at the Facility - Base Herd

Base herd
50 horses for an average of 7 days
at $1.64 per day = $ 574

Labor

Other than truck driver

Base herd - left on range.

Excess Horses
38 horses at $14.00 ea = $ 532

Miscellaneous

Base herd - left on range.

Excess horses
38 horses at $1.50 ea = $ 57

Processing Supplies

Base herd - left on range.

Excess Horses
38 horses at $20.25 ea = $ 770

Vet for Processing

Excess Horses
38 horses at $12.00 ea = $ 456

Processing Labor

Base herd - left on range.

Excess Horses
38 horses at $ 3.60 ea = $ 137

Selection & Sorting for Return to the Range

Base herd - left on range.

Feeding & Care at the Facility - Base Herd

Base herd - left on range.

Transportation Back to the Range	Transportation Back to the Range
Base herd 50 horses at $10.62 ea = $ 531	Base herd - left on range.
Feeding Adoptables at Facility	Feeding Adoptables at Facility
Excess adoptable horses 42 horses for an average of 60 days at $1.64 per day = $ 4,133	Excess adoptable horses 19 horses for an average of 60 days at $1.64 per day = $ 1,870
Feeding Unadoptable Excess Horses at the Facility	Feeding Unadoptable Excess Horses at the Facility
All assumed adoptable.	Unadoptable excess horses 19 horses for an average of 60 days at $1.64 per day = $ 1,870
Adoption of Excess Horses 1/	Adoption of Excess Horses 1/
Excess horses adopted 42 horses at $300.00 ea = $12,600	Excess horses adopted 19 horses at $300.00 ea = $ 5,700
Income from Adopted Horses	Income from Adopted Horses
Adopted horses 42 horses at $125.00 Income of = $ 5,250	Adopted horses 19 horses at $125.00 ea Income of = $ 2,375
Shipping Unadopted Horses	Shipping Unadopted Horses
All assumed adoptable.	Ship by GBL - 1,587 MILES 19 horses at $72 ea = $ 1,368
Feeding Unadoptable Horses at Contract Feed Yard	Feeding Unadoptable Horses at Contract Feed Yard
All assumed adoptable.	Excess unadoptable horses 19 horses for an average of 730 days at $2.55 per day = $35,369

1/ This is an assumed average cost for the program. Note that this includes tranportation costs from point of origin to the adoption site.

VII. SUMMARY OF EACH YEAR 4 GATHER

A.	COST ITEM	STRUCTURED MANAGED HERD	GATE CUT HERD
1.	Local costs associated with handling base herd.	$ 6,211	-0-
2.	Local costs not associated with handling base herd horses.	$23,124	$15,335
3.	Total local cost that comes from the District budget (line 1 + line 2).	$29,335	$15,335
4.	Return from adoption fees. Goes to the Washington Office	$ 5,250	$ 2,375
5.	Shipping to Contract Feed Yard from 5200 funds.	None	$ 1,368
6.	Feed and care cost at Contract Feed Yard. From Washington Office budget.	None	$35,369
7.	Washington Office net costs (line 5 + line 6 less line 4)	- $ 5,250 1/	$34,362
8.	Program net costs (line 3 + line 7)	$24,085	$49,697

1/ The Washington Office will have received $ 5,250 more than it expended for this operation, due to increased adoptions.

Comments For Each 4 Year Gather

At each 4 year gather it will cost the District an extra $14,000. Of this $6,211 (see A. 1) is for Base Herd management and $7,789 for handling of extra adoptable horses (see A. 2) $23,124 minus $15,335 = $7,789. For the local District this is an extra cost of $3,500 each year for a Managed Herd over a Gate Cut Herd ($14,000 divided by 4 = $3,500).

The Washington Office will have a savings of $39,612 for each 4 year period (see A. 7) $5,250 plus $34,362 = $39,612. This would be an annual savings to the Washington Office of $9,903 ($39,612 divided by 4 = $9,903).

The net savings to the Wild Horse and Burro Program will be $25,612 for each 4 year period. Gate Cut Herd cost $49,697 minus Structured Managed Herd cost of $24,085 = $25,612 - (see A. 8).

The annual savings to the overall Wild Horse and Burro Program will be $6,403 for each Base Herd of 50 horses.

VIII. CONCLUSIONS

The combined data in this Wild Horse Report leads to the following conclusions.

A. The use of management to increase adoptability can reduce the costs to the Wild Horse and Burro Program.

The selection of base herd horses that will produce highly adoptable off-spring and harvesting these off-spring before they are five years of age will greatly reduce the number of animals being placed in contract feeding facilities.

Using the same assumptions as illustrated in the Cost Analysis Comparison by herd and assuming that the combined base herds in the future will be about 30,000 horses, the savings to the Program could be nearly four million dollars. This figure was calculated as follows:

> 30,000 horses split into groups of fifty (50) equals 600 groups. Six hundred (600 groups of fifty (50) horses times $6,403 annual savings for each group equals $3,841,800.

Obviously, not every herd can be managed in fifty (50) head increments nor will it be practical to manage every herd in this type of program due to physical limitations of gathering some areas (i.e. topography, trees, access). Variables of each herd will affect the total cost associated with management. However, this calculation illustrates the potential for a very significant cost savings in the Wild Horse and Burro Program if management to increase adoptability is used.

B. The use of management to increase adoptability will increase costs to each District implementing the program. Cost savings will be realized at the National level. (The cheapest way for a District to operate is to gather on a gate cut basis and immediately ship unadoptables to a contract feeding facility. In this way increased costs are charged against the cost of operating the feeding facility not the District.)

The bulk of the funding would need to be shifted to the Districts.

C. There may be some cost savings during the implementation phase. This was not analyzed because of the great variability between existing herds.

D. The use of management to produce adoptable horses can be done in a biologically sound manner.

E. The use of management can reduce the large number of horses presently being placed in the contract feeding facilities. The number of horses being placed in these facilities gives the Wild Horse Program a negative image and was not the intent of the Law. The ability of management to place nearly all excess wild horses through the Regular Adoption Program would be a tremendous positive step for the BLM's Wild Horse and Burro Program.

IX. FINAL STATEMENT

This analysis was based on the very optimistic goal of reaching 100% adoptability in the Regular Adoption Program. It is realized that this goal may not be reached. However; even at a level somewhat short of the goal the savings will be very significant.

The most important point of "management for adoptability" is that it attacks the most costly item in the program rather than making insignificant cost items appear to be more important than they are.

This type of program has the potential to remove the over riding bottleneck so the agencies can get on with the job of protection, management, and control of wild free-roaming horses as intended by PL 92-195.