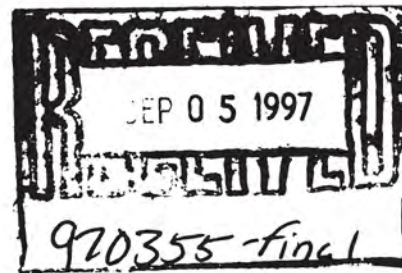




Final Environmental Impact Statement

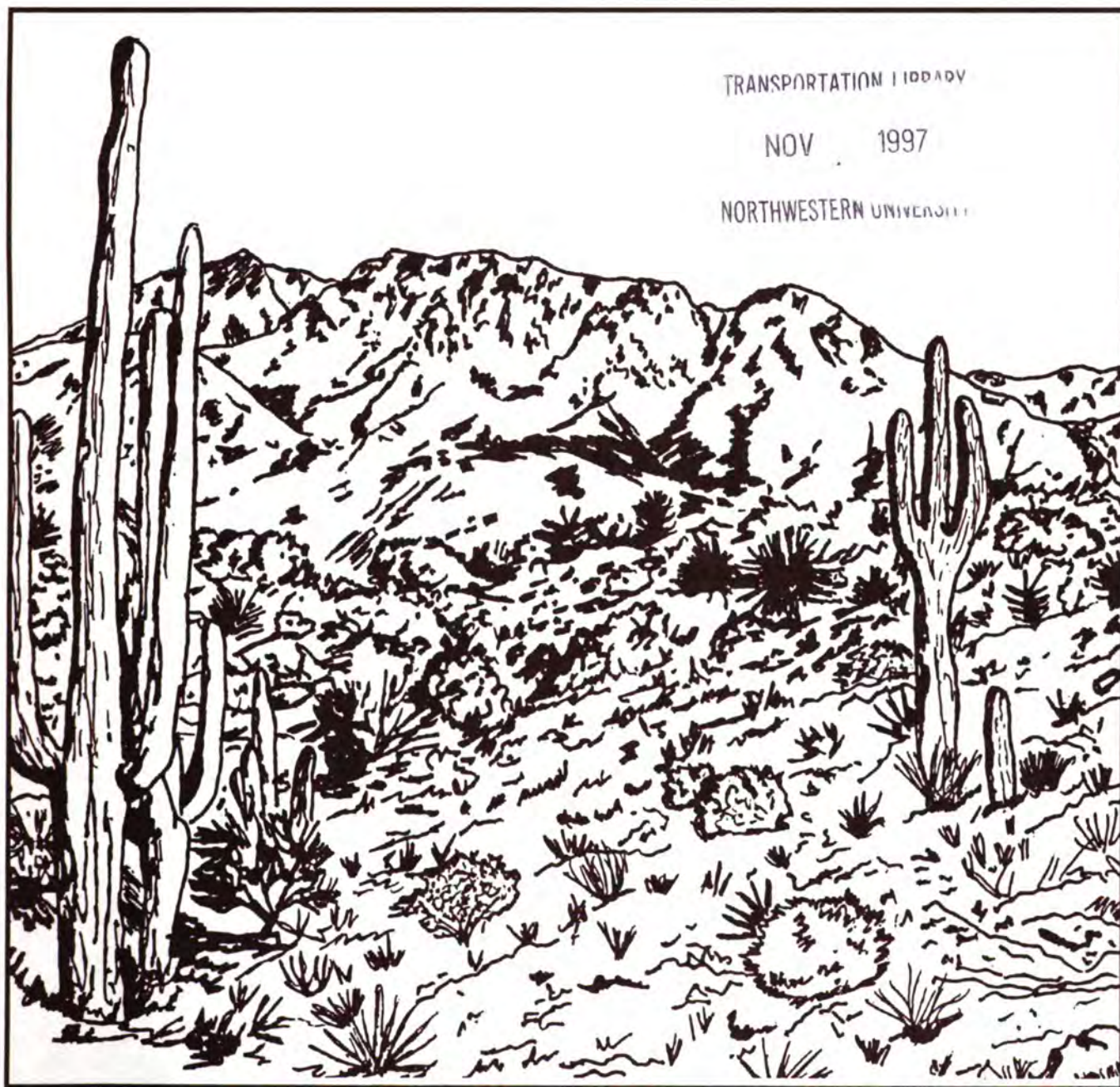


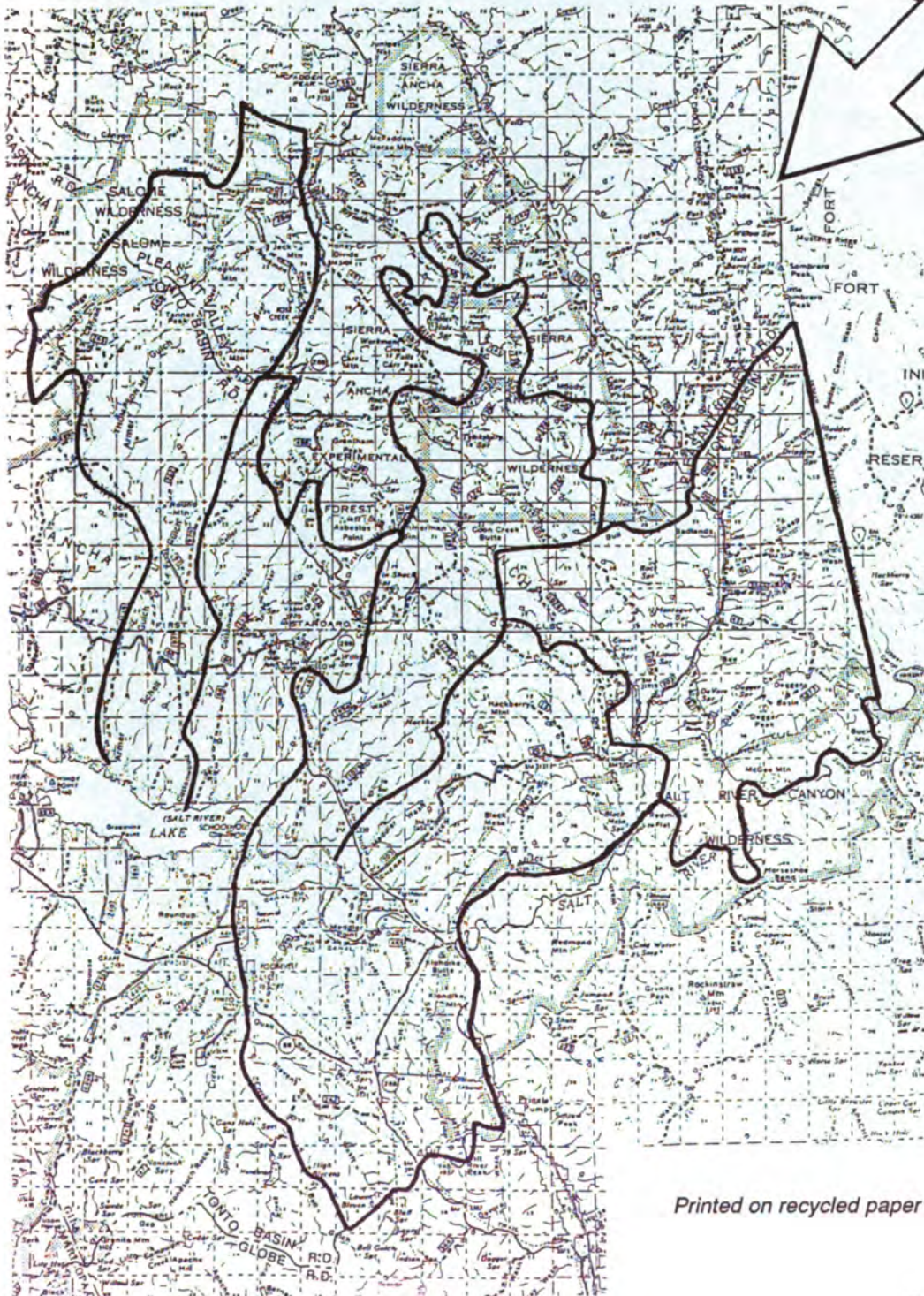
Grazing Strategy and Associated Range Improvements for the Eastern Roosevelt Lake Watershed Analysis Area, Tonto Basin Ranger District, Tonto National Forest

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Final Environmental Impact Statement

Grazing Strategy and Associated Improvements for the Eastern Roosevelt Lake Watershed Analysis Area

USDA Forest Service
Tonto National Forest
Tonto Basin Ranger District
Gila County, Arizona

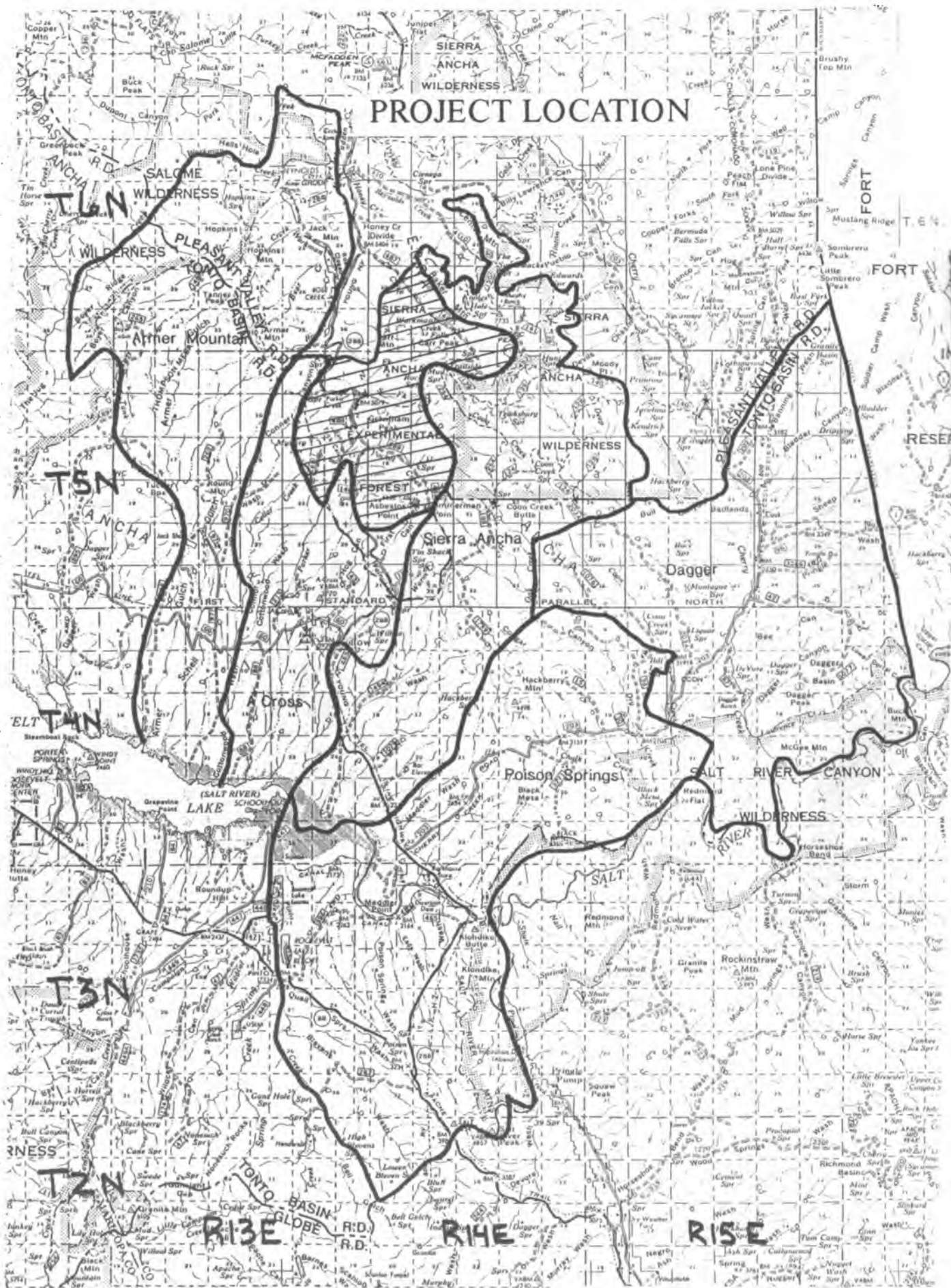
July 1997

Lead Agency:	USDA Forest Service
Responsible Official:	Tina J. Terrell District Ranger
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Abstract: The Tonto National Forest, Tonto Basin Ranger District proposes to develop five management plans for the allotments comprising the Eastern Roosevelt Lake Watershed Analysis Area. These plans are needed to facilitate moving the existing condition toward the identified desired condition. The area contains three designated wilderness areas, threatened and endangered species, and degraded riparian habitat.

Five alternatives for each allotment have been considered for the management of this area. These alternatives are: 1) No action - current management; 2) No grazing; 3) Adjust current management with new improvements and the same number of permitted livestock; 4) Adjust current management with new improvements (except for the A Cross Allotment) and a reduction in permitted livestock numbers; and 5) Adjust current management with new improvements and an increase in permitted livestock numbers. Alternative 3 for each allotment is identified as the preferred alternative in the EIS.

A Draft Environmental Impact Statement was sent out for comment in September 1996. Changes have been made to this final statement as a result of comments on the draft and further analysis.



Summary

The Tonto National Forest proposes to develop management plans for the Armer Mountain, A Cross, Dagger, Poison Springs and Sierra Ancha Allotments. These plans are needed to adjust existing management on each of the allotments. A comparison between the existing and desired conditions indicates that herbaceous ground cover; and species diversity for the Ponderosa Pine/Mixed Conifer; Chaparral, and Riparian vegetation types do not currently reflect the desired condition. Nor does the canopy cover of woody species within the Ponderosa Pine/Mixed Conifer and Desert Scrub vegetation types. It also indicates habitat needs for the Gambel's quail, neotropical migratory birds, most insectivorous bat species, Lowland leopard frog, southwest willow flycatcher, gila topminnow, bald eagle, razorback sucker, and gila roundtail chub are not currently being met. Distributions of livestock on the acres available for livestock grazing currently do not represent the desired condition, nor do the seral stages represented on the various ecological land units present within the analysis area.

The Eastern Roosevelt Lake Watershed Analysis Area (ERLWAA) encompasses more than 167,000 acres and contains five grazing allotments, which are: Armer Mountain, A Cross, Dagger, Poison Springs and Sierra Ancha. There are three designated wilderness areas wholly or partially within the ERLWAA. These are the Salome Wilderness, the Sierra Ancha Wilderness, and the Salt River Canyon Wilderness. The Sierra Ancha Experimental Forest occurs on the A Cross and Sierra Ancha Allotments. Currently, the Tonto National Forest's Land Management Plan has listed livestock use on the Experimental Forest as Level A, No Grazing. On June 29, 1994, a wildfire was started by a lightning strike near Armer Mountain. A total of 5,760 acres was burned. Depending on the recovery of the vegetation of each of the allotments, some priorities may need to be shifted in the future. The Fish and Wildlife Service's Amendment to the Fish and Wildlife Coordination Act Report on Plan 6, Central Arizona, Regulatory Storage Division was prepared as a mitigation plan designed to mitigate impacts on fish and wildlife resources associated with construction and operation of Plan 6. This report states that funding should be available and used to accelerate the implementation of new and revised allotment management plans for 11 allotments around the lake. The Armer Mountain, A Cross, Poison Springs and Sierra

Ancha allotments are included as part of those 11 allotments. An environmental assessment was prepared in December 1995 for the ERLWAA. Based on that assessment, it was determined that additional analyses for this project were required, and that an environmental impact statement would be prepared.

This EIS describes the direct, indirect and cumulative impacts on the environmental resources for the alternatives to the extent necessary to determine if the impacts would be significant. The analyses described in this document will be the basis for a decision regarding the alternatives and the selection of appropriate monitoring and mitigation measures.

Project Alternatives

The project alternatives were selected for analysis in the EIS on the basis of specific criteria, including:

- Public or Agency issue or concern.
- Technical or economic feasibility.

The alternatives analyzed in this EIS are described in detail in Chapter 2, Alternatives. Five alternatives were analyzed in detail for each of the five allotments.

A Cross Allotment

Alternative 1 (no action) — This alternative would maintain the status quo. It would not change the grazing strategy, would not construct any new improvements, and would not change the number of animal unit months (AUM's) (currently 2,280) allowed to graze on the allotment.

Alternative 2 — This alternative would remove all livestock. It would not construct any new improvements.

Alternative 2 — This alternative would implement a deferred rest-rotation grazing strategy. It would have one herd with six pastures and one holding pasture. Two additional pastures would not be grazed per a Memorandum of Understanding for non-use. New range improvements would include: 4 miles of fence, 3 cattleguards, 1 spring development, and 1 mile of pipeline with

2 troughs. The number of AUM's that would be allowed to graze would be 2,280; the same as currently exists.

Alternative 4 — This alternative would implement a deferred rest-rotation grazing strategy. It is exactly like alternative 1 except with fewer permitted AUM's (1,704). It would have one herd with 5 pastures and one holding pasture. There would be no new improvements.

Alternative 5 — This alternative would implement a deferred rest-rotation grazing strategy with the same project design as in Alternative 3. In addition, the Memorandum of Understanding providing non-use in the upper two pastures would be canceled to allow livestock grazing, and the permitted AUM's would be increased to 3,480. It would have one herd with 8 pastures plus one holding pasture. New improvements are the same as listed in Alternative 3.

Armer Mountain

Alternative 1 (no action) — This alternative would maintain the status quo. It would not change the grazing strategy, would not construct any new improvements, and would not change the number of animal unit months (AUM's) (currently 2,509) allowed to graze on the allotment.

Alternative 2 — This alternative would remove all livestock. It would not construct any new improvements.

Alternative 3 — This alternative would implement a deferred rest-rotation grazing strategy. It would have one herd with 7 pastures plus 3 holding pastures. New range improvements would include: 4 miles of fence, 4 miles of road maintenance, 3 spring developments, and 3 miles of pipeline with 6 troughs. The number of AUM's that would be allowed to graze would be 2,509.

Alternative 4 — This alternative would implement a deferred rest-rotation grazing strategy with the same project design as in Alternative 3, except for a less intensive rotation schedule and with fewer AUM's (1,700). It would have one herd with 7 pastures plus 3 holding pastures. New improvements would be the same as listed in Alternative 3.

Alternative 5 — This alternative would implement a deferred rest-rotation grazing strategy with the same project design as in Alternative 3. In addition, the Forest Plan would be amended to place Thompson Mesa in Level D (intensive) management from Level A (no grazing), and the permitted AUM's would be increased to 4,000. It would have one herd with 7 pastures plus 3 holding pastures. New improvements would be the same as those listed in Alternative 3.

Dagger Allotment

Alternative 1 (no action) — This alternative would maintain the status quo. It would not change the grazing strategy, would not construct any new improvements, and would not change the number of animal unit months (AUM's) (currently 3,860) allowed to graze on the allotment.

Alternative 2 — This alternative would remove all livestock. It would not construct any new improvements.

Alternative 3 — This alternative would implement a deferred rest-rotation grazing strategy. It would have 2 herds with 10 pastures and 2 holding pastures. The two new pastures would be specifically for riparian management along Cherry Creek. New range improvements include: 6.75 miles of fence, 1 cattleguard, 1 spring development, and 2 miles of pipeline with 4 troughs. The number of AUM's that would be allowed to graze would be 3,860.

Alternative 4 — This alternative would implement a deferred rest-rotation grazing strategy. It is exactly like Alternative 1 except for few permitted AUM's (3,296). There would be no new range improvements.

Alternative 5 — This alternative would implement a deferred rest-rotation grazing strategy with the same project design as in Alternative 3, except that the permitted AUM's would be increased to 5,060. It would have two herds with 10 pastures plus 2 holding pastures. New improvements would be the same as those listed in Alternative 3.

Poison Springs/Sierra Ancha Allotments

Alternative 1 (no action) — This alternative would maintain the status quo. It would not change the grazing strategy, would not construct any new improvements, and would not change the number of animal unit months (AUM's) (currently 8,471) allowed to graze on the allotment.

Alternative 2 — This alternative would remove all livestock. It would not construct any new improvements.

Alternative 3 — This alternative would implement a deferred rest-rotation grazing strategy. It would have 3 herds with 9 rotation pastures (a total of 25 pastures on the 2 allotments), 4 yearling pastures and one bull pasture. New range improvements include: 25 miles of fence, 3 cattleguards, 2 wells improved, 1 new well drilled, 3 spring developments, and 3 miles of pipeline with 6 troughs. The number of AUM's that would be permitted to graze would be 7,861.

Alternative 4 — This alternative would consist of 6 herds rotating through 25 pastures and 5 holding pastures. Pastures would be used at the same time each year for lengthy periods. Some pastures would be used more than once each year by separate herds. The number of AUM's that would be permitted to graze would be 7,461. The new improvements would be the same as listed in Alternative 3.

Alternative 5 — This alternative would implement two modified Santa Rita grazing systems. One herd would use 12 pastures and 4 holding pastures, and the other herd would use 5 pastures with 3 holding pastures. The permitted AUM's would be increased to 10,200. The new improvements would be the same as listed in Alternative 3.

Issues to Be Resolved

There were three issues identified during the scoping process. These are:

1. **Wildlife Habitat** - potential to affect upland habitat and increase competition between livestock and wildlife species.

2. **Recreation Conflicts** - Livestock and range improvements may not be aesthetically pleasing to some recreationists. New improvements may make it hard for recreationists to access the area.

3. **Economics** - Livestock operation viability can be affected by the kind and number of improvements needed to implement new management. Changing the number of permitted animals on the allotment may also have an effect on the operation's viability.

Summary of Impacts

Detailed analyses of potential impacts and mitigation measures for each resource are presented in the environmental consequences sections in Chapter 3, Affected Environment and Environmental Consequences.

The following information provides a summary of potential impacts, by resource, that would result from implementing the alternatives.

A Cross Allotment

Vegetation: Riparian - Alternative 1 would provide for minimal improvement in canopy and litter cover. This increase will be to such an extent that the condition of the riparian areas might become good, but would not withstand flood events. In areas where cattle tend to congregate, the riparian areas would degrade, possibly affecting downstream riparian conditions, regardless of the amount of livestock use. Alternative 4 would probably result in riparian conditions slightly better than Alternative 1, due to its fewer livestock numbers.

Alternatives 3 and 5 could likely have positive effects on riparian conditions. The benefits seen under these alternatives would be an increase in canopy cover, ground cover and litter. Alternative 3 would result in the greatest improvement of the action alternatives. Alternative 5 would see the least improvement between the two, and would impact the riparian areas which are currently ungrazed in the upper two pastures.

Riparian areas would improve faster and to the greatest extent under Alternative 2 in the lower portion of the allotment.

Other Vegetation - Currently, range condition in the lower elevations is either static or declining. Alternatives 1 and 4 will result in decreased vegetative cover in areas of greater livestock use, increasing surface runoff and soil erosion in these areas. The difference between Alternatives 1 and 4 is the size of the area being impacted. It will be smaller in Alternative 4 due to the fewer numbers of livestock.

Alternatives 3 and 5 are expected to improve livestock distribution. Alternative 3 has a more intensive management strategy and will result in the greatest improvement in the current high use areas.

Alternative 2 would also improve the high use areas. However, the upland areas, especially those within the desert scrub and semidesert grassland, will respond the same as described for Alternatives 3 and 5.

Soil and Water - Soil erosion and water quality are affected by the amount of soil disturbance and the vegetative cover. Alternatives 3 and 5 are the only ones containing new range improvements, which would contribute to soil disturbance in some areas. Most of this disturbance is expected to be short-lived due to the vegetative growth in these areas. Their contribution to soil movement would be short-lived; therefore, alternatives 2, 3 and 5 would result in the most improvement in vegetative cover on the allotment. Alternative 2 would result in the greatest improvement in the riparian areas, followed by Alternative 3 and then 5. Alternatives 2 and 3 would be about the same in the upland areas. Alternative 1 would result in further decline in the current high use areas, increasing surface runoff and soil erosion. The same would be expected for Alternative 4, except these areas would be smaller in size.

Wildlife and TES Species - Alternatives 2-5 should make additional forage and cover available for game species, but will have little affect on populations. The main concern is for threatened, endangered and sensitive species. Most of these species are dependant on riparian areas and, therefore, will benefit from improvement in riparian conditions. As seen from the description above, Alternative 2 would result in the greatest improvement in riparian conditions, followed by 3 and then 5. There would be minimal improvement from current management under Alternative 4.

Air Quality - None of the alternatives are expected to affect air quality through the project area. Dust and other pollutants may be produced for short periods in localized areas when livestock are rotated through pastures, and new improvements are constructed, but these are expected to be short-lived and occur once every 3-6 months.

Livestock Distribution - Livestock distribution is not a factor under Alternative 2. It would improve the most under Alternative 3, followed by Alternative 5. Livestock distribution would be minimally affected by Alternative 4, and would not be affected under Alternative 1.

Ranch Operation Viability - Alternative 2 would have the greatest negative impact on ranch operation viability and the local economy, followed by Alternative 4, with its reduction in livestock numbers. Alternative 5 would have the greatest positive impact to the viability of the operation, with the increase in livestock numbers, followed by Alternative 3. The long-term impact of Alternative 1 would be negative, because numbers would probably have to be adjusted eventually to protect resources in the lower portion of the allotment.

Cost/Benefit Analysis - The cost/benefit analysis expresses the most advantageous course of action in terms of monetary benefits alone. Benefits are derived from AUM market value. Costs are those associated with constructing and maintaining improvements, and administration. The following list displays the alternatives from the greatest cost/benefit ratio to the least: 5, 1, 3, 4, 2.

Dagger Allotment

Vegetation: Riparian - Alternative 1 would provide for minimal improvement in canopy and litter cover. This increase will be to such an extent that the condition of the riparian areas might become good, but would not withstand flood events. In areas where cattle tend to congregate, the riparian areas would degrade, possibly affecting downstream riparian conditions, regardless of the amount of livestock use. Alternative 4 would probably result in riparian conditions slightly better than Alternative 1, due to its fewer livestock numbers.

Alternatives 3 and 5 could likely have positive effects on riparian conditions. The benefits seen under these alternatives would be an increase in canopy cover, ground cover and litter. Alternative 3 would result in the greatest improvement of the action alternatives. Riparian areas would improve faster and to the greatest extent under Alternative 2 in the lower portion of the allotment.

Other Vegetation - Currently, range condition in the lower elevations is either static or slightly improving. Alternatives 1 and 4 will result in decreased vegetative cover in areas of greater livestock use, increasing surface runoff and soil erosion in these areas.

Alternatives 3 and 5 are expected to improve livestock distribution. Alternative 3 has a more intensive management strategy and will result in the greatest improvement in the current high use areas.

Alternative 2 would also improve the high use areas. However, the upland areas, especially those within the desert scrub and semidesert grassland, will respond the same as described for Alternatives 3 and 5.

Soil and Water - Soil erosion and water quality are affected by the amount of soil disturbance and the vegetative cover. Alternatives 3 and 5 are the only ones containing new range improvements, which would contribute to soil disturbance in some areas. Most of this disturbance is expected to be short-lived due to the vegetative growth in these areas. Their contribution to soil movement would also be short-lived; therefore, Alternatives 2, 3 and 5 would result in the most improvement in vegetative cover on the allotment. Alternative 2 would result in the greatest improvement in the riparian areas, followed by Alternative 3, and then 5. Alternatives 2 and 3 would be about the same in the upland areas. Alternative 1 would result in further decline in the current high use areas, increasing surface runoff and soil erosion. The same would be expected for Alternative 4, except these areas would be smaller in size.

Wildlife and TES Species - Alternatives 2, 3 and 5 should make additional forage and cover available for game species, but will have little affect on populations. The main concern is for threatened, endangered and sensitive species. Most of these species are dependant on riparian

areas and, therefore, will benefit from improvement in riparian conditions. As seen from the description above, Alternative 2 would result in the greatest improvement in riparian conditions, followed by Alternative 3 then 5. There would be minimal improvement from current management under Alternative 4.

Air Quality - None of the alternatives are expected to affect air quality through the project area. Dust and other pollutants may be produced for short periods in localized areas when livestock are rotated through pastures, and new improvements are constructed, but these are expected to be short-lived and occur once every 3-6 months.

Livestock Distribution - Livestock distribution is not a factor under Alternative 2. It would improve the most under Alternative 5, followed by Alternative 3. Livestock distribution would be minimally affected by Alternative 4, and would not be affected under Alternative 1.

Ranch Operation Viability - Alternative 2 would have the greatest negative impact on ranch operation viability and the local economy, followed by Alternative 4, with its reduction in livestock numbers. Alternative 5 would have the greatest positive impact to the viability of the operation, with the increase in livestock numbers, followed by Alternative 3.

Cost/Benefit Analysis - The cost/benefit analysis expresses the most advantageous course of action in terms of monetary benefits alone. Benefits are derived from AUM market value. Costs are those associated with constructing and maintaining improvements, and administration. The following list displays the alternatives from the greatest cost/benefit ratio to the least: 5, 3, 1, 4, 2.

Armer Mountain Allotment

Vegetation: Riparian - Alternative 1 would provide for minimal improvement in canopy and litter cover. This increase will be to such an extent that the condition of the riparian areas might become good, but would not withstand flood events. In areas where cattle tend to congregate, the riparian areas would degrade, possibly affecting downstream riparian conditions, regardless of the amount of livestock use.

Alternatives 3, 4 and 5 could likely have positive effects on riparian conditions. The benefits seen under these alternatives would be an increase in canopy cover, ground cover and litter. Alternative 4 would result in the greatest improvement of the action alternatives, followed closely by Alternative 3. Alternative 5 would see the least improvement between the three. Alternative 4 would probably result in riparian conditions slightly better than Alternative 3 or 5, due to its fewer livestock numbers.

Riparian areas would improve faster and to the greatest extent under Alternative 2 in the lower portion of the allotment.

Other Vegetation - Currently, range condition in the lower elevations is either static or slightly improving. This would be expected to continue under Alternative 1, except in the current high use areas.

Alternatives 3, 4 and 5 are expected to improve livestock distribution. Alternative 3 has a more intensive management strategy and will result in the greatest improvement in the current high use areas. Alternative 4 would result in greater improvement than Alternative 5.

Alternative 2 would also improve the high use areas. However, the upland areas, especially those within the desert scrub and semi-desert grassland, will respond the same as described for Alternatives 3-5.

Soil and Water - Soil erosion and water quality are affected by the amount of soil disturbance and the vegetative cover. Alternatives 3-5 are the only ones containing new range improvements, which would contribute to soil disturbance in some areas. Most of this disturbance is expected to be short-lived due to the vegetative growth in these areas. Their contribution to soil movement would also be short-lived; therefore, Alternatives 2-5 would result in the most improvement in vegetative cover on the allotment. Alternative 2 would result in the greatest improvement in the riparian areas, followed by Alternative 4, then 3 and then 5. Alternatives 2, 3 and 4 would be about the same in the upland areas. Alternative 1 would result in further decline in the current high use areas, increasing surface runoff and soil erosion.

Wildlife and TES Species - Alternatives 2-5 should make additional forage and cover available for game species, but will have little effect on populations. The main concern is for threatened, endangered and sensitive species. Most of these species are dependant on riparian areas and, therefore, will benefit from improvement in riparian conditions. As seen from the description above, Alternative 2 would result in the greatest improvement in riparian conditions, followed by Alternative 4, and then 3, and then 5.

Air Quality - None of the alternatives are expected to affect air quality through the project area. Dust and other pollutants may be produced for short periods in localized areas when livestock are rotated through pastures, and new improvements are constructed, but these are expected to be short-lived and occur once every 3-6 months.

Livestock Distribution - Livestock distribution is not a factor under Alternative 2. It would improve the most under Alternatives 3 and 5, followed by Alternative 4. Livestock distribution would not be affected under Alternative 1.

Ranch Operation Viability - Alternative 2 would have the greatest negative impact on ranch operation viability and the local economy, followed by Alternative 4, with its reduction in livestock numbers. Alternative 5 would have the greatest positive impact to the viability of the operation, with the increase in livestock numbers, followed by Alternative 3.

Cost/Benefit Analysis - The cost/benefit analysis expresses the most advantageous course of action in terms of monetary benefits alone. Benefits are derived from AUM market value. Costs are those associated with constructing and maintaining improvements, and administration. The following list displays the alternatives from the greatest cost/benefit ratio to the least: 5, 2, 1, 3, 4.

Polson Springs/Sierra Ancha Allotments

Vegetation: Riparian - Alternatives 1 and 4 would provide for minimal improvement in canopy and litter cover. This increase will be to such an extent that the condition of the riparian

areas might become good, but would not withstand flood events. In areas where cattle tend to congregate, the riparian areas would degrade, possibly affecting downstream riparian conditions, regardless of the amount of livestock use.

Alternatives 3 and 5 could likely have positive effects on riparian conditions. The benefits seen under these alternatives would be an increase in canopy cover, ground cover and litter. Alternative 3 would result in the greatest improvement of the action alternatives, followed by Alternative 5.

Riparian areas would improve faster and to the greatest extent under Alternative 2 in the lower portion of the allotment.

Other Vegetation - Currently, range condition in the lower elevations is either static or declining. This would be expected to continue under Alternatives 1 and 4.

Alternatives 3 and 5 are expected to improve livestock distribution. Alternative 3 has a more intensive management strategy and will result in the greatest improvement in the current high use areas.

Alternative 2 would also improve the high use areas. However, the upland areas, especially those within the desert scrub and semi-desert grassland, will respond the same as described for Alternatives 3 and 5.

Soil and Water - Soil erosion and water quality are affected by the amount of soil disturbance and the vegetative cover. Alternatives 3-5 are the only ones containing new range improvements, which would contribute to soil disturbance in some areas. Most of this disturbance is expected to be short-lived due to the vegetative growth in these areas. Their contribution to soil movement would also be short-lived; therefore, Alternatives 2, 3 and 5 would result in the most improvement in vegetative cover on the allotment. Alternative 2 would result in the greatest improvement in the riparian areas, followed by Alternative 3, then 5 and then 4. Alternatives 2 and 3 would be about the same in

the upland areas. Alternatives 1 and 4 would result in further decline in the current high use areas, increasing surface runoff and soil erosion.

Wildlife and TES Species - Alternatives 2, 3 and 5 should make additional forage and cover available for game species, but will have little affect on populations. The main concern is for threatened, endangered and sensitive species. Most of these species are dependant on riparian areas and, therefore, will benefit from improvement in riparian conditions. As seen from the description above, Alternative 2 would result in the greatest improvement in riparian conditions, followed by Alternative 3, and then 5.

Air Quality - None of the alternatives are expected to affect air quality through the project area. Dust and other pollutants may be produced for short periods in localized areas when livestock are rotated through pastures, and new improvements are constructed, but these are expected to be short-lived and occur once every 3-6 months.

Livestock Distribution - Livestock distribution is not a factor under Alternative 2. It would improve the most under Alternatives 5 and 3, followed by Alternative 4. Livestock distribution would not be affected under Alternative 1.

Ranch Operation Viability - Alternative 2 would have the greatest negative impact on ranch operation viability and the local economy, followed by Alternative 4, with its reduction in livestock numbers. Alternative 5 would have the greatest positive impact to the viability of the operation, with the increase in livestock numbers, followed by Alternative 3.

Cost/Benefit Analysis - The cost/benefit analysis expresses the most advantageous course of action in terms of monetary benefits alone. Benefits are derived from AUM market value. Costs are those associated with constructing and maintaining improvements, and administration. The following list displays the alternatives from the greatest cost/benefit ratio to the least: 1, 5, 3, 2, 4.

Armer Mountain Allotment - This table shows the new and total number of range improvements for each alternative. The "Total" column for each alternative equals the improvements existing on the allotment (Total under Alternative 1) and the new improvements proposed for that alternative.

Improvements per Alternative	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5	
	New	Total	New	Total	New	Total	New	Total	New	Total
Miles of Fence	0	54	0	0	4	58	4	58	4	58
Number of Corrals	0	4	0	0	0	4	0	4	0	4
Number of Wells	0	0	0	0	0	0	0	0	0	0
Number of Spring Developments	0	12	0	2	3	15	3	15	3	15
Miles of Pipeline	0	4	0	0	3	7	3	7	3	7
Number of Troughs	0	7	0	0	6	13	6	13	6	13
Number of Cattleguards	0	4	0	0	0	4	0	4	0	4
Number of Dirt Tanks	0	10	0	2	0	10	0	10	0	10
Number of Pastures	0	9	0	0	1	10	1	10	2	11
Permitted AUM's	2,509		0		2,509		1,700		4,000	

A Cross Allotment - This table shows the new and total number of range improvements for each alternative. The "Total" column for each alternative equals the improvements existing on the allotment (Total under Alternative 1) plus the new improvements proposed for that alternative.

Improvements per Alternative	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5	
	New	Total	New	Total	New	Total	New	Total	New	Total
Miles of Fence	0	40	0	0	4	44	0	40	4	44
Number of Corrals	0	2	0	0	0	2	0	2	0	2
Number of Wells	0	2	0	0	0	2	0	2	0	2
Number of Spring Developments	0	9	0	0	1	10	0	9	1	10
Miles of Pipeline	0	6	0	2	1	7	0	6	1	7
Number of Troughs	0	12	0	1	2	14	0	12	2	14
Number of Cattleguards	0	4	0	0	3	7	0	4	3	7
Number of Dirt Tanks	0	4	0	1	0	4	0	4	0	4
Number of Pastures	0	6	0	0	1	7	0	6	1	7
Permitted AUM's	6,140		0		6,140		5,000		8,540	

Dagger Allotment - This table shows the new and total number of range improvements for each alternative. The "Total" column for each alternative equals the improvements existing on the allotment (Total under Alternative 1) plus the new improvements proposed for that alternative.

Improvements per Alternative	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5	
	New	Total	New	Total	New	Total	New	Total	New	Total
Miles of Fence	0	68	0	0	6.75	74.75	0	68	6.75	74.75
Number of Corrals	0	10	0	0	0	10	0	10	0	10
Number of Wells	0	9	0	1	0	9	0	9	0	9
Number of Spring Developments	0	2	0	0	1	3	0	2	1	3
Number of Storage Tanks	0	5	0	1	0	5	0	5	0	5
Miles of Pipeline	0	10	0	2	2	12	0	10	2	12
Number of Troughs	0	22	0	1	4	26	0	22	4	26
Number of Cattleguards	0	5	0	0	1	6	0	5	1	6
Number of Dirt Tanks	0	3	0	1	0	3	0	3	0	3
Number of Pastures	0	8	0	0	2	10	0	8	2	10
Permitted AUM's	6,140		0		6,140		5,000		8,540	

Polson Spring/Sierra Ancha Allotments - This table shows the new and total number of range improvements for each alternative. The "Total" column for each alternative equals the improvements existing on the allotment (Total under Alternative 1) plus the new improvements proposed for that alternative.

Improvements per Alternative	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5	
	New	Total	New	Total	New	Total	New	Total	New	Total
Miles of Fence	0	118	0	18	25	143	25	143	25	143
Number of Corrals	0	16	0	0	0	16	0	16	0	16
Number of Wells	0	8	0	0	1	9	1	9	1	9
Number of Spring Developments	0	12	0	2	3	15	3	15	3	15
Miles of Pipeline	0	4	0	0	3	7	3	7	3	7
Number of Troughs	0	7	0	0	6	13	6	13	6	13
Number of Cattleguards	0	4	0	0	0	4	0	4	0	4
Number of Dirt Tanks	0	10	0	2	0	10	0	10	0	10
Number of Pastures	0	9	0	0	5	25	16	25	16	25
Permitted AUM's	8,471		0		7,861		7,261		10,200	

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RECORD OF DECISION

Grazing Strategy and Associated Improvements
Dagger Allotment
Tonto Basin Ranger District
USDA Forest Service
Gila County, Arizona

Decision and Rational

It is my decision to implement Alternative 3 for the grazing strategy and range improvements for the Dagger Allotment. When compared to the other alternatives, the grazing strategy provides the greatest level of response to all of the issues raised. It provides for improvement in vegetative cover through better livestock distribution and intensive range management on 33,933 acres of forest land. It will provide for management of stream, spring, and lake shore riparian; management of recreation conflicts within water-based recreation areas; and manage towards the established Tonto National Forest Plan objectives and goals.

All practicable means have been employed to avoid and/or minimize environmental harm. Detailed descriptions of required mitigation can be found in Chapter 2 of the environmental impact statement (EIS). This EIS was written for the Eastern Roosevelt Lake Watershed Analysis Area (ERLWAA), which includes five grazing allotments. These allotments are: Armer Mountain, A Cross, Dagger, Poison Springs and Sierra Ancha. The Range/Watershed/Soils Staff Officer will be responsible for seeing the project is implemented on the ground as designed. Specific monitoring activities are described in the EIS. These activities include: inspections, upland transects per the Tonto Basin Ranger District's Rangeland Management Plan, Tonto Riparian Inventory and Monitoring Methods (TRIMM) surveys in key riparian areas, and permanent photo points within riparian areas.

Public Involvement and Scoping

Consultation and public involvement for the ERLWAA was sought from 1992 through 1996. Four public meetings, three public notices, and several letters to interested/affected publics (including the Tonto National Forest's Environmental Analysis Status Report) gave people an opportunity to comment on the proposal. During scoping activities, forty-two people attended the meetings, twenty-seven comment letters were received, and numerous phone contacts were made. Scoping activities identified three substantive issues: wildlife habitat, recreation conflicts, and economics. The specific people and agencies involved with this project are documented in Chapters 4 and 5 of the EIS for ERLWAA.

Comments received throughout the scoping and analysis were considered in this process. An explanation of the comments received prior to the release of the draft EIS and how they were dealt with is contained in Chapter 5 of the EIS.

A draft EIS was issued in September, 1996. The formal comment period on the draft EIS ended

on November 30, 1996. Additional comments were accepted and considered in this decision up until the last practical time (May, 1997) before finalizing the EIS. Thirty-seven formal comments were received. Each comment and an agency response have been included in the final EIS in Chapter 6.

In response to the comments on the DEIS the following changes have been made in the FEIS:

1. The Purpose and Need (EIS, Chapter 1) discussion has been expanded to include two new tables to more accurately describe the existing condition. The table which displays the desired condition for the vegetative attributes on the ERLWAA (Table 4) has been changed such that it is more realistic per the General Ecosystem Survey for the area.
2. The Alternative descriptions (EIS, Chapter 2) have been expanded for further clarification. Alternative 4 for the A Cross Allotment and the Dagger Allotment have been changed so that it has the same project design as Alternative 1, except for the number of permitted AUM's. Prescribed burns are no longer proposed as new improvements for any of the allotments under any alternative.
3. The discussion of effects on vegetation (EIS, Chapter 3) has been expanded to incorporate information from the General Ecosystem Survey.
4. The discussion of effects on air quality (EIS, Chapter 3) has been changed to reflect the removal of the prescribed burns from the proposed action, and to include a discussion on the presence of Class I areas within or near the project area.
5. An analysis of the effects each alternative would have on the local economy has been included in the Cost/Benefit discussion (EIS, Chapter 3).
6. Appendices I, J, K and L have been added as support information. Appendix I illustrates the GES map units within the project area. Appendix J displays the stocking rate as Acres/AUM for each alternative for each allotment. Appendix K display recommended initial stocking rates in Acres/AUM. Appendix L summarizes the management emphasis, and standards and guidelines for each of the Management Areas found within the ERLWAA as identified in the Tonto Land Management Plan (LMP).
7. Several editorial corrections have been made throughout the document.

Alternatives Considered

The alternatives considered in detail for the Armer Mountain Allotment include a no action alternative, a no livestock grazing alternative, and three grazing alternatives that respond to the needs for the action and the issues (see Chapter 1 of the EIS). One other alternative was dropped from detailed study.

Detailed Alternatives:

Alternative 1 (no action): This alternative would maintain the status quo. It would not change the grazing strategy, would not construct any new range improvement projects, would not create smaller pastures, would not change the number of Animal Unit Months (AUM's) that would be permitted to graze (2509), would not meet the Forest Plan objectives, and the issues and concerns identified during the scoping would not be resolved.

Alternative 2: This alternative would remove all livestock. It does not meet the direction of the Tonto National Forest Plan. This alternative was not selected because it is expected that substantial resource improvement can occur with improved grazing management.

Alternative 3 (selected alternative): This alternative would implement a deferred rest-rotation grazing strategy. It would have one herd with 7 pastures plus three holding pastures. New range improvements to be constructed include: 4 miles of fence, 4 miles of road maintenance, 3 spring developments, and 3 miles of pipeline with 6 troughs. The number of AUM's that would be permitted to graze would be 2509. It is compatible with riparian, visual, cultural, air quality, watershed, and soils resource objectives.

Alternative 4: This alternative would implement a deferred rest-rotation grazing strategy with the same project design as in the selected alternative, except for a less intensive rotation schedule and with fewer permitted AUM's (1700). It would have one herd with 7 pastures plus three holding pastures. New range improvements to be constructed include: 4 miles of fence, 4 miles of road maintenance, 3 spring developments, and 3 miles of pipeline with 6 troughs. It would not provide for the greatest improvement in condition of resources, and the issues and concerns identified during the scoping process would not be resolved.

Alternative 5: This alternative would implement a deferred rest-rotation grazing strategy with the same project design as in the selected alternative. In addition, the Forest Plan would be amended to place Thompson Mesa in Level D (intensive) management from Level A (no grazing), and the permitted AUM's would be increased to 4000. It would have one herd with 7 pastures plus three holding pastures. New range improvements to be constructed include: 4 miles of fence, 4 miles of road maintenance, 3 spring developments, and 3 miles of pipeline with 6 troughs. It would not provide for the greatest improvement in condition of resources, and the issues and concerns identified during the scoping process would not be resolved.

Eliminated Alternative

This alternative consisted of changing the current grazing permit such that it would allow only seasonal use on the allotment. Grazing by domestic livestock would only be permitted from September/October through March/April. This alternative was eliminated because it would not be technically or economically feasible.

This alternative was not considered in detail because of the undue hardship it would place on the permittee. Under this alternative livestock would have to be removed from the allotment for several months each year. The permittee would be required to find a place for the animals during this period. The private land base in Gila County is only approximately 3%. It would be very difficult to find enough conjoined acres to support the animals. If the land base was available, there would be the added cost of purchasing the land, and trucking the animals twice each year. If the land base was not available, the permittee would have to sell the entire herd, and then buy back each year. This is not consistent with good livestock production or business practices.

Findings Required by Other Laws

The A Cross Allotment is located in Management Areas 6F, 6J, 5D, 5E and 5F of the Tonto National Forest. The project is consistent with the intent of the forest plan's long term goals and objectives. The project was designed in conformance with the forest plan standards and incorporates appropriate forest plan guidelines. The National Forest Management Act (NFMA) requirements have been met and are addressed in the EIS for the ERLWAA.

A Biological Assessment and Evaluation on the ERLWAA for fourteen species was completed by the Zone Biologist and is included in the project record for this process. Four threatened and endangered species and ten sensitive species were found in the ERLWAA. A "no impact" determination was made for the gila roundtail chub, Hohokam agave, Tonto Basin agave, lowland leopard frog, Northern goshawk, green-backed heron, black-crowned night heron, Gila monster, Maricopa tiger beetle, and Yavapai pocket mouse. A "may affect" determination was made for the bald eagle, Mexican spotted owl, Southwestern willow flycatcher, and razorback sucker. The US Fish and Wildlife Service concurred with the agency findings, stating that the action would not jeopardize the continued existence of the four species of concern.

Environmentally Preferred Alternative

Alternative 2, the no grazing alternative, is the environmentally preferred alternative. This alternative would remove domestic livestock from the allotment. No new developments would be constructed. Most of the existing improvements would be removed. Current degraded riparian areas would recognize the greatest benefit from this alternative.

This alternative was not chosen because it does not address the socioeconomic issues and objectives, as does Alternative 3. Even though Alternative 3 is not the environmentally preferred alternative, it does provide for a high level of environmental protection, and resource improvement over current management while better addressing the socioeconomic issues identified.

Implementation Date

The project will not be implemented sooner than five business days following the close of the

appeal period established in the notice of decision in the **Payson Roundup**. If an appeal is filed, implementation will not begin sooner than 15 calendar days following a final decision on the appeal. Implementation means actually doing the ground disturbing actions described in this notice. Field project preparation work may proceed (survey, design, contract preparation, etc.).

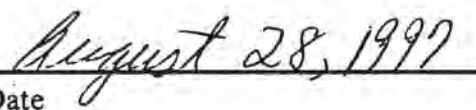
Appeal Rights Statement

This decision is subject to appeal in accordance with 36 CFR 215.7. A notice of appeal must be in writing and clearly state that it is a Notice of Appeal being filed in pursuant to 36 CFR 215. Appeals must be filed with the Regional Forester, Southwestern Region, 517 Gold SW, Albuquerque, NM 87102-0084 within 45 days of the date of legal notice of this decision in the **Payson Roundup**.

For additional information concerning this decision or the Forest Service appeal process, contact the District Ranger, Tina J. Terrell, Tonto Basin Ranger District, HC02 Box 4800, Roosevelt, Arizona 85545, (520) 467-3200.


TINA J. TERRELL

District Ranger
Tonto Basin Ranger District


Date

RECORD OF DECISION

Grazing Strategy and Associated Improvements
Armer Mountain Allotment
Tonto Basin Ranger District
USDA Forest Service
Gila County, Arizona

Decision and Rational

It is my decision to implement Alternative 3 for the grazing strategy and range improvements for the Armer Mountain Allotment. When compared to the other alternatives, the grazing strategy provides the greatest level of response to all of the issues raised. It provides for improvement in vegetative cover through better livestock distribution and intensive range management on 31,702 acres of forest land. It will provide for management of stream, spring, and lake shore riparian; management of recreation conflicts within water-based recreation areas; and manage towards the established Tonto National Forest Plan objectives and goals.

All practicable means have been employed to avoid and/or minimize environmental harm. Detailed descriptions of required mitigation can be found in Chapter 2 of the environmental impact statement (EIS). This EIS was written for the Eastern Roosevelt Lake Watershed Analysis Area (ERLWAA), which includes five grazing allotments. These allotments are: Armer Mountain, A Cross, Dagger, Poison Springs and Sierra Ancha. The Range/Watershed/Soils Staff Officer will be responsible for seeing the project is implemented on the ground as designed. Specific monitoring activities are described in the EIS. These activities include: inspections, upland transects per the Tonto Basin Ranger District's Rangeland Management Plan, Tonto Riparian Inventory and Monitoring Methods (TRIMM) surveys in key riparian areas, and permanent photo points within riparian areas.

Public Involvement and Scoping

Consultation and public involvement for the ERLWAA was sought from 1992 through 1996. Four public meetings, three public notices, and several letters to interested/affected publics (including the Tonto National Forest's Environmental Analysis Status Report) gave people an opportunity to comment on the proposal. During scoping activities, forty-two people attended the meetings, twenty-seven comment letters were received, and numerous phone contacts were made. Scoping activities identified three substantive issues: wildlife habitat, recreation conflicts, and economics. The specific people and agencies involved with this project are documented in Chapters 4 and 5 of the EIS for ERLWAA.

Comments received throughout the scoping and analysis were considered in this process. An explanation of the comments received prior to the release of the draft EIS and how they were dealt with is contained in Chapter 5 of the EIS.

A draft EIS was issued in September, 1996. The formal comment period on the draft EIS ended

Supplemental Information

to

Final Environmental Impact Statement for the Grazing Strategy and Associated Range Improvements for the Eastern Roosevelt Lake Watershed Analysis Area

USDA Forest Service
Tonto National Forest
Tonto Basin Ranger District
Gila County, Arizona

August 1997

Lead Agency: USDA Forest Service

Responsible Official: Tina J. Terrell
District Ranger

For Further Information: Linny Warren or Rhonda O'Byrne
Range/Watershed/Soils Staff
Tonto Basin Ranger District
HC02 Box 4800
Roosevelt, AZ 85545
(520)467-3200

Abstract: The Tonto National Forest, Tonto Basin Ranger District proposes to develop an allotment management plan for the Poison Springs and Sierra Ancha Allotments which are part of the Eastern Roosevelt Lake Watershed Analysis Area. This plan is needed to facilitate moving the existing condition toward the identified desired condition. The area contains threatened and endangered species, and degraded riparian habitat.

A Final Environmental Impact Statement was prepared in July 1997. An additional alternative (Alternative 6) has been developed for the Poison Springs/Sierra Ancha Allotments. This alternative was developed to address new information and issues related to the southwestern willow flycatcher. Alternative 6 is the preferred alternative for the Poison Springs/Sierra Ancha Allotments.

This Supplemental Information has been prepared to describe and disclose the effects of the new alternative.

Chapter 1 - Project Scope

Issues

An additional issue related to threatened and endangered species has been identified as a result of the proposed livestock grazing strategy and associated improvements for the Poison Springs/Sierra Ancha Allotments. This issue is more specific than Issue #3 identified in the FEIS.

4. Southwestern Willow Flycatcher and Associated Occupied Habitat - Livestock grazing could potentially harm the southwestern willow flycatcher by 1) causing direct or indirect destruction of riparian habitat; and 2) continued presence of cattle and fragmentation of flycatcher habitat could facilitate brood parasitism by the brown-headed cowbird.

Chapter 2 - Alternatives

Alternative Description

Poison Springs/Sierra Ancha Allotments

Alternative 6 - This alternative consists of managing the two allotments together in three modified Santa Rita grazing systems. Herd rotation will occur as described in Alternative 3, except that Lake Pasture will be excluded from livestock grazing. Projects are the same as described for Alternative 3, with the addition of one fence. This fence is needed to completely separate the Lake Pasture from surrounding pastures. The amount of AUM's which would be permitted would be reduced by 610 AUM's under a non-use agreement on the Sierra Ancha Allotment. This would result in a total of 7,861 AUM's that would be permitted to graze on these two allotments.

Preferred Alternative Description

The preferred alternative for the Poison Springs/Sierra Ancha Allotments is Alternative 6. This alternative allows for a shift in current management such that the existing condition can move toward the desired condition and should facilitate recovery of the southwestern willow flycatcher, while allowing the permittee to maintain a viable livestock operation.

Chapter 3 - Affected Environment and Environmental Consequences

Alternative 6 differs from Alternative 3 in that it involves total exclusion of livestock grazing in the Lake Pasture. Under Alternative 3, this pasture would be used for 3.5 months 2 years out of 3. Under Alternative 6, it is expected that the surrounding pastures would be able to effectively handle these animals with very little or no change in the impacts as described in the FEIS, Chapter 3 for Alternative 3 (PRF-Q2). For this discussion, the affected environment for which the impacts of implementing Alternative 6 will be evaluated is identified as the Lake Pasture.

Impacts from implementing Alternative 6 are the same as those described for Alternative 3, except as described below.

Vegetation

Vegetation in the Lake Pasture is dominated by riparian vegetation along the Salt River and its inflow into Theodore Roosevelt Lake. It is dominated by tamarisk (Tamarix pentandra), with interspersed willow and cottonwood trees. Tamarisk in this area generally occurs in dense, monotypic stands, with very little herbaceous component. Annual grasses and forbs are common in the winter months where canopy cover allows (usually surrounding the tamarisk stands).

The desert scrub vegetation type is found to a much smaller extent on the upland areas within the pasture. It is located around the perimeter of the pasture. Dominate species consist of creosote, palo verde, mesquite and annual grasses and forbs.

Under Alternative 6, livestock grazing will not occur within the Lake Pasture. It is expected that the herbaceous ground cover will increase throughout this area where existing canopy cover will allow. There would probably be minimal change in the existing dense stands of tamarisk; however, in those areas where tamarisk is not the dominate species, there should be regeneration of cottonwoods and willows. It is expected that riparian recovery in the affected area would be similar to that described for Alternative 2.

Soil and Water

The effective vegetative cover which would occur through implementation of Alternative 6 would help reduce soil erosion and compaction within the Lake Pasture. It is expected that infiltration rates, and bank stability along the Salt River and the lake would improve within the affected area. The new fence needed to complete the Lake Pasture would produce some soil disturbance and erosion during construction, however, this will quickly be offset by the expected increase in herbaceous ground cover. Reduced soil erosion, and improved bank stability would result in an increase in water quality and facilitate faster recovery rates following scouring flooding events. It is expected that Alternative 6 would reduce soil erosion, and increase water quality to a greater extent than Alternative 3.

Wildlife and TES Species

Riparian TES Species

Southwestern Willow Flycatcher - Livestock can pose a direct threat to the southwestern willow flycatcher by physically disturbing nests, damaging nests, or spilling the contents of nests as they walk by. Livestock can also indirectly threaten the flycatcher through habitat degradation and modification of riparian areas. Under Alternative 6, livestock would be removed from the area surrounding the occupied suitable habitat of the flycatcher. This would remove the potential for these types of direct threats to the flycatcher. The exclusion of livestock in the affected area should also remove the threat of degrading or modifying habitat within the riparian area (PRF-M20). The possibility of these threats occurring would still remain under Alternatives 1, and 3-5. These threats would be completely removed

under Alternative 2.

Livestock could also pose an indirect threat to the flycatcher through its association with the brown-headed cowbird. Cowbirds are a brood parasite, and parasitize smaller songbirds, including the flycatcher. Concentrated livestock provide successful feeding areas for the cowbirds, thereby attracting them to these areas. Livestock may also fragment flycatcher habitat by creating trails and bedding areas, which facilitates parasitism by cowbirds.

The specific mitigation measures listed in the FEIS for both the southwestern willow flycatcher and the razorback sucker would be implemented as part of Alternative 6 (this includes flycatcher survey and monitoring efforts and a cowbird management program at the flycatcher breeding area).

Under Alternative 6, fragmentation to flycatcher habitat by livestock will not occur. This could reduce the risk of parasitism by the brown-headed. In addition, there would not be concentrations of livestock within, or near the immediate vicinity of the occupied suitable habitat which could serve as feeding areas for the cowbird. This will also reduce the risk of parasitism by the brown-headed cowbird. Implementation of the cowbird management program will further reduce the risk of parasitism.

Implementation of Alternative 2 should have no negative direct or indirect effects to the southwestern willow flycatcher.

Both the direct and indirect effects described above could occur under Alternatives 1, and 3-5. Of these, Alternative 3 would pose the least threat of these four alternatives. Under Alternative 3, flycatcher survey and monitoring efforts would be implemented, as would a cowbird management program. In addition, livestock would be permitted to graze in the affected area only during the non-growing season two years out of three.

Alternatives 1 and 5 would pose the greatest threat. Alternative 1 allows for an extended period of use each year, including a portion of the flycatcher breeding season, in the affected area. Alternative 5 would allow a greater number of animals to graze in the affected area. This would increase the likelihood of 1) directly affecting the nests; 2) increasing fragmentation of the occupied habitat; and 3) creating both a greater number and size of feeding areas for the brown-headed cowbird, thereby attracting more cowbirds into the affected area. This in turn could increase the risk of parasitism to the flycatcher.

Chapter 1 - Project Scope

(Note: The PRF (Project Record File) in parentheses refers to a specific document(s) in the Project Record Index included at the end of this environmental impact statement, e.g., PRF-G1-3.)

Background

Livestock Management: The Eastern Roosevelt Lake Watershed Analysis Area (ERLWAA) contains five grazing allotments: Armer Mountain, A Cross, Dagger, Poison Springs and Sierra Ancha. These allotments are currently operated as three combined units with three permits. The A Cross and Dagger allotments are operated under one permit, as are the Poison Springs and Sierra Ancha allotments (USDA, 1992).

Wilderness Areas: There are three designated wilderness areas wholly or partially within the ERLWAA. These are the Salome Wilderness (7,852 acres), the Sierra Ancha Wilderness (20,850 acres), and the Salt River Canyon Wilderness (9,777 acres) (USDA, 1985).

Sierra Ancha Experimental Forest: This Experimental Forest is 13,371 acres in size. It occurs on the A Cross and Sierra Ancha Allotments. Currently, the Tonto National Forest's Land Management Plan has listed livestock use in the Experimental Forest as Level A, No Grazing (USDA, 1985).

Armer Mountain Wildfire: On June 29, 1994, a wildfire was started by a lightning strike near Armer Mountain. This fire burned portions of the Armer Mountain and A Cross Allotments. A total of 5,760 acres burned. Depending on the recovery of the vegetation on each of these allotments, some of the previous priorities may need to be shifted in the future.

Plan 6: In 1984, the Secretary of Interior approved the modification of Roosevelt Dam as part of the Central Arizona Project's Plan 6. The modification work was necessary because engineers determined that the probable maximum flood is far greater than was thought possible. The benefits to be seen as a result of Plan 6 include enhanced flood control, improved safety, increased water conservation and additional recreational opportunities. Due to Plan 6, the Fish and Wildlife Service prepared the Amendment to the Fish and Wildlife Coordination Act Report on Plan 6, Central Arizona, Regulatory Storage Division. This report was prepared as a mitigation plan designed to mitigate impacts on fish and wildlife resources associated with construction and operation of Plan 6. In this report it states, "In order to control access to the lake by livestock and reduce impacts to native vegetation associated with uncontrolled grazing,

funding should be provided to accelerate the implementation of new and revised Allotment Management Plans for 11 allotments around Roosevelt Lake . . . This funding should be utilized for the construction of range management fencing and water developments which should provide for management designed to meet vegetative objectives and provide appropriate use by livestock so that established objectives could be met." The Armer Mountain, A Cross, Poison Springs, and Sierra Ancha allotments are listed as part of those 11 allotments (USDI, 1984, 1989, 1990).

Tonto National Forest Land Management Plan: The Tonto National Forest Land Management Plan (LMP) was signed in 1985. The LMP gives direction regarding management on the Forest. It accomplishes this through identifying Management Emphasis Areas, and standards and guidelines. The project area lies within the following Management Emphasis Areas: 5C, 5D, 5E, 6F, 6G and 6J. Descriptions of these areas and their associated standards and guidelines as they relate to range management are found in Appendix L.

Environmental Assessment: Preparation of an environmental assessment for this proposed action began in October 1993 (USDA, 1994(a)) and was completed in December 1995 (USDA, 1994(b)). Based on that document, it was determined that an environmental impact statement would be prepared (PRF AE-1).

Purpose and Need for Action

Purpose of Action

The purpose of this action is to move toward the desired condition which was set forth in the Tonto's Forest Land Management Plan, and identified by the Interdisciplinary Team.

Need for Action

There is a need to develop management strategies, including the identification of structural and nonstructural range improvements needed to implement the strategies, for the 5 allotments within the ERLWAA. This need is based on a comparison between the existing and desired conditions, which indicates that management of

the Eastern Roosevelt Lake Watershed Analysis Area needs to be adjusted. Herbaceous ground cover, canopy cover of woody species, and species diversity in the Desert Scrub, Pinyon/Juniper, Juniper/Oak Woodland, and Riparian communities currently do not reflect the desired condition. Habitat needs for Gambel's quail, neotropical migratory birds, most insectivorous bat species, Lowland leopard frog, southwestern willow flycatcher, gila topminnow, bald eagle, razorback sucker, and gila roundtail chub occurring on the analysis area are not being met. Distribution of livestock on the acres available for livestock grazing currently does not represent the desired condition, nor is the representation of a mosaic of seral stages on the various ecological land units present on the analysis area.

Action is also needed in order to implement the Fish and Wildlife Service's Amendment to the Fish and Wildlife Coordination Act Report on Plan 6, Central Arizona, Regulatory Storage Division (USDI, 1989).

Existing Condition

Allotment Management: The analysis area consists of five allotments: Armer Mountain, A Cross, Dagger, Poison Springs and Sierra Ancha. A single permittee manages livestock on the A Cross and Dagger Allotments. Another permittee manages livestock on the Poison Springs and Sierra Ancha Allotments, and the Armer Mountain Allotment has a single permittee. In the past, Allotment Management Plans (AMP) have been prepared for four of the five allotments. An AMP has never been fully developed for the Sierra Ancha Allotment. Livestock distribution on the acres available to livestock within the analysis area varies greatly from one allotment to the other. The Poison Springs/Sierra Ancha Allotments (these two allotments will be analyzed as a single management unit throughout this document) have the lowest percentage of distribution at about 30%. The Dagger Allotment has the greatest percentage of distribution on available acres for livestock at about 70-80%. The Armer Mountain and A Cross Allotments have an average distribution of about 40-50%. Throughout most of the analysis area, this has typically resulted in over utilized areas easily accessed by livestock and little or no use on the uplands (USDA, 1992).

Soil Condition:

Total Acres 157,655
Unsatisfactory Soil Condition . . 18.7%
Satisfactory Soil Condition 55.25%
Unsuited or Rock Outcrop 16.8%
Not Rated (Soil Inclusions) 9.5%

Wildlife Habitat:

Game Species - Habitat needs for mule deer and whitetail deer in chaparral, pinon juniper and ponderosa pine habitats are being adequately met. Habitat needs for javelina are also, for the most part, being met. The low percentage of ground cover in much of the desert scrub habitat type does not meet the cover requirements of Gambel's quail. Quail cover needs are best met in drainages supporting higher brush densities. Habitat requirements for predator species

Table 1. The following table describes the soil condition within the analysis area. Data was taken from the General Ecosystem Survey (GES). (USDA, 1989). Figures given are acres per soil condition. See Appendix I for a map of the project area with the GES units.

GES Map Unit	Unsatls.	Satisfac.	Rock Outcrop Unsult.	Not Rated
214	29,424	23,539		5,885
237		26	60	
298		9,234	2,638	1,319
301		270		30
303		8,171	16,342	2,724
305		4,945		549
306		2,186		546
461		13,764		1,529
485		10,357		
487		14,470	7,235	2,412
TOTAL		86,962	26,275	14,994

Table 2. Vegetation types within the ERLWAA (taken from GES) (PRF AP).

Vegetation Type	Acres	Percent of Area	Approximate Elevation
Low Elevation Riparian	5,494	3.5%	Below 3000 feet
High Elevation Riparian	2,732	1.7%	Above 3000 feet
Desert Scrub	67,353	42.7%	2000-3000 feet
Semi-Desert Grassland	10,554	6.7%	3000-4000 feet
P-J/Oak Woodland	13,353	8.5%	3300-4900 feet
Chaparral	21,252	13.5%	3300-5300 feet
Ponderosa Pine/Oak/Conifer	18,823	12.0%	5200-7500 feet
Rock Outcrop/Badlands	18,096	11.5%	—

Table 3. Description of vegetative attributes on the Eastern Roosevelt Lake Watershed Analysis Area from preliminary vegetative monitoring data collected in October 1993 (O'Byrne, 1994).

Vegetation Type	Percent Herbaceous Ground Cover	Percent Canopy Cover	Species Diversity (Plants Present)
Ponderosa Pine with pockets of Mixed Conifer	45-55	30-60	<u>Juniperous monosperma</u> (one-seed juniper), <u>Bouteloua curtipendula</u> (side oats grama), <u>Poa pratensis</u> (Kentucky Bluegrass), <u>Koeleria pyramidata</u> (June grass), <u>Sitanion hystrix</u> (squirrel tail), <u>Quercus grisea</u> (gray oak), <u>Juniperus deppeana</u> (Alligator juniper), <u>Quercus gambelli</u> (Gambel oak), <u>Pinus ponderosa</u> (ponderosa pine)
Desert Scrub	15-30	30-50	<u>Prosopis juliflora</u> (mesquite), <u>Calliandra spp.</u> (false mesquite), <u>Gutierrezia sarothrac</u> (snakeweed), <u>Haplopappus laricifolius</u> (turpentine bush), <u>hilaria belangeri</u> (curly mesquite), <u>Sporobolus spp.</u> (dropseed), <u>Aristida spp.</u> (3-awn), <u>Ambrosia psilostachia</u> (ragweed), <u>Larrea tridentata</u> (creosote), <u>Acacia constricta</u> (white thorn), <u>Cercidium spp.</u> (palo verde), <u>Lycium pallidum</u> (tomatillo), <u>Koeberlinia spp.</u> (crucifixion thorn)
Pinyon/Juniper	20-45	20-40	<u>Juniperous spp.</u> , <u>Pinus edulis</u> (pinyon pine), <u>Quercus spp.</u> (oaks), <u>Bouteloua hirsuta</u> (hairy grama), squirrel tail
Chaparral	15-20	25-60	<u>Rhus ovata</u> (mountain laural), <u>Q. turbinella</u> (scrub live oak), <u>Cercocarpus montanus</u> (mountain mahogany), <u>Ceanothus spp.</u> , <u>Rhus ovata</u> (squawberry), <u>Garrya flavescens</u> (silktassel), <u>Acacia spp.</u> (catclaw), <u>Archtoostaphylos spp.</u> (manzanita)

Table 3. Description of vegetative attributes on the Eastern Roosevelt Lake Watershed Analysis Area from preliminary vegetative monitoring data collected in October 1993 (O'Byrne, 1994) (Continued).

Vegetation Type	Percent Herbaceous Ground Cover	Percent Canopy Cover	Species Diversity (Plants Present)
Riparian Scrub Shrub (lower elevations)	40-50	80-140	<u>Hymenoclea monogyra</u> (burrowbush), <u>Baccharis sarothroides</u> (desert broom), <u>Chilopsis leucaris</u> (desert willow), <u>Platanus wrightii</u> (AZ sycamore), <u>Salix goodingii</u> (Gooding willow), <u>Populus fremontii</u> (Fremont cottonwood), <u>Cyperus arizonica</u> (AZ cypress), <u>Vitis arizonica</u> (canyon grape), <u>Celtis</u> spp. (hackberry), <u>Juglans major</u> (walnut), <u>Bromus</u> spp. (brome grass), 3-awn, catclaw, <u>Cynodon dactylon</u> (bermuda grass), <u>Equisetum</u> spp. (horsetails), <u>Carex</u> spp. (sedges)
Riparian Forested/Mixed Broadleaf (higher elevations)	20-40	160-200	<u>Alnus oblongifolia</u> (AZ alder), ponderosa pine, <u>Pseudotsuga menziesii</u> (Douglas-fir), <u>Acer glabrum</u> (dwarf maple), <u>Populus angustifolia</u> (narrowleaf cottonwood), canyon grape, <u>Rosa arizonica</u> (AZ rose), <u>Dactylis glomerata</u> (orchard grass), <u>Q. emoryi</u> (Emory oak), <u>Q. arizonicus</u> (AZ white oak), Alligator juniper, sideoats grama, <u>Rhamnus californica</u> (coffeeberry)

Table 4. Description of vegetative attributes on the Eastern Roosevelt Lake Watershed Analysis Area for the Desired Condition (Long-Term Goal).

Vegetation Type	Percent Herbaceous Ground Cover	Percent Canopy Cover	Species Diversity (Plants Present)
Ponderosa Pine with pockets of Mixed Conifer	85-100	70-95	ponderosa pine, alligator juniper, <u>Quercus arizonica</u> (white oak), mountain mahogany, silktassel, <u>Nolina microcarpa</u> (sacahuista), <u>Bouteloua gracilis</u> (blue grama), sideoats grama, Junegrass, <u>Quercus emoryi</u> (Emory oak), manzanita, Gambel oak, <u>Muhlenbergia longiligala</u> (longtongue muhly), <u>Festuca arizonica</u> (AZ fescue), Douglas-fir, <u>Agropyron smithii</u> (western wheatgrass)
Desert Scrub	10-20	15-30	paloverde, ceanothus, creosote bush, <u>Bouteloua eriopoda</u> (black grama), jojoba, brittlebush, sideoats, cholla, mesquite, <u>Cereus giganteus</u> (saguaro), plains lovegrass, <u>Haplopappus</u> spp. (Goldenweed), prickly pear, <u>Krameria parvifolia</u> (ratany), <u>Dodonaea viscosa</u> (hopbush), lovegrass, ocotillo, <u>Hilaria mutica</u> (tobosa), <u>Muhlenbergia porteri</u> (bush muhly)

Table 4. Description of vegetative attributes on the Eastern Roosevelt Lake Watershed Analysis Area for the Desired Condition (Long-Term Goal) (Continued).

Vegetation Type	Percent Herbaceous Ground Cover	Percent Canopy Cover	Species Diversity (Plants Present)
Semi-Desert Grassland	20-45	10-20	ceanothus, <u>Berberis haematocarpa</u> (red barberry), black grama, <u>Canotia holacantha</u> (crucifixion thorn), sideoats, cholla, mesquite, plains lovegrass, <u>Dasyllirion wheeleri</u> (sotol), <u>Stipa speciosa</u> (desert stipa), prickley pear, lovegrass, bush muhly, hairy grama, <u>Erigonum</u> spp. (buckwheat), cane beardgrass
Pinyon/Juniper	35-50	45-55	alligator juniper, Utah juniper, pinyon pine, white oak, Emory oak, manzanita, Wright silktassel, shrub live oak, buckwheat, <u>Erodium cicutarium</u> (flaree), sideoats, black grama, blue grama, hairy grama, desert stipa, sacahuista
Chaparral	20-40	45-55	scrub live oak, mountain mahogany, ceanothus spp., mountain laural, squawberry, silktassel, manzanita, sacahuista, buckwheat, <u>Andropogon scoparius</u> (little bluestem), sideoats, blue grama, black grama, hairy grama, flaree
Riparian Scrub-Shrub (lower elevations)	50-60	120-150	Fremont cottonwood, AZ sycamore, walnut, canyon grape, AZ cypress, Gooding willow, mesquite, hackberry, <u>S. bonplandiana</u> (Bonpland willow), horsetails, <u>Juncus</u> spp. (rushes), carex, <u>Cyperus</u> spp. (sedges), <u>Agrostis</u> spp. (bent grass), brome grass, bermuda grass, muhly grass, desert willow, and various annual forbs and grasses
Riparian Forested/Mixed Broadleaf (higher elevations)	40-50	180-220	AZ alder, ponderosa pine, Douglas-fir, dwarf maple, narrowleaf cottonwood, canyon grape, AZ rose, AZ white oak, Emory oak, alligator juniper, sideoats grama, coffeeberry, plains lovegrass, orchard grass, fendler bluegrass, and various annual forbs and grasses

(mountain lion, black bear, bobcat, and coyote) are adequately being met. Raptor needs are also being met (Pollock, 1993 (a&b), 1994, 1996).

Non-game Species - A disproportionately high percentage of wildlife species are dependent upon riparian areas for at least a portion of their needs. Riparian conditions are currently such that these habitat needs are not being met. Included in this group are a high percentage of the neotropical migratory birds that occur on the allotment. These riparian corridors are also the primary foraging areas for most of the insectivorous bat species which occur (Pollock, 1993 (a&b), 1994, 1996).

Threatened, Endangered, and Sensitive Species (TES) - Habitat requirements, for the most part, are adequately being met for the hohokam agave, Tonto Basin agave, Yavapai pocket mouse, Mexican spotted owl, peregrine falcon, Arizona bughane, Arizona agave, Maricopa tiger beetle, and Blummer's dock. Habitat requirements are not being met for the lowland leopard frog, Southwestern willow flycatcher, Gila topminnow, razorback sucker, and bald eagle (Pollock, 1993 (a&b), 1994, 1996).

Most ecological land units in the lower elevations of the analysis area are represented by early seral stages. The ecological land units in the higher elevations of the analysis area are represented by mid to late seral stages.

Desired Condition

The desired condition is a description of the long-term goals set for this area. Most of this description is not expected to be achieved in the next 10-year period. Portions of it will be achieved in various timeframes. A discussion of the short range goals expected to be achieved in the next 10 years follows. The desired condition is for the grazing strategy and associated improvements to be in place and being implemented.

Livestock distribution is increasing to where livestock are distributed across 80-90% of the acres available for grazing by livestock. All land units show improving or stabilizing watershed condition and species diversity, exhibiting a mosaic of all seral stages in each land unit. Wildlife habitat needs are being met for all species, and TES recovery objectives are being met. Herbaceous ground cover, canopy cover of woody species, and species diversity are represented as indicated in the following table.

Short Term Goals

These are goals which are expected to be met within the 10-year period following the decision based on this document. The time line below is marked with uppercase letters to indicate the approximate time certain goals should be met in

Year	0	1	2	3	4	5	6	7	8	9	10
						A	B			C	D E
<p>A - Necessary improvements needed are in place and in working order.</p> <p>B - Grazing strategy for livestock is initiated.</p> <p>C - Riparian areas throughout the analysis area are responding to the new grazing strategy. There is an increase in ground cover in these areas by 5-10%. There is also an increase in the number of seedlings and saplings of the desired woody plants.</p> <p>D - There is an increase in herbaceous ground cover on the uplands (higher elevations of the Desert Scrub vegetation type) by 2-5%. Desirable herbaceous plants are starting to move down into the lower elevations.</p> <p>E - Ground cover in the uplands and riparian areas is continuing to improve.</p>											

order to move toward the identified desired condition. This is dependent upon the absence of long-term drought, and catastrophic flooding events. Following the time line is a description as to what each of the uppercase letters represents.

Habitat needs for those species dependent upon riparian areas are closer to being met. Saplings of desired riparian plants are well established and there is still strong evidence of regeneration of these species.

Proposed Action

The proposed action is to develop and implement new grazing strategies for the five allotments on the ERLWAA on the Tonto Basin Ranger District in order to meet Plan 6 and Forest Plan objectives, standards, and guidelines (USDA, 1985).

Decision to be Made

The Tonto Basin District Ranger is responsible for deciding whether to continue present management on each of the allotments, discontinue grazing, or implement new grazing strategies with associated improvements. The District Ranger may decide to select the no action alternative, defer action, or select one of the action alternatives. If a development alternative is selected, that decision will include: 1) grazing system; 2) types and locations of range improvements; 3) monitoring needs; and 4) the number of livestock to be grazed.

Issues

Issues are defined as concerns that may be caused by implementing the proposed action. Three key issues have been identified as a result of proposing these livestock grazing strategies and associated range improvements for the Eastern Roosevelt Lake Watershed Analysis Area. The issues are:

1. **Wildlife Habitat** - Improving the distribution of livestock will influence the wildlife habitat on the uplands which are not currently being grazed by livestock. There will be some competition between livestock and wildlife when livestock are present in these areas throughout the rotation schedule.

Threatened, Endangered and Sensitive species are also of concern, due to their status and listing.

2. **Recreation Conflicts** - Implementing the preferred alternatives will require various new range improvements to achieve satisfactory distribution of livestock. The main impediment to recreationists will be the fencing around the Upper Salt River Recreation Site and possibly around a proposed campground at Cottonwood Wash to exclude livestock. Improving livestock distribution to where cattle are distributed across more acres than present, and having livestock and certain range improvements present in wilderness areas will not be aesthetically pleasing to some recreationists. Due to the increase in range improvements on the analysis area, the possibility of damage occurring to these improvements by recreationists is higher than at present.
3. **Economics** - Various new range improvements will be needed to implement the preferred alternatives. Although the permittees will be required to construct many of these, and will have to maintain all in working order, it will not affect their ability to maintain viable livestock operations. Any change in permitted numbers may also affect the operation's viability, as well as the local economy.

Measures

The following units of measure were selected to analyze issue resolution and attainment of objectives, and describe environmental impacts. In most cases, the measures are quantified and interpreted for each detailed alternative. When the measures could not be quantified, a narrative discussing specific effects is presented in Chapter 3. The units of measure are:

1. **Percent ground cover of herbaceous species, percent canopy cover of woody species, and species composition by vegetation type.**
2. **Soil/Water** - Narrative of condition/acres of soil disturbance.
3. **TES Species Populations** - Narrative by species.

4. Air Quality - Narrative.
5. Livestock Distribution - Percent of allotment which livestock are distributed across.
6. Ranching Operation Viability - Narrative.
7. Cost/Benefit Analysis.

Project Location/Analysis Area

This is a site specific environmental document that covers the environmental effects related to the major issues created by the proposal. The ERLWAA encompasses more than 167,150 acres, northeast of Roosevelt Lake (Appendix B). ERLWAA is situated on the Tonto Basin Ranger District and Pleasant Valley Ranger District, Tonto National Forest, in Gila County, Arizona. The area is further identified by the following legal descriptions:

Armer Mountain Allotment - 31,702 acres

All or part of sections 34-36 of T7N, R13E; sections 1-3 and 8-35 of T6N, R13E; sections 24-26, 35, and 36 of T6N, R12E; sections 1, 2, and 12 of T5N, R12E; sections 2-10, 15-18, 20-22, 28, 29, and 32-34 of T5N, R13E; and sections 3-5, 7-10, 15-18, 20-22, and 27-29 of T4N, R13E; Gila and Salt River Base and Meridian (Appendix C-1).

A Cross Allotment - 35,894 acres

All or part of sections 34-36 of T7N, R13E; sections 31 and 32 of T7N, R14E; sections 1, 2, 12, 13, 24-26, 35 and 36 of T6N, R13E; sections 5-9, 15-21, and 28-34 of T6N, R14E; sections 1-3, 10-15, 21-28, and 34-36 of T5N, R13E; sections 3-8, 16-20, and 29-31 of T5N, R14E; sections 1-3, 10-15, 22-24, 26, and 27 of T4N, R13E; and sections 6 and 7 of T4N, R14E; Gila and Salt River Base and Meridian (Appendix C-2).

Dagger Allotment - 33,933 acres

All or part of sections 26, and 34-36 of T6N, R15E; sections 24-27, and 34-36 of T5N, R14E; sections 1-3, 9-16, and 19-36 of T5N, R15E; section 35 of T5N, R16E; sections 1 and 2 of T4N, R14E; sections 1-6, 8-17, 21-28 and 33-35 of T4N, R15E; sections 2, 3, 10, 11, 14, 15, 22,

and 23 of T4N, R16E; and section 2 of T3N, R15E; Gila and Salt River Base and Meridian (Appendix C-3).

Poison Springs Allotment - 43,529 acres

All or part of sections 34, and 35 of T5N, R14E; sections 5-9, 16-21, and 28-32 of T4N, R15E; sections 1-3, 9-16 and 20-36 of T4N, R14E; sections 35 and 36 of T4N, R13E; sections 2-11, 14-23, and 26-36 of T3N, R14E; sections 1, 2, 11-14, 23-26, 35, and 36 of T3N, R13E; sections 3-9, and 17 of T2N, R14E; and section 1 of T2N, R13E; Gila and Salt River Base and Meridian (Appendix C-4).

Sierra Ancha Allotment - 22,099 acres

All or part of sections 15-17, 20-22, 26-29, and 32-35 of T6N, R14E; sections 6, 7, 18, and 19 of T5N, R15E; sections 1-5, 8-17, and 20-34 of T5N, R14E; sections 2-10, 16-21 and 29-31 of T4N, R14E; and sections 1, 12, 13, and 24-26 of T4N, R13E; Gila and Salt River Base and Meridian (Appendix C-5).

Additional NEPA Analysis

The proposed action and alternatives include all reasonably foreseeable connected actions. Environmental effects estimated for this project consider the site specific effects of all foreseeable actions and mitigation measures. No additional environmental analysis will be done when the analyzed actions are actually implemented. This EIS will guide any subsequent project implementation. Specific project proposals will be tiered to this EIS. Tiering means that, if needed, future environmental documents for projects based on the EIS will summarize or incorporate by reference the issues discussed in this document. Environmental documents for those projects will focus on site specific issues unique to the project. If new information or unforeseen and unanalyzed actions become necessary in the future, additional site specific environmental analysis will be done before implementation. Monitoring of the AMP may require future changes to the proposed allotment management scheme, which may also require additional NEPA analysis.

Chapter 2 - Alternatives

Alternative Development

The analysis of the Eastern Roosevelt Analysis Area (ERLWAA) was initiated on July 7, 1992 (PRF D). The Integrated Resource Management (IRM) process was used to conduct this analysis (USDA, 1993 (a&b)). Management Plan Overviews were prepared in July 1992 (USDA, 1992). Four scoping documents were prepared as a result of five interdisciplinary team (IDT) meetings (PRF G1-3, J1-5, O1-2, P1-3). Part of an IDT meeting on June 30, 1993, was a session for generating preliminary range management techniques and strategies (i.e., alternatives) (PRF J1-5). Extensive reconnaissance trips and other field trips were utilized to further refine alternatives (PRF O1-2, P1-3). A specific Citizen's Participation Action Plan described how public involvement would be organized (USDA, 1990). A Biological Assessment and Evaluation for TES plants and animals was completed in March 1994 (Pollock, 1994, 1996). Preparation of an environmental assessment was started in October 1993 (USDA, 1994(a)) and completed in December 1995 (USDA, 1994(b)). Based on this document, it was determined that an EIS would be prepared. Preparation of this EIS began in March 1996 (PRF AE1-9).

Alternatives Dropped From Detailed Study

Alternatives concerning changing the term grazing permits to allow only seasonal grazing were considered, but not in detail. It was determined that this type of alternative would not be economically or technically feasible.

Alternatives Considered in Detail

Five alternatives were considered in detail for each of the five allotments.

Objectives Common to Alternatives

Although each alternative will emphasize various facets of resource management, the IDT felt that several issues could be adequately resolved under all action alternatives. Accordingly, all alternatives were analyzed against these common objectives:

- Riparian conditions will be improved.
- Plant diversity, herbaceous ground cover, and canopy cover of woody species will be improved, although to different degrees.
- Livestock distribution will be improved, although the acres available to livestock grazing will vary with each alternative.
- Recreation conflicts with livestock management will be reduced.
- A viable livestock operation will be maintained.

Alternative Mitigation and Monitoring

To minimize resource impacts, the mitigation measures below would be followed for all action alternatives. Potential mitigation measures that are peculiar to a specific alternative are disclosed in Chapter 3, Affected Environment. The mitigation measures included here are limited to those for which the US Forest Service has authority. The mitigation measures have been used on previous projects and have been proven to be very effective in reducing environmental impacts. Monitoring requirements are also listed below for all action alternatives. Specific monitoring requirements are required to measure effectiveness of the implemented alternative.

A. Mitigation Requirements:

- A cultural resource specialist/trained personnel will visit the staked or flagged location of all potential ground disturbing improvement projects to obtain clearance prior to construction (per the National Historic Preservation Act).
- Trained personnel will visit the staked or flagged location of all potential ground disturbing improvement projects to re-certify the findings in the Biological Assessment and Evaluation prior to construction (per the Endangered Species Act).
- Spring developments will be fenced to prevent livestock access.
- Visual Quality Objectives set forth in the Forest Land Management Plan will be met (Appendix H).

B. Monitoring Requirements:

- Conduct range inspections and production/utilization studies. Conduct Range Analysis studies when other monitoring techniques used show that additional action may be needed to reach desired condition.
- Implement the Tonto Basin Ranger District's Rangeland Monitoring Plan prepared in agreement with the Bureau of Reclamation, Arizona Game and Fish Department, and the Fish and Wildlife Service for the 11 allotment plans affected by Plan 6. The objective of this monitoring is to obtain data that will indicate if new management is moving toward or meeting the goals and objectives specified in the EIS. This monitoring is a three level system. Each level is described below:

Level I - Use aerial photos to identify the vegetation types on each allotment.

Level II - Establish photo points and collect base data to describe the existing condition. Monitoring techniques will be used to obtain data relating to percent ground cover, percent canopy cover and species diversity.

Level III - Continue Level II type monitoring on a 4-year cycle to re-evaluate if management is moving toward meeting the goals and objectives.

- The extent of riparian area accessible to livestock varies in each allotment. Key riparian areas that will be monitored include:

Armer Mountain:	Armer Gulch, Cottonwood Wash
A Cross:	Cottonwood Wash, Parker Creek
Sierra Ancha:	minimal riparian areas
Poison Springs:	Dry Creek, Coon Creek
Dagger:	Cherry Creek, Coon Creek

A variety of methods will be used to monitor riparian vegetation and stream channels. Methods include permanent photo points, qualitative ocular scorecard assessments of riparian area condition, TRIMM transects, permanently located belt transects and stream channel transects. With the exception of belt transects, all methods are described in the Tonto Riparian Inventory Monitoring Methods (TRIMM) (Myers 1991). The belt transect method is similar to that described in the Tonto Basin Ranger District Rangeland Monitoring Plan. It will be used to quantify changes in: 1) cover of key herbaceous species; and 2) establishment of key woody species. Parameters measured will include: utilization, cover, woody species height, and diameter.

Existing monitoring includes several permanent photo point locations and TRIMM surveys.

Additional photo points will be established at key riparian locations over the next 2 to 4 years. Most sites are photographed annually. Some of the more remote sites are re-photographed every 3 to 5 years.

Walkthroughs and riparian condition scorecard assessments will be conducted for the following streams at least once for each grazing rotation, preferable more frequently.

Armer Mountain:	Armer Gulch, Cottonwood Wash
A Cross:	Cottonwood Wash, Parker Creek
Poison Springs:	Dry Creek
Dagger:	Cherry Creek, Coon Creek

TRIMM surveys will be repeated at the end of each rotation schedule. Belt transects may be substituted for TRIMM surveys if more specific information is desired to quantify utilization, herbaceous cover and woody plant recruitment.

Permanent stream cross sections will be established in the Coon Creek riparian enclosure, and the Cherry Creek riparian

pastures. Remeasurements will be done every 5-10 years, or more frequently if flooding occurs.

Alternative Description

Alternatives 1 and 2 are the same for all five allotments. These two alternatives will only be described once to avoid repetition.

Alternative 1 - This is the "No Action" alternative required by the National Environmental Policy Act and regulations. This alternative represents continuation of the existing management. Each allotment would continue to be used as a cow/calf and yearling operation with permitted livestock numbers remaining the same as currently permitted. Existing developments would be maintained by the permittee, but no new range improvements would be constructed. For detailed description of current management on each allotment see the Allotment Overviews (USDA, 1992) and meeting notes (PRF G1-3, J1-5, P1-3).

Alternative 2 - After the existing grazing permit expires, all livestock would be removed. The Forest Service would remove all internal pasture fences and cattleguards. Adjacent permittees would have their permits amended to give them responsibility for boundary fence maintenance. Existing highway right-of-way would probably be left in place, as it is owned by the state and the Forest Service does not have control over it. All water and other range improvements would not be removed, nor would they be maintained with range management appropriated funds. Per the Forest Service specifications in Forest Service Manual 2237.02 and 2237.03, if grazing is ceased on any allotment, compensation will be given for improvements contributed by the current permittee.

Armer Mountain Allotment

Alternative 3 - This alternative has one herd, with seven pastures and three holding pastures. The holding pastures will be used for bulls, weaned yearlings, horses, and sick animals. The two lower elevation pastures will be used in the winter with grazing periods of 2 months and rest periods of 8 to 24 months. The three middle elevation pastures will be grazed in the spring and fall with grazing periods of 2 months and rest periods that vary from 4 to 26 months. The

two pastures at higher elevations will be alternately grazed each summer for 4 months, with one being rested (not grazed) each summer. Rest periods are for 8, 20, and 32 months. This is a deferred rest-rotation grazing system. The amount of AUM's that would be permitted would remain the same as the current permit. This would result in a total of 2,509 AUM's that would be permitted to graze on the allotment.

Projects will include: fencing, three spring developments with pipelines and water troughs, maintenance of 4 miles of road, and repair to one dirt stock tank. The proposed range improvement projects are identified in Appendices C-1c and F-1. Any amendments to the Tonto Resource Access/Travel Management Plan necessary for permittee access to range improvements will be shown in Appendix G. The other important information is located in the allotment plan overview (USDA, 1992).

Alternative 4 - This alternative consists of one herd, with seven pastures and three holding pastures. The only difference between this alternative and Alternative 3 is the grazing rotation schedule, and the number of permitted AUM's. Both employ a deferred, rest-rotation grazing system. The lower elevation pastures will be grazed the same as Alternative 3, with the middle pastures grazed for 4 months each winter in a flip-flop. The higher elevation pastures will be grazed 5 months. This alternative will include the same range improvement projects as Alternative 3. The proposed range improvement projects are identified in Appendices C-1d and F-1. Any amendments to the Tonto Resource Access/Travel Management Plan necessary for permittee access to range improvements will be shown in Appendix G. The other important information is located in the allotment plan overview (USDA, 1992). The amount of AUM's that would be permitted would be reduced by 809 AUM's. This would result in a total of 1,700 AUM's that would be permitted to graze on the allotment.

Alternative 5 - This alternative consists of one herd, with eight pastures and three holding pastures. The Forest Land and Resource Management Plan would need to be amended to allow livestock grazing in this area. Pastures would be grazed the same as in Alternative 3. This alternative will include the same range improvement projects as Alternative 3. The proposed range improvement projects are identi-

fied in Appendices C-1d and F-1. Any amendments to the Tonto Resource Access/Travel Management Plan necessary for permittee access to range improvements will be shown in Appendix G. The other information is located in the allotment plan overview (USDA, 1992). The amount of AUM's that would be permitted would be increased by 1,491 AUM's. This would result in a total of 4,000 AUM's that would be permitted to graze on the allotment.

A Cross Allotment

Alternative 3 - This alternative consists of one herd, with six pastures and one holding pasture in a deferred rest-rotation grazing system. Two additional pastures are not grazed according to a Memorandum of Understanding for non-use. Also, the Sierra Ancha Experimental Forest is part of this allotment. It is not grazed either. Four of the six pastures in the rotation are grazed for 3 months with rest periods varying from 3 to 33 months. The remaining two pastures will be used for weaning calves in the fall for 45 days, with rest periods of 10.5 to 34.5 months. Improvement projects include: fencing, cattleguards, one spring development with a pipeline and troughs, and maintenance of old pipelines. The proposed range improvement projects are identified in Appendices C-2, C-2c, and F-2. Any amendments to the Tonto Resource Access/Travel Management Plan necessary for permittee access to range improvements will be shown in Appendix G. The other information is located in the allotment plan overview (USDA, 1992). The amount of AUM's that would be permitted would remain the same as the current permit. This would result in a total of 6,140 AUM's that would be permitted to graze on the allotment.

Alternative 4 - This alternative is exactly the same as Alternative 1, with the only change being the amount of AUM's which would be permitted to graze. The amount of AUM's that would be permitted would be reduced by 1,140 AUM's. This would result in a total of 5,000 AUM's that would be permitted to graze on the allotment. There would not be any new range improvement projects (Appendix C-2b).

Alternative 5 - This alternative has one herd, with eight pastures and one holding pasture in a deferred, rest-rotation grazing system. The Memorandum of Understanding (MOU) between the Forest Service and permittee will be canceled

and the two upper pastures will be grazed for 3-1/2 months in the summer in a flip-flop. The lower pastures will be grazed for 3 or 6 months, and rest periods varying from 6 to 24 months. Improvement projects will be the same as for Alternative 3. Due to the Armer Fire, some projects may not be completed as planned. The proposed range improvement projects are identified in Appendices C-2d and F-2. Any amendments to the Tonto Resource Access/Travel Management Plan necessary for permittee access to range improvements will be shown in Appendix G. The other information is located in the allotment plan overview (USDA, 1992). The amount of AUM's that would be permitted would be increased by 2,400 AUM's. This would result in a total of 8,540 AUM's that would be permitted to graze on the allotment.

Dagger Allotment

Alternative 3 - This alternative consists of two herds, with a total of ten pastures and two holding pastures in two deferred rotation systems. Four pastures will be used for one herd, including a riparian pasture along Cherry Creek. This riparian pasture would be used during the winter months for 2 to 3 months at a time, and completely rested 1 out of every 3 years. The other pastures would be grazed for 4 months and then receive rest periods of 4 to 16 months. The second herd would use five pastures, including a riparian pasture along Cherry Creek. Each pasture would be grazed in 2 to 4-month periods with rest periods of 6 to 19 months. Improvement projects include fencing, one cattleguard, and a spring development with a pipeline and troughs. The proposed range improvement projects are identified in Appendices C-3, C-3c and F-3. Any amendments to the Tonto Resource Access/Travel Management Plan necessary for permittee access to range improvements will be shown in Appendix G. The other information is located in the allotment plan overview (USDA, 1992). The amount of AUM's that would be permitted would remain the same as the current permit. This would result in a total of 6,140 AUM's that would be permitted to graze on the allotment.

Alternative 4 - This alternative is exactly the same as Alternative 1, with the only change being the amount of AUM's that would be permitted to graze. The amount of AUM's that would be permitted would be reduced by 1,140 AUM's. This would result in a total of 5,000

AUM's that would be permitted to graze on the allotment. There would not be any new range improvement projects (Appendix C-3a).

Alternative 5 - This alternative is exactly the same as alternative 3, with the only change being the amount of AUM's that would be permitted to graze. The amount of AUM's that would be permitted would be increased by 2,400 AUM's. This would result in a total of 8,540 AUM's that would be permitted to graze on the allotment (Appendix C-3c).

Poison Springs/Sierra Ancha Allotments

Alternative 3 - These two allotments will be managed together in three modified Santa Rita grazing systems. This alternative has a three herd, nine pasture grazing rotation with four yearling pastures and one bull pasture. Each herd will rotate through three pastures. Some of these three pastures are actually two or three pastures used together. There are a total of 25 pastures. The grazing periods will be 4 months each time with rest periods of 4 to 16 months. The yearling pastures will be used for yearlings from January 1 to either April 15 or May 15 each year. Projects will include: fencing, pipelines and water troughs, drilling one well, and maintenance of 3 wells. The proposed range improvement projects are identified in Appendices C-4, C-4c, and F-4/5. Any amendments to the Tonto Resource Access/Travel Management Plan necessary for permittee access to range improvements will be shown in Appendix G. The other information is located in the allotment plan overview (USDA, 1992). The amount of AUM's that would be permitted would be reduced by 610 AUM's under a non-use agreement on the Sierra Ancha Allotment. This would result in a total of 7,861 AUM's that would be permitted to graze on these two allotments.

Alternative 4 - This alternative consists of six herds, with 25 pastures, including holding pastures. The holding pastures will be used for bulls, weaned yearlings, horses, and sick animals. The difference between this alternative and Alternative 3 is the number of herds, the

grazing rotation schedule, and the number of permitted AUM's. Pastures are used at the same time each year for lengthy periods. Some pastures are grazed by more than one herd within the same grazing year, which allows for little or no rest for some critical areas. This alternative will include the same range improvement projects as identified in Alternative 3. The proposed range improvement projects are identified in Appendices C-4, C-4c, and F-4/5. Any amendments to the Tonto Resource Access/Travel Management Plan necessary for permittee access to range improvements will be shown in Appendix G. The other information is located in the allotment plan overview (USDA, 1992). The amount of AUM's that would be permitted would be reduced by 1,010 AUM's. This would result in a total of 7,261 AUM's that would be permitted to graze on the two allotments.

Alternative 5 - This alternative consists of two modified Santa Rita grazing systems. It has two herds and 25 pastures. The north herd will rotate through 12 pastures with four holding pastures. Each pasture would be grazed for 1 to 1-1/2 months and receive rest periods of 12 to 24 months. The south herd would rotate through five pastures with three holding pastures. Each pasture would be grazed for 2 months, and receive rest periods of 6 to 18 months. The proposed range improvements are exactly the same as Alternative 3. The amount of AUM's that would be permitted would be increased by 1,729 AUM's. This would result in a total of 10,200 AUM's that would be permitted to graze on the two allotments.

Preferred Alternative Identification

In this environmental impact statement, the preferred alternative for each allotment is Alternative 3. This alternative for each allotment allows for a shift in current management such that the existing condition can move toward the desired condition, while allowing the permittee to maintain a viable livestock operation.

Table 5. Armer Mountain - This table shows the new and total number of range improvements for each alternative. The "Total" column for each alternative equals the improvements existing on the allotment (Total under Alternative 1) and the new improvements proposed for that alternative.

Improvements per Alternative	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5	
	New	Total	New	Total	New	Total	New	Total	New	Total
Miles of Fence	0	54	0	0	4	58	4	58	4	58
Number of Corrals	0	4	0	0	0	4	0	4	0	4
Number of Wells	0	0	0	0	0	0	0	0	0	0
Number of Spring Developments	0	12	0	2	3	15	3	15	3	15
Miles of Pipeline	0	4	0	0	3	7	3	7	3	7
Number of Troughs	0	7	0	0	6	13	6	13	6	13
Number of Cattleguards	0	4	0	0	0	4	0	4	0	4
Number of Dirt Tanks	0	10	0	2	0	10	0	10	0	10
Number of Pastures	0	9	0	0	1	10	1	10	2	11
Permitted AUM's	2,509		0		2,509		1,700		4,000	

Table 6. A Cross - This table shows the new and total number of range improvements for each alternative. The "Total" column for each alternative equals the improvements existing on the allotment (Total under Alternative 1) plus the new improvements proposed for that alternative.

Improvements per Alternative	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5	
	New	Total	New	Total	New	Total	New	Total	New	Total
Miles of Fence	0	40	0	0	4	44	0	40	4	44
Number of Corrals	0	2	0	0	0	2	0	2	0	2
Number of Wells	0	2	0	0	0	2	0	2	0	2
Number of Spring Developments	0	9	0	0	1	10	0	9	1	10
Miles of Pipeline	0	6	0	2	1	7	0	6	1	7
Number of Troughs	0	12	0	1	2	14	0	12	2	14
Number of Cattleguards	0	4	0	0	3	7	0	4	3	7
Number of Dirt Tanks	0	4	0	1	0	4	0	4	0	4
Number of Pastures	0	6	0	0	1	7	0	6	1	7
Permitted AUM's	6,140		0		6,140		5,000		8,540	

Table 7. **Dagger** - This table shows the new and total number of range improvements for each alternative. The "Total" column for each alternative equals the improvements existing on the allotment (Total under Alternative 1) plus the new improvements proposed for that alternative.

Improvements per Alternative	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5	
	New	Total	New	Total	New	Total	New	Total	New	Total
Miles of Fence	0	68	0	0	6.75	74.75	0	68	6.75	74.75
Number of Corrals	0	10	0	0	0	10	0	10	0	10
Number of Wells	0	9	0	1	0	9	0	9	0	9
Number of Spring Developments	0	2	0	0	1	3	0	2	1	3
Number of Storage Tanks	0	5	0	1	0	5	0	5	0	5
Miles of Pipeline	0	10	0	2	2	12	0	10	2	12
Number of Troughs	0	22	0	1	4	26	0	22	4	26
Number of Cattleguards	0	5	0	0	1	6	0	5	1	6
Number of Dirt Tanks	0	3	0	1	0	3	0	3	0	3
Number of Pastures	0	8	0	0	2	10	0	8	2	10
Permitted AUM's	6,140		0		6,140		5,000		8,540	

Table 8. **Polson Spring/Sierra Ancha** - This table shows the new and total number of range improvements for each alternative. The "Total" column for each alternative equals the improvements existing on the allotment (Total under Alternative 1) plus the new improvements proposed for that alternative.

Improvements per Alternative	Alternative 1		Alternative 2		Alternative 3		Alternative 4		Alternative 5	
	New	Total	New	Total	New	Total	New	Total	New	Total
Miles of Fence	0	118	0	18	25	143	25	143	25	143
Number of Corrals	0	16	0	0	0	16	0	16	0	16
Number of Wells	0	8	0	0	1	9	1	9	1	9
Number of Spring Developments	0	12	0	2	3	15	3	15	3	15
Miles of Pipeline	0	4	0	0	3	7	3	7	3	7
Number of Troughs	0	7	0	0	6	13	6	13	6	13
Number of Cattleguards	0	4	0	0	0	4	0	4	0	4
Number of Dirt Tanks	0	10	0	2	0	10	0	10	0	10
Number of Pastures	0	9	0	0	5	25	16	25	16	25
Permitted AUM's	8,471		0		7,861		7,261		10,200	

Chapter 3 - Affected Environment and Environmental Consequences

Introduction

This Chapter shows the affected environment within the project area and the changes that can be expected from implementing the action alternatives or taking no action at this time. The no action alternative sets the environmental baseline (present condition) for comparing the effects of the action alternatives.

The major issues (see Chapter 1) define the scope of the environmental concern for this project. The environmental effects (changes from present baseline condition) that are described in this chapter reflect the identified major issues.

Vegetation

(Ambos; O'Byrne, 1994; Myers, 1993; USDA, 1989)

Riparian vegetation is found within all of the allotments in various creeks, washes and springs, and makes up less than 1 percent of the total project area. Presently, most of the riparian areas are in poor to fair condition. Stream canopy cover is less than desirable as is the mix of woody vegetation. The alternatives will affect the amount of canopy cover, litter cover, and bare ground in the riparian areas. If the present management continues, the canopy cover and litter cover will likely improve minimally from current condition and the percentage of bare ground will decrease. The increase in litter and decreasing bare ground are to such an extent that the condition of the riparian areas might become good, but heavy water flows would still create a lot of soil erosion and channel scouring. In areas where cattle congregate, the riparian area would degrade, possibly affecting downstream riparian conditions, regardless of the amount of livestock use.

All action alternatives could likely have positive effects on riparian conditions (Myers, 1993). Alternative 3 would produce a faster and more favorable response than Alternative 5, due to the intensity of the management prescribed. Compared to current conditions, the canopy and litter cover will both increase and bare ground could nearly be eliminated. The canopy cover would exceed 100%, indicating an increase in vertical diversity. Stream channel scouring would be expected to nearly stop, except in large

flooding events. Alternative 4 would probably result in conditions slightly better than those seen under Alternative 3, except for the Poison Springs/Sierra Ancha Allotments, due to the number of herds and poor distribution this alternative portrays. Alternative 3 would produce greater benefits than Alternative 4 for the Dagger Allotment as well, due to its inclusion of riparian pastures along Cherry Creek.

Alternative 2, no grazing, also increases canopy and litter cover, and reduces bare ground. Removal of cattle accelerates the accumulation of litter cover and the reduction of bare ground over the other action alternatives. Improvement in canopy cover would exceed that of the action alternatives in the beginning. Stream channel scouring would be expected to be similar or a little less than the action alternatives.

The desert scrub vegetation type covers approximately 42.7% of the analysis area. Estimated percentages of each allotment are: Armer - 35.8%; A Cross - 42.3%; Dagger - 66.1%; Poison Springs - 36.1%; and Sierra Ancha - 31.4%. This area is heavily used due to its accessibility to livestock. Dominant species are curly mesquite, prickly pear, annual grasses and forbs, 3-awn, staghorn cholla, mesquite, creosote, jojoba, and palo verde (USDA, 1989).

The semidesert grassland vegetation type covers approximately 6.7% of the analysis area. Estimated percentages of each allotment are: Armer - —; A Cross - —; Dagger - —; Poison Springs - 25.8%; and Sierra Ancha - —. This area is also used fairly heavily by livestock due to its accessibility. Dominant species include ceanothus, sideoats, curly mesquite, mesquite, cholla, prickly pear, sotol hairy grama, and buckwheat (USDA, 1989).

The chaparral vegetation type covers about 13.5% of the analysis area. Estimated percentages of each allotment are: Armer - 9.3%; A Cross - 7.6%; Dagger - 10.5%; Poison Springs - 19.3%; and Sierra Ancha - 18.7%. Dominant species are turbinella oak, mountain mahogany, silk tassel, manzanita, ceanothus, with perennial grasses and annual grasses and forbs (USDA, 1989).

The pinyon-juniper/oak vegetation type covers about 8.5% of the analysis area. Estimated percentages of each allotment are: Armer - 14.4%; A Cross - 14.1%; Dagger - 3.1%; Poison

Springs - —; and Sierra Ancha - 16.4%. The dominant species are juniper, pinyon, oaks, curly mesquite, 3-awn, sideoats, mesquite, and annual grasses and forbs (USDA, 1989).

The ponderosa pine/mixed conifer vegetation type covers about 12% of the analysis area. Estimated percentages of each allotment are: Armer - 19.7%; A Cross - 19.9%; Dagger - 4.3%; Poison Springs - —; and Sierra Ancha - 23.6%. Dominant species are ponderosa pine, mixed conifer, weeping lovegrass, sideoats, various muhly grasses, and hairy grama (USDA, 1989).

Under current management (Alternative 1), range condition is static or declining in the lower elevations of the analysis area. Range condition is static or improving in the higher elevations of the analysis area. Those areas of greater use by livestock without herd distribution control will reduce plant vigor and decrease herbaceous cover. The result will be increased surface runoff and soil erosion in these areas. It is expected there would be 45-50% vegetative cover (canopy and ground cover combined) with 50-55% bare ground (PRF Q).

Alternatives 3-5 reduce the current level of grazing pressure in the high use bottom lands by more evenly distributing the livestock across the acres available for grazing, and reducing the amount of time livestock are allowed to graze within any one area. Management in Alternative 3 is more intensive and provides for more rest and better distribution. This "rest" will allow those species present to gain more vigor and abundance. Herbaceous plants will be able to gain a competitive edge on the woody species in the lower elevations and eventually will create a grassland-shrub mosaic with 10-20% ground cover by perennial herbaceous, and 40-50% by woody species (it is not expected that there would be 100% ground cover in the lower elevations) (USDA, 1989; Ambos).

Under Alternative 2, these areas will improve as described in Alternatives 3 and 4. Research on the Santa Rita Experimental Range near Tucson, AZ has shown that the range recovery rate under conservative grazing was about the same as the recovery rate under continuous protection from livestock (Rivers, 1980). The difference between the recovery under Alternative 2 and that under Alternatives 3 and 4 is in the response time. Riparian areas and those areas where livestock tend to congregate will recover at a faster rate

under Alternative 2. However, the upland areas, especially those within the desert scrub and semidesert grassland, will respond the same as in Alternatives 3-5. Removing livestock grazing from the ERLWAA would not significantly affect the invasion of shrubby species (Brown, 1950; Humphrey, 1958). Once woody vegetation has become established, the removal of livestock from an area does not affect the rate of subsequent invasion by woody species, nor the recovery rate of grasses. Once a seed source has been established for woody species, nothing less than mechanical or chemical treatment will significantly affect the amount of canopy cover by woody species (Caraher, 1970).

Soil and Water

The soil and water conditions on the project area are affected by the vegetative cover and the amount of soil disturbed and exposed by range improvements. The condition of the riparian areas and the potential for stream scouring from storm events are also indicators of watershed conditions. The construction of range improvements will be done by following best management practices (ADEQ, 1990, 1991). Typical examples are shown in Appendix E.

The effective vegetative cover presently varies from poor to fair on slopes less than 10%. Ground cover presently averages about 30-50% over the whole project area and in areas of heavy livestock concentration averages about 20% (see Table 3 concerning the existing condition description for more detailed information) (O'Byrne, 1994). The lack of ground cover in some areas is contributing to soil movement. The Armer Fire removed several acres of vegetative cover. Therefore, an increase in runoff and erosion can be expected in this area for a short time until regrowth can occur. Alternative 1 for each allotment, and Alternative 4 for the A Cross and Dagger Allotments could result in the decline of ground cover particularly in the livestock concentration areas. It is expected that there would be no improvement in herbaceous cover in these areas under continued management, and minimal improvement under Alternative 4. The difference between these two being the area affected. Alternative 4 for the A Cross and Dagger Allotments would impact a smaller area in the concentration areas than in current management.

Alternatives 3 and 5 for each of the allotments, and Alternative 4 for Armer Mountain and Poison Springs/Sierra Ancha Allotments would allow for better watershed condition than Alternative 1. The present heavy livestock concentration areas would improve as livestock would be better distributed throughout the area as a result of improved management. In the areas that are currently heavily used, the amount of vegetative ground cover would be expected to improve, also the compacted soils would begin to show better soil structure, allowing better infiltration. Alternative 3 would be expected to result in faster improvement than Alternatives 4 or 5.

Alternative 2 will increase ground cover across the project area. The current livestock concentration areas in the lowlands would be expected to increase to about 60% ground cover with the removal of livestock. The improvement in watershed conditions in these areas would be expected to occur more rapidly than in Alternatives 3-5. However, in a few areas, especially in the desert scrub, the lack of grazing could result in further brush encroachment at the expense of herbaceous vegetation.

Table 9 displays the estimated soil disturbance resulting from the construction of new range improvements needed in order to implement the alternative. This information is only given for those alternatives which require new improvements. The amount of soil disturbance is combined for all improvements on all the allotments for that alternative.

Table 9. Soil Disturbance.

Type of Improvement	Amount of Soil Disturbance
Construct New Fence	60 acres
Spring Developments	1.6 acres
Pipelines (above the ground)	12.7 acres
Troughs	14 acres
Cattleguards	675 sq. ft.

The amount of disturbance given for spring developments, pipelines and cattleguards is expected to be short lived, producing minimal soil erosion during construction and reducing for 1 to 2 years until vegetation is reestablished. The figures given for new fences and troughs are expected during and shortly after construction. The amount of soil erosion in these areas will reduce somewhat as vegetation is reestablished, but there will always be some soil erosion in these areas as they are livestock concentration areas. It is expected that the soil loss from these improvements will be offset by the implementation of the prescribed management. The prescribed management will improve the condition of the watershed, which will reduce soil erosion area wide (see Chapter 3 - Vegetation and Soil/Water). Although all of the action alternatives have the same amount of improvements associated with them, it is expected that Alternative 3 will result in the greatest amount of soil erosion reduction on a per acre basis because it provides for the greatest amount of improved watershed condition. Range improvements will be constructed using Best Management Practices (ADEQ, 1990, 1991).

Wildlife and TES Species

The project area provides habitat or potential habitat for several species of wildlife and Threatened, Endangered, and Sensitive (TES) species. Potential habitat exists for: American Bittern, Least Bittern, Osprey, Ferruginous Pygmy-owl, California Leaf-nosed Bat, Southwestern Cave Bat, Western Mastiff Bat, and the Narrow headed Garter Snake. In addition to the species discussed in detail below, others are known to occupy habitat in the ERLWAA: Belted King Fisher, Colorado Squawfish, Gila Topminnow, Occult Little Brown Bat, Red Bat, Arizona Agave, Apache Wild Buckwheat, Arizona Bugbane, Blumer's Dock, and Mogollon Fleabane. The action alternatives will make additional forage and cover available but will have little effect on game animal populations. The main concern is for threatened, endangered, and sensitive species inhabiting the riparian areas associated with the Salt River and several riparian areas in the analysis area. Several other species are known to inhabit the pine vegetation type and desert scrub vegetation type.

Riparian TES Species

The riparian areas provide potential habitat for several species. The southwestern willow flycatcher, bald eagle, razorback sucker, green-backed heron, black-crowned night heron, gila roundtail chub, lowland leopard frog, and maricopa tiger beetle have been confirmed on the analysis area (Pollock, 1993 (a&b), 1994, 1996). The improved riparian conditions will improve habitat conditions for these species in Alternatives 2, 3, and 4. Alternative 1 for all allotments, and Alternative 4 for the Dagger and Poison Springs/Sierra Ancha Allotments may allow riparian conditions to degrade which could significantly affect habitat for these species within the allotment.

For the preferred alternative of each allotment, the following mitigation measures will be implemented where applicable, as specified in the U.S. Fish and Wildlife Service's Biological Opinion (Reasonable and Prudent Measures) (USDI, 1995, 1997).

For the razorback sucker -

- A. Take measures to ensure that the monitoring program for this action is sufficient to evaluate real improvement to wildlife habitats and vegetation communities.
- B. Take measures to provide for additional revision of the grazing plans if significant progress toward meeting objectives has not occurred by the end of the 10-year grazing permit period.
- C. Take measures to ensure that those improvements affecting endangered or threatened species or their habitats are constructed.

For the southwestern willow flycatcher -

- A. Continue to monitor the flycatcher as part of the statewide Partners in Flight survey and monitoring effort.
- B. Implement a cowbird management program at the flycatcher breeding area.

Specific mitigation measures are not needed for the other riparian TES species.

Other Wildlife TES Species of Concern

The mexican spotted owl is known to occupy habitat on the analysis area. The proposal may affect, but is not likely to adversely affect the mexican spotted owl. The yavapai Arizona pocket mouse may inhabit the lower half of the project area outside the riparian areas. The species feeds almost entirely on seeds. The northern goshawk and gila monster are also known to inhabit the ERLWAA. The proposal will have no impact on these species (Pollock, 1993 (a&b), 1994, 1996).

TES Plants

The project area is known to contain clones of Hohokam agave and Tonto Basin agave. The action alternatives are not expected to affect these plants (Pollock, 1993 (a&b), 1994, 1996). Additional site visits will be conducted along all flagged or staked locations of ground disturbing projects to confirm that none of these plants will be affected (See mitigation discussions in Chapter 2).

Air Quality

The project area contains a portion of one Class I area (see Glossary), the Sierra Ancha Wilderness, and is approximately 5 miles at its closest point to a second Class I area, the Superstition Wilderness. Air quality will not be significantly affected in these areas or the rest of the project area by any alternative. Very little dust and other pollutants will be produced by any actions in any of the alternatives. Some of the action alternatives require livestock to be rotated or moved at closer intervals compared to current management. However, these large herd movements will be short lived (approximately 1 week), and occur once every 3-6 months.

Other Effects

Livestock Distribution

Improvement of livestock distribution would reduce the use of key lowland areas and force the use into the underutilized upland areas.

More intensive management of livestock distribution and rotation will allow herbaceous plants to rest during critical growing periods and develop seed heads for regeneration. Presently, livestock are only distributed across about 30-50% of the acres available for livestock grazing within the analysis area. Table 10 summarizes the percent of the acres available for grazing for each alternative per each allotment on which livestock are distributed. The effects shown in the table were estimated for a full grazing cycle after all improvements are in place.

Continuation of present management (Alternative 1) will not change the present percent of acreage of the allotments on which livestock are distributed. The over utilized areas will further decline if the over grazing continues (See Chapter 3 - Vegetation).

In Alternatives 3 and 4, livestock distribution would be improved through intensive management. Alternative 3 would allow for the greatest distribution on the allotments, except for the Poison Springs/Sierra Ancha Allotments. Alternative 5 for these allotments includes a 2-herd rotation system with an increase in permitted AUM's. Alternatives 3-5 move cattle on a systematic and time controlled fashion and livestock will not be distributed across the entire range at any one time.

In Alternative 2, livestock will be removed from the allotment as soon as the present Term Grazing Permit expires.

Ranching Operation Viability

If present management is continued (Alternative 1), the lower country could begin to decline in time. If a decline is detected through monitor-

ing, action would have to be taken. To improve range condition without intensive management would probably require stocking reductions of 10-50%, depending on the allotment. When the numbers were adjusted, it would affect the ranch operation viability. This could have an adverse impact on the local economy, as it relies partially on the livestock industry in the community (Sprinkle, 1996).

Each of the permittees would be able to maintain a viable livestock operation in Alternative 3. In the early stages of implementation the permittees would be required to make several expensive investments in improvements. Additionally, they would have to more intensively monitor and manage herd movement, but additional ranch employees would probably not be needed.

Permittees probably would not be able to maintain viable livestock operations under Alternative 4, which reduces the permitted numbers of AUM's. The decrease in revenue generated from this reduction, and the added expense from the new improvements would be too much to absorb. The viability of each operation would be the greatest for all allotments under Alternative 5, which involves an increase in permitted AUM's.

In Alternative 2, the ranch operations would no longer operate as they currently exist after the present permits expire. This could have adverse impacts to the local economy.

Cost/Benefit Analysis - Cost of Range Developments (PRF AF1-12)

Costs of range developments are provided in Table 13. Costs include all material and labor

Table 10. Percent of acres available for grazing on which livestock are distributed per each allotment.

Allotment	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Armer Mountain	30-40%	0%	70-80%	50-60%	70-80%
A Cross	50-60%	0%	70-80%	60-70%	60-70%
Dagger	70-80%	0%	75-85%	65-75%	80-90%
Poison Springs/Sierra Ancha	20-30%	0%	70-80%	40-50%	80-90%

expenses involved for the developments. The permittee's and government's share of costs are displayed. The government's share of expenses is estimated based on: price of materials for fence, corrals, spring developments, pipeline, and troughs; the government will be solely responsible for the costs associated with installing cattleguards due to safety issues; and the permittee will be solely responsible for the costs associated with drilling a new well. Range Betterment dollars derived from grazing fees provide the Forest Service's share of investment. A total of \$115,000 from the Bureau of Reclamation has been budgeted to be used on the ERLWAA for range improvements (see Chapter 1, Need for Action). All other costs would be incurred by the permittee.

Table 11 shows that there would be no costs associated with new improvements for Alternatives 1 and 2 for any of the 5 allotments. The cost for new improvements will be the same for Alternatives 3-5 for each allotment, because the new improvements will be the same for each of these alternatives.

Another method of comparing alternatives is to compare the estimated discounted benefits (market value of animal unit months (AUM's) provided) and the expected discounted costs to the permittee, and the cost to the government for building and maintaining structural improvements in each alternative (PRF AF1-12).

The investment costs used in the analysis are explained above. The permittee costs used here are only for those costs associated with the

initial construction of the structural improvements—they are not the total cost to the permittee of running the allotment. The cost associated with maintenance of the structural improvements by the permittee is estimated using the formula of \$0.04 per foot of existing fence. A new fence is estimated to cost \$0.95/foot, and it is estimated that only 1/24 of the fence will be maintained in any one year, equaling \$0.04/foot. Fencing was used because it generally requires the most intensive maintenance and usually makes up the majority of the maintenance costs. Unless there is a high level of vandalism, any new fence constructed will not require much maintenance for the first 15-20 years, therefore, it was not included in the maintenance figure. Using this formula, maintenance costs would be the same for all alternatives except Alternative 2 for every allotment. There would be no maintenance cost to the permittee in Alternative 2, because the permittee would no longer have the permit.

Administrative Costs - The Forest Service's administrative costs are displayed in Table 12. Forest Service administration costs are estimated based on variable costs associated with permit administration (annual plans, validations, etc.), overhead (utilities, horse support, facilities' maintenance, etc.), and monitoring and inspections. Monitoring costs were based on 30 man days per year per allotment, except for Alternative 2. Permit administration costs were estimated at 24 man days per year per allotment for all alternatives except Alternative 2. For Alternative 2, it is estimated that administration

Table 11. Cost of Range Developments (\$1,000)

Allotment	Alt. 1			Alt. 2			Alt. 3			Alt. 4			Alt. 5		
	Gov.	Perm.	Total	Gov.	Perm.	Total	Gov.	Perm.	Total	Gov.	Perm.	Total	Gov.	Perm.	Total
Armer Mountain	0	0	0	0	0	0	40	20	60	40	20	60	40	20	60
A Cross	0	0	0	0	0	0	15	15	30	0	0	0	15	15	30
Dagger	0	0	0	0	0	0	36	26	62	0	0	0	36	26	62
Poison Springs/ Sierra Ancha	0	0	0	0	0	0	125	115	240	125	115	240	125	115	240

costs would be half that of the other alternatives. Costs would still be incurred due to reporting and ensuring that trespass does not occur on the allotment, and other administrative actions.

Overhead costs were estimated at \$500 per year per allotment based on average other costs for all alternatives except Alternative 2. For Alternative 2, it is estimated that overhead costs would be half that of the other alternatives. Costs would still be incurred for the same reasons as the administrative costs. Allotment Management Plan revision and associated analysis is assumed to happen at year 15 and

cost \$20,000 for all alternatives, except Alternative 2, for each allotment. Tables 13 through 16 show the costs and benefits of development and management by alternative for each allotment.

Forest Service costs are minimized in Alternative 2 for each allotment where there are no new investments and no AUM's to deal with, but the monetary benefits are nonexistent. Alternative 1 for each allotment is the next least costly. This is due to the fact that there are no new investments in improvements for any of the 5 allotments. Alternatives 3-5 for each allotment would cost the same for both the government

Table 12. Forest Service Administrative Costs.

	Armer, A Cross & Dagger Alt. 1, & 3-5	Poison Springs/ Sierra Ancha Alt. 1, & 3-5	Armer, A Cross & Dagger Alt. 2	Poison Springs/ Sierra Ancha Alt. 2
Permit Administration (\$/yr)	4,200	8,400	2,100	4,200
Overhead (\$/yr)	500	1,000	250	500
Monitoring (\$/yr)	5,000	5,000	0	0
Plan Revision (\$/yr)	20,000	20,000	0	0

Table 13. Armer Mountain Allotment Costs and Benefits of Development and Management (Discounted Thousands \$).

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Benefits (AUM Market Value)	267	0	267	181	426
Costs - F.S.					
Structural	0	0	40	40	40
Administrative	76	38	76	76	76
Other	28	0	50	50	50
Total	105	38	166	166	166
Costs - Permittee					
Structural	0	0	20	20	20
Maintenance	203	0	203	203	203
Total	203	0	223	223	223
Total Costs	308	38	389	389	389
Net Benefit (Costs)	(41)	(38)	(122)	(208)	37

Table 14. A Cross Allotment Costs and Benefits of Development and Management (Discounted Thousands \$).

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Benefits (AUM Market Value)	653	0	653	532	909
Costs - F.S.					
Structural	0	0	15	0	15
Administrative	76	38	76	76	76
Other	28	0	28	28	28
Total	105	38	120	105	120
Costs - Permittee					
Structural	0	0	15	0	15
Maintenance	162	0	162	162	162
Total	162	0	178	162	178
Total Costs	267	38	297	267	297
Net Benefit (Costs)	386	(38)	356	265	612

Table 15. Dagger Allotment Costs and Benefits of Development and Management (Discounted Thousands \$).

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Benefits (AUM Market Value)	653	0	653	532	909
Costs - F.S.					
Structural	0	0	36	0	36
Administrative	76	38	76	76	76
Other	28	0	44	28	44
Total	105	38	157	105	157
Costs - Permittee					
Structural	0	0	26	0	26
Maintenance	244	0	162	244	162
Total	244	0	188	244	188
Total Costs	348	38	345	348	345
Net Benefit (Costs)	305	(38)	308	184	564

Table 16. Poison Springs/Sierra Ancha Allotments Costs and Benefits of Development and Management (Discounted Thousands \$).

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Benefits (AUM Market Value)	902	0	837	773	1,086
Costs - F.S.					
Structural	0	0	125	125	125
Administrative	153	76	153	153	153
Other	28	0	92	92	92
Total	181	76	369	369	369
Costs - Permittee					
Structural	0	0	115	115	115
Maintenance	406	0	406	406	406
Total	406	0	522	522	522
Total Costs	587	76	891	891	891
Net Benefit (Costs)	314	(76)	(54)	(118)	194

and the permittee, because the investments would be the same. The differences between these are the cost/benefit ratios. These differences are due to the number of AUM's that would be allowed to graze. The greater the number of AUM's, the greater the benefit.

In summary, the results displayed in Tables 11-14 clearly show that the following alternatives for each allotment are the most advantageous course in terms of monetary benefits alone: Armer Mountain = Alternative 5; A Cross = Alternative 5; Dagger = Alternative 5; and Poison Springs/Sierra Ancha = Alternative 1 (PRF AF1-12). For each of these allotments except Poison Springs/Sierra Ancha, the greater benefit comes from the increased numbers of AUM's that would be allowed to graze under that alternative. Alternative 4 for the Poison Springs/Sierra Ancha and Armer Mountain, and Alternative 2 for A Cross and Dagger have the least benefit in terms of monetary value due to the low number of AUM's that would be allowed to graze.

Effects on Local Economy - (Sprinkle, 1996)

In November of 1996, the economic impact of cattle ranching to Gila County was determined using the 1993 IMPLAN input-output model.

This analysis was performed by Dr. Julie Leones, Extension Economist, University of Arizona Cooperative Extension. Gross receipts for direct sales of cattle were 4.32 million dollars. When the indirect and induced effects of salaries and goods and supplies purchased by ranchers and ranch employees is accounted for, then the total impact on the Gila County economy is more than 5.98 million dollars. For every dollar in gross calf sales generated, the multiplier effect upon the economy is 1.385 (4.3218 million gross sales * 1.385 = 5.986 million total impact). It is estimated that cattle ranching is responsible for generating 165 full time, part-time, or seasonal jobs in Gila County. Additionally, the county receives 25% of the grazing fees collected from the allotments on the Forest for improving schools and roads (See Twenty-Five Percent Fund [P.L. 60-136, Ch. 192, 35 Stat, 260 as amended; 16 U.S.C. 500, 553, 556d]), or \$79,455 in 1996.

Using a base price of \$83.72 (Sprinkle, 1996) per calf sold, the producing Gila County cow population of approximately 18,619 cows, a modest conception rate of 65%, the 1996 average sale weight of 525 pounds for the Gila County calf sale, and the 1.385 multiplier, a long-term average for economic impact to Gila County was

more than \$7.3 million last year. Impact per capita for Gila County would be \$170 per person and \$433 per household per year. Using the last 5-year average grazing fee (1.74 per AUM), schools and roads in Gila County would be shortchanged \$102,409 each year. Gila County only has 3% private land from which to generate income. Clearly, removing cattle grazing from Gila County would have an economic impact upon the county.

Using the permitted Animal Units year long for the ERLWAA (188 producing cows - 100 bulls) and the other data above, the long-term economic impact of removing cattle from the ERLWAA management area would be \$709,854 per year.

Cumulative Effects Analysis - Watershed Assessment

Most of the environmental effects measured by the evaluation criteria are confined to the alternative actions and will not be cumulative. Other past, present, and foreseeable future projects that may contribute to cumulative effects are: other grazing allotments; mining activities, including the Copper Cities, Cyprus Miami, BHP Pinto Valley and the Carlotta Copper project; the Bureau of Reclamation's Plan 6; Roosevelt Lake Recreation Area Plan; State Route 88 Realignment; fuelwood activities; and prescribed burning and wildfires. The cumulative effects of the proposal, including the effects of the above, have been estimated for air quality, and watershed effects (see page 20, and 26-30) (PRF AG1-19). A more detailed cumulative effects analysis is included in the project record file. This analysis contains the technical details as to how the above projects were considered in the cumulative effects analysis determination. The text of this document summarizes and incorporates by reference the detailed information found in the Project Record File. Other environmental effects were judged by the IDT to be localized to the individual project analysis area.

This will serve to document the analysis of cumulative effects from a watershed standpoint for the ERLWAA project. For further information, see the Project Record File (PRF AG1-19). This cumulative effects analysis will consider the alternatives for the ERLWAA project, and all significant past, present and reasonably foresee-

able future actions and their estimated effects relevant to the cumulative vegetation, soil, and water effects analysis.

Watershed Description

The project area is located within the Salt River Watershed, Arizona (See Appendix B-1). The Salt River Watershed encompasses approximately 8,462,720 acres from its headwaters to its confluence with the Gila River (PRF AG 9). The project area encompasses approximately 167,160 acres, which is the equivalent of about 2% of the total Salt River Watershed area. The Salt River Watershed contains numerous 5th code watersheds. The ERLWAA project area lies within 6 of these 5th code watersheds. The cumulative effects analysis will be done on these 6 watersheds, which are: Cherry Creek, Upper Salt River, Pinal Creek, Pinto-Campaign Creek, East Roosevelt Lake and Salome Creek. Table 17 expresses the amount of the project area within each of the 5th code watersheds (See Appendix B-2).

Table 17. Amount of Project Area within Each of the 5th Code Watersheds.

5th Code Watershed	Gross Acres of Watershed	Project Area Acres	Percent Project Area in Watershed
Cherry Creek	169,727	32,315	19
Upper Salt River	159,471	25,430	16
Pinal Creek	99,078	3,630	4
Pinto-Campaign Creek	119,136	10,880	9
East Roosevelt	103,945	69,635	67
Salome Creek	73,978	25,270	34
TOTAL	725,335	167,160	23

Past, Present and Reasonably Foreseeable Future Projects (By 5th Code Watershed)

Cherry Creek Watershed

Grazing - Livestock grazing occurs within this watershed on the following allotments from the Pleasant Valley Ranger District: Flying H & V, Center Mountain, Flying V, Cherry Creek/Frio

Canyon, Vosberg, Crouch Mesa, Pleasant Valley, Bar X and Red Lake.

Prescribed Burns - There are 60,000 acres identified for prescribed burning within this watershed (PRF AG-10). The objective of the burning is to reintroduce fire as a natural component to the ecosystem. The burning will be completed in a 6-10 year period. We would target 2,000-4,000 acres each year, with 50% of the targeted area actually burned. These would be cool season burns, occurring in the spring or fall, sometimes in winter if it is dry.

Catholic Peak Prescribed Burn: This burn is planned to be approximately 3500 acres in size. The objectives are to improve the age class diversity of the chaparral species, and reduce the number of junipers (Dave Tubb, personal communication).

Fuelwood Sales (Dave Tubb, personal communication)

Personal Fuelwood Sale: This is a past sale which disturbed approximately 500-600 acres.

Juniper Cuts: This project entails going into a previously treated area (juniper push) and cutting the resprouts with a chainsaw. It is not expected to disturb more than 280 acres.

Vosberg Fuelwood Sale: This project will be approximately 300 acres in size. The objective is to stop current sheet erosion. Once the target species are cut for fuelwood, the remaining slash will be scattered to within 24 inches of the ground surface. Native species will then be seeded. It is expected that the slash would remain on the ground for 3-4 years.

Upper Salt River Watershed

Grazing - Livestock grazing occurs within this watershed on the following allotments from the Globe Ranger District: Hicks-Pick Peak, Winters Ranch, Sedow, Haystack Butte, and Chrysotile.

Pinal Creek Watershed

Grazing - Livestock grazing occurs within this watershed on the following allotments from the Globe Ranger District: Hicks-Pike Peak, Winters Ranch, Radium, Scarborough, Gerald Hills, Sleeping Beauty, Bohme, Dimario, Bellevue, Jones, Ranger Station and Parker.

Mining (USDA, 1995(a))

Copper Cities Mine: The Copper Cities Deposit is located about 3.5 miles north of Miami. It encompasses approximately 1,500 acres of area and is currently inactive. Exploration of the Copper Cities Deposit began in the early 1950's. Production began in 1954 and continued at a rate of 12,000 to 14,000 tons per day until reserves were depleted in 1975. Production was by floatation milling and precipitation process. Precipitation produced cement copper until 1981 when the facility was closed. The property is currently owned by BHP Copper - Pinto Valley Operations.

Cyprus Miami Mine: The Cyprus Miami Mine began operation in 1912 on land situated immediately north and west of Miami. Several other historical mining lands, such as the Oxhide Deposit and Bluebird Mine, are presently operated as part of the Cyprus Miami Mine. It encompasses approximately 7,953 acres of disturbed area. The production rate at the open-pit mine is about 127.3 million pounds of copper per year, with 213 million tons of ore reserves. Cyprus Miami Mining Corporation plans to expand leaching facilities at the Cyprus Miami Mine on their patented mining claims and public lands administered by both the BLM and Forest Service (Tonto National Forest). The proposed expansion includes the addition of new leach pads, overburden deposition area, storm water impoundments, solution collection and transfer facilities, and supporting roadways and power installations.

Miami Unit Mine: The Miami Unit deposit is located immediately north of Miami. It encompasses approximately 500 acres of area and currently produces approximately 20 million pounds of copper per year by the Solvent Extraction Electrowinning process. The property is currently owned by BHP Copper - Pinto Valley Operations.

State Route 88 Realignment (ADOT, 1996) - This project pertains to the upgrading and/or reconstruction of Arizona State Route 88 (SR88) between the Tonto National Monument and the junction of US 60 in Claypool to meet current highway design guidelines and projected traffic needs. This highway segment is approximately 28 miles long and lies primarily within the Tonto National Forest. Since it provides access to

Theodore Roosevelt Lake Dam and Recreation Area (Roosevelt Lake) and the Tonto National Monument, the route experiences significant recreational traffic, particularly on weekends. It also serves many private developments.

The north and south terminal segments of the project generally meet acceptable alignment and roadway standards and will require only minor upgrading.

There are two main segments that will include the creation of a new roadway outside the existing road. The first is 4 miles long and bypasses Wheatfields to the west. It begins near the Hicks Wash crossing of the existing road and continues southward along the foothills above the existing road and the community of Wheatfields. This segment rejoins the existing road at its junction at Gerald Wash.

The other segment is 10 miles long. It departs from the existing roadway near Pinto Creek. This segment rejoins the existing roadway at its crossing of Hicks Wash. A portion of this segment lies within the Pinto-Campaign Watershed.

Pinto-Campaign Creek Watershed

Grazing - Livestock grazing occurs within this watershed on the following allotments from the Globe Ranger District: Bohme, Hobbs Ranch, Lyons Fork, Pinto Creek and Bellevue.

Mining (USDA, 1995(a))

Carlotta Copper Project: The Carlotta Copper Company has proposed to construct, operate, and reclaim the Carlotta Copper Project, an open-pit copper mining and processing facility located about 6 miles west of Miami, Arizona. Of the approximately 3,050 acres of unpatented and patented lands in the project area, the proposed action would disturb approximately 1,385 acres. The proposed action would involve mining using conventional techniques, including blasting, truck hauling from the pit to the crusher, and conveyor transport from the crusher to the leach pads. Approximately 100 million tons of ore would be mined from the Carlotta/Cactus, Eder North, and Eder South pits (including the smaller Eder Middle pit). The pits would be partially backfilled with mine rock; additional mine rock would be placed in one of three disposal areas. A diversion would be constructed in Pinto Creek to route the stream around the Carlotta/Cactus pit. The leach pad (capacity of

approximately 100 million tons) would be located in Powers Gulch; the leach pad would also require a stream diversion. Ore processing would include "curing" with sulfuric acid and leaching to produce a copper-bearing solution. The acid (raffinate) solution would be applied to the pad, collected in an internal pond, and then piped to the solvent extraction/electrowinning (SX/EW) plant for production of high quality copper cathodes. The SX/EW plant would have a design flow rate of 6,000 gallons per minute (gpm). An estimated 900 million pounds of copper would be produced.

An average of approximately 750 gpm of water would be required for operation, with a peak demand of 1,200 gpm during the dry months. The proposed water source would be ground water supply wells in the Pinto Creek drainage. Additional project facilities would include access and haul roads; power lines; equipment maintenance shop and warehouse; office and laboratory buildings, water, fuel, and reagent storage tanks; and sewage treatment/disposal systems.

BHP (Magma) Pinto Valley Mine: The Pinto Valley Mining Company acquired patented claims in 1907 at a site that was located about 8 miles southwest of Miami. In 1920, the Miami Copper Company acquired the claims from the Pinto Valley Mining Company for gold mining. The Castle Dome Mine was opened at this site in 1943. In 1973, Magma Pinto Valley Mining Company acquired the Castle Dome Mine. The property is currently owned by BHP Copper - Pinto Valley Operations. The mine encompasses approximately 3,584 acres of disturbed area. Copper and molybdenum are produced at the Pinto Valley Operations. The mineral reserve at the mine is estimated to be 624,000 tons and the mining rate is 65,000 tons of ore per day. The recovery processes include dump leaching and floatation milling. A land exchange has been proposed between the BHP Copper - Pinto Valley Operations and the Tonto National Forest that will encompass approximately 1,200 acres for dump sites, tailings dams, and miscellaneous operations.

East Roosevelt Lake Watershed

Grazing - Livestock grazing occurs within this watershed on the following allotments from the Tonto Basin Ranger District: Dutchwoman, Roosevelt, Schoolhouse, and Bar V Bar/Campaign.

Bureau of Reclamation's Plan 6 (USDI, 1984, 1990) - In 1984, the Secretary of the Interior approved the modification of Roosevelt Dam as part of the Central Arizona Project's Plan 6. Many benefits will be seen as a result of this work including: enhanced flood control, improved safety, increased water conservation and additional recreational opportunities. Modification work was necessary because engineers determined that the probable maximum flood (the largest conceivable flood) is far greater than was thought possible. The probable maximum flood would have brought more water into the reservoir than the original dam was designed to safely release. This large volume of water would have overtopped the dam, destroyed the spillways and cause the river outlet works to be inoperative. The dam would not have breached, but technically it would have failed because the structure would be unable to control water releases. In addition, the original dam did not meet the standards for an event called a "maximum credible earthquake." A maximum credible earthquake had the potential to cause the original dam to fail.

If Roosevelt had failed, the three dams downstream of Roosevelt would also be threatened. Should all of these dams fail, the resulting flood would inundate a large area of metropolitan Phoenix, causing millions of dollars in damage and possible loss of life.

The modifications to Roosevelt have increased flood storage space, so that flood flows can be safely absorbed in the reservoir and released at a rate that does not exceed the capacity of the dams downstream. The extra water stored in the reservoir will be used by several Phoenix-area cities.

Table 18 depicts some of the changes to Roosevelt Lake resulting from the modifications of Roosevelt Dam (USDI, 1996).

Recreation (USDA, 1995(b)) - The recreational situation for Roosevelt Lake is changing dramatically. Starting in the spring of 1996, the active conservation pool was raised from 2136 feet elevation to 2151 feet elevation, due to modifications of Roosevelt Dam. During high lake levels, the traditional camping areas will be submerged. A Recreation Management Plan is currently being prepared to evaluate the potential for developed and dispersed sites to meet the recreational needs of the public in the future. Following is a brief description of the facilities completed and planned at Roosevelt Lake to satisfy the future recreation demand by the public.

Highly-developed Sites:

- Cholla Campground - 200 camp units
- Cholla Boating Site - 6-lane boat ramp and 263 parking places
- ◆ Windy Hill Campground - 340 camp units and a 2-lane boat ramp
- ◆ Windy Hill Boating Site - 2 boat ramps with adjacent parking and an 8-lane boat ramp with approximately 450 parking places.
- ◆ Grapevine Group Site - 9 loops with up to 100 persons each and a 6-lane boat ramp with 197 parking places
- ◆ Schoolhouse Recreation Site - 200 camp units with a boat ramp
- Indian Point Recreation Site - 200 camp units with a boat ramp

Table 18. Roosevelt Dam Modifications.

	Current Condition	With Modified Dam
Operating High Water Level*	Elevation 2136	Elevation 2151
Total Capacity**	1,336,734 acre feet	1,609,168 acre feet
Surface Area**	17,337 acres	19,199 acres
Flood Surcharge Storage***	87,793 acre feet	1,802,202 acre feet
<p>* Operating high water level is also known as the "active conservation level."</p> <p>** As measured from the top of the active conservation level.</p> <p>*** As measured from the top of the active conservation level to the top of the dam.</p>		

- Bermuda Flat - undeveloped shoreline camping and a day-use site
- Carson's Landing Picnic Site
- Vineyard Picnic Site

Semi-primitive and Roaded Sites

- Hotel Point - day use area
- Al Sieber Vista - day use area
- Chuckwalla East - day use area
- Chuckwalla West - day use area
- Mile Post 246 - day use area
- Vineyard Point - boat access camping
- Mills Cove - overnight camping
- Soltera Parking - staging area
- Soltera Cove - boat access camping
- Bachelors Cove - overnight camping
- Cholla Bay - overnight camping
- Rock Creek - day use, marina
- Goose Point - day use area
- Angler's Inn - boat access camping
- Three Bar Parking - day use area
- Orange Peel - day use area
- Bumble Bee - overnight camping
- ◆ Old Marina - day use area and emergency boat ramp
- ◆ Government Cove - overnight camping
- ◆ Windy Flats - boat access camping
- ◆ Saddle Island - boat access camping
- ◆ Schoolhouse Wash - boat access camping
- ◆ Grapevine Bay - boat access camping
- ◆ Grapevine Airstrip - overnight group-use
- ◆ Schoolhouse Point - boat access camping
- ◆ Cottonwood Wash - overnight camping
- ◆ Connor's Ledge - boat access camping
- ◆ The Islands - boat access camping
- ◆ Long Gulch - boat access camping
- Salt Gulch - boat access camping

◆ These are sites that will be within the East Roosevelt Lake Watershed. The other sites are not within any watershed that the project area is located.

Salome Creek Watershed

Grazing - Livestock grazing occurs within this watershed on the following allotments from the Tonto Basin Ranger District: Dutchwoman, and Greenback; from the Pleasant Valley Ranger District: Buzzard Roost.

Armer Mountain Wildfire - On June 29, 1994, a wildfire was started by a lightning strike near Armer Mountain. This fire burned portions of the Armer Mountain and A Cross Allotments. A total of 5,760 acres was burned.

Cumulative Effects by Activity (PRF AG1-19)

Grazing - Grazing allotments occupy more than 90% of the total acreage of the 6 watersheds. In the historic past, livestock grazing has contributed to a lowered watershed condition by reducing vegetation ground cover and causing soil compaction. This has been mostly evident in the riparian areas and easily accessed areas on the uplands. Most of the grazing allotments situated on the 6 watersheds have been under some form of management and watershed conditions are improving.

Wildfire and Prescribed Burns - Both wildfires and prescribed burns have the short-term effect of reducing canopy and ground cover. This condition has the potential to increase soil erosion and stream sedimentation in the short term. Depending on the environmental conditions present when a wildfire occurs, these effects can last up to several years if there is no rehabilitation effort. This is not usually the case with fires burned under prescription.

Past wildfires and prescribed burns, except portions of the Armer Fire, no longer contribute to cumulative effects due to their age. The potential for beneficial cumulative effects is achieved when a prescribed burn program is balanced within a time frame to reduce short-term soil loss.

Fuelwood - All of the known past, present and future fuelwood sales occurring in the cumulative effects analysis area are located within the Cherry Creek watershed. Cumulatively, these sales will disturb a maximum of approximately 1,180 acres, or 1% of the gross acres in the

Cherry Creek watershed. It is expected that the net effects of these sales will be positive, due to the project design (Dave Tubb, personal communication).

Roads and Trails - Runoff from roads contributes suspended sediments; however, a high percentage of the roads are associated with gentle to moderate slopes, where water can infiltrate the soil more easily. The roads associated with the steeper slopes are generally within the chaparral type, and in soils that are decomposed granite (Ambos).

Dispersed Recreation - Dispersed recreation within the entire cumulative effects analysis area can cause sediment to be carried to the Salt River and Roosevelt Lake. This is usually caused from using roads and trails or by recreating on the stream side or banks. However, the proportion of total acreage of this type of disturbance compared to the gross acres is very low.

Developed Recreation - Within developed campgrounds, compaction of soils, development of roads, sanitation facilities and loss of vegetative ground cover are of concern. There are potential adverse cumulative effects here due to the location of the campgrounds next to Roosevelt Lake and the Salt River. However, with the implementation of Best Management Practices, there would be control of runoff from these developed sites. From a cumulative effects standpoint, these developments would have minor potential adverse effects, as well as, the potential for beneficial cumulative effects resulting from reducing the effects of past dispersed recreational activities (USDA, 1995(b)).

Active and Inactive Mining - Most of the significant mining activity within the cumulative effects analysis area has occurred within the Pinal Creek and Pinto-Campaign Creek watersheds. The Cyprus Miami and BHP Pinto Valley mines are the only two that are currently active. In addition, the Carlota Copper Company has proposed a mine within the Pinto-Campaign watershed. Mining activity has disturbed approximately 10% of the Pinal Creek Watershed, with 8% still active. It has the potential to disturb a total of approximately 5% of the area of the Pinto-Campaign Creek watershed. Most of the disturbed acreage from past mining activities

is currently undergoing some form of extensive rehabilitation/reclamation. The active and proposed mining activities have the greatest potential for contributing toward cumulative effects, especially in the form of sediment and contaminants. However, these activities are under close, constant observation and monitoring for point and non-point source pollution. The likelihood of any long-term contributions toward soil erosion, sedimentation and contaminants is very low (USDA, 1995(a)).

State Route 88 - Approximately 14 miles of new roadway will be built as part of this project. Soil erosion is expected to increase in the project vicinity for the short term, resulting from the removal of vegetative cover. These effects are expected to be minimal and short lived due to the project design. The project design includes extensive mitigation measures, such as erosion control measures to be used during construction and rehabilitation/reclamation after construction activity (ADOT, 1996).

Bureau of Reclamation's Plan 6 - Construction associated with this project has been completed. Both soil erosion and compaction occurred during the active construction phases for this project. However, reclamation and rehabilitation efforts since the completion of construction have, for the most part, eliminated most of the effects. It is not expected that the active implementation of this project (raising the level of Roosevelt Lake for flood protection) will significantly contribute to cumulative effects in a negative fashion. Although vegetation will be inundated and die, these effects were anticipated and mitigation measures were implemented to deal with them (USDI, 1984, 1990).

Summary - The net effect of all the past, present and reasonable foreseeable future actions would be zero or beneficial for Alternatives 2, 3, and 5 for the Armer Mountain and Poison Springs/Sierra Ancha, Alternative 4 for the A Cross and Dagger, and Alternative 1 for the Dagger Allotment. It would be zero or negative for Alternative 4 for the Armer Mountain and Poison Springs/Sierra Ancha, Alternative 5 for the A Cross and Dagger, and Alternative 1 for all allotments except Dagger.

National Forest Management Act Findings

The preferred alternative for the Eastern Roosevelt Lake Watershed Analysis Area (Alternative 3 for each of the allotments) is consistent with the Tonto National Forest Plan. Alternative 2, no grazing, for all of the allotments would require an amendment to the Forest Plan. Alternative 1, no action, would not meet the objectives or Forest Plan standards and guidelines for all allotments, except for Dagger. Alternative 4 for the A Cross Allotment would require an amendment to the Forest Plan to

allow grazing in the Experimental Forest. The preferred alternatives will further the long-term goals and objectives listed in the Forest Plan. The project is located in Management Areas 6F, 6G, 6H, 6J, 5A, 5C, 5D, 5E, and 5F and is consistent with the stated management emphasis for those areas. The project design specifications adhere to the standards and guidelines (Appendix L). This project does not involve timber harvest nor is any harvest otherwise planned on the suitable timber land; therefore, the other required NFMA findings do not need to be addressed (USDA, 1985).

Chapter 4 - List of Preparers

Agency EIS Interdisciplinary Team

Responsibility	Name	Qualifications
EIS Coordinator	Rhonda O'Byrne Tonto National Forest Tonto Basin R.D.	B.S. in Environmental Resources 6 years experience
Range Resources Asst. EIS Coordinator	Linny Warren Tonto National Forest Tonto Basin R.D.	B.S. in Environmental Resources 23 years experience
Soils	Norm Ambos Tonto National Forest Supervisor's Office	B.S. in Soil Science, B.A. in Chemistry 19 years experience
Lands and Minerals	W. Brad Johnson Tonto National Forest Globe R.D.	B.S. in Forest Science 18 years experience
Fire Ecology	Robert Ortlund Tonto National Forest Tonto Basin R.D.	B.S. in Natural Resources 24 years experience
Wildlife/TES	Don Pollock Tonto National Forest Payson R.D.	B.S. in Wildlife Biology 17 years experience
Wildlife/TES	Craig Woods Tonto National Forest Tonto Basin R.D.	B.S. in Field Biology/M.A. in Ecology 20 years experience
Recreation Management	Joseph Sitarzewski Tonto National Forest Tonto Basin R.D.	B.S. in Watershed Management 19 years experience
Wilderness/Dispersed Recreation	Brad Orr Tonto National Forest Tonto Basin R.D.	B.S. in Biology 20 years experience
Water Resources	Grant Loomis Tonto National Forest Supervisor's Office	M.S. (Abt) in Hydrology 15 years experience
Fisheries Resources	Liza Bizios Tonto National Forest Supervisor's Office	B.S. in Zoology/B.S. in Mathematics 9 years experience
Riparian Resources	Lew Myers Retired	B.S. Wildlife Biology/M.S. Zoology 30 years experience
Riparian Resources	Janet Johnson Tonto National Forest Supervisor's Office	B.S. Biology/M.A. Botany/PhD Forest Ecology 19 years experience

Responsibility	Name	Qualifications
Economic Analysis	Walter Stewart Southwestern Region Regional Office	B.S. in Economics/M.A in Economics/ PhD in Natural Resource Administration
Heritage Resources	Steve Germick Tonto National Forest Supervisor's Office	B.S. & M.A. in Anthropology 20 years experience
Visual Resources	Ron Wilson Tonto National Forest Supervisor's Office	B.S. in Landscape Architecture 25 years experience
Water/Wastewater Treatment	Harold Estes (#646) Tonto National Forest Tonto Basin R.D.	4 AZ Licenses - Water Grade 2, Wastewater Grade 2, Water Distribution Grade 2, & Wastewater Collection Grade 2
T and E Species	Individual Specialists U.S. Fish and Wildlife Service	

Other In-Agency Contributors

Name	Position	Location
Cindy Thornhill	Rangeland Management Specialist	Resigned
Gary Holder	Rangeland Management Specialist	Tonto National Forest, Supervisor's Office
Howard Okomoto	Recreation/Wilderness Staff	Tonto National Forest, Pleasant Valley R.D.
Cliff Dils	Forestry Group Leader	Tonto National Forest, Payson R.D.
Anthony Miller	Rangeland Management Specialist	Tonto National Forest, Globe R.D.
Dave Tubb	Rangeland Management Specialist	Tonto National Forest, Pleasant Valley R.D.
Lynn Mason	Hydrologist	Tonto National Forest, Supervisor's Office
Eddie Alford	Biological Resources Group Leader	Tonto National Forest, Supervisor's Office
Marilee Houtler	Forester	Tonto National Forest, Payson R.D.
Larry Widner	District Ranger	Tonto National Forest, Globe R.D.
George Robertson	Soil Scientist	Coconino National Forest Supervisor's Office
Dave Stewart	Range Administration	Southwestern Region, Regional Office
Dave Sire	Ecosystem Management Planner	Southwestern Region, Regional Office
Gerald Gottfried	Research Forester	Rocky Mtn. Forest and Range Exp. Station Tonto National Forest, Supervisor's Office

Chapter 5 - Consultation With Others

List of Contacts

During the preparation of the EIS for the ERLWAA, the Forest Service communicated with and received input from various federal, state, and local agencies; elected representatives; environmental and citizen groups; industries; and individuals interested in the issues regarding the proposed action.

Federal Agencies

Bureau of Reclamation
Natural Resource Conservation Service (formally Soil Conservation Service)
U.S. Environmental Protection Agency
Office of Environmental Policy and Compliance
U.S. Fish and Wildlife Service
U.S. Army Corp of Engineers

State Agencies and Universities

Arizona Department of Environmental Quality
Arizona Game and Fish Department
Arizona Department of Transportation
University of Arizona
Colorado State University

Local Agencies

Gila County Sheriff's Office
Gila County Community Development Office
Gila County Department of Emergency Services
Roosevelt Zoning Commission

Organizations

Southwest Center for Biological Diversity
Forest Guardians
People for the West
American Rivers
Maricopa Audubon Society
Greater Gila Biodiversity Project
Sierra Club
Arizona State Cattlegrowers Association
Arizona Wildlife Federation
Nature Conservancy

Private Entities

BHP Copper
Zuni Heritage and Historic Preservation Office
Salt River Pima-Maricopa Indian Community
C.E. Brooks and Associates, P.C.
Yavapai-Prescott Indian Tribe
Rockhouse Store
Porter Ranch
Jackshoe Ranch
Sanborn Land and Cattle Co.
Bar Eleven Land and Cattle Co.
Central Arizona Guide Association
CHRM
Ft. McDowell Indian Community
Tonto Apache Tribe
White Mountain Apache Tribe
San Carlos Apache Tribe
The Hopi Tribe
Camp Verde Yavapai-Apache Indian Tribe

List of Agencies, Organizations, and Persons to Whom Copies of this Statement Are Sent

The Forest Service completed an environmental assessment prior to the preparation of this EIS. The Notice of Intent to prepare this EIS was sent to all individuals and organizations who had previously expressed an interest in this project. At that time, each person/organization was asked if they would like to remain informed and involved in the process to develop this EIS. Following is the list of those who responded that, yes, they want to be kept informed and involved in the preparation of the EIS.

Arizona Game and Fish Department
Arizona Department of Environmental Quality
Baker, Alana
Beck, Betty Ann
Benne, Robert L
Bowman, Mary
Bureau of Reclamation
Burgess, Jeff

C.E. Brooks and Associates, P.C.

Cain, Harry R.

Corso, Carmen C.

Cowan, Caren

Dishta, Joseph

Erickson, Chas

Erman, Rick

Euler, Dr. Robert C.

Fletcher, Herb and June

Glenn, Pat

Gottfried, Gerald

Griffin, Gail

Hale, Jane

Hayworth, Honorable J.D.

Holder, Mitchell R.

Horning, John C.

Hyde, Pamela

Isaac, Donna

Jelks, Keri

Kennedy, Jean

Kyl, Honorable Jon

Mawson, Robert

McCain, Honorable John

Mercer, Bill

Milroy, Dawn

Moss, Marka

People for the West

Rice, Clarence E.

Sanborn Land and Cattle Co.

Sansom, Larry

Seidman, Mike

Smith, Rebekah

Smith, Steve and Tammy

Southwest Center for Biological Diversity

Sprinkle, Dr. Jim

Thomas, Rachel

Thompson, Les

Trojanovich, George

U.S. Fish and Wildlife Service

U.S. Environmental Protection Agency

Vaaler, Jim

Welsh, Frank P.E. J.D.

Witzeman, Robert M.D.

Woods, Jane

Chapter 6 - Response to DEIS Comments

Summary of FEIS Changes

Following are the changes which have occurred in the FEIS as a result of a specific response to comments or have resulted from updating data, analysis, etc.

1. The Purpose and Need (EIS, Chapter 1) discussion has been expanded to include two new tables to more accurately describe the existing condition. The table which displays the desired condition for the vegetative attributes on the ERLWAA (Table 4) has been changed such that it is more realistic per the General Ecosystem Survey for the area.
2. The Alternative descriptions (EIS, Chapter 2) have been expanded for further clarification. Alternative 4 for the A Cross Allotment and the Dagger Allotment have been changed so that it has the same project design as Alternative 1, except for the number of permitted AUM's. Prescribed burns are no longer proposed as new improvements for any of the allotments under any alternative.
3. The discussion of effects on vegetation (EIS, Chapter 3) has been expanded to incorporate information from the General Ecosystem Survey.
4. The discussion of effects on air quality (EIS, Chapter 3) has been changed to reflect the removal of the prescribed burns from the proposed action, and to include a discussion on the presence of Class I areas within or near the project area.
5. An analysis of the effects each alternative would have on the local economy has been included in the Cost/Benefit discussion (EIS, Chapter 3).
6. Appendices I, J, K and L have been added as support information. Appendix I illustrates the GES map units within the project area. Appendix J displays the stocking rate as acres/AUM for each alternative for each allotment. Appendix K display recommended initial stocking rates in acres/AUM. Appendix L summarizes the management emphasis, and standards and guidelines for each of the Management Areas found within the ERLWAA as identified in the Tonto Land Management Plan (LMP).

7. Several editorial corrections have been made throughout the document.

Index to DEIS Respondents

Following is a list of those who sent in comments to the draft environmental impact statement (DEIS). The respective identifier corresponds with the location of the letter in the project record file.

AL-1	Jeff Burgess
AL-2	Jim Vaaler
AL-3	Rick Erman
AL-4	Rachel Thomas
AL-5	J. Steven Smith
AL-6	Frank Welsh
AL-7	Jeff Burgess
AL-8	William E. Gray
AL-9	Clarence E. Rice
AL-10	Mitchell R. Holder
AL-11	Fred C. Schmidt
AL-12	Keri Jelks
AL-13	Jean Kennedy
AL-14	Mike Seidman
AL-15	Gary Porter
AL-16	Jane Hale
AL-17	Rachel Thomas
AL-21	Jane Woods
AL-22	Marka Moss
AL-23	Betty Ann Beck
AL-24	Alana Baker
AL-25	Mary Bowman
AL-26	Robert L. Benne
AL-27	Pat Glenn
AL-28	Jim Sprinkle
AL-29	P.F. & Marvalene Sanborn
AL-30	Chas Erickson
AL-31	Landi Fernley
AL-32	John C. Horning
AL-33	Frank Welsh
AL-34	Dawn Milroy
AL-35	David J. Farrel; EPA
AL-36	Patricia Sanderson Port; OEPC
AL-37	Barbara Heslin; AGFD

Responses to the Comments

Category	Comment	Forest Service Response
Economics -1	Several comments were received concerning the effects the action alternatives would have on the local community, and that the DEIS should include a better assessment of these costs.	An analysis as to how the proposed action will affect the local economy has been done (Sprinkle, 1996). A discussion concerning this analysis has been added to the FEIS. It is located on page 25 of the EIS.
2	There is no estimate of the cost of maintaining new fences due to vandalism.	Vandalism to range improvements has always been a problem and continues to be. This cost has been added to the economic analysis. It is estimated that the cost would be one-quarter of the cost associated with maintaining the existing fence, or $.25 * \$0.04 = \$0.01/\text{foot}$.
3	It's important that we keep viable livestock operations on our public lands.	Maintaining viable livestock operations was identified by the ID Team, through scoping meeting and letters, as an objective for the analysis area (Refer EIS, pg. 9).
4	Several comments were received regarding the absence of disclosed benefits associated with lower stocking rates, or no grazing.	The cost-benefit economic analysis done for the DEIS is based solely on monetary gains, and monetary gains are only associated with the sale of livestock. To capture the non-monetary benefits associated with several of the action alternatives, an evaluation of other uses has been done (PRF AP).
5	Why bother analyzing different stocking rates if it is known in advance that every alternative whose stocking rate is below what is considered profitable will be rejected?	The National Environmental Policy Act requires that a full range of alternatives be developed and analyzed. For the proposed action to meet this requirement, a range of stocking rates must be analyzed. Depending on the specific grazing strategy, specific stocking rates can have various impact, both environmental and economic. Each alternative was evaluated against 5 common objectives (Refer EIS pg. 9) identified through scoping meetings and letters (one of which was to maintain a viable livestock operation). The effects of each alternative in relation to the 5 common objectives, and the environmental parameters, are disclosed in the EIS. The appropriate line officer (District Ranger) will use this information to make a decision.

Category	Comment	Forest Service Response
6	Please explain why it would cost \$7,050/year for permit administration and overhead under Alternative 2 when no permit is required.	Although there would be no Term Grazing Permit associated with Alternative 2, there would still be administrative and management costs. Some of these costs would be a result of: inspections to insure there are no trespass livestock, inventory and removal of improvements no longer needed, allotment boundary fence maintenance, and monitoring ecological status and watershed condition.
7	Because recreationists and other taxpayers are the source of revenue to install the range improvements and to absorb the costs of cattle grazing on public lands, their needs should be primary in the selection of the preferred alternative.	<p>The dollars used to construct range improvements come from Range Betterment funds. These funds are a portion of the grazing fees paid by the permittees returned back to the unit they were collected on to be used specifically for the purpose of new improvements.</p> <p>Please read further in the Social category for a response regarding who should have preference in selecting the preferred alternative.</p>
Social - 1	Several comments were received from a wide variety of interests specifying why their particular interest group should have preference or more say in what alternatives should be preferred or selected.	<p>The appropriate line officer, for this proposed action it is the District Ranger, is the only person authorized to make a decision in this matter. However, the District formed a Citizens Participation Action Plan (PRF H-1) prior to beginning this analysis to ensure interested and/or affected groups were involved. The purpose of the Plan is to provide Forest Service personnel and interested citizens a format in which they work together in the implementation and monitoring of the Roosevelt Dam component of the Regulatory Storage Division's "Plan 6", and the Forest's Land Management Plan. The intent is to provide timely information, involve the citizens as partners in our management efforts, to establish a process for accomplishing public involvement assignments, and to identify emerging issues. A major objective of this Plan is to provide guidance that will enable the land manager to bring together individuals and groups with differing views or values who will work together to resolve those differences. We want to form positive partnerships that will enable us to care for the land, and serve the people better.</p>

Category	Comment	Forest Service Response
Riparian - 1	Several comments were received concerning the lack of attention given to protecting riparian areas, including no indication of which pastures contain riparian vegetation, how much time livestock will be spending in these areas, why livestock aren't fenced off from more riparian areas, and that restoration of riparian habitat should be a prime objective.	Riparian management is a major objective of this EIS (Refer EIS pg. 9). There are various approved management techniques that enhance riparian vegetation in the presence of livestock grazing. The proposed grazing strategies have been developed specifically (EIS pg. 10 Myers, 1993; and PRF K) to provide for proper riparian management. As a matter of routine policy, monitoring (as identified in the EIS, pg. 9-10) riparian areas will occur. Subsequent modifications to the grazing strategy would occur as needed.
2	The definition of riparian should be available.	A definition for riparian has been provided in the EIS (See Glossary).
3	The trail near Boyer Cabin needs to be gated so cows cannot get into Salome Riparian area.	Currently, this area serves as a holding pasture for the Armer Mountain Allotment. The descriptions for Alternatives 3-5 have been changed, such that, if implemented, the holding pasture would be moved out of the riparian area.
4	I think the District and the analysis area would benefit from a study of the BLM's "Proper Functioning Condition" paradigm.	The BLM's Proper Functioning Condition paradigm currently is not identified as an acceptable method of monitoring for the Southwestern Region of the Forest Service (Region 3). Work is being done to change this. If Proper Functioning Condition becomes a Region 3 approved method for assessing riparian condition, that method may be used.
Wildlife/TES - 1	I disagree that mule deer habitat needs are being met. Because of suppression of fire in chaparral, density of brush is such that deer cannot see far enough to take flight from lions, coyotes, etc.	We have noted your comment.

Category	Comment	Forest Service Response
2	Ranchers in compliance with biological sound management plans offer not only production, but low cost maintenance of water, which benefits wildlife in all forms.	We agree that sound livestock management not only provides water to wildlife species, but that it also provides many other of their habitat needs.
3	I do not think any action should be taken that might harm, hurt, bother, or kill or have any other negative affect on the cowbird population.	We have noted your comment.
4	The District should provide ample food for all species of wildlife year round. I ask that a specific alternative be developed to provide that food source.	Providing ample food for all species of wildlife year round is outside the scope of this proposal.
5	We are not clear on how the project has complied with your ESA mandate in terms of completing a Biological Assessment on the proposed action.	A Biological Assessment and Evaluation (BAE) has been completed, including two amendments, for the preferred alternative. This documentation is located in the Project Record File (PRF R).
6	The Mexican spotted owl Recovery Plan guidance is completely ignored and thus the grazing permits are not consistent with the new Forest Plan direction.	Utilization standards for livestock grazing were listed in the Recovery Plan for the Mexican Spotted Owl. The Tonto's LRMP was amended in 1996 to incorporate the necessary changes as specified in the Recovery Plan. A standard clause in each Term Grazing Permit in Region 3 requires the permittee to comply with the standards and guidelines and management direction outlined in the Forest's Land and Resource Management Plan (LRMP). In addition, the EIS specifies which alternatives are consistent with the National Forest Management Act (Chapter 3).
7	The decision fails to comply with your mandate to ensure the biological viability of fish and wildlife species throughout the planning region.	A decision has not been made at this time. However, a BA&E has been prepared for the preferred alternative. The US Fish and Wildlife Service provides a Biological Opinion (PRF T), which assesses the effect the preferred alternative has on threatened and endangered species within the project area. The final decision will comply with the National Forest Management Act.

Category	Comment	Forest Service Response
8	<p>No real analysis was done to assess how the increase in submerged acreage from the implementation of Plan 6 combined with continued livestock grazing in the ERLWAA will affect the SWWF, Razorback sucker, Hohokam agave and other TES species and their habitat within the project area.</p>	<p>In 1984, the Secretary of Interior approved the modification of Roosevelt Dam as part of the Central Arizona Project's Plan 6. The modification work was necessary because engineers determined that the probable maximum flood is far greater than was thought possible. The benefits to be seen as a result of Plan 6 include enhanced flood control, improved safety, increased water conservation, and additional recreational opportunities. Due to Plan 6, the Fish and Wildlife Service prepared the Amendment to the Fish and Wildlife Coordination Act Report on Plan 6, Central Arizona, Regulatory Division. This report was prepared as a mitigation plan designed to mitigate impacts on fish and wildlife resources associated with construction and operation of Plan 6. In this report it states, "In order to control access to the lake by livestock and reduce impacts to native vegetation associated with uncontrolled grazing, funding should be provided to accelerate the implementation of new and revised Allotment Management Plans for 11 allotments around Roosevelt Lake...This funding should be utilized for the construction of range management fencing and water developments which should provide for management designed to meet vegetative objectives and provide appropriate use by livestock so that established objectives could be met." The Armer Mountain, A Cross, Poison Springs and Sierra Ancha allotments are listed as part of those 11 allotments (USDI, 1984, 1989, 1990).</p>
9	<p>The Forest Service is in ongoing violation of sections 7 and 9 of the Endangered Species Act (ESA). The fact that the Fish and Wildlife Service indicated that the amount of incidental take resulting from the proposed action is not quantifiable indicated that the FS has provided inadequate data regarding the potential effects of the proposed grazing strategy on the sucker and flycatcher. The</p> <p style="text-align: right;"><i>continued . . .</i></p>	<p>The Tonto National Forest requested the initiation of formal section 7 consultation with the US Fish and Wildlife Service regarding the ERLWAA on April 7, 1994 and received a biological opinion from that agency on December 1, 1995. The Forest reinitiated formal consultation on September 10, 1996 and received a biological opinion on April 21, 1997. This has satisfied our ESA requirement under section 7 (Refer PRF T).</p> <p>Concerning section 9, on page 27 of the biological opinion dated December 1, 1995, there is a statement which reads, "While the incidental take statement provided in this consultation satisfies the requirements of the</p> <p style="text-align: right;"><i>continued . . .</i></p>

Category	Comment	Forest Service Response
	FS is currently violating Section 9 of the ESA and will continue to do so because the amount of incidental take of these species has been and continues to be exceeded.	ESA, as amended, it does not constitute an exemption from the prohibitions of take of the listed migratory birds under the more restrictive provisions of the Migratory Bird Treaty Act." This statement leads us to believe that we have complied with both section 7 and 9 of the ESA.
Monitoring - 1	I hope that a continued analysis of the ever changing situation is made. The final implementation of each phase of the plans should be based on the results of the continued analysis.	We agree. Basically, this is a description of "adaptive management". The District implements this with its current management strategies. The Forest Services has identified adaptive management as an effective tool under Ecosystem Management.
2	The riparian monitoring methods listed on page 11, why don't they include assessments of the effects of cattle hooves upon stream bank stability?	As with any physical or biological resource, there are key attributes which can be measured, and then this data can be used to interpret how the entire system is functioning. The Forest's riparian specialist developed the riparian monitoring section for the EIS (pg. 9-10). She feels that implementing the monitoring techniques as specified in the EIS will be adequate to assess riparian conditions.
3	Monitoring should be conducted following burns to determine potential effects on plant species composition and to demonstrate that burn objectives have been met.	We agree - The document has been changed to reflect this.
Water Quality - 1	Several comments were received regarding the need for a Section 401 permit to comply with the Clean Water Act.	<p>Arizona does not currently require 401 certification for livestock grazing permits. The state is drafting rules which could require 401 certification in the future. The proposed rules are undergoing public review. The Forest will comply with the final rules when they become available.</p> <p>The Forest Service currently manages nonpoint source pollution through an Inter-governmental Agreement with Arizona [16-R3-91-033] (PRF AD-1) that designates the Forest Service as the designated Planning and Management Agency within the context of</p> <p><i>continued . . .</i></p>

Category	Comment	Forest Service Response
		<p>the Arizona Water Quality Management program for all National Forest System lands within the state. This agreement requires the Forest Service to implement Best Management Practices (BMP's) to control nonpoint source pollution from its management activities. Grazing is identified as a potential source of nonpoint source pollutants. BMP's are included in the Allotment Management Plans and Grazing Permits which authorize grazing on the Forest (PRF AD-2 thru 4). The Arizona Department of Environmental Quality (ADEQ) reviews these plans to ensure that appropriate BMP's have been included. Implementation of these BMP's constitutes compliance with the Clean Water Act.</p>
2	<p>Contamination of the Phoenix-Mesa water supply by <i>Cryptosporidium</i> in April 1995 provides significant evidence that contamination of the water supply due to cattle grazing is a significant threat. Especially from the A Cross and Armer Mountain allotments, as they drain directly into Roosevelt Lake.</p>	<p><i>Cryptosporidium</i> is a microscopic parasite that can cause disease, mainly diarrhea, if swallowed. People with severely weakened immune systems (i.e. people with the human immunodeficiency virus, HIV) are likely to have more severe and longer lasting symptoms than healthy individuals. <i>Cryptosporidium</i> is common in surface waters, especially when these waters contain a high amount of sewage contamination or animal waste. Recent studies indicate that <i>Cryptosporidium</i> oocysts are present in 65-97 percent of surface waters tested throughout the country. Seventy-seven percent of general surface waters collected from the western United States were found to have oocysts. <i>Cryptosporidium</i> oocysts are found even in pristine surface water systems indicating that this organism occurs naturally in pristine watersheds.</p> <p><i>Cryptosporidium</i> species are transmitted by ingestion of oocysts excreted in the feces of infected humans or animals. Cryptosporidial infection can, therefore, be transmitted from person-to-person through ingestion of fecally contaminated water or food, from animal to person or by contact with fecally contaminated environmental surfaces. <i>Cryptosporidium</i> is found in a wide variety of mammals including humans, cattle, sheep, goats, pigs and horses. It also occurs in various wildlife species such as deer, rac-</p> <p style="text-align: right;">continued . . .</p>

Category	Comment	Forest Service Response
		<p>coons, opossums, rabbits, rats, mice and squirrels. <i>Cryptosporidium</i> oocysts (eggs) shed from one species of mammal appear to be infective to other species of mammals. In cattle, clinical disease and shedding of the parasite is usually limited to calves under a few months of age. In humans, clinical disease and shedding appears to occur at all ages, but is most common among children.</p> <p>For livestock (particularly calves) to transmit the disease to humans, the calf must become infected and must shed the oocysts in its feces. These oocysts must then enter a surface water supply and remain infective as they journey downstream to water treatment plants and distribution systems. The oocysts must then survive the treatment process and remain in sufficient concentration to be infective to humans. Most of the research conducted to date on cattle has been with dairy calves, very little has been conducted with beef calves. The parasite appears to be relative common in dairy calves, but insufficient information is available to draw conclusions about its occurrence in beef calves. Little is also known about the prevalence of shedding among wildlife species with access to surface waters or what contribution humans themselves make to surface water contamination.</p> <p>Environmental concern in the ERLWAA region would tend to reduce the viability of oocysts shed by livestock grazing in the area. Oocysts that dry out appear to become non-infective in just a few hours. Ten or more days of freezing causes over 90 percent of oocysts to become non-infective. If fecal material is deposited directly in surface waters residence time in the water body appears to affect oocyst viability. One study found that after 33 days in river water, an estimated 34-40% of purified oocysts were incapable of excystation. After 176 days, 89-99% were estimated to be incapable of excystation. The hot dry condition of the summer, the freezing conditions of winter and residence time of oocysts in the chain of lakes above the intake systems for the Phoe-</p> <p style="text-align: right;">continued . . .</p>

Category	Comment	Forest Service Response
		<p>nix metropolitan area could substantially reduce the number of potentially infective oocysts shed from infected animals in the ERLWAA analysis area.</p> <p><i>Cryptosporidium</i> is very hard to kill with typical disinfection (chlorination), and even a well-operated water system cannot ensure that drinking water will be completely free of this parasite. However, the organism can be effectively removed by maintaining all levels of a multiple barrier system. The city of Phoenix water treatment division is aware of the potential for <i>Cryptosporidium</i> contamination of the treated water supplies and believes that its existing treatment system is adequate, no changes in its existing system are currently planned. Operators of the system believe that a properly functioning filtration system is the most important element in removing <i>Cryptosporidium</i> from raw water sources.</p> <p>EPA currently does not have a drinking water standard for <i>Cryptosporidium</i>. Present analytical methods for detection in water samples are developmental and do not provide absolutely reliable data. Interpretation of <i>Cryptosporidium</i> positive test results is difficult. The results do not reveal whether the parasite is dead, whether it is an infective species of <i>Cryptosporidium</i> if alive (a number of species of <i>Cryptosporidium</i> exist, and only one is known to infect humans), <i>Cryptosporidium</i> recoveries are low using the current testing method, a rapid analysis is not possible with the current method. Based on uncertainties using the current test methods, the health significance of these methods is unknown. EPA is currently working to resolve a number of scientific questions that will assist it in setting specific safety standards for <i>Cryptosporidium</i> in the future.</p> <p>For the reasons listed above:</p> <ul style="list-style-type: none"> • <i>Cryptosporidium</i> is common in surface waters. • <i>Cryptosporidium</i> may be introduced to surface waters from many sources, including humans and wildlife. <p style="text-align: right;">continued . . .</p>

Category	Comment	Forest Service Response
		<ul style="list-style-type: none"> • Adverse environmental conditions (dry conditions in summer, freezing conditions in the winter, residence times in water bodies) could substantially reduce the viability of oocysts shed in the ERLWAA. • The organism may be spread by a number of methods. • EPA does not currently have a drinking water standard for <i>Cryptosporidium</i>. • <i>Cryptosporidium</i> can be effectively removed by maintaining all levels of a multiple barrier system. • The city of Phoenix does not intend to change their current treatment system; they believe it is effective in removing <i>Cryptosporidium</i>. • Interpretation of <i>Cryptosporidium</i>-positive test results is difficult: <ul style="list-style-type: none"> • <i>Cryptosporidium</i> may be dead. • <i>Cryptosporidium</i> may not be infectious to humans, if alive. • <i>Cryptosporidium</i> recoveries are low using the current test method. • A rapid analysis is not possible with the current test method. • Therefore, health significance of positive tests is unknown. <p>The Forest does not believe that changes in grazing management specifically to address concerns about <i>Cryptosporidium</i> are necessary on allotments included in the ERLWAA.</p>
3	<p>A big issue I feel the EIS fails to address is the direct relationship between livestock grazing and accelerated erosion...What is the added cost to the users of Roosevelt Lake in</p> <p style="text-align: right;">continued . . .</p>	<p>A major reason for the creation of the Tonto National Forest was for watershed protection. The Salt River Valley Water Users who financed construction of Roosevelt Dam were concerned that poor land use practices above the reservoir would result in accelerated siltation of the lake. A large portion of the</p> <p style="text-align: right;">continued . . .</p>

Category	Comment	Forest Service Response
	terms of accelerated siltation of the reservoir due to livestock grazing?	watershed (42% of the contributing watershed in Indian reservation) was subsequently declared a National Forest so that among other things the watershed could be managed to protect the reservoir from siltation. Since creation of the Forest, livestock numbers have been reduced, grazing allotments have been established, and allotments have been placed under management. A reservoir siltation study conducted in 1995 found that reservoir capacity had been reduced by 12 percent over the 86-year period since construction of the dam (Lyons, et al, 1996). This results in an average annual sediment yield of .37 acre feet per square mile of watershed area. The relatively slow rate of loss of reservoir capacity indicates that accelerated siltation of the reservoir is not occurring. Improvement in watershed condition as expected with the proposed action should reduce sediment yield below the existing rate.
Vegetation - 1	Several comments were received concerning the identification of the District's preferred seral stages, and what is meant by improving ecological health and wanting a mosaic of all seral stages in each land unit.	<p>The EIS does not specify any preference of seral stages within the analysis area. A part of the desired condition description, "a mosaic of seral stages in each land unit", is proposed. A full range of seral stages ensures that a variety of species (both plant and animal) are capable of inhabiting any given landscape. Grazing strategies alone do not create major manipulations of ecosystems, nor do they result in fragmentation.</p> <p>The term ecological condition is difficult to interpret. This will be replaced with the phrase, "improved or stabilized watershed condition and species diversity".</p>
2	The District should display a detailed description of the pre-settlement condition.	Descriptions of the pre-settlement conditions are anecdotal at best. Data taken from reference areas and the General Ecosystem Survey provided information that developed desired condition descriptions for various vegetative types. Pre-settlement conditions are not necessarily a desired condition.

Category	Comment	Forest Service Response
<p>Stocking Rates/Live-stock Concentration Areas - 1</p>	<p>Grazing has been the most important human sponsored activity on these 167,000+ acres for hundreds of years and it remains the best use. Cattle lost from the Spanish occupation were present in this area as reported by Kern's California Column. The numbers are not known and probably decreased in length of the Apache occupation (1800's). When the first anglo cattlemen arrived, there were few cattle and horses but an excellent range to stock. The same for a good market with the government in San Carlos and the mines in Globe. The range was held in this period by occupation and ranges were fully stocked (if you didn't, your neighbor would). This left no reserve for ups and downs of drought and a deteriorating ecological condition. There were literally 100 cows where there is only one today, with no fences for control. If cutting numbers alone were a panacea, everything should be perfect today.</p>	<p>Your comment is noted.</p>
<p>2</p>	<p>Several comments were received regarding the difference between the rate of improvement between Alternatives 3 and 4, specifically, how there could be faster improvement under Alternative 3 when Alternative 4 has fewer livestock numbers.</p>	<p>Although there would be fewer numbers under Alternative 4, the adjustments in the management scheme are not sufficient enough to meet the resource needs in the current problem areas. Studies were done on each of the allotments several years ago to assess grazing capacities, and livestock numbers on each of the allotments were reduced as a result of these studies. Therefore, reducing numbers isn't addressing the management problems. The only real difference seen under this alternative when</p> <p style="text-align: right;"><i>continued . . .</i></p>

Category	Comment	Forest Service Response
		<p>compared to current management would be the total area of the current overuse zones. These areas would shrink somewhat due to the fewer number of animals, but there would not be any improvement in the distribution of livestock. The management scheme proposed under Alternative 3 was developed as a means of balancing livestock utilization on the acres available for grazing. It also incorporates rest to preferred plants from grazing during key periods (the growing season), which is necessary for the plants to be healthy and vigorous, and to propagate. Number reductions are not always necessary to improve even apparently overstocked ranges if management is adjusted to secure more uniform utilization (Stoddart, et al, 1975).</p>
3	<p>The DEIS acknowledges that there are areas of heavy livestock concentration where cover averages about 20%, but the extent of these areas of concentrated livestock use is not revealed.</p>	<p>Livestock tend to congregate in areas that are most accessible to them. These generally are valley bottoms, mesas, low saddles between drainages, and areas around water. The choice of grazing grounds by livestock is affected by several factors. These include: topography, distribution of water, vegetation, prevailing winds and kind of livestock (Stoddart, et al, 1959). A general rule of thumb is that 5-10% of an allotment will be within a concentration area. Riparian areas and permanent water sources are the largest contributors. Table 2 on page 3 of the FEIS shows that approximately 5% of the total area of the ERLWAA is comprised of riparian vegetation. With the addition of the other water sources on the allotments, it is expected that these concentration areas fall within the 5-10% guideline mentioned above.</p>
4	<p>Why does the EIS tend to lump alternatives 3-5 as in its chart on the amount of soil disturbance, when the impact of each stocking rate would clearly be different?</p>	<p>It is assumed that Table 9 in the EIS is the table to which is being referred. The preceding paragraph to Table 9 explains that the table displays the estimated soil disturbance resulting from the construction of new range improvements needed in order to implement the alternative. The same range improvements are proposed for Alternatives 3-5 for each allotment, except Alternative 4 for the A Cross Allotment. This alternative has been changed in the FEIS to have the same project design as Alternative 1, which includes no new improvements.</p>

Category	Comment	Forest Service Response
5	<p>The grazing strategy will not be initiated for 4 years. Shouldn't there be a reduction in stocking at least until the improvements are in place?</p>	<p>Several studies have been done on the five allotments which determined grazing capacity (see response below). The Term Grazing Permits have been adjusted as needed to reflect the results of these studies. The lack of livestock distribution is attributed as the main cause of the current resource problems associated with livestock grazing in the project area. Reducing animals numbers until new improvements are in place will not address the problems with livestock distribution. It is estimated that it will take 4 to 5 years for all improvements to be in place and the entire management strategy to be implemented. However, as new improvements are constructed, portions of the strategy can be implemented.</p>
6	<p>The district should do the most basic analysis to show the stocking rates proposed can be supported by the land. These tests have never been done.</p>	<p>The following studies and recommendations have been conducted on the allotments comprising the ERLWAA regarding stocking rates:</p> <p>Armer Mountain Allotment - Production/Utilization Study conducted in 1976 — Permitted numbers were adjusted to reflect the results of the study.</p> <p>A Cross Allotment - Production/Utilization Studies conducted in 1973 & 1974 — Permitted numbers were adjusted to reflect the results of the study.</p> <p>Dagger Allotment - Production/Utilization Study conducted in 1989 — Study showed permitted numbers were below the current grazing capacity.</p> <p>Poison Springs Allotment - Production/Utilization Study conducted in 1963 — Permitted numbers were adjusted to reflect the results of the study.</p> <p>Sierra Ancha Allotment - Production/Utilization Study conducted in 1967 — Study showed that permitted numbers were within current grazing capacity.</p> <p>Except for the Dagger Allotment, at the time the studies were performed on each of the allotments, it was determined that the allot-</p> <p style="text-align: right;"><i>continued . . .</i></p>

Category	Comment	Forest Service Response
		ment was in "poor" to "very poor" range condition. These stocking rates were recommended as a means of improving range condition. The stocking rates have remained the same since that period, while range conditions have remained static or improved.
7	This is a perfect example where outputs, the number of AUM's, are needed to pay for an established or desired lifestyle. That alone is pushing the final decision.	The current stocking rates on each of the allotments is within the grazing capacity of the allotment (see above response). The alternatives were designed to address the issues and objectives identified during scoping. The preferred alternative identified in the EIS is that of the Interdisciplinary Team, based on its ability to address the issues and concerns. The deciding official will use all of the information contained in the EIS in order to make a decision.
8	It is difficult to determine from the EIS the actual number of animals you are proposing to permit to graze because you present it in AUM's instead of cattle yearlong. Could you convert the AUM's to cattle yearlong for each allotment?	To convert AUM's to cattle yearlong, divide the AUM's by 12.
9	Why isn't there an alternative analyzing a reduction in livestock numbers without the massive infrastructure (improvements).	Alternative 4 for the A Cross Allotment and the Dagger Allotment have the same project design as the No Action alternative, but with a reduction in permitted numbers. Alternative 4 for each of the other allotments proposes a reduction in livestock numbers. Improvements are associated with these because the alternative also addresses other issues. For example, the management scheme for Alternative 4 for the Poison Springs/Sierra Ancha allotments was proposed by the permittee; therefore, the need for the range improvements. It was determined that a reduction would be needed for resource protection if this alternative was implemented. For the Armer Mountain Allotment, the current stocking rate is so low that a further reduction would not address any of the issues. Any need for a reduced stocking level is as likely a result of poor management as from any inherent productivity limitation on the range itself (Stoddart, et al, 1959).

Category	Comment	Forest Service Response
10	The EIS needs to disclose to the public exactly how many cattle are grazing on the allotments currently and whether the preferred alternative will increase or decrease the number of cattle grazing on the ERLWAA.	Tables 5-8 of the EIS disclose the differences between each of the alternatives for each allotment. The last row of each table displays the number of AUM's which would be permitted for each alternative. Alternative 1 is the No Action alternative, which is current management. These figures are also explained in the description of alternative in the text of Chapter 2 of the EIS.
Wilderness - 1	Several comments were received regarding livestock use in wilderness areas. These comments centered on constructing new improvements within the wilderness.	<p>Grazing in Tonto National Forest wilderness areas will conform with Congressional grazing guidelines (sec. 108, P.L. 96-560, H.R. Report 96-617 dated 11/14/79) and Forest Service Manual 2323.2 (PRF AN).</p> <p>Section 4(d)(4)(2) of the Wilderness Act states that grazing in wilderness areas, if established prior to designation of the area as wilderness, "shall be permitted to continue subject to such reasonable regulations as are deemed necessary by the Secretary of Agriculture". As stated in the Forest Service regulations (36 CFR 293.7), grazing in wilderness areas ordinarily will be controlled under the general regulations governing grazing of livestock on National Forests. This includes the establishment of normal range allotments and allotment management plans. Furthermore, wilderness designation should not prevent the maintenance, nor the construction and maintenance of new fences or improvements which are consistent with AMP's and/or which are necessary for the protection of the range.</p> <p>No new improvements are proposed within the three affected wilderness areas under any alternative.</p>
Cumulative Effects - 1	<p>The Forest Service provides no supporting evidence that the net effects from all of the potential and presently occurring actions will be zero and thus the cumulative effects analysis is inadequate to determine</p> <p style="text-align: right;"><i>continued . . .</i></p>	<p>A clear description of all past, present and reasonably foreseeable future actions were discussed on pages 26-30 of the EIS. This supporting evidence provides the basis for the determination of a zero or beneficial net effect on resources within the analysis area. A BA&E and subsequent biological opinion from the Fish and Wildlife Service indicates that</p> <p style="text-align: right;"><i>continued . . .</i></p>

Category	Comment	Forest Service Response
	how the proposed project in combination with all other impacts from past, present and reasonable foreseeable future actions will affect watersheds, vegetation, and TES species and their habitats within the project area.	the implementation of the proposed action is not likely to jeopardize the continued existence of threatened or endangered species within the analysis area. Biological opinions have been rendered on all of the other major actions previously proposed within the six affected watersheds.
Watershed/ Erosion - 1	I would like to see more information about the condition of the watershed.	The watershed analysis was adequately addressed. It is located on pages 26-31 of the EIS.
2	Will the preferred alternative really provide sufficient rest to allow these areas to recover in the foreseeable future?	Each of the preferred alternatives was selected as such because of their ability to respond to the issues and objectives identified in the EIS (refer EIS pages 7-9). As specified, the desired condition descriptions are long-term goals for the analysis area. The short-term goals are also listed. These are goals which are expected to be achieved within 10 years following implementation of the selected alternative.
3	The agency cannot excuse the continued watershed and riparian degradation of the ERLWAA by simply moving the cows to the upland pastures. The Forest Service should cite specific references for assumptions made in the DEIS regarding impacts of dispersing cattle in the upland communities.	Livestock naturally tend to congregate in certain areas. Some typical examples are: valley bottoms, low saddles between drainages, areas around waterholes, and level mesas. Because livestock congregate in these areas, they are usually overgrazed. The purpose of improving livestock distribution with adjustments to management is to secure more uniform utilization. In addition to uniform utilization of an area, management must also look at proper utilization of forage and browse species within the same area. There are numerous books, journals, master's thesis', etc. that deal with this topic. Some specific references for more information can be found in the Literature Cited section of the EIS.

Category	Comment	Forest Service Response
Suitability - 1	Several comments were received regarding the Forest Service's responsibility to conduct a suitability analysis for the project area in order to comply with the National Forest Management Act.	<p>The purpose of the National Forest Management Act (NFMA) regulations (36 CFR 219) is to "....set forth a process for developing, adopting, and revising land and resource management plans for the National Forest System...". A suitability analysis as required in NFMA was completed for the 1985 Forest Land Management Plan. This determination was based on allotment analysis information compiled from allotment files on the Tonto National Forest. In addition, a prediction model for capacity was developed for each vegetative type. Slopes were delineated into 0-15%, 16-40%, and 41-80% categories. Condition classes were overlayed on each slope determination to determine which condition areas fell into which slope categories. From this, allowable use determinations for forage were delineated for each condition class within the three slope categories. Overall the poorer range condition and steeper sloped areas received the lowest allowable use determinations. Areas 41% and over were determined to be unsuitable for use by domestic livestock (PRF A1-3).</p> <p>Suitability is summarized in Appendix A of the Tonto Land Management Plan (TLMP). Appendix D in the TLMP identified levels of management for livestock grazing in various management units. These management levels reflect how livestock grazing relates to other competing uses on National Forest System lands. The majority of the grazed area on the ERLWAA is in Management Unit 6F. Management Unit 6F calls for level D management in the TLMP. Level D management states "Management seeks to optimize production and utilization of forage allocated for livestock use consistent with maintaining the environment and providing for multiple use of the range." To optimize production and utilization of forage, many different methods to improve quality and quantity of forage for domestic livestock can be used. These include implementation of complex grazing systems combined with fencing and water development, as well as brush control and seeding type projects.</p>

Category	Comment	Forest Service Response
Process - 1	There is nothing fair or equitable about the process as a whole, but it is used simply to placate fringe factions and soothe the general public's fears.	<p>The process used to complete this environmental impact statement was consistent with all applicable laws, rules, regulations and Forest Service policies. The National Environmental Policy Act (NEPA) is the primary law driving this analysis. Within NEPA, it states "Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decision making." The District has utilized Region 3's Integrated Resource Management (IRM) process to address this statement. IRM outlines both the agency's and the public's roles throughout the analysis. The public includes any and all individuals who are interested and/or affected by the proposed action. The public is involved through scoping. They are key in identifying and developing issue statements. These issue statements drive the remaining analysis. Once a decision is made, an individual has an opportunity to appeal the decision if they feel the analysis supporting the decision is inadequate.</p>
2	The district needs to develop an array of alternatives, with a logical/rational explanation for each.	<p>An array of alternatives has been developed and analyzed in the FEIS (Refer to Chapter 2, Alternatives). These alternatives have been developed through more than 5 years of scoping and analysis. The project record file for this proposed action includes all of this documentation, including the logic and rationale for each alternative.</p>
3	I can only report that the IRM process was not followed by any stretch of the imagination.	<p>The process used to complete this environmental impact statement was consistent with all applicable laws, rules, regulations and Forest Service policies. Integrated Resource Management (IRM) was developed by the Southwestern Region (Region 3) as a means of facilitating compliance with the National Environmental Policy Act (NEPA) and the National Forest Management Act (NFMA), as well as other environmental laws and regulations. The major components of IRM are:</p> <p>PROPOSED ACTION IDENTIFICATION</p> <ul style="list-style-type: none"> • Locate an area • Describe existing condition <p style="text-align: right;"><i>continued . . .</i></p>

Category	Comment	Forest Service Response
		<ul style="list-style-type: none"> • Describe desired condition • List possible management practices • Develop proposed action and purpose and need <p>PROPOSED ACTION DESIGN</p> <ul style="list-style-type: none"> • Scoping • Environmental analysis • Environmental documentation • Implementation <p>MONITORING</p> <ul style="list-style-type: none"> • Monitor programs and actions <p>The purpose of IRM is to GUIDE identification, design and monitoring of proposed actions to: comply with legal requirements, get people involved, analyze and disclose environmental effects, and to successfully apply an ecosystem approach to forest plan implementation through quality actions. Guide is the key word. Process managers have the discretion to vary the detail and intensity of the process steps.</p>
4	<p>The EIS should disclose what are the irreversible and irretrievable impacts of the proposed action, what the unavoidable adverse impacts are from the implementation of the proposed action and should disclose specific mitigation measures, not the nebulous monitoring the DEIS tries to pass off as mitigation.</p>	<p>There are no irreversible (and irretrievable) impacts associated with the proposed action, nor are there any unavoidable adverse impacts. Specific mitigation measures are located in the EIS (Refer EIS pgs 9 and 20)</p>
5	<p>The Forest Service has produced a totally inadequate document with virtually no analysis of the actual environmental effects of the proposed grazing scheme on soil condition, watershed and riparian conditions and</p> <p><i>continued . . .</i></p>	<p>Specific analyses for each of the resource areas can be found in the specialists' reports (PRF M) as well as in other specific documentation found in the project record file (i.e. biological assessment and evaluation). In addition, an evaluation of other uses has been completed for other resources based on the identified issues (PRF AP).</p> <p><i>continued . . .</i></p>

Category	Comment	Forest Service Response
	wildlife habitat, as well as omitting analysis of the impacts of the proposed grazing strategy on recreationists and water consumers in Phoenix. There is no analysis of the site specific impacts of proposed range improvements on specific habitat types.	Standard operating procedure was used in the evaluation of the site specific impacts of the proposed range improvements. The estimated acreages of soil disturbance are listed in the EIS for all new improvements (Refer EIS pg 18-19). Legal locations for all new proposed improvements can be found in Appendix F in the EIS.
Miscellaneous - 1	I suggest that you provide a list of all the end products that are from or made from cattle.	This is beyond the scope of this environmental analysis.
2	Our comments include suggested language changes to correctly reflect the description of BHP Copper properties found in the EIS.	Changes have been made in the FEIS to address this.
3	I believe provision should be made that in periods of extreme drought the rested pastures can be used.	This is beyond the scope of this environmental analysis. However, the District must follow Forest policy concerning drought.
4	Your draft document by all appearances puts grazing at the top of the heap in regard to land usage.	As identified in Chapter 1 of the EIS, the purpose and need for the proposed action is to facilitate movement of the existing condition toward the desired condition. It was determined that current livestock management would need to be adjusted to accomplish this. Three issues were identified through the scoping process. Alternatives were developed to address these issues, including one for no livestock grazing. Each alternative was evaluated against each issue, and how they would affect the five main environmental components (vegetation, wildlife, soils, water and air).
5	I'm curious what the District means when it says "Management in Alternative 3 is more intensive". Is it less intensive in Alternatives 4 and 5?	The management of livestock, or the lack thereof, involves several factors. The major factors include kind of animal, number of animals, distribution of animals and time of use (each of these factors have numerous <i>continued . . .</i>

Category	Comment	Forest Service Response
		<p>factors which also must be considered) (Stoddart, et al, 1975). A very intensive management strategy is one that addresses each of these factors by being flexible enough to adjust to changing conditions. A continuous, yearlong grazing strategy is not intensive. Holistic resource management, where livestock numbers, rotation schedule, etc. can change on a weekly or even daily basis, is extremely intensive. The management scheme proposed under Alternative 3 addresses, and is more responsive to these factors, than the management strategy in either Alternative 4 or 5.</p>
6	<p>The "no grazing" alternative does not include prescribed burns. An explanation is required.</p>	<p>The proposed action for this environmental analysis is for a grazing strategy and associated improvements. Under the no grazing alternative, there would not be any associated improvement associated with it. That does not mean that prescribed burning could not be proposed for the area, it's just that it is beyond the scope of this analysis.</p>
7	<p>I don't consider fences and watering troughs to be range "improvements". They are livestock management devices and the land isn't necessarily improved by their presence.</p>	<p>The Forest Service handbook refers to these as range improvements. The EIS is using acceptable Forest Service terminology.</p>
8	<p>Why weren't the relationships between livestock grazing and red brome and cowbirds analyzed in the EIS?</p>	<p>The relationship of livestock and brown-headed cowbirds, as they relate to threatened and endangered species, has been addressed in the biological assessment and evaluation (PRF R), and the biological opinion (PRF T) received from the U.S. Fish and Wildlife Service. This is referred to in the EIS (pg 20). The relationship of livestock and red brome is beyond the scope of this environmental analysis.</p>
9	<p>Why did you propose to implement deferred rest-rotation grazing systems on the Armer Mountain, A Cross and Dagger allotments, but only a Santa Rita system on the Poison Springs/Sierra Ancha allotments?</p>	<p>The Santa Rita grazing system is a deferred rest-rotation grazing system. The difference between it and the other systems is that it is very specific in the number of pastures and times of use. The other proposed management strategies are simply modified Santa Rita systems.</p>

Category	Comment	Forest Service Response
10	One of the objectives is to maintain a viable livestock operation. This is an inappropriate objective for land which is unsuited to cattle grazing. The DEIS states that the lower country could begin to decline unless there is a 10-15% stocking reduction. This would affect ranch viability. Does this mean that viability is more important than the environment, TES, recreation, etc.?	The area's suitability for livestock grazing was assessed in the Tonto's Land Management Plan (PRF A). Maintaining a viable livestock operation was identified through scoping with the various interested and/or affected parties (PRF L, W, AL). It is the purpose of this environmental document to evaluate each alternative against each of the issues identified and disclose the effects. The preferred alternative was identified based on how that alternative addresses the issues and objectives. This document or analysis has not placed an importance rating to any of the identified issues/objectives.
11	The DEIS makes no mention of the existence of or critical of cryptogamic soils. The DEIS needs to include an assessment of the current status of cryptogamic soils on these allotments.	While cryptobiotic communities (cryptogamic crusts or cryptogams) perform important functions, it is uncertain how extensive these communities were prior to European settlement. It is doubtful that they were ever abundant in the Pinyon-juniper and grassland zones. Evidence from relic areas and other lightly impacted remote areas suggests that they were not. For example, Dutchwoman Butte, a pristine grassland near Roosevelt Lake on the Tonto National Forest has very few cryptobiotic communities. Most other remote areas on the Forest similarly have few cryptogams. There are, however, a few notable exceptions where cryptogams are fairly extensive. These are normally areas of very shallow, rocky soils, often with low fertility. Some examples of fairly extensive cryptobiotic communities are on the Supai Sandstone near Sedona, some otherwise barren areas within the Superstition Wilderness on the Tonto National Forest, and sites within Canyonlands National Park in Utah. These areas that do support cryptogams all have poorly developed soil of low fertility and lack extensive communities of higher plants. It appears that on fertile sites, cryptobiotic communities are out competed by higher plants, notably grasses and forbs. It is thought that in the past, most pinyon-juniper communities had a much more luxurious herbaceous understory than at present, making an abundant cover of cryptogams unlikely. On the other hand, there are areas where cryptogams appear to be increas- <i>continued . . .</i>

Category	Comment	Forest Service Response
		<p>ing in extent. These are areas where past grazing practices severely depleted the herbaceous understory allowing cryptobiotic communities to expand.</p> <p>In summary, extensive cryptogamic communities were likely not abundant in the past, being mostly limited to harsh sites where competition with higher plants was less. On fertile sites, grasses and forbs probably out competed cryptogams for space and nutrients.</p>
12	<p>The environmental document does not disclose how many acres currently are grazed compared to how many acres will be grazed if the preferred alternative is implemented.</p>	<p>It is estimated that under current management, all acres available to livestock for grazing are receiving some use. One of the most important facets of proper grazing management is the dispersion of grazing animals and associated forage utilization within the management unit or area (Vallentine, 1990). The primary management strategy associated with the preferred alternative is to improve livestock distribution, which really equates to more uniform utilization of forage by livestock throughout the management units, not to increase the number of acres livestock will use.</p>



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Dear Mr. Warren:

The Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the project entitled **Grazing Strategy and Associated Range Improvements for the Eastern Roosevelt Lake Watershed Analysis Area, Tonto Basin Ranger District, Tonto National Forest, AZ.** Our review is pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

The Forest Service proposes to develop grazing management plans for the Armer Mountain, A Cross, Dagger, and Poison Springs/Sierra Ancha allotments. These plans are needed to adjust existing management on each of the allotments. These plans are also part of the US Fish and Wildlife Service's recommended mitigation for the modification of Roosevelt Dam as part of the Central Arizona Project's Plan 6. Due to uneven livestock distribution in riparian and low land areas, existing conditions in these areas do not currently reflect the desired condition or adequately provide for the habitat needs of a number of sensitive wildlife species. Five alternatives are considered for each allotment: Alternative 1 - No Action - Current Management, Alternative 2 - No grazing, Alternative 3 - Adjust management with new range improvements and no change in current permitted animal unit months (AUMs), Alternative 4 - Adjust management with new range improvements and a reduction in permitted AUMs, Alternative 5 - Adjust management with new range improvements and an increase in permitted AUMs. The Forest Service's preferred alternative is Alternative 3.

EPA commends the Forest Service for their initiative to modify these allotment plans to address poor conditions in riparian areas and lower elevations. We fully support attempts to provide for more even livestock distribution, use of rest/rotation and Santa Ana grazing systems, and the use of no use agreements for specific pastures. We also recognize the need to balance resource improvements with the economic viability of the livestock operation. Achieving the correct balance can be difficult. Thus, we urge a conservative approach and use of adaptive management and monitoring to ensure natural resource improvements are being realized. Where riparian and sensitive habitat resources are in very poor condition as a result of

Forest Service Response

grazing practices, we urge further consideration of no use agreements and a reduction of permitted AUMs.

While we support the overall goals of the proposed project, we are very concerned with the lack of specific information (e.g., present grazing strategy, amount of stream channel cutting, current water quality characteristics) and the overall general and vague evaluation provided by this very short EIS. The lack of specific information makes it very difficult to conduct an informed review of the proposed project. Of special interest to EPA are detailed descriptions of past, current, and anticipated conditions of riparian and aquatic habitats, water quality, and air quality. Additional detailed information should also be supplied regarding existing conditions and the current grazing strategy for each allotment.

In addition, environmental consequences of the proposed project, are described in general terms by alternative and issue area versus describing specific effects on each allotment. We strongly recommend environmental consequences be described in detail for each allotment for each alternative. We believe this is an appropriate approach given the unique grazing strategy developed for each allotment. Excessive duplication of information can be avoided by referencing issues and discussions made in preceding allotment environmental consequences evaluations.

Because of the above concerns, we have classified this DEIS as category EC-2, Environmental Concerns - Insufficient Information (see attached "Summary of the EPA Rating System"). We appreciate the opportunity to review this DEIS. Please send one copy of the Final EIS to this office at the same time it is officially filed with our Washington, D.C. office. If you have questions, please call me at (415) 744-1584, or invite your staff to call Ms. Laura Fujii of my staff at (415) 744-1579.

Sincerely,



David J. Farrel, Chief
Federal Activities Office

Enclosure: (3 pages)

Filename: rosevelt.del
MI002668

cc: Lesley Fitzpatrick, US Fish and Wildlife Service
Bob Arambula, SCS/NRCS
Leonard Cooper, AZ Game and Fish Dept.
Mike Hill, AZ DEQ
Brian Jennings, AZ Cattlegrowers Assoc.
Bobbie Holaday, Sierra Club
Jane Hale, People for the West

SUMMARY OF RATING DEFINITIONS AND FOLLOW-UP ACTION

Environmental Impact of the Action

LO-Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC-Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO-Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU-Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of environmental quality, public health or welfare. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1-Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2-Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3-Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From: EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

COMMENTS

Alternatives

1. The DEIS states that term grazing permits to allow only seasonal grazing are technically or economically infeasible (pg. 9). However, Appendix F-1, Specific Allotment Plans, appear to provide for only spring and fall grazing periods on some of the pastures. The FEIS should provide additional information to support the above conclusion regarding infeasibility of seasonal grazing.
2. Rest/rotation grazing strategies are proposed which appear to have a large range of variation for the length of the rest period. For example, Alternative 3 for the A Cross allotment proposes grazing of some pastures for 3 months with rest periods of 3 to 33 months (pg. 14). The FEIS should provide the rationale for this large range of variability and describe the criteria that will be used to determine what length rest period will be implemented.
3. Several of the allotment plans utilize no use agreements to eliminate grazing from specific pastures (e.g., A Cross Allotment). The FEIS should describe why these agreements are being used and whether there is a correlation with sensitive areas which need extended periods of rest.
4. The DEIS concludes that Alternative 3 would provide faster improvement to watershed conditions than other action alternatives (pg. 22). Detailed information to support this conclusion is not present. We strongly recommend the FEIS provide this information and the rationale leading to this conclusion.

Water Quality

EPA is especially concerned with potential effects to water quality and watershed conditions. The DEIS does not describe or evaluate in detail the overall condition of the watersheds in regard to cumulative effects. We are familiar with the Forest Service's use of Thresholds of Concern (TOC) to determine the relative risk of a proposed action and cumulative impacts on the stability of a watershed. We urge the Forest Service to provide specific information on the TOCs for each of the affected watersheds and to evaluate whether the proposed project will cause the watersheds to approach or exceed their TOC.

Cumulative Effects Analysis

1. Cumulative effects by activity are described for roads and trails (pg. 36). In this description, the DEIS states that roads associated with the steeper slopes are generally within the chaparral type and in soils that are decomposed granite. There is

Alternatives

1. Changing the current grazing permits from allowing year long use on the allotments to seasonal use would be economically and/or technically infeasible. If this change was made, the permittees would be responsible for either finding enough acreage off of the current allotment to support the livestock for several months each year, or sell and buy an entire herd each year. Private property comprises only about 3% of Gila County, Arizona, which is where each of the allotments are located. It would be very difficult to find and be able to purchase enough conjoined acres to implement this. Plus there would be the added cost of purchasing the land, and trucking the animals twice each year. Selling and buying an entire producing herd each year is not conducive to good livestock production and business practices. The business would not be able to support such practices.

As you point out, Appendix F provides for only spring and fall grazing periods on some of the pastures in some years, and summer or winter grazing in others. The livestock will be present on the allotment in other pastures at these times.

2. The rotation schedule for alternative 3 is given for a five year period in Appendix F. This schedule was developed utilizing basic principles of range and livestock management. Many studies have been done as to how certain vegetation types can be grazed by domestic animals to achieve specific results. Vallentine (1990) suggests the following characteristics for a grazing system to be effective and practical:

1. It is based on and suited to the physiological requirements and life history of the primary forage plants.
2. It will improve vegetation low in vigor or maintain vegetation already high in condition.
3. It is adapted to existing soil conditions so erosion and puddling will not result from livestock trampling.
4. It will favor the desirable plants and promote high forage productivity.
5. It is not detrimental to animal performance and will hold animal disturbance at acceptable levels.
6. It is practical to implement and reasonably simple to operate.

Another key factor is that a grazing system must be adjustable enough to respond to fluctuations in both the environment and the operation. This is the type of information which was used when the rotation schedules were developed.

3. The Memorandum of Understanding for non-use on two pastures of the A Cross Allotment was done because of conflicts between uses with other resource areas, particularly recreation and private inholdings, as well as the Sierra Ancha Experimental Forest. By establishing no use agreements, there is no correlation with sensitive areas which need extended periods of rest.

4. Sources from which information was pulled to draw these conclusions, and additional information have been added to this discussion in the FEIS.

no evaluation or description of the relative risk of runoff and erosion from these roads on steeper slopes. It is our understanding that decomposed granite is highly unstable and often a significant contributor to excess stream sedimentation. The FEIS should address the cumulative effects on water quality of the roads and trails on steeper slopes and describe whether the proposed action will influence these effects (e.g., will increased livestock movement on trails induce a significant increase in erosion?).

2. The Summary/conclusions of the cumulative effects analysis does not clearly characterize the connections between the conclusions (e.g., zero or beneficial effect for Alternative 4 for A Cross and Dagger allotments, pg. 37) and the cumulative effects described for each watershed and activity. The FEIS should clearly describe the basis for the conclusions and the connection with other cumulative effect analysis information provided.

Air Quality

Information regarding air quality is very sparse. Existing conditions are not described nor the presence of Class I or Class II areas (e.g., wilderness areas). Furthermore, the DEIS does not provide an evaluation of conformity nor a detailed discussion on smoke management regulations. Full disclosure of potential beneficial and/or adverse impacts to air quality is critical due to the proposed use of prescribed burning and increased movement of livestock. In addition, the Forest Service may have an affirmative responsibility to assure that this project will conform to the attainment plan approved for the area [§176(c) of the Clean Air Act (CAA), as amended November 15, 1990]. It is these provisions of the CAA which address whether or not the project would interfere with attainment or maintenance. EPA has promulgated regulations at 58 Federal Register 63214 (November 30, 1993) implementing §176(c) of the Clean Air Act (CAA). Among other things, these regulations establish de minimis levels for actions requiring conformity determinations, exempt certain actions from conformity determinations, and create criteria and procedures that Federal agencies must follow for actions required to have conformity determinations. You should review these regulations and discuss their applicability in the FEIS. Pursuant to §176(c), conformity to an implementation plan means:

"conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of such standards; and

"that such activities will not (i) cause or contribute to any new violation of any standard in any area; (ii) increase the frequency or severity of any existing violation of any standard in any area; or (iii) delay timely attainment of any standards or any required interim emission reductions or other milestones in any area."

Water Quality

Monitoring will determine pre and post implementation conditions. The Forest is not aware of Threshold of Concern. Per an intergovernmental agreement between the Forest Service and the State of Arizona (ADEQ, 1990 & 1991), the District agrees to implement Best Management Practices to protect watershed and riparian conditions, and to reduce erosion from any proposed mechanical treatments (construction of improvements).

Cumulative Effects Analysis

1. Improved livestock distribution is expected to increase vegetative ground cover. Increased ground cover would improve the ability of vegetation to filter eroded sediments and prevent their delivery to stream channels.

Roads and trails tend to be areas where livestock congregate. Improvement in the distribution of livestock will reduce the impact livestock currently have along the existing roads and trails in the area.

The Forest also has an approved Resource Access/Travel Management Plan (RA/TM) that identifies roads planned to be left open, planned for closure and planned for obliteration. Many roads in the project area are planned for closure or obliteration. Roads planned for obliteration are concentrated in the Armer Mountain-Tanner Peak-Workman Creek areas. Some of these roads were obliterated following the Armer Wildfire. Others have yet to be obliterated. Road closure is a slow process that depends on budget and work priorities. Eventual closure or obliteration of the remaining roads would reduce their water quality impact.

The cumulative effects of improved ground cover and reduced roaded area should reduce the water quality impacts of roads and trails in the project area.

2. Most of the effects described in the cumulative effects analysis were taken from documentation related to that project. These have been cited and referenced in the FEIS.

On March 15, 1993, EPA published a proposed rule in the Federal Register on "Determining Conformity of General Federal Actions to State or Federal Implementation Plans." The proposed rule applies to federal activities not related to transportation plans, programs, and projects and which occur in non-attainment or maintenance areas. The proposed rule requires that conformity determinations be made for each (non-transportation) federal activity with a total of direct and indirect emissions of air pollutants exceeding de minimis thresholds. The Clean Air Act prohibits federal approval of a project for which conformity with the SIP cannot be assured. The FEIS should clearly demonstrate that the proposed action does not exceed de minimis thresholds or trigger conformity determination requirements.

General Comments

1. The DEIS describes a number of range improvements to ensure better livestock distribution throughout the allotments. A schedule for implementation of these improvements does not appear to be provided. We recommend that a proposed schedule be supplied plus a list prioritizing the projects to be implemented. Describe fallback options if adequate funding or resources to implement the improvements does not occur.
2. Potential adverse local economic effects are predicted if the allotments are closed to grazing (pg. 25). The FEIS should provide additional information, such as the percentage of the local economy dependent on these allotments, the number of people employed, and the level of reliance on public land grazing rights; to support the predicted negative local economic effects.
3. Appendix D provides a check list of issues considered but resolved by alternative design, the Land Resources and management Plan, affected environment, and Plan 6 environmental documents. We recommend the appendix be expanded to provide a narrative description of how the issues were resolved through these actions.
4. The DEIS frequently refers to a number of background and planning documents which are incorporated by reference (e.g., pg. 1). While we support incorporation by reference, we believe it is critical that the conclusions and relevant information from these documents be summarized, in enough detail, to allow the public to evaluate the proposed action without constant referral to these other documents.

Air Quality

The proposed prescribed burns would be the primary influence to air quality. These have been removed as part of the proposed action. A discussion about the presence of Class I airsheds within or near the project area has been added to the FEIS.

General Comments

1. Page 7 of the EIS discusses the short term goals for this project. Letter A identifies that one goal is for all necessary range improvements to be in place and in working order within 5 years after a decision has been made. Once a decision is made, the District and the permittee will have to develop an Allotment Management Plan (AMP). Part of this plan will be a range improvement schedule, which will specify which party will be responsible for funding and/or constructing each of the new improvements and in what year. The AMP becomes a part of the Term Grazing Permit, and is subject to the rules and regulations which apply to the permit.
2. An analysis as to how the proposed action will affect the local economy has been done. A discussion concerning this analysis has been added to the FEIS. It is located on page 29 of the FEIS.
3. Appendix D is provided as a summary. Discussions as to how the issues were resolved is located in various documents throughout the project record file. These documents are readily available for review.
4. The literature cited list has been expanded, and where needed, explanations have been given for the documents listed.



United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
600 Harrison Street, Suite 515
San Francisco, California 94107-1576

December 2, 1996

ER 96/670

Tonto Basin District Ranger
Tonto National Forest
Tonto Basin Ranger District
HC02 Box 4800
Roosevelt, AZ 85545

Dear Gentlemen:

The Department of the Interior has completed its review of the Draft Environmental Impact Statement for the Grazing Strategy and Associated Range Improvements for the Eastern Roosevelt Lake Watershed Analysis Area, Tonto National Forest, Gila County, Arizona. We offer the following comments concerning the Draft EIS.

General Comments

The document does not analyze cultural resources or impacts to them. In Chapter 4 - List of Preparers, there is no archeologist listed for the preparation of this document. A section on "Issues Considered but Eliminated from Further Analysis or Consideration" should be added to discuss why cultural resources were not included. Otherwise, the Final EIS should include a discussion in Chapter 3 - Affected Environment and Chapter 4 - Environmental Consequences regarding this issue.

Specific Comments

Page 10 a. Mitigation Requirements: A mitigation requirement should be added to identify that an archeological investigation will be implemented before ground disturbance can take place. This section should include some discussion about the requirements for the investigation. For example, will an archeologist or para-archeologist conduct the archeological survey and who will coordinate consultation with the interested Indian tribes under the National Historic Preservation Act and Native American Graves Protection Repatriation Act?

We recommend that the U.S. Forest Service get tribal input at the earliest possible date, particularly in regards to areas around springs that might be deemed sacred. This will have some bearing on future developments. In addition, please reference the following for consultation with tribes that should be addressed in the Final EIS:

Executive Order 12898 Environmental Justice in Minority and Low-Income Populations, dated February 16, 1994,

DR	
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ACC	

General Comments

Cultural resources were considered, and an archaeologist was consulted. The document has been changed to reflect this.

Specific Comments

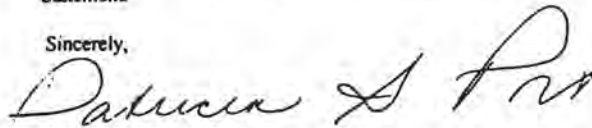
1. In Chapter 2, Mitigation Requirements - the first mitigation requirement listed addresses the need for trained personnel to visit the location of all ground disturbing projects and survey the area to obtain clearance per the National Historic Preservation Act prior to construction.
2. Potentially affected/interested tribes have been contacted regarding the proposed project.
3. The effects of this action will not have a disproportionate impact on minority or low income populations. This action is part of providing multiple use on National Forest System lands.

Memorandum for the Heads of Executive Departments and Agencies regarding
Government-to-Government Relations with Native American Tribal Governments, dated
April 29, 1994;

Executive Order 13007 Indian Sacred Sites, dated May 24, 1996.

Thank you for the opportunity to review and comment on this Draft Environmental Impact
Statement.

Sincerely,



Patricia Sanderson Port
Regional Environmental Officer

cc: Director, OEPC (w copy/incoming)
Area Director, BIA, Phoenix, AZ
State Director, BLM, Phoenix, AZ



GAME & FISH DEPARTMENT

2221 West Greenway Road, Phoenix, Arizona 85023-4399 (602) 942-3000

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Mesa Office, 7200 E. University, Mesa, Arizona 85207 (602) 981-9400

November 27, 1996

Mr. Linny Warren
Acting District Ranger
Tonto Basin Ranger District
HC02 Box 4800
Roosevelt, Arizona 85545

Re: Draft Environmental Impact Statement for Grazing Strategy and
Associated Range Improvements for the Eastern Roosevelt Lake
Watershed Analysis Area

Dear Mr. Warren:

The Arizona Game and Fish Department (Department) has reviewed the draft Environmental Impact Statement (EIS) for grazing strategy and associated range improvements for the Eastern Lake Roosevelt Watershed Analysis Area (ERLWAA). The Department provides the following comments concerning this draft EIS.

Alternatives

The Department believes that implementation of Alternative 2 (No Grazing), Alternative 3 (additional pastures using current AUM numbers), or Alternative 4 (additional pastures using reduced AUM numbers) could, with some revision, adequately address maintenance and improvement of riparian and upland wildlife habitat within the analysis area. The Department would support the implementation of any of the above three alternatives in each of the five allotments within the analysis area. We do request that the recommendations within this letter are incorporated into the preferred alternative in the final EIS. We further recommend that the final EIS provide for revisions to the implemented alternatives if improvement of habitat condition does not progress in a timely manner.

The Department does not favor implementation of Alternative 1 or Alternative 5 on any of the five allotments. We believe that Alternative 1 and Alternative 5 lack adequate protection measures for riparian and upland habitats. Under current management (Alternative 1), range condition in the lower elevations of the analysis area is static or declining, and riparian habitat is in poor to fair condition. Long term improvement of range condition using current stocking levels and altered grazing management has yet to been demonstrated in the analysis area; thus, we believe that an increase in stocking levels prior to improvement of current range condition as proposed in Alternative 5 is not prudent.

Riparian Habitats

The Department recommends that additional emphasis be placed on the improvement of riparian habitat within these allotments. Our agency recognizes riparian habitats as areas of critical environmental importance to wildlife and fisheries. Many of the special status species in Arizona are riparian obligates which would be negatively affected by land management practices that degrade riparian habitats. Riparian areas are also used for cover and forage by numerous game and nongame wildlife species. The Department's habitat compensation goal for riparian habitats associated with perennial waters is to achieve no loss of existing in-kind habitat value (AGFD Operating Manual Policy I2.3).

The draft document states that current conditions within riparian areas are not meeting needs for various neo-tropical migratory birds and insectivorous bat species. While two riparian pastures have been planned along Cherry Creek in the Dagger Allotment, no other riparian pastures are currently proposed. The Department recommends that additional riparian pastures be proposed, particularly in "key" riparian areas identified on page 10. Riparian areas which are not perennial such as Coon Creek, Armer Gulch, Schell Gulch, and Cottonwood Wash could also benefit from the creation of additional riparian pastures or the modification of proposed grazing schedules.

The Department is concerned that some riparian areas are proposed to be grazed during key summer months. We recommend that proposed livestock grazing rotations be re-examined or riparian pastures be created within pastures listed on the enclosed attachment. Limiting livestock grazing to winter months only in riparian habitats would allow for the return of riparian areas to proper functioning condition.

Upland Habitats

The Department believes that as increased livestock distribution goals are attained, overall range condition would improve. This improvement would be particularly evident within desert scrub/grassland areas which have been used heavily in the past by livestock due to their accessibility. Both nongame and game species, particularly Gambel's quail, are expected to benefit from improved conditions within this habitat type.

The Department supports the implementation of the ten prescribed burns proposed for the analysis area. These burns are anticipated to benefit both wildlife and livestock. We believe that increased age class diversity resulting from these controlled burns will benefit game species such as mule deer, white-tailed deer, elk, and Gambel's quail, and will decrease the chance of catastrophic

1 & 2. Improvement of riparian habitat is an objective listed in the EIS (see Chapter 1). The preferred alternatives were developed to address riparian needs. The proposed grazing strategies have been developed specifically to provide for proper riparian management. Monitoring will be done to assess if livestock management is affecting a riparian area's ability to improve. Adjustment can then be made to management to address any new concerns derived from the monitoring data.

Mr. Linny Warren
November 27, 1996
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wildfire in the analysis area which could negatively impact wildlife.

We do recommend that prescribed burns be conducted in a manner which will minimize impacts to wildlife. In addition, monitoring should be conducted following burns to determine potential effects on plant species composition and to demonstrate that burn objectives have been met.

Monitoring Requirements

The Department considers monitoring to be critical in assessing the success of the proposed grazing strategies for the maintenance and improvement of riparian and upland habitats. We recommend that the monitoring plan for the allotments be more intensive than proposed in the draft EIS.

The Department requests that additional photo points be established for Parker Creek and Cottonwood Wash. We further recommend that the key riparian locations at which additional photo points are to be established over the next two to four years be identified in the document. In addition, monitoring of riparian areas may need to be completed on a 2-year cycle rather than the proposed 4-year cycle as stated in the draft document in order for livestock management strategies to rapidly respond to riparian habitat condition trends.

Mitigation Requirements.

The draft EIS states that fencing of spring developments will occur only if resource damage is observed (page 10). The Department recommends that the eight spring developments identified for the five allotments be fenced initially to preclude any resource damage from cattle use. Livestock enclosure fences surrounding these spring developments should employ the Department's Standard Game Fence Specifications. A copy of these specifications has been enclosed for your information.

The Department also recommends that water be piped to the cattle trough 1/4 mile from the fenced spring source. The water delivery system should be designed so that when the cattle trough is full, no additional water will be diverted from the spring and associated riparian community. In addition, we request that escape/access ramps be installed in all water troughs to allow small animals access to water while preventing entrapment or drowning of wildlife.

The Department recognizes that the proposed water developments will increase distribution of livestock while providing benefits to wildlife. We request that water developments remain operational for wildlife use year round even if livestock are located in another pasture. In addition, all livestock and wildlife waters

3. The prescribed burns which were included as non-structural range improvements are no longer being considered as a part of this proposed action.

4. Riparian monitoring as established in the EIS is considered to be adequate by the Forest's Riparian Specialist to assess how livestock management is affecting riparian conditions on each of the allotments.

5. Any new spring developments will be fenced from livestock at the time the spring is developed. The fence will be to Forest Service and wildlife specifications, which are the same as the Department's.

The purpose of developing a spring is to pipe water away from the spring source. It is assumed that the Department is referring to placing float valves on the troughs in an attempt to stop the diversion of water from the spring. The District does not employ this technique. First, only about 25% of the water is diverted from a spring source to supply water to a pipeline. Secondly, it is expected that floating a trough may cause backflow to the spring, saturating the source, which may in turn cause the source to move. Instead, the District allows the water to "overflow" from the last trough connected to the pipeline. If possible, the overflow is directed toward the same drainage it was removed from, or toward a stock pond.

It is standard operating procedure to require access/escape ramps on all watering troughs.

6. It is standard operating procedure to have all water conveyance systems operational for wildlife use year round, regardless of the presence or absence of livestock within the pasture.

Although the District would be willing to help as it is able, "No camping within 1/4 mile of water sources" is a State law. Posting this is not within the District's responsibility or authority.

Tonto National Forest policy prohibits the placement of salt or other supplements within 1/4 mile of water sources or riparian areas, unless special permission is granted in writing by the Forest Officer in charge.

Mr. Linny Warren
November 27, 1996

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should be posted "No camping within one-quarter mile." We further recommend that the use of salt be prohibited within riparian areas.

Access

While additional fencing will benefit range conditions in the analysis area, the Department contends that public land access should remain or be improved. We recommend use of gates and/or cattle guards appropriate for passage of motor vehicles on established roads. Gates should also be provided for horseback passage and foot traffic on trails and other appropriate locations.

The Department anticipates potential conflicts between recreational users and livestock operators with the fencing off of the Upper Salt River Recreation Site. This site is a popular recreation area which offers many access points to the river. We contend that public demand for access to this area will be particularly high in light of the Forest Service's plans to close off many traditional access points to Roosevelt Lake outside of managed recreation sites. We recommend that alternatives be examined that would allow for the control of livestock while providing for recreational access to the area.

The Department is also concerned with the number of roads which are slated for closure under RATM within the analysis area. These roads are heavily used by recreationists, particularly during the fall and winter months when many hunting seasons are open. Hunters will be denied major vehicle access to traditional quail hunting and duck hunting areas with closure of these roads. Access for wildlife viewing and hiking would also be denied under the proposed road closures.

Due to the unforeseen access issues that have arisen several years following development of the current RATM plan, the Department requests that the Forest Service reopen and update RATM with full participation by the Department and members of the public. A listing of proposed RATM road closures of particular concern located within the ERLWAA analysis area have been enclosed with this letter. We also recommend that Forest roads identified to remain open for use by the livestock permittee be available for use by outdoor recreationists.

Special Status Species

Special status species information for each of the five grazing allotments has been enclosed in this letter. This special status species information represents an update to the information provided to the Tonto Basin Ranger District at the August 25, 1993 ERLWAA scoping meeting. Both the Department's and the U.S. Fish and Wildlife Service's special status species definitions have changed and the current lists provide this updated information.

7. Gates and cattleguards will be provided for vehicular, pedestrian and horseback access where appropriate.

8. The Upper Salt River Recreation Site is already fenced off from livestock access. It was not a part of this proposed action.

9. The Department's proposed changes to the Tonto National Forest's RATM plan exceed the scope of this proposed action. Your comments have been given to the District Ranger and Recreation Staff Officer for further consideration.

Mr. Linny Warren
November 27, 1996
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General Editorial Recommendations

Tables 1 and 2 (pages 4-5) show current and future desired condition riparian canopy cover percentages at levels greater than 100 percent. These figures represent a summation of overstory and understory canopy closure percentage figures. The Department recommends that these canopy closure percentage figures express overstory and understory levels separately so that no canopy closure percentages in these tables are greater than 100. Descriptions of the riparian canopy closure percentages in the document text should also adhere to the above recommendations.

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10. The canopy cover percentages as shown in the tables follow standards operating procedure.

In Table 4 (page 15), the total allowable AUMs indicated for Alternative 4 is 8540, with 5000 AUMs allowed under Alternative 5 for the A Cross Allotment. The document text discussion this allotment (page 14) states that Alternative 4 would allow 5000 AUMs and Alternative 5 would allow 8540 AUMs. Similarly, Alternative 4 and 5 AUM numbers in Table 5 are the reverse of the text description of Alternative 4 and 5 AUM numbers for the Dagger Allotment (pages 15-16). We recommend that Tables 4 and 5 be corrected to reflect the AUM numbers described in the text.

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11. The document has been changed so that the number of AUM's correlate between the text and tables.

Appendix G does not indicate which symbols are associated with the various categories within the legend of each allotment RATM map. The Department requests symbols be indicated in the legends of each map in Appendix G in the final EIS. We believe that the inclusion of symbols on the map legends would these maps easier to interpret.

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12. Appendices G 1-5 have been changed so that the legend is complete.

The Department appreciates the opportunity to comment on the draft ERLWAA EIS. We look forward to continued cooperation in the planning of this grazing strategy.

Sincerely,

Barbara Heslin

Barbara Heslin
Habitat Specialist

BSH:NR:MF:bh

cc: Kelly Neal, Regional Supervisor, Region VI
David L. Walker, Project Evaluation Program Supervisor,
Habitat Branch
Sam Spiller, Ecological Services, US Fish and Wildlife Service
Marty Fabritz, Wildlife Manager, Roosevelt District

Enclosures

AGFD# 10-29-96(07)

Pastures Proposed for Re-evaluation to Avoid
Livestock Grazing in Riparian Habitats
During the Growing Season
in the ERLWAA Analysis Area

Arizona Game and Fish Department
November 1996

A-Cross Allotment

Center Pasture from 5-1 to 7-31 in 1996 and in 1999. This pasture includes Cottonwood Wash and Parker Creek

Dagger Allotment

Upper Coon Creek Pasture from 7-1 to 10-31 in 1998 and 4-15 to 8-15 in 1999.

Dagger Pasture from 5-31 to 8-31 in 1997. This pasture includes Lower Cherry Creek.

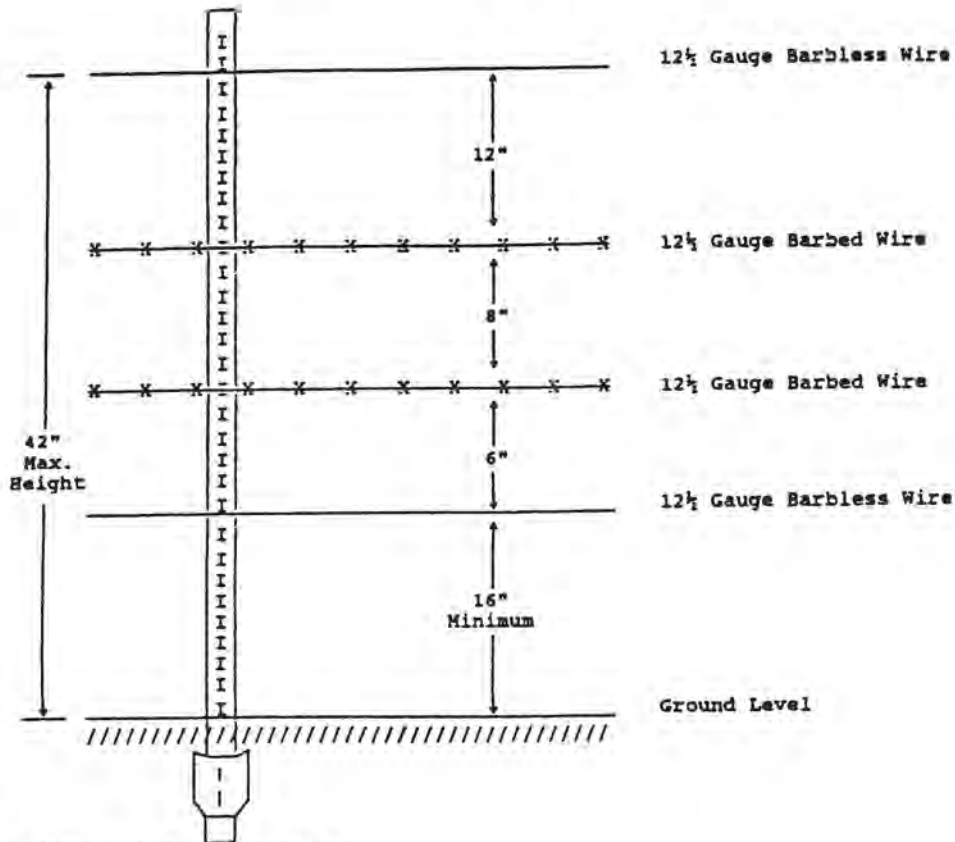
Sierra Ancha Allotment

Oak Creek Pasture from 7-1 to 10-31 in 1997 and from 3-1 to 6-30 in 1998. This pasture includes Upper Coon Creek.

Poison Springs Allotment

Lower Dry Creek Pasture from 7-1 to 10-31 in 1997 and again until 6-30 in 1998. This pasture includes Dry Creek.

ARIZONA GAME AND FISH DEPARTMENT
STANDARD GAME FENCE SPECIFICATIONS



Additional Specifications:

- 20 - 25 feet between T-posts.
- At least 3 equally spaced stays between each post.
- Modifications to this design may be requested for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn.

**Roads Proposed for RATH Re-Evaluation
in the ERLWAA Analysis Area**

**Arizona Game and Fish Department
November 1996**

Armer Allotment: Lower Jack-Shoe Road (F.S. 97), and associated roads below A-Cross Road; The road west of the upper 97 road and north of A-Cross Road; The road that connects the 110 road and the upper 97 Road.

Sierra-Ancha Allotment: Roads below State Route 288, particularly the road that goes to the Salt River (near Griffin Wash); The road that forks off of Forest Service 1179 road near head of Cougar Canyon.

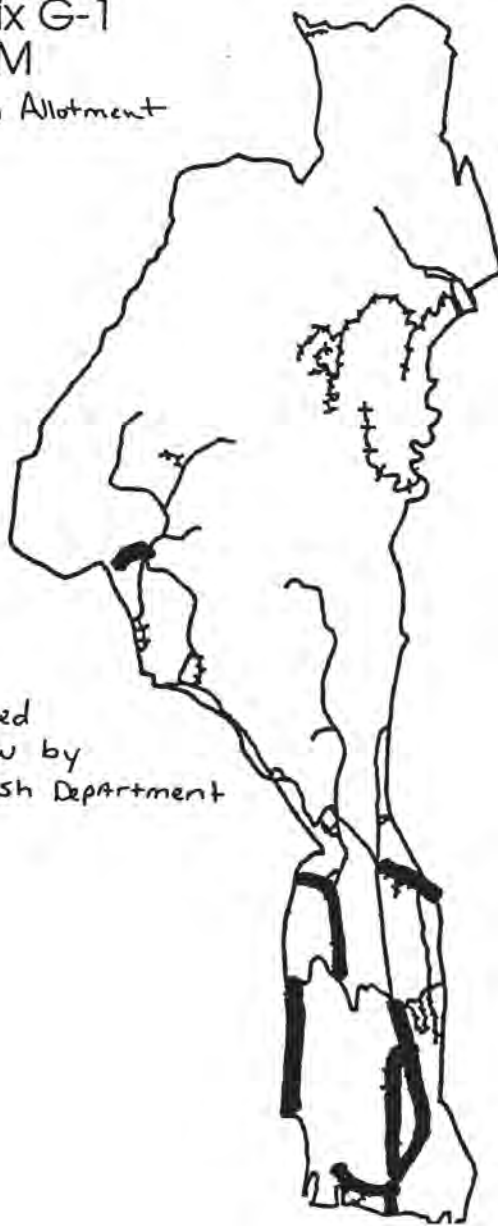
Poison Springs Allotment: Roads behind Roosevelt Lake Estates; Road east of Highway 288 in M-Z Wash vicinity; two roads south of Cherry Creek Road just east of Highway 288; Forest Service 15 and 38 Roads in Coon Creek/Dry Creek vicinity.

A-Cross Allotment: Forest Service Road 88 and associated roads located south and east of the Bar 11 Ranch off of A-Cross and Highway 288.

Dagger Allotment: Spur roads off of Forest Service 42 Road; Road between Cherry Creek Road and Dagger Ranch Road; Road north of 96 Road off of Forest Service 203 Road; Spur roads south of Forest Service 202 Road.

See attached allotment RATH maps for additional road location information.

Appendix G-1
RA/TM
Armer Mountain Allotment



■ = Roads Proposed
FOR re-EVALUATION by
Arizona Game & Fish Department

LEGEND

Open
Closed
Proposed
Open

Appendix G-2 RA/TM

A Cross Allotment

■ = Roads proposed
for Re-evaluation by
Arizona Game and Fish
Department

LEGEND

Open
Closed
Proposed
Open



Appendix G-3 RA/TM

Dagger Allotment

— = Roads proposed
for re-evaluation by
Arizona Game and
Fish Department

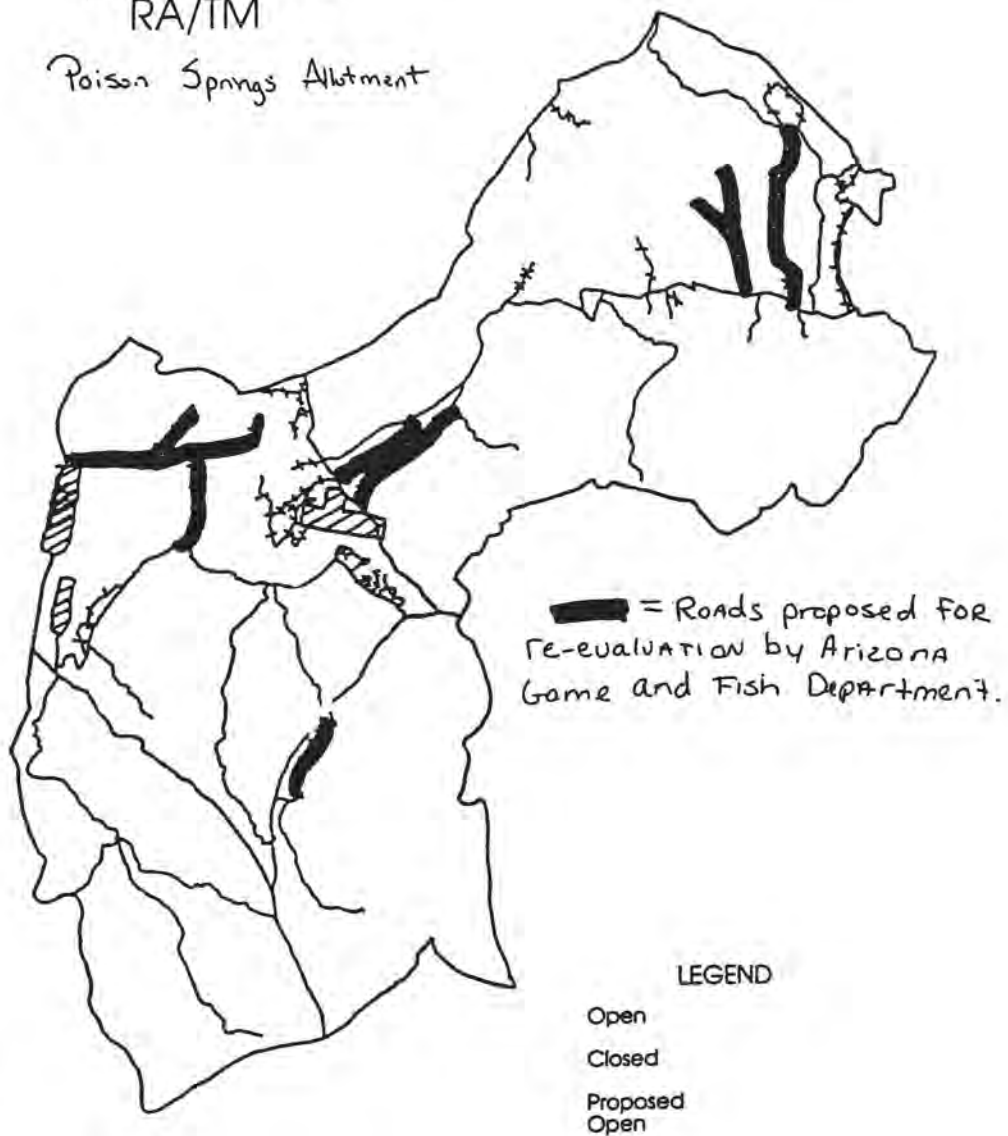
LEGEND

Open
Closed
Proposed
Open



Appendix G-4
RA/TM

Poison Springs Allotment



LEGEND

Open
Closed
Proposed
Open

Appendix G-5
RA/TM

Sierra Ancha Allotment

█ = Roads proposed
for re-evaluation by
Arizona Game and Fish
Department



LEGEND

Open
Closed
Proposed
Open

A Cross Grazing Allotment EDMS Check
Updated 11/26/96

The Department's Heritage Data Management System has been accessed and current records show that the special status species listed below have been documented as occurring in the A Cross Grazing Allotment.

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
Arizona agave	<u>Agave arizonica</u>	LE,S,HS
Blumer's dock	<u>Rumex orthocentrus</u>	C,S,HS
Mexican spotted owl	<u>Strix occidentalis lucida</u>	LT,WC,S
Toumey agave	<u>Agave toumeyana bella</u>	SR
Western barking frog	<u>Hylactophryne augusti cactorum</u>	WC,S

STATUS DEFINITIONS

- LE - Listed Endangered. Species identified by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA) as being in imminent jeopardy of extinction.
- LT - Listed Threatened. Species identified by USFWS under ESA as being in imminent jeopardy of becoming Endangered.
- C - Federal Candidate. Species for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as Endangered or Threatened under ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.
- WC - Wildlife of Special Concern in Arizona. Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Department's listing of Wildlife of Special Concern in Arizona (WSCA, in prep.). Species included in WSCA are currently the same as those in Threatened Native Wildlife in Arizona (1988).
- S - Sensitive. Species classified as "sensitive" by the Regional Forester when occurring on lands managed by the U.S.D.A. Forest Service.
- HS - Highly Safeguarded. Those Arizona native plants whose prospects for survival in this state are in jeopardy or are in danger of extinction, or are likely to become so in the foreseeable future, as described by the Arizona Native Plant Law (1993).
- SR - Salvage Restricted. Those Arizona native plants not included in the Highly Safeguarded Category, but that have a high potential for theft or vandalism, as described by the Arizona Native Plant Law (1993).

Armer Mountain Grazing Allotment HDMS Check
Updated 11/26/96

The Department's Heritage Data Management System has been accessed and current records show that the special status species listed below have been documented as occurring in the Armer Mountain Grazing Allotment.

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
Hohokam agave	<u>Agave murpheyi</u>	S, HS
Tonto Basin agave	<u>Agave delamateri</u>	S, HS

STATUS DEFINITIONS

- S - Sensitive.** Species classified as "sensitive" by the Regional Forester when occurring on lands managed by the U.S.D.A. Forest Service.
- HS - Highly Safeguarded.** Those Arizona native plants whose prospects for survival in this state are in jeopardy or are in danger of extinction, or are likely to become so in the foreseeable future, as described by the Arizona Native Plant Law (1993).

Dagger Grazing Allotment HDMS Check
Updated 11/26/96

The Department's Heritage Data Management System has been accessed and current records show that the special status species listed below have been documented as occurring in the Dagger Grazing Allotment.

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
Lowland leopard frog	<u>Rana yavapaiensis</u>	WC, S
narrow-headed garter snake	<u>Thamnophis rufipunctatus</u>	WC, S

STATUS DEFINITIONS

- WC - Wildlife of Special Concern in Arizona.** Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Department's listing of Wildlife of Special Concern in Arizona (WSCA, in prep.). Species included in WSCA are currently the same as those in Threatened Native Wildlife in Arizona (1988).
- S - Sensitive.** Species classified as "sensitive" by the Regional Forester when occurring on lands managed by the U.S.D.A. Forest Service.

Poison Springs Grazing Allotment NDMS Check
Updated 11/26/96

The Department's Heritage Data Management System has been accessed and current records show that the special status species listed below have been documented as occurring in the Poison Springs Grazing Allotment.

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
bald eagle	<u>Haliaeetus leucocephalus</u>	LE,WC,S
Gila monster	<u>Heloderma suspectum</u>	S
Gila roundtail chub	<u>Gila robusta robusta</u>	WC,S
Hohokam agave	<u>Agave murpheyi</u>	S,RS
Sonoran desert tortoise	<u>Gopherus agassizii</u>	WC,S
Tonto Basin agave	<u>Agave delamateri</u>	S,RS
zone-tailed hawk	<u>Buteo albonotatus</u>	S

STATUS DEFINITIONS

- LE - Listed Endangered. Species identified by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA) as being in imminent jeopardy of extinction.
- WC - Wildlife of Special Concern in Arizona. Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Department's listing of Wildlife of Special Concern in Arizona (WSCA, in prep.). Species included in WSCA are currently the same as those in Threatened Native Wildlife in Arizona (1988).
- S - Sensitive. Species classified as "sensitive" by the Regional Forester when occurring on lands managed by the U.S.D.A. Forest Service.
- RS - Highly Safeguarded. Those Arizona native plants whose prospects for survival in this state are in jeopardy or are in danger of extinction, or are likely to become so in the foreseeable future, as described by the Arizona Native Plant Law (1993).

Sierra Ancha Grazing Allotment NDMS Check
Updated 11/26/96

The Department's Heritage Data Management System has been accessed and current records show that the special status species listed below have been documented as occurring in the Sierra Ancha Grazing Allotment.

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
Blumer's dock	<u>Rumex orthocentrus</u>	C,S,HS
occult little brown bat	<u>Myotis lucifugus occultus</u>	S
red bat	<u>Lasiurus blossevillei</u>	WC,S

STATUS DEFINITIONS

- C - Federal Candidate. Species for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as Endangered or Threatened under ESA. However, proposed rules have not yet been issued because such actions are precluded at present by other listing activity.
- WC - Wildlife of Special Concern in Arizona. Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Department's listing of Wildlife of Special Concern in Arizona (WSCA, in prep.). Species included in WSCA are currently the same as those in Threatened Native Wildlife in Arizona (1988).
- S - Sensitive. Species classified as "sensitive" by the Regional Forester when occurring on lands managed by the U.S.D.A. Forest Service.
- HS - Highly Safeguarded. Those Arizona native plants whose prospects for survival in this state are in jeopardy or are in danger of extinction, or are likely to become so in the foreseeable future, as described by the Arizona Native Plant Law (1993).

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Glossary

A

ADEQ: Arizona Department of Environmental Quality.

AMP: Allotment Management Plan.

Animal Unit: One cow/calf pair, one cow, or one bull.

AUM - Animal Unit Month: The potential forage intake of one animal unit for a period of one month (30 days). The term AUM is commonly used in three ways: 1) stocking rate, as in "X acres per AUM"; 2) forage allocations, as in "X AUM's in Allotment A; and 3) utilization, as in "X AUM's grazed".

B

BAE: Biological Assessment and Evaluation

Belt Transect: A strip quadrant used for sampling vegetation. It is rectangular in shape. The length is determined by the transect length used. The width is determined by type and amount of vegetation being sampled.

BMP: Best Management Practices.

Browse: (n) Leaf and twig growth of shrubs, woody vines, and trees available and acceptable for animal consumption; (v) to consume browse.

C

Canopy Cover: the quantitative measure of areal coverage of a species per unit area, usually taken for woody species.

Class I Area: One of three classes of areas provided for in the Clean Air Act for the Prevention of Significant Deterioration program. Class I areas are the "cleanest" area and receive special visibility protection. They are allowed very limited increases (increments) in sulfur dioxide and particulate matter concentrations in the ambient air over baseline concentrations (See 42 U.S.C. 7473 for descriptions of the specific increments). On the Tonto National Forest, these areas are wilderness areas which are greater than 5,000 acres in size and have been in existence since 1977.

Clone: a single or group of plants sprouting from a single parent plant.

CFR: Code of Federal Regulations.

D

Deferred Grazing: Where some management units (pastures) within an allotment receive delayed livestock use to provide for plant reproduction, establishment of new plants, or restoration of vigor of existing plants.

E

EIS: Environmental Impact Statement.

ERLWAA: Eastern Roosevelt Lake Watershed Analysis Area.

ESA: Endangered Species Act.

F

Forage: That part of the vegetation that is available and acceptable for animal consumption, whether considered for grazing or mechanical harvesting; includes herbaceous plants in mostly whole plant form and browse.

G

GES: General Ecosystem Survey.

Grazing Capacity: Stocking rate which may be sustained under a given set of prescribed conditions.

Growing Season: that portion of the year when the temperature and moisture typically favor plant growth.

H

Herbaceous: pertaining to vegetative growth that has little or no woody component.

Herbaceous Ground Cover: the quantitative measure of ground surface coverage of herbaceous plants and litter that is at least 1/2 inch in depth.

I

IDT: Interdisciplinary Team.

IRM: Integrated Resource Management.

IMPLAN: An economic input-output model to determine the impacts to Gila County, Arizona.

L

Litter: The uppermost layer of organic material, usually slightly decaying.

Livestock Distribution: The arrangement of livestock over an area, usually affected by 1) topography; 2) distribution of waters; 3) vegetation; 4) prevailing winds; and 5) kind of livestock.

LMP/LRMP: Land and Resource Management Plan.

M

MOU: Memorandum of Understanding.

N

NEPA: National Environmental Policy Act.

NFMA: National Forest Management Act.

P

Permitted Livestock: Livestock which are authorized to graze on a specified unit of Forest land per a Term Grazing Permit.

Plan 6: A project of the Bureau of Reclamation with the primary purpose of modifying Roosevelt Dam. Benefits to be seen as a result of Plan 6 include enhanced flood control, improved safety, increased water conservation, and additional recreation opportunities.

PRF: Project Record File

R

RA/TM: Road Access/Travel Management.

Rest-rotation Grazing: A grazing system employing various combinations of full year rest, deferment, and full season grazing, commonly in 3 to 5 year cycles.

Riparian: Pertaining to a zone between aquatic and terrestrial situations, such as bordering streams, rivers and lakes, in which soil moisture is sufficiently in excess of that otherwise available locally so as to provide a more mesic habitat than that of contiguous uplands.

Riparian Pasture: A pasture in which the primary purpose is to minimize the impact of grazing on riparian plants, usually by altering season of use and length of use from adjacent, upland pastures.

S

Santa Rita Grazing System: A 3 pasture, 1 herd system that accumulates 24 months of non-grazing and 12 months of grazing per 3-year grazing system cycle without foregoing grazing on any year's forage crop.

Seral Stage: The various transitions in the orderly and predictable changes in a biological community from pioneer stage to the climax stage—succession.

T

TES: Threatened, Endangered and Sensitive Species.

TRIMM: Tonto Riparian Inventory and Monitoring Methods.

A P P E N D I X

A - Project Record File

Index Reference	Subject Heading	Number of Documents
A	Tonto National Forest Plan	3
B	Range Project Implementation Process	1
C	Mailing Lists	1
D	Project Initiation Letter	1
E	Allotment Overviews	4
F	Initial Resource Issues	15
G	August 5 th ID Team Meeting	3
H	Citizens Participation Action Plan	1
I	Public Notification of ID Team Meeting	1
J	June 30 th ID Team Meeting	5
K	Permittee Proposal/Alternative Development	12
L	Interested/Affected Individuals Issues and Comments	25
M	Specialist's Reports	18
N	Meeting with the Regional Office; re: Poison Springs/Sierra Ancha	7
O	Field Trip 8/18/93	2
P	8/25/93 and 9/8/93 Meetings	3
Q	Cause and Effect Worksheets	1
R	Biological Assessment and Evaluation	13
S	Comment Copy Environmental Assessment	3
T	Biological Opinion - FWS	2
U	Environmental Assessment	1
V	FONSI's and Decision Notices	11
W	Comments on the EA	20
XYZ	Appeals	8
AA	Withdrawals of Decisions	3
AB	Correspondence Related to Decisions	10
AC	Meeting with Appellants	7
AD	Best Management Practices	4
AE	Notice of Intent to Prepare and EIS	9

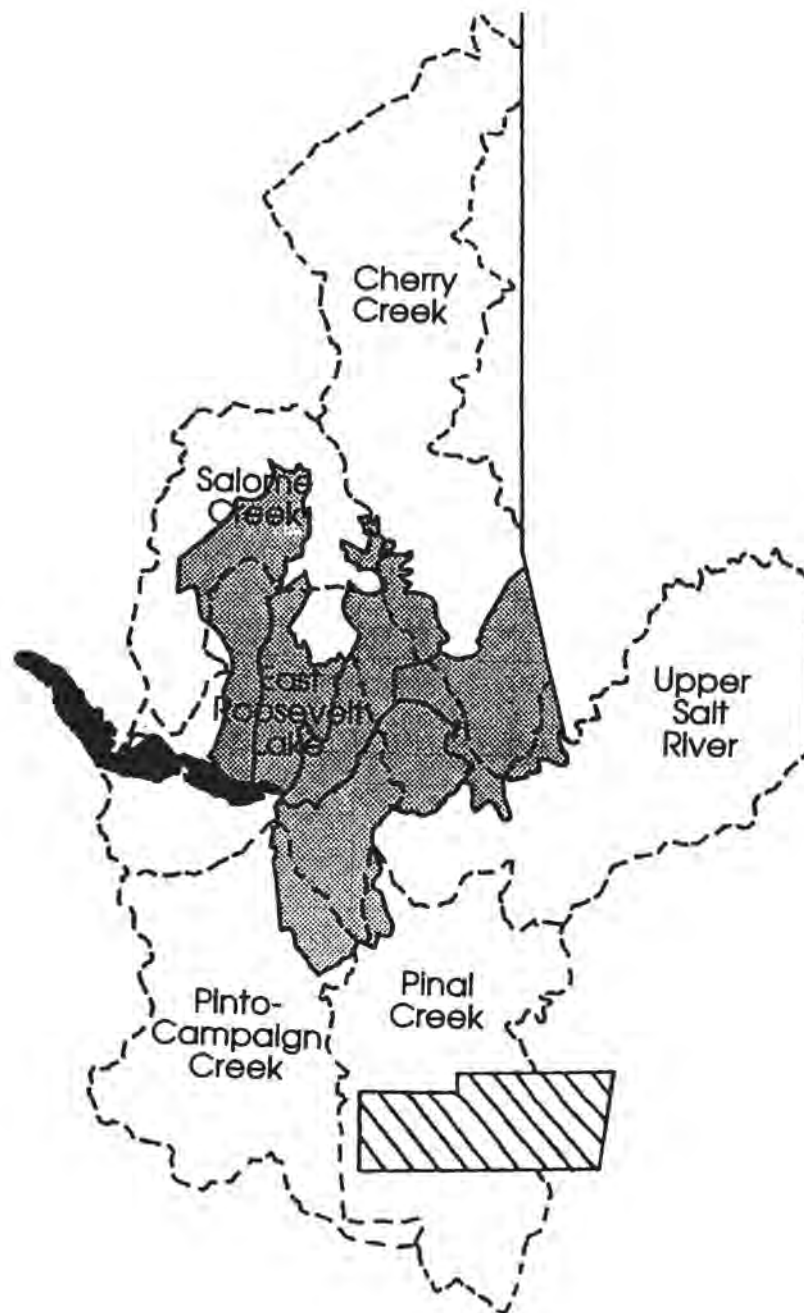
Index Reference	Subject Heading	Number of Documents
AF	Economic Analysis	12
AG	Cumulative Effects Analysis	19
AH	Publishing DEIS	5
AI	Mailing out the DEIS	15
AJ	Draft Environmental Impact Statement	1
AK	Blank	0
AL	Letters Responding to DEIS	37
AM	Content Analysis of Letters Received	38
AN	References Regarding Wilderness	4
AO	References Regarding Cryptosporidium	10
AP	Stocking Rate, Vegetative Responses References	5
AQ	General Ecosystem Survey Information	4
AR	Specialists Responses to DEIS Comments	6
AS	Publishing Final EIS	3
AT	Summary of Changes Made in FEIS from DEIS	1
AU	Mailing the FEIS - Preliminary Mailing Lists	4
AV	Review of Appeal Regulations and Procedures	1

B-1 - Salt River Watershed Vicinity Map

ARIZONA



B-2 - 5th Code Watersheds Map



Legend



Project
Area



Roosevelt
Lake

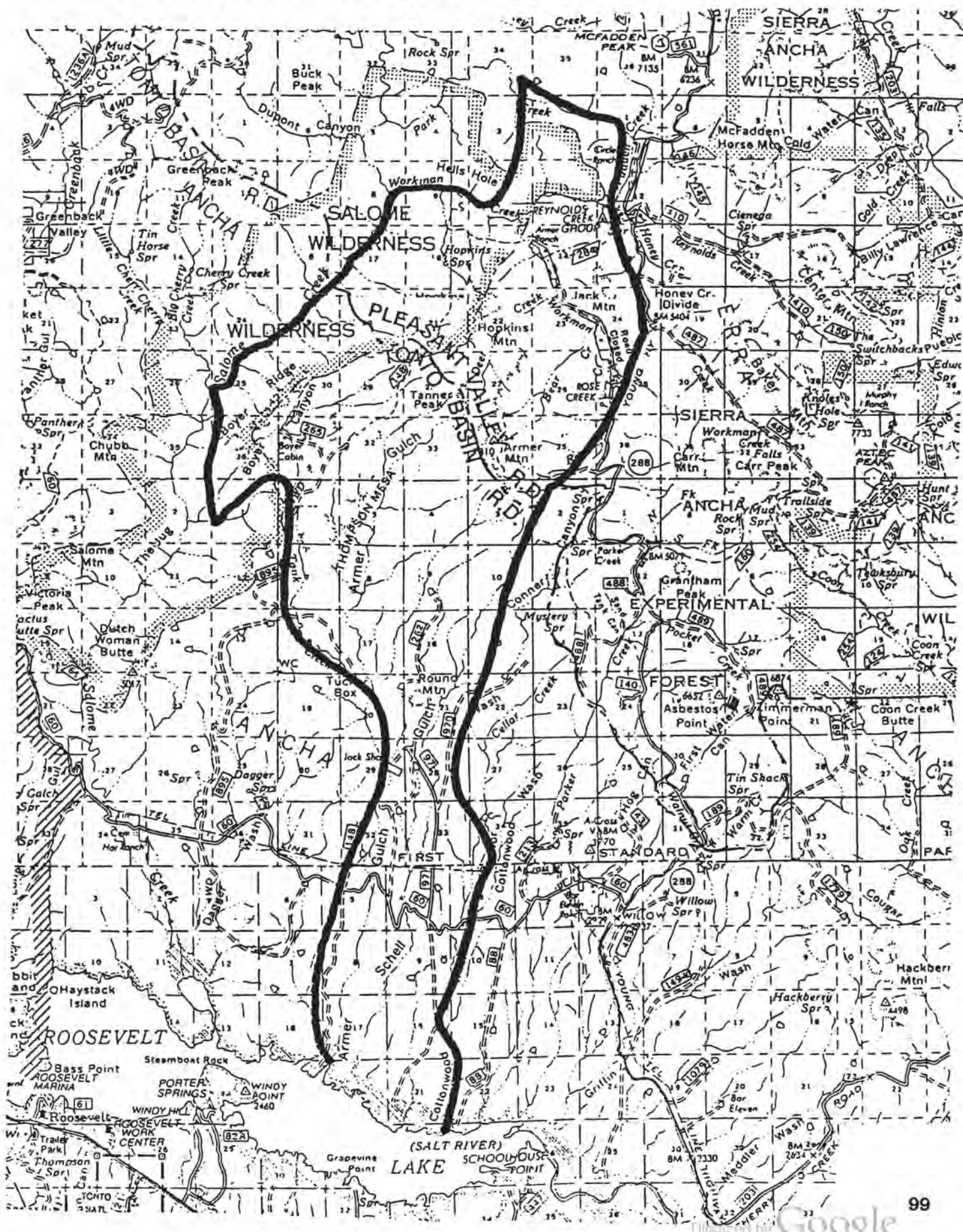


5th Code
Watersheds

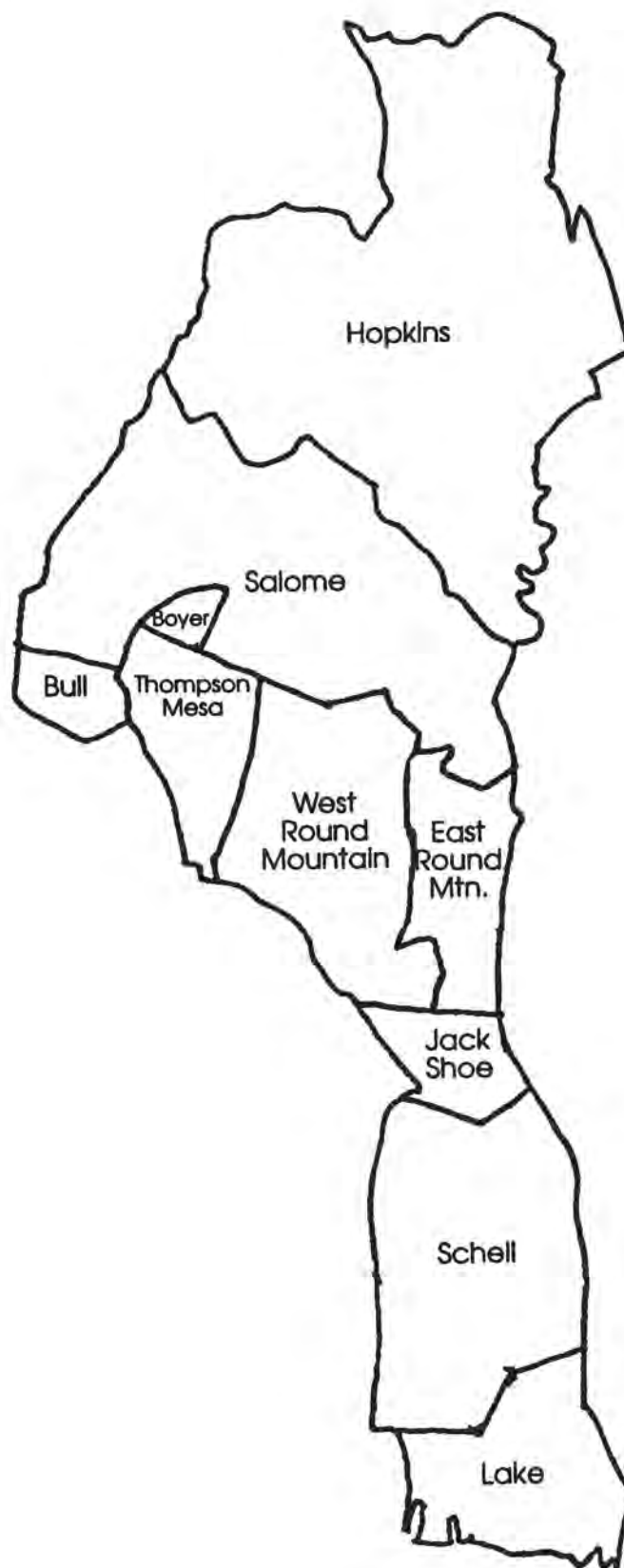


City of
Globe

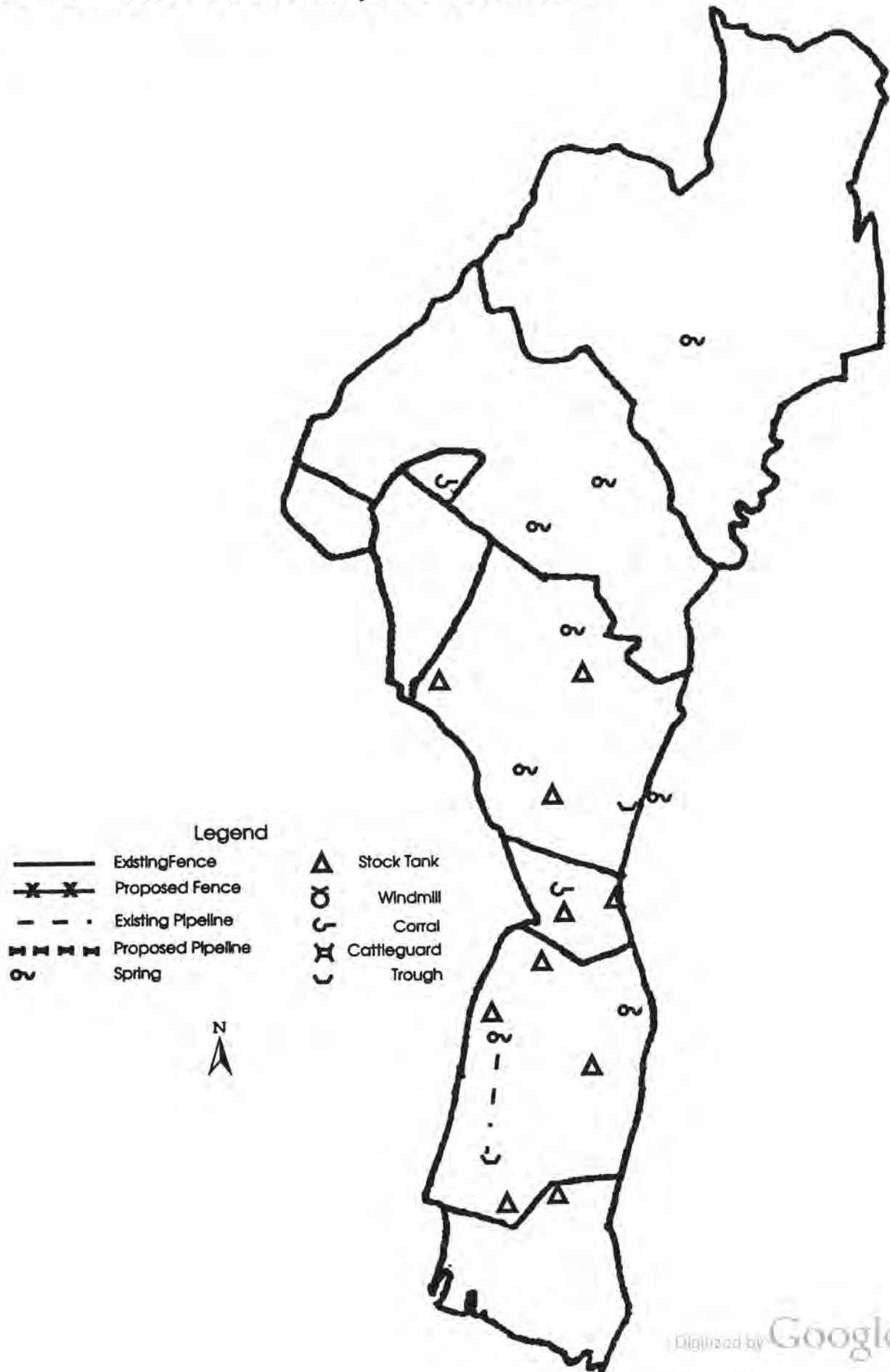
C - Armer Mountain Project Map



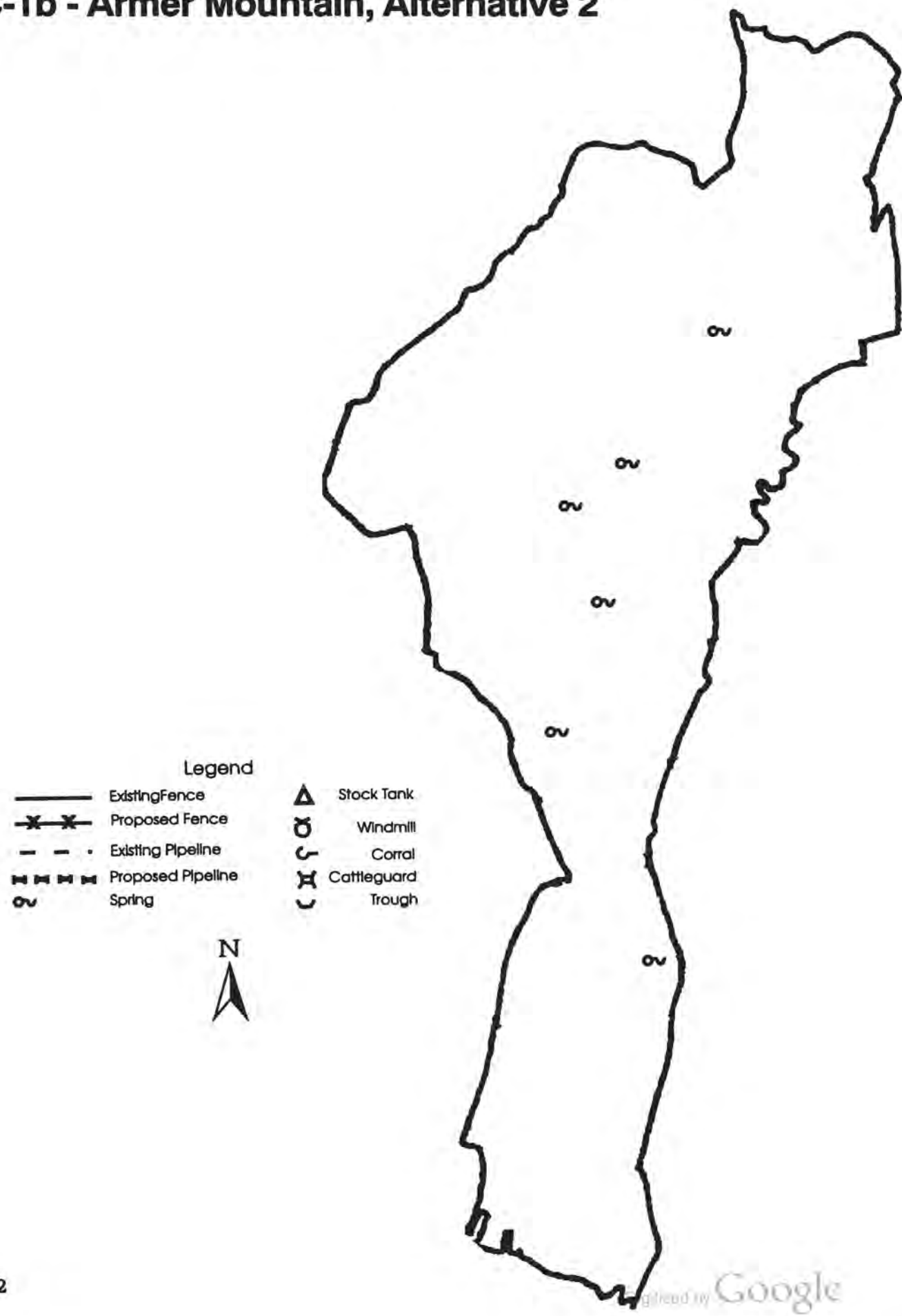
C-1 - Armer Mountain Pasture Map for Proposed Action



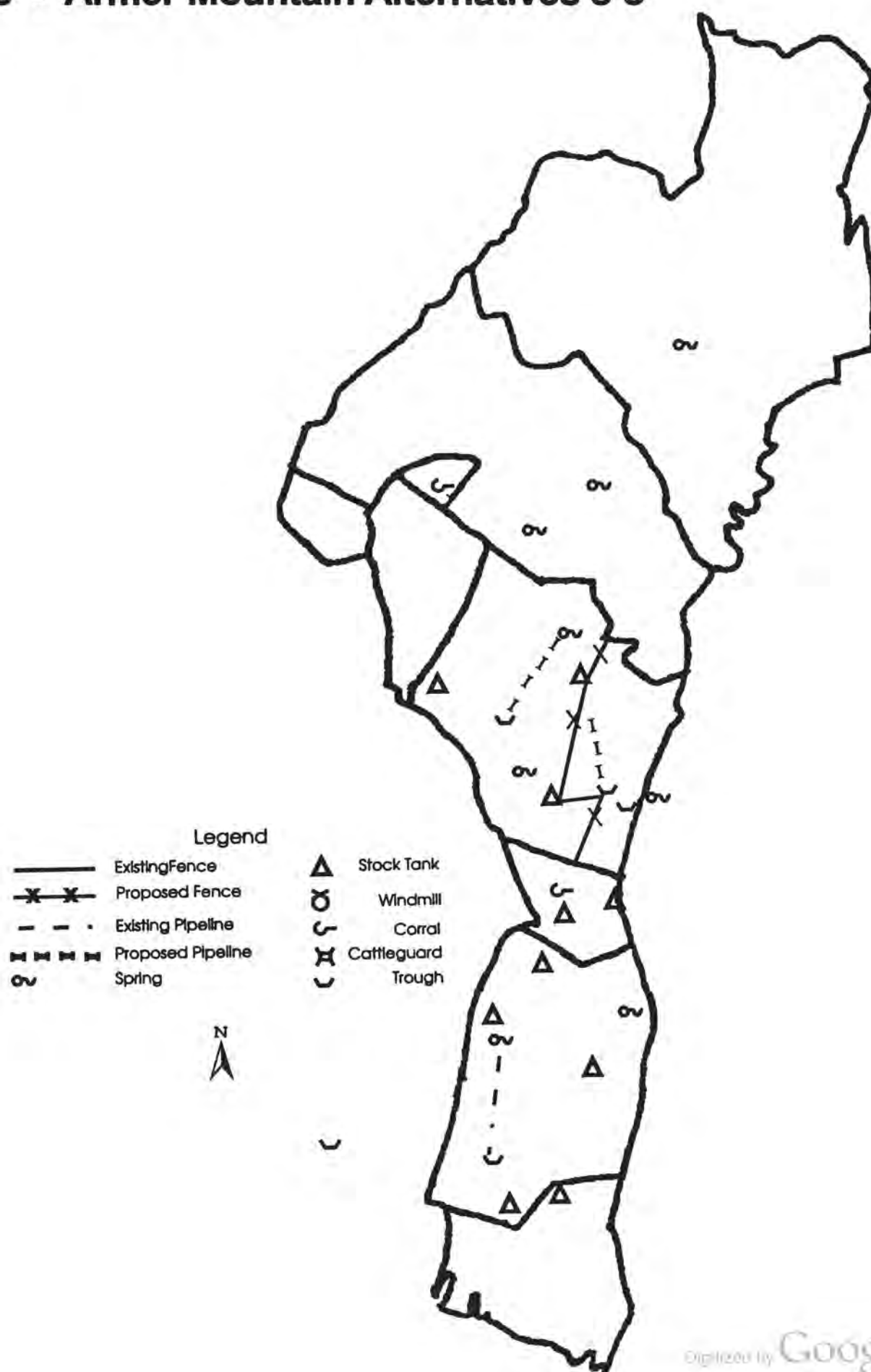
C-1a - Armer Mountain, Alternative 1



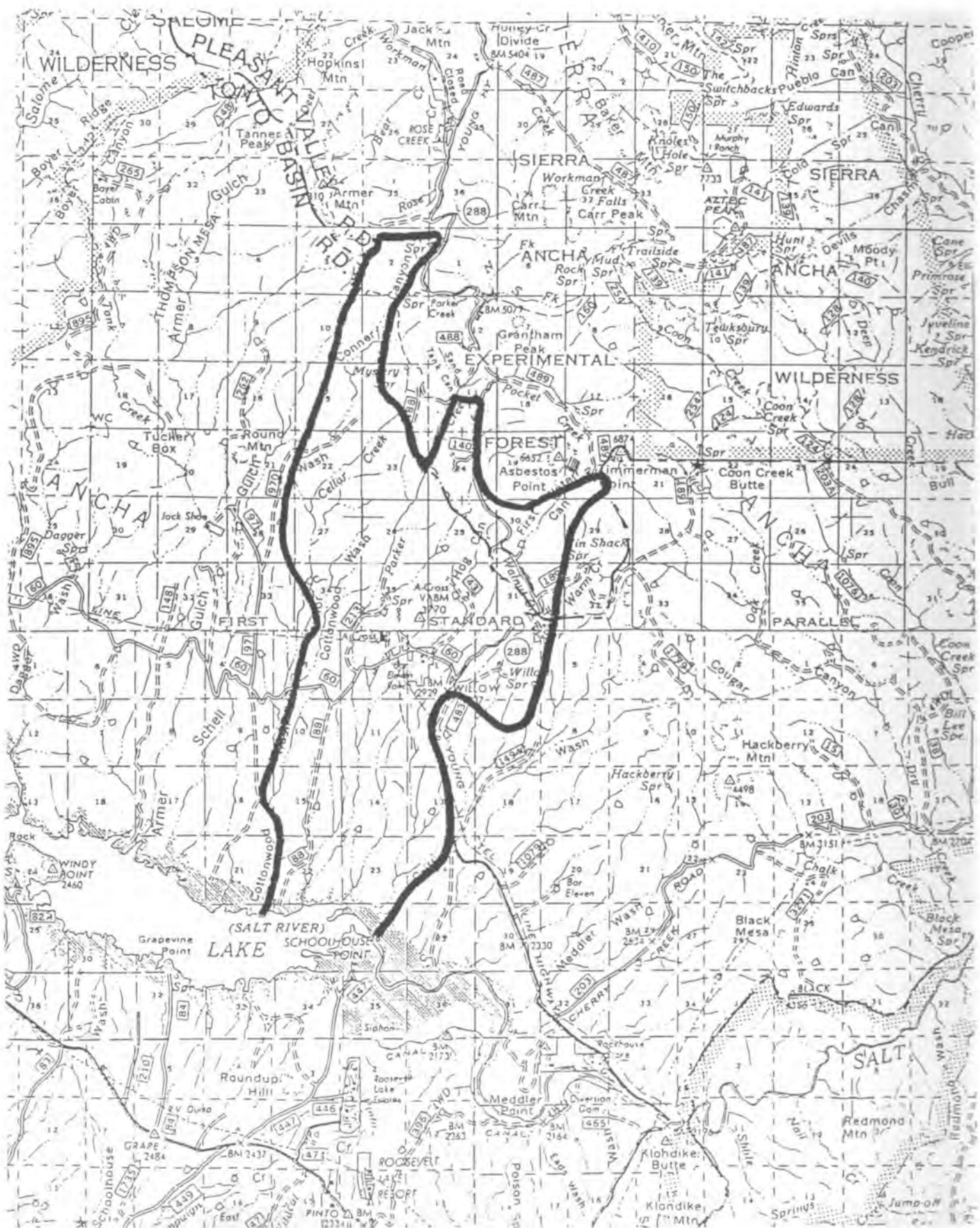
C-1b - Armer Mountain, Alternative 2



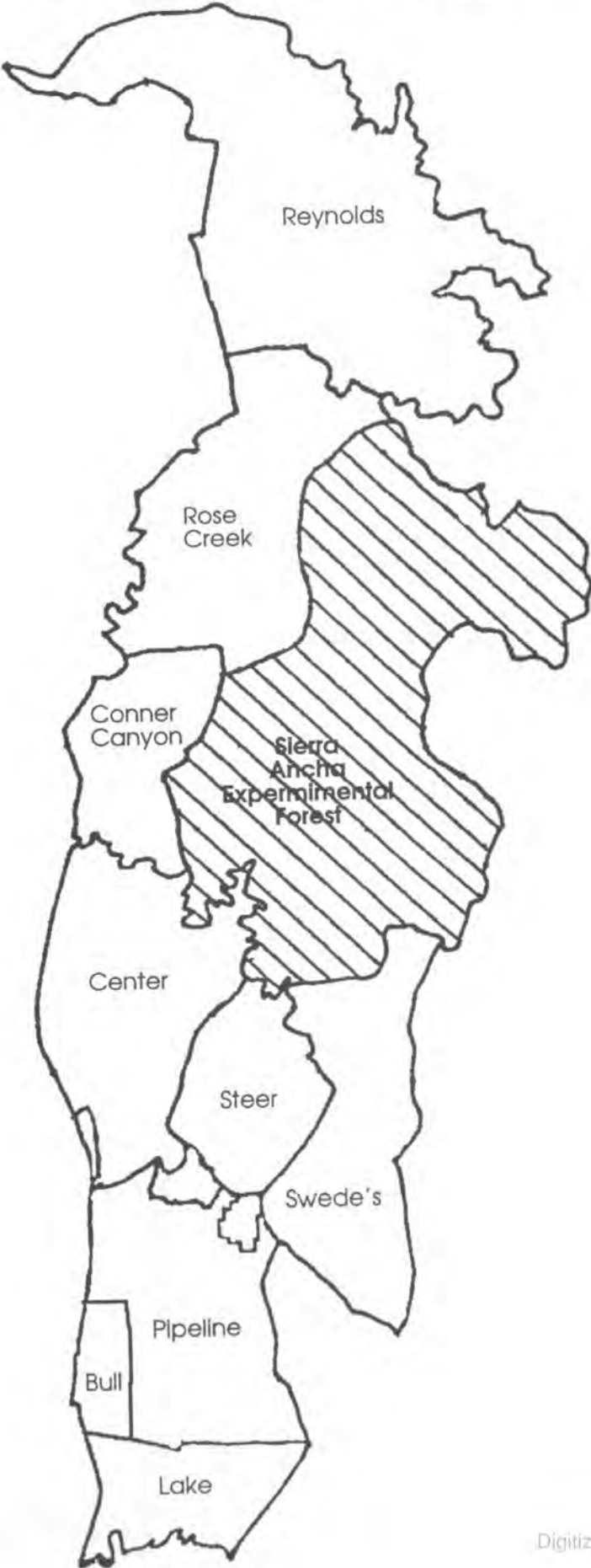
C-1c - Armer Mountain Alternatives 3-5



C - A Cross Project Map



C-2 - A Cross Pasture Map for Proposed Action

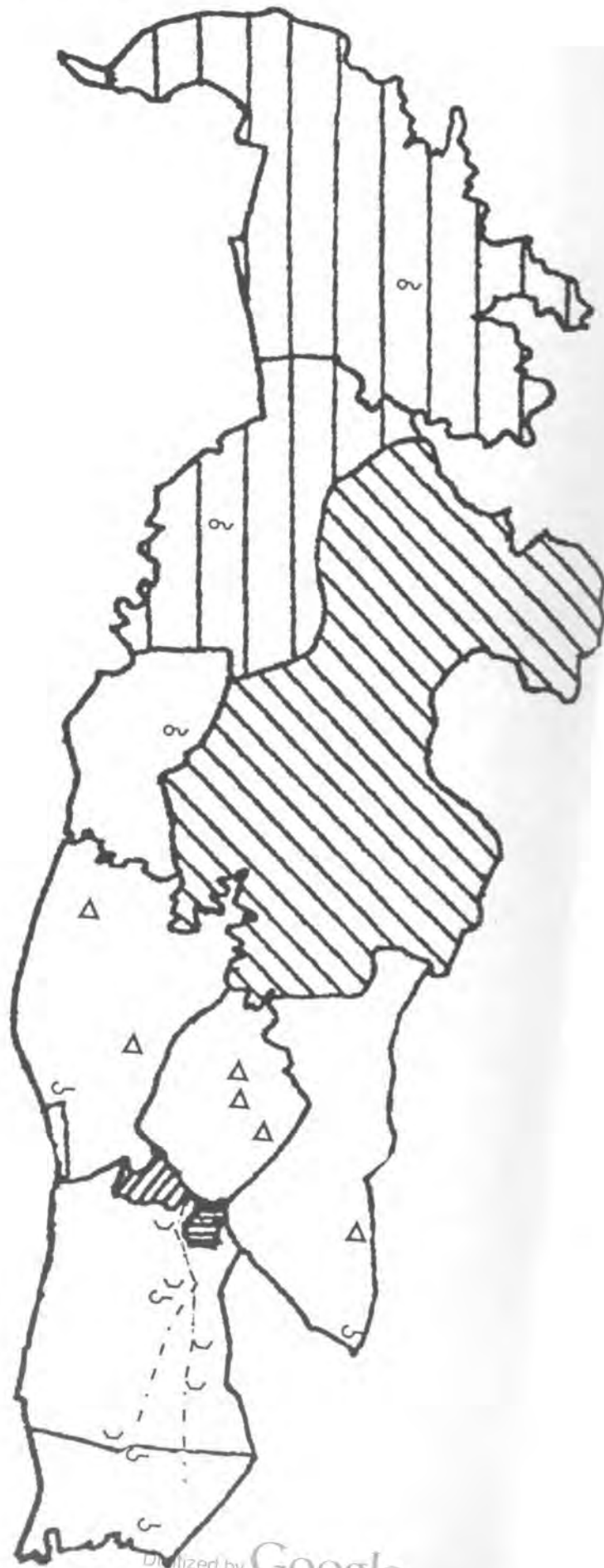


C-2a - A Cross, Alternatives 1 & 4

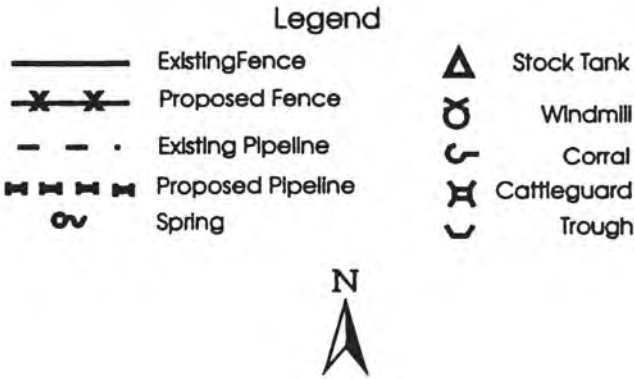
Legend

	Existing Fence
	Proposed Fence
	Existing Pipeline
	Proposed Pipeline
	Spring

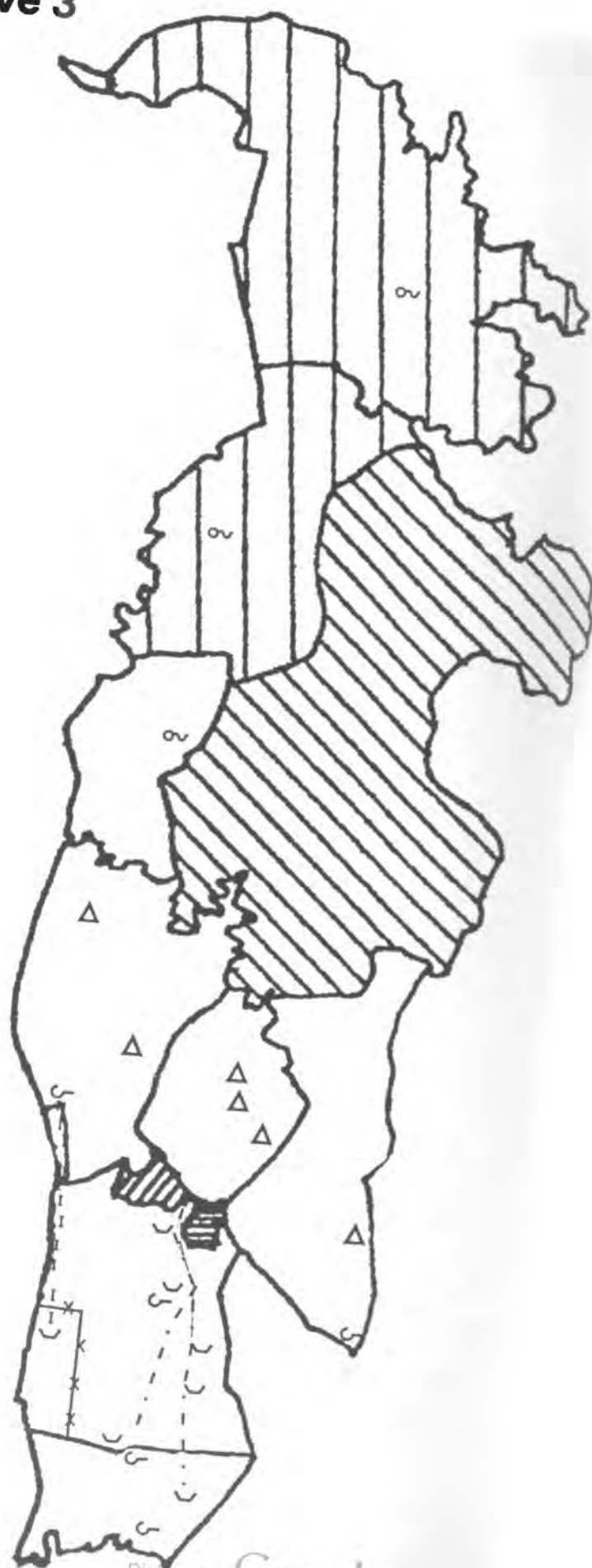
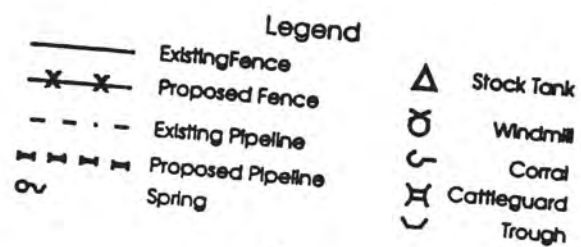
	Stock Tank
	Windmill
	Corral
	Cattle guard
	Trough



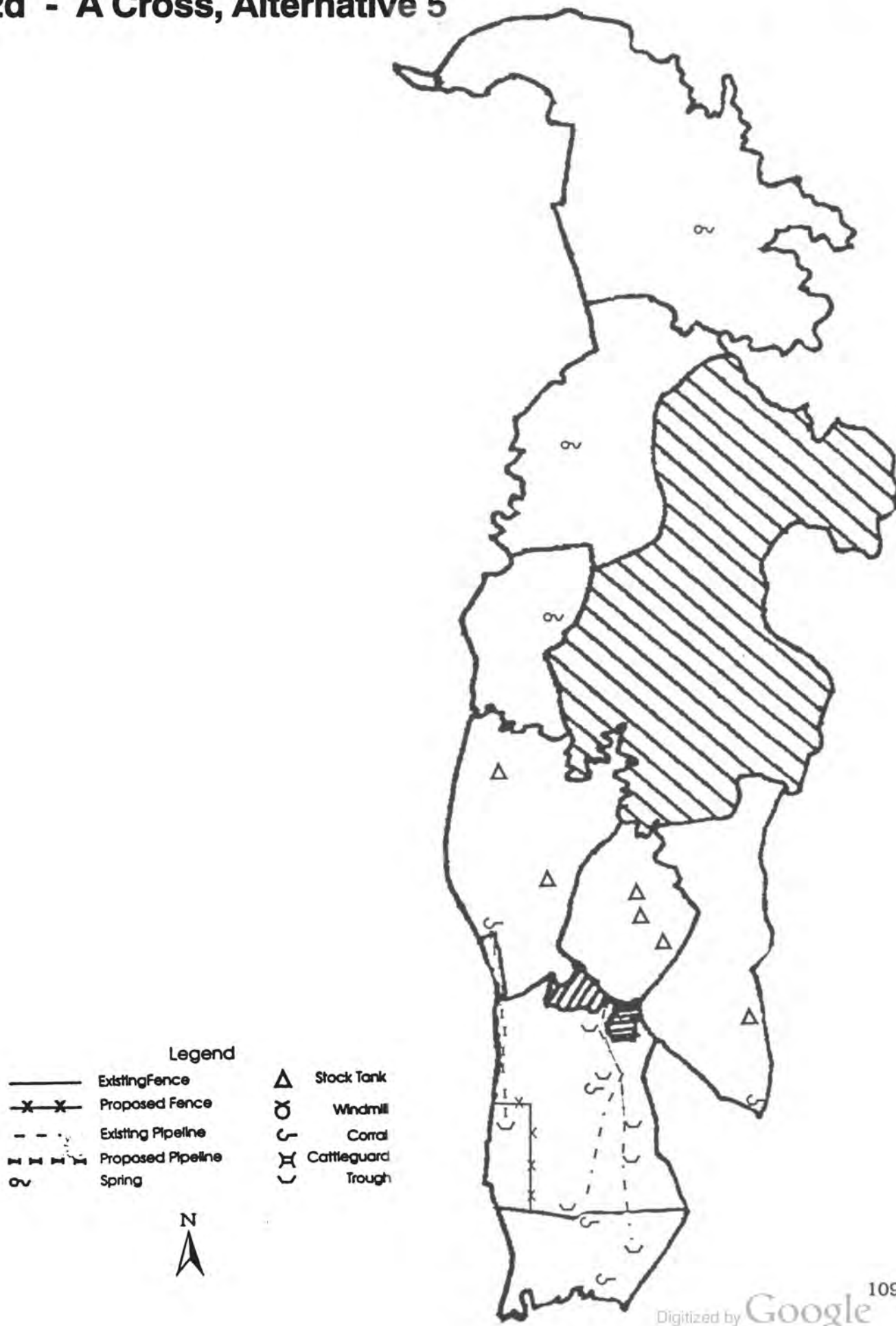
C-2b - A Cross, Alternative 2



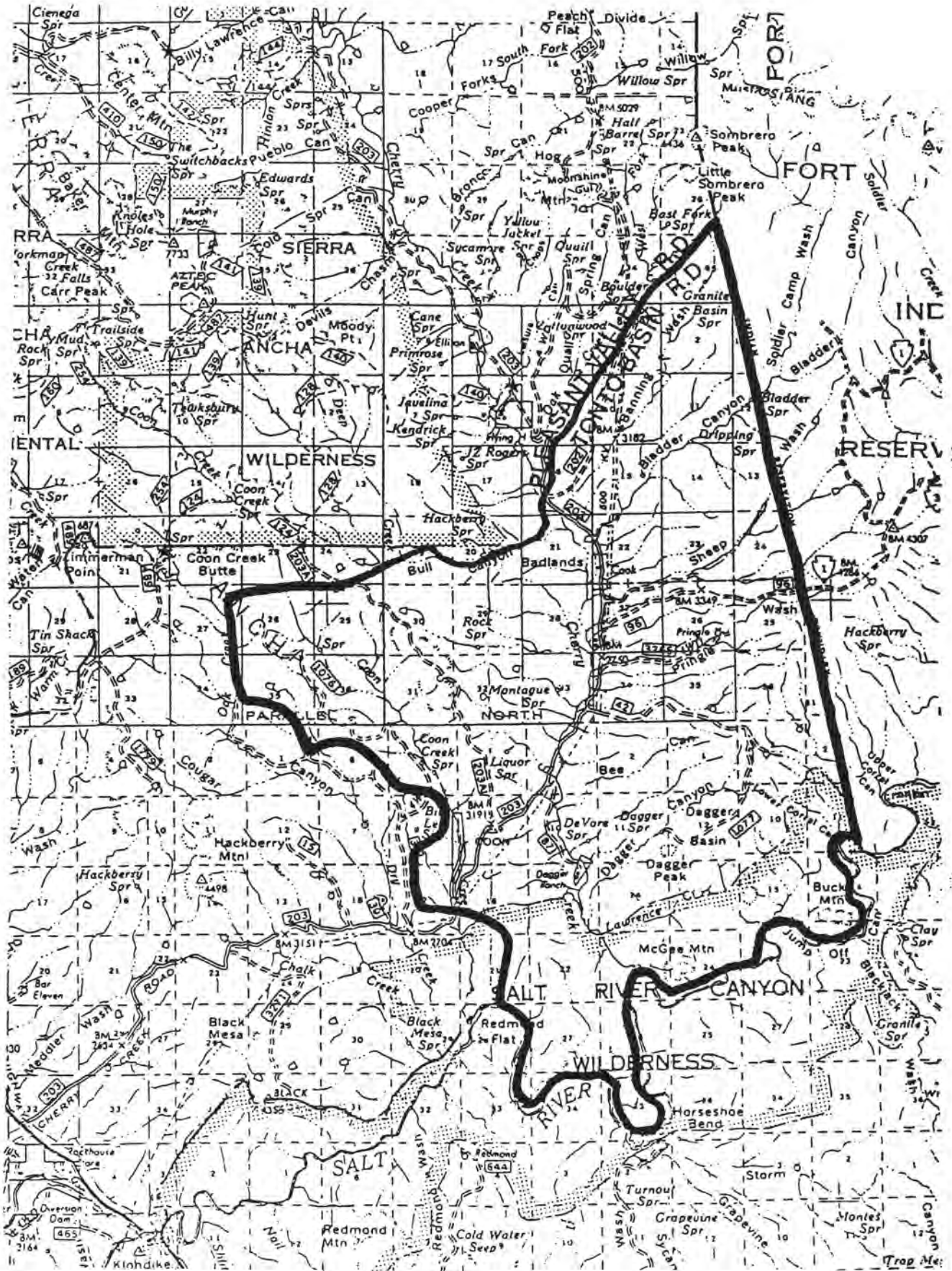
C-2c - A Cross, Alternative 3



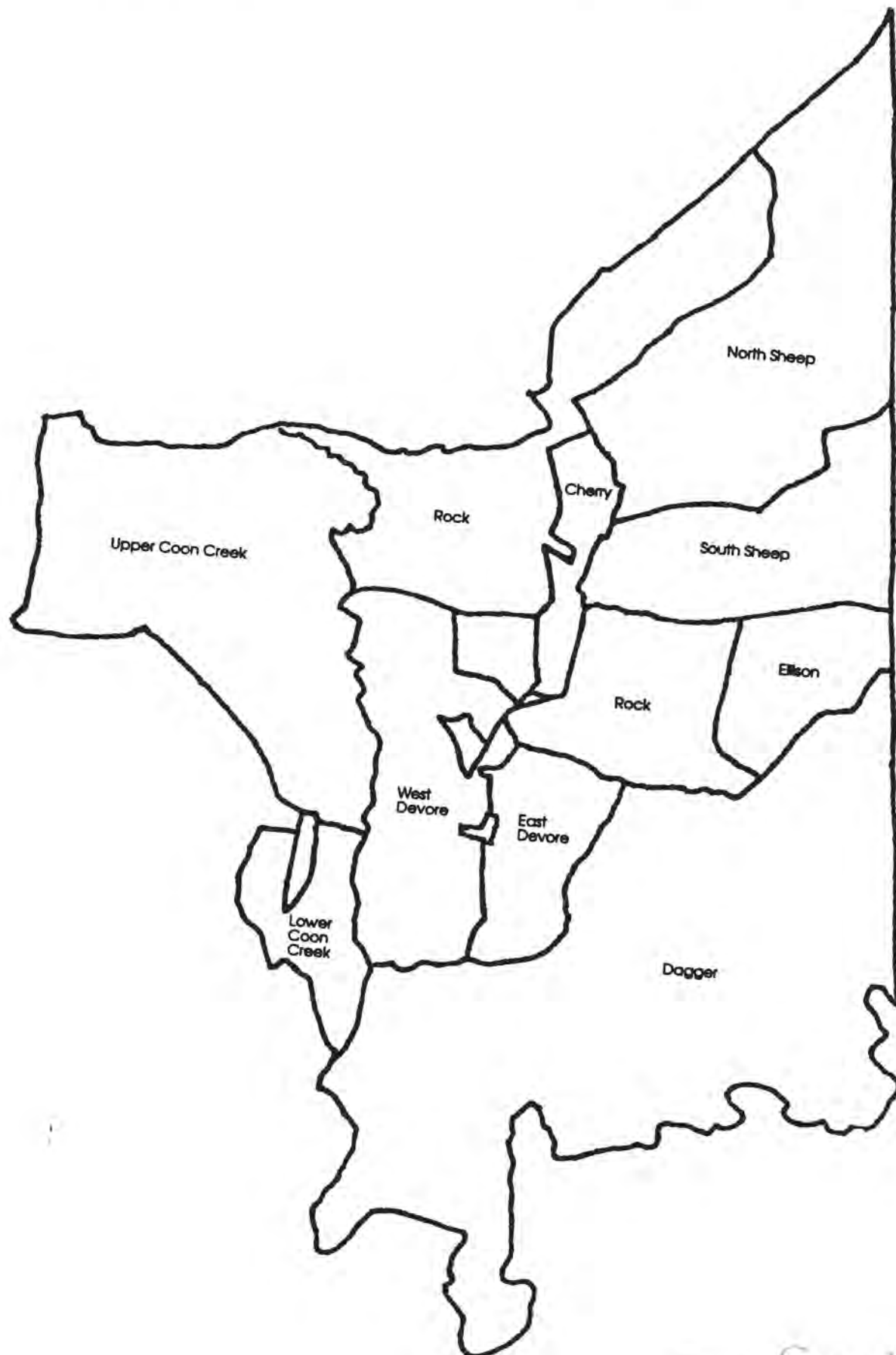
C-2d - A Cross, Alternative 5



C - Dagger Project Map



C-3 - Dagger Pasture Map for Proposed Action



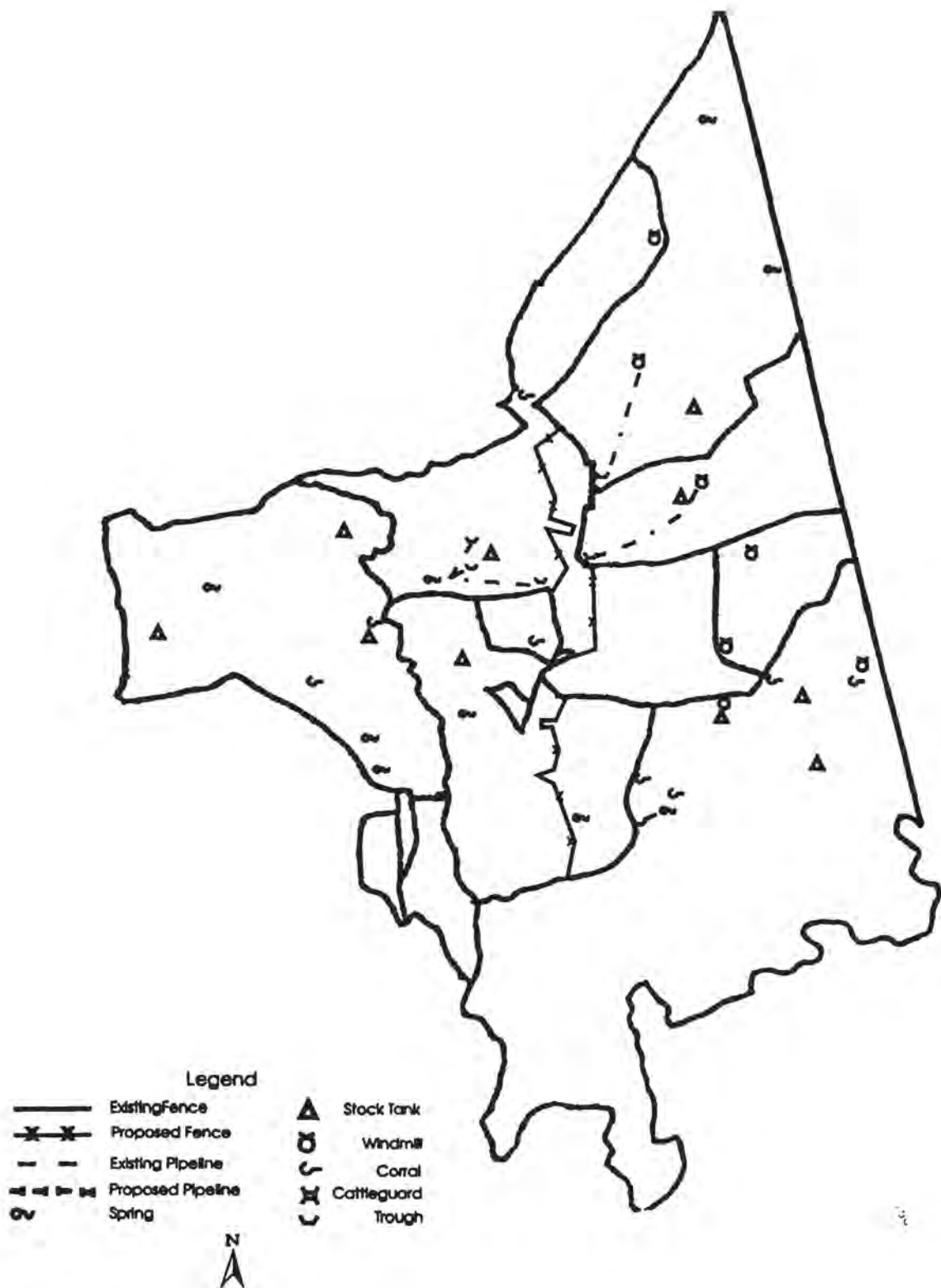
C-3a - Dagger, Alternatives 1 & 4



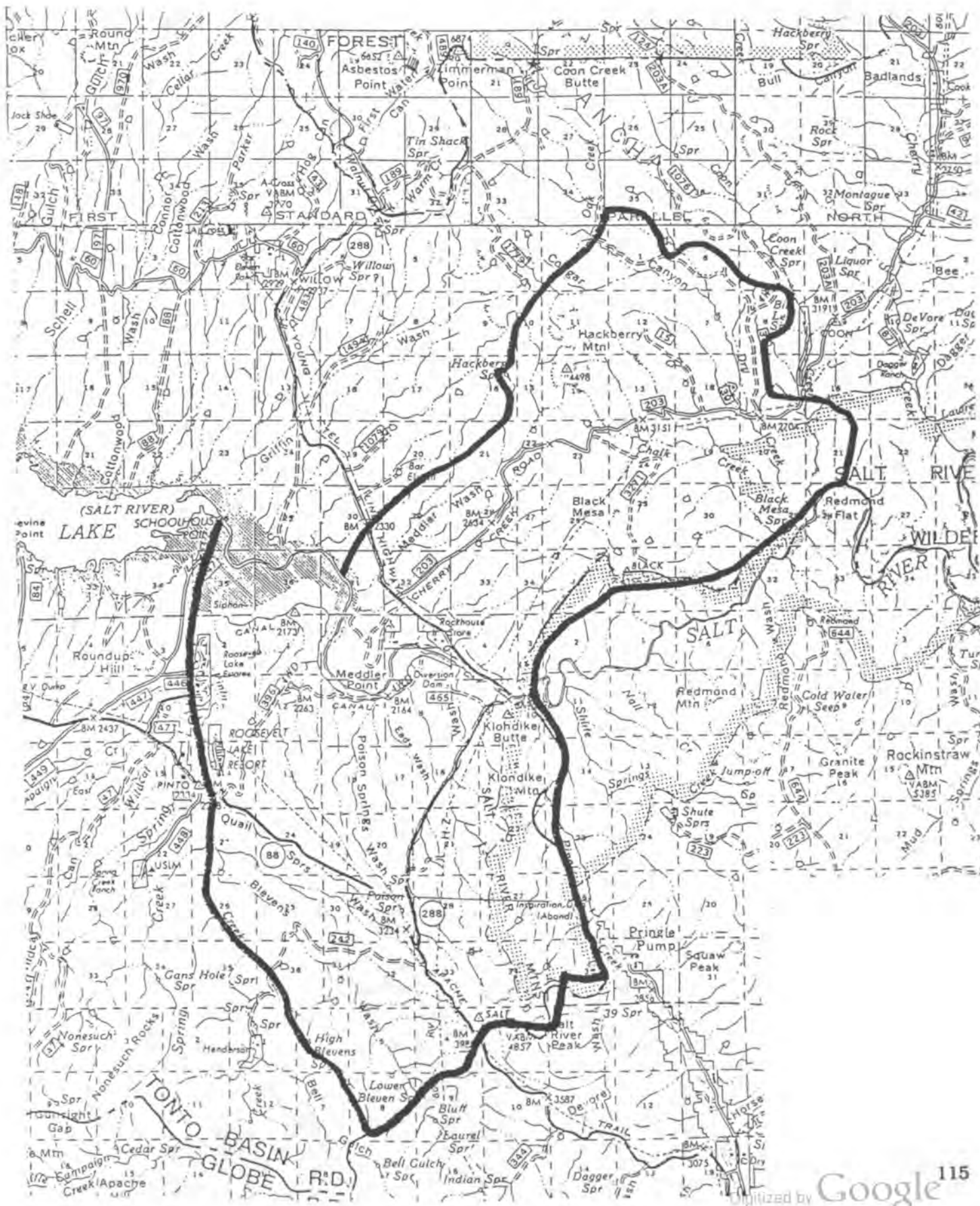
C-3b - Dagger, Alternative 2



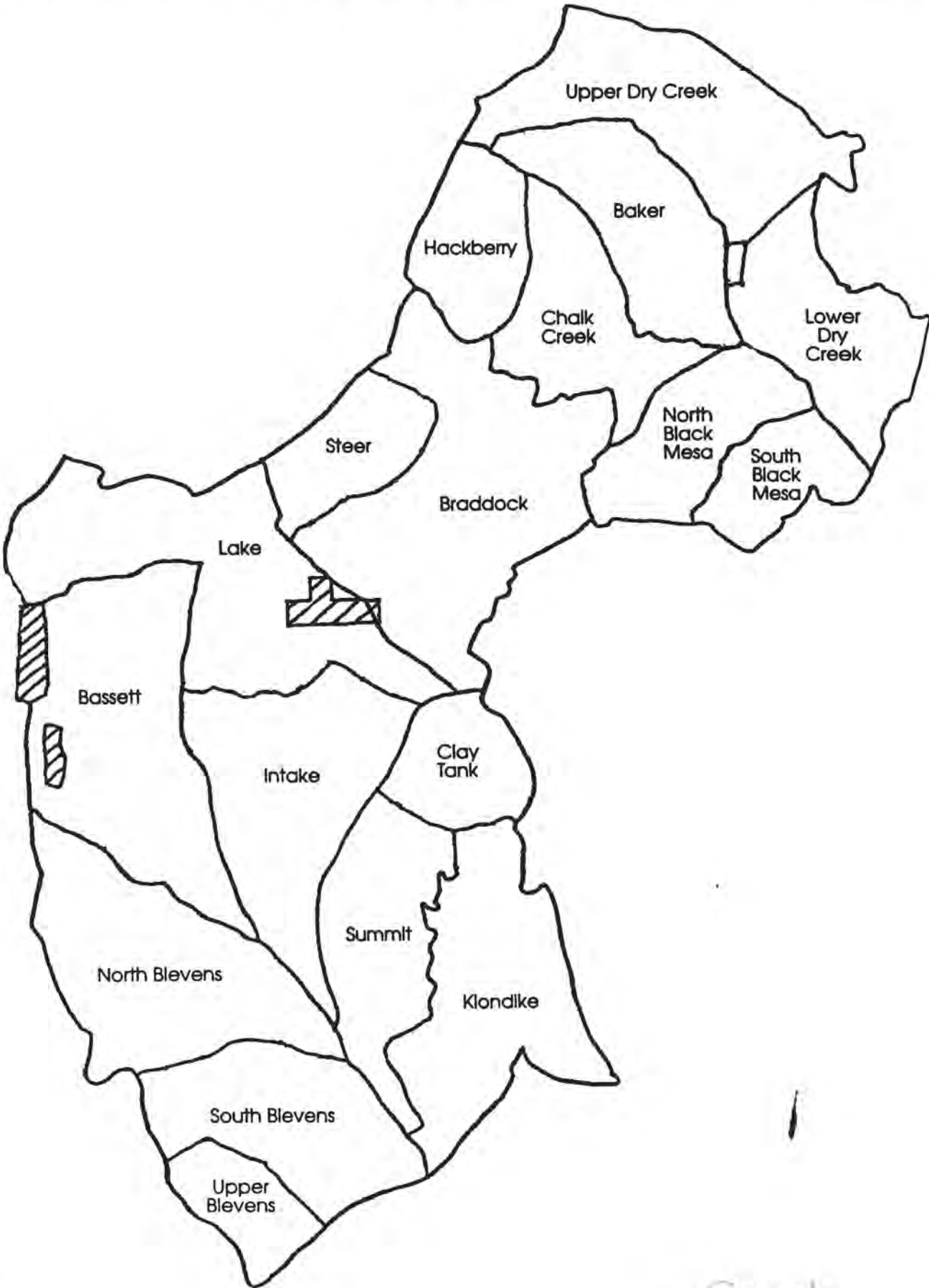
C-3c - Dagger, Alternatives 3 & 5



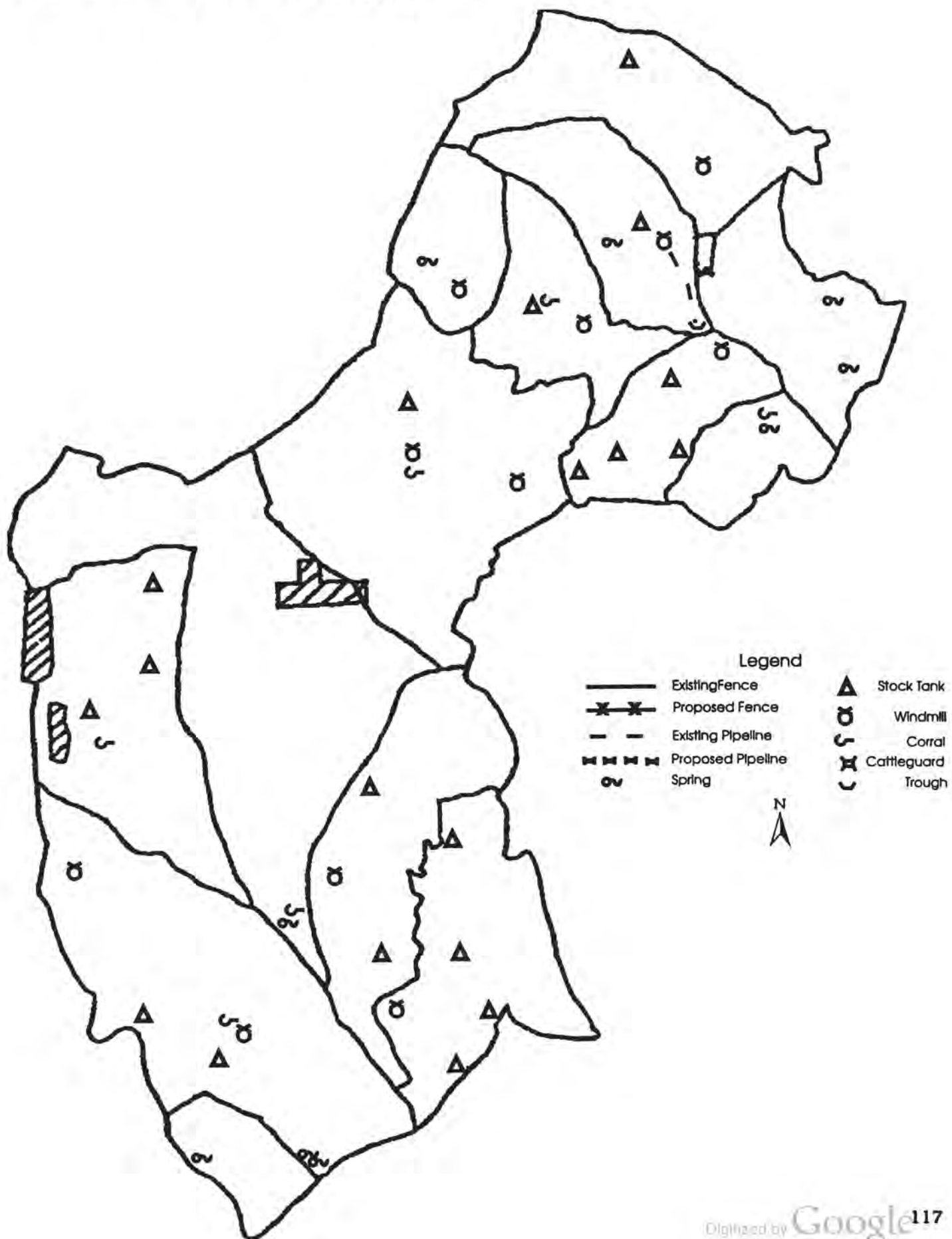
C - Poison Springs Project Map



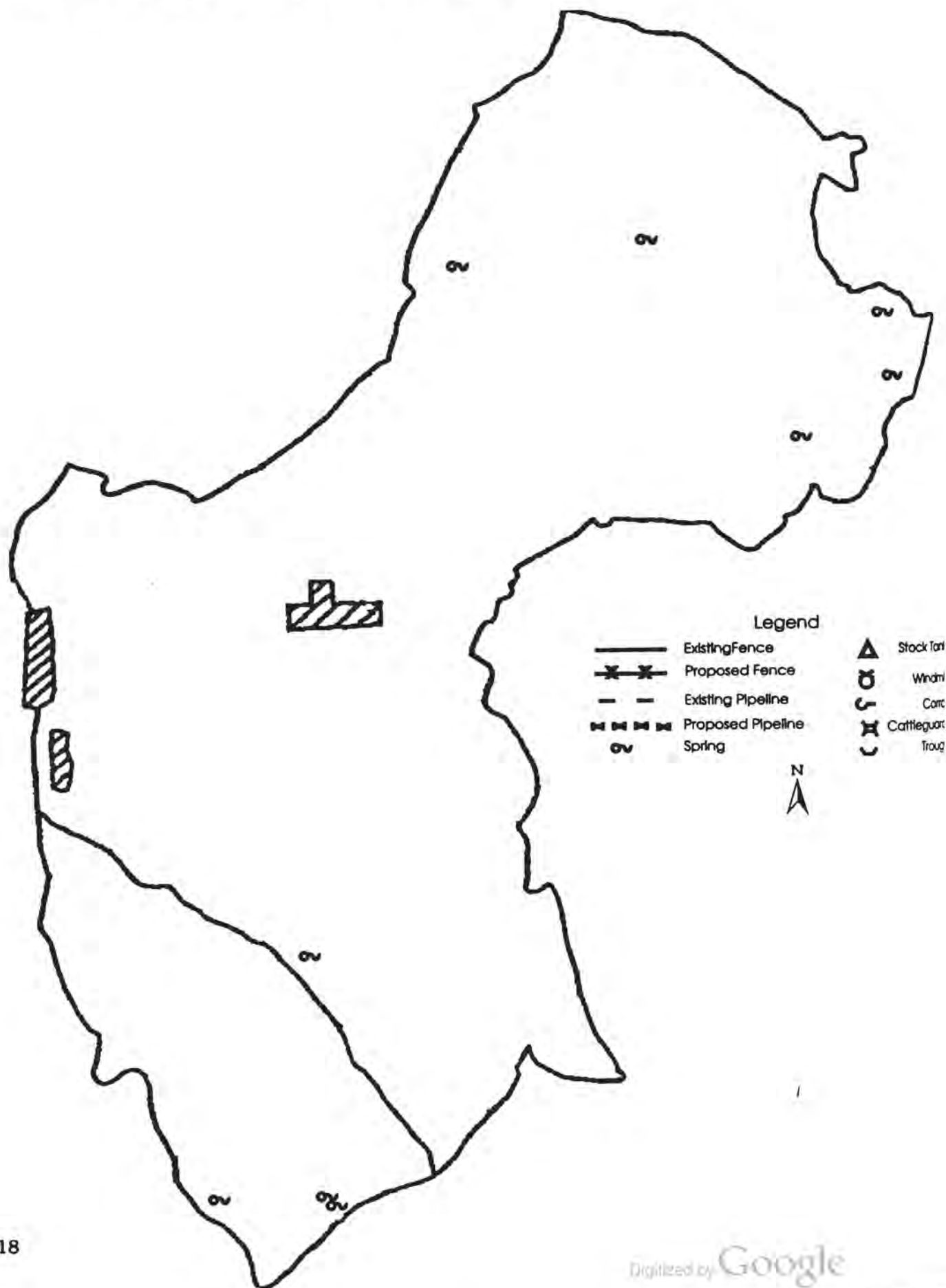
C-4 - Poison Springs Pasture Map for Proposed Action



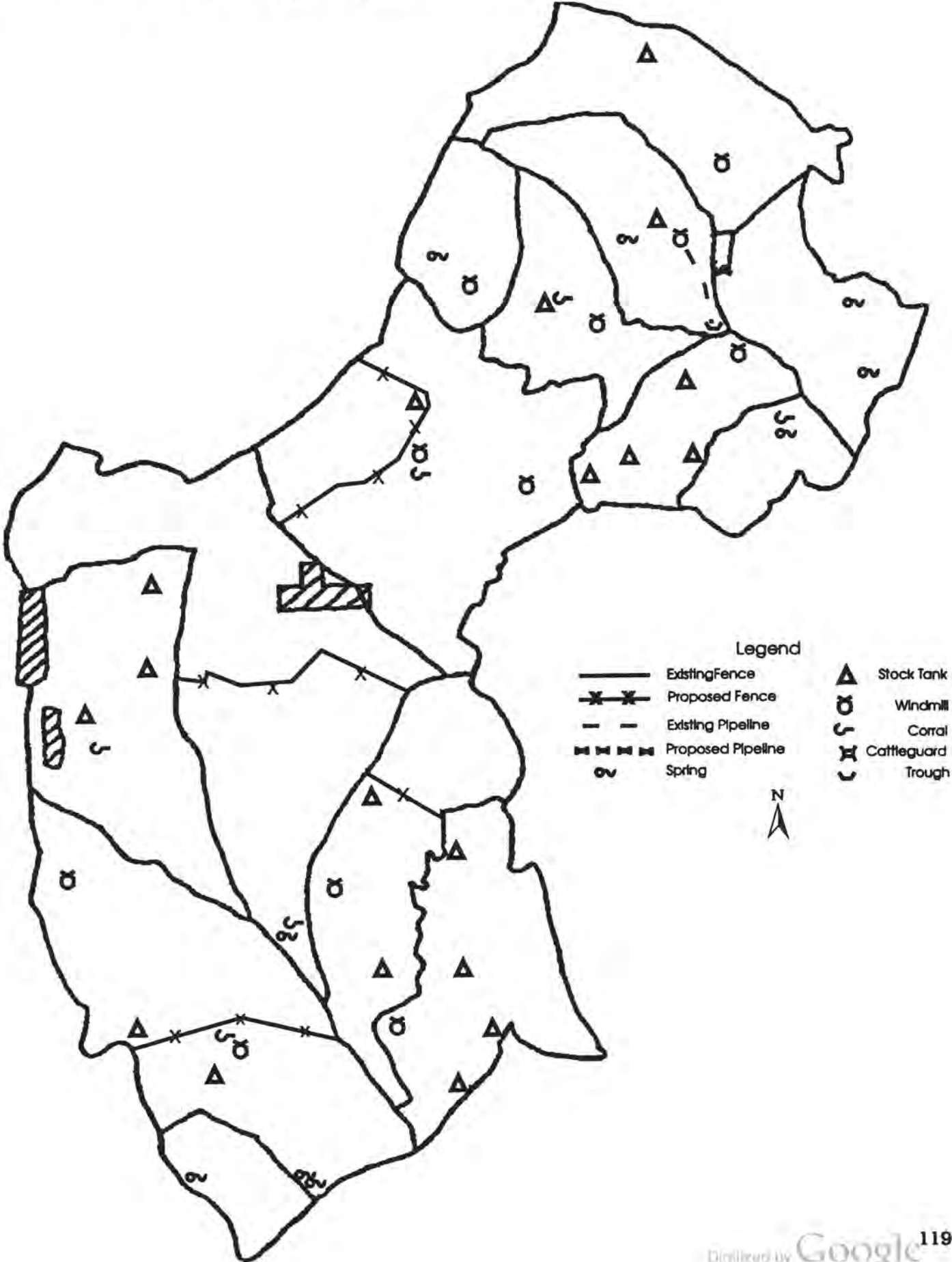
C-4a - Poison Springs, Alternative 1



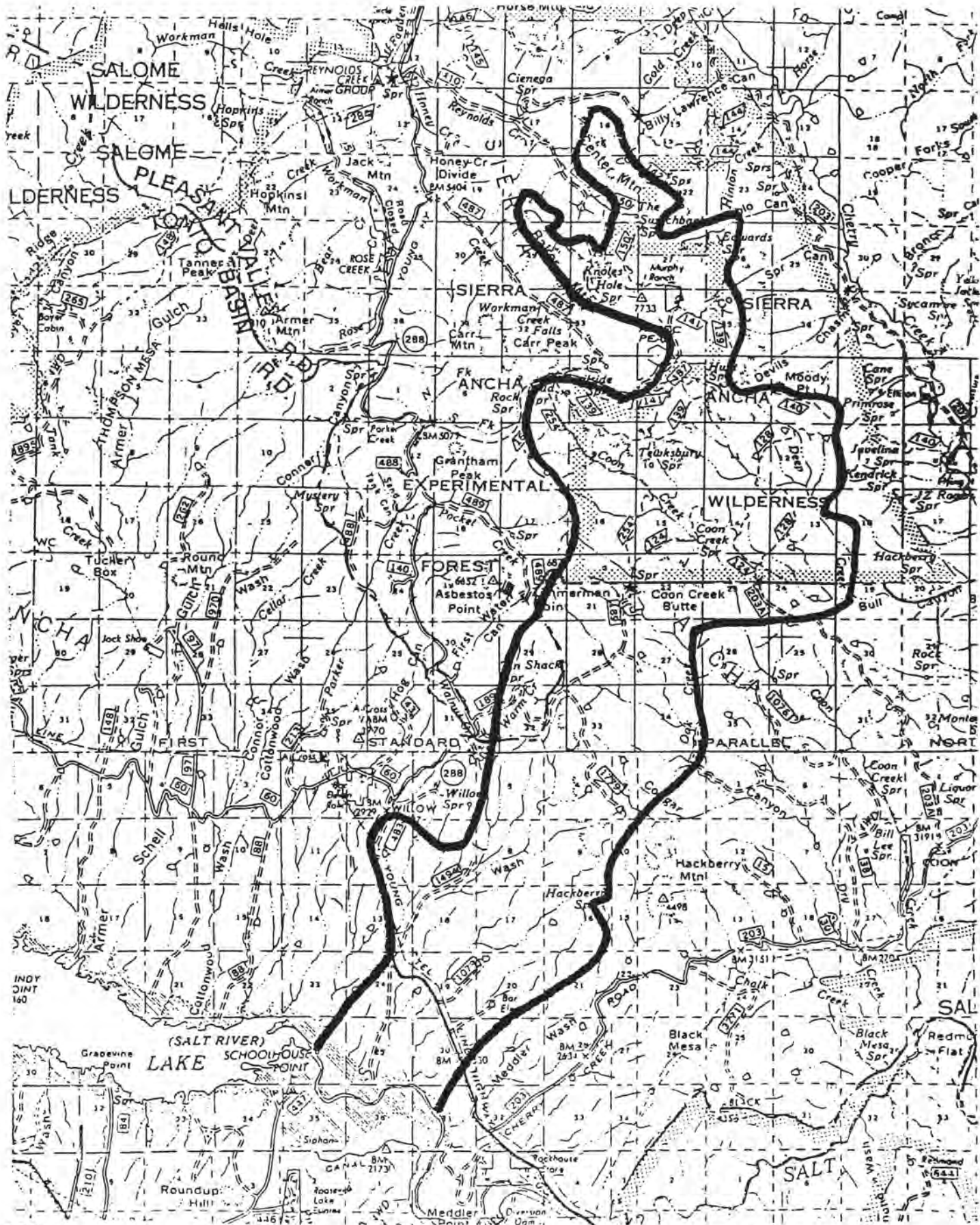
C-4b - Poison Springs, Alternative 2



C-4c - Poison Springs, Alternatives 3-5



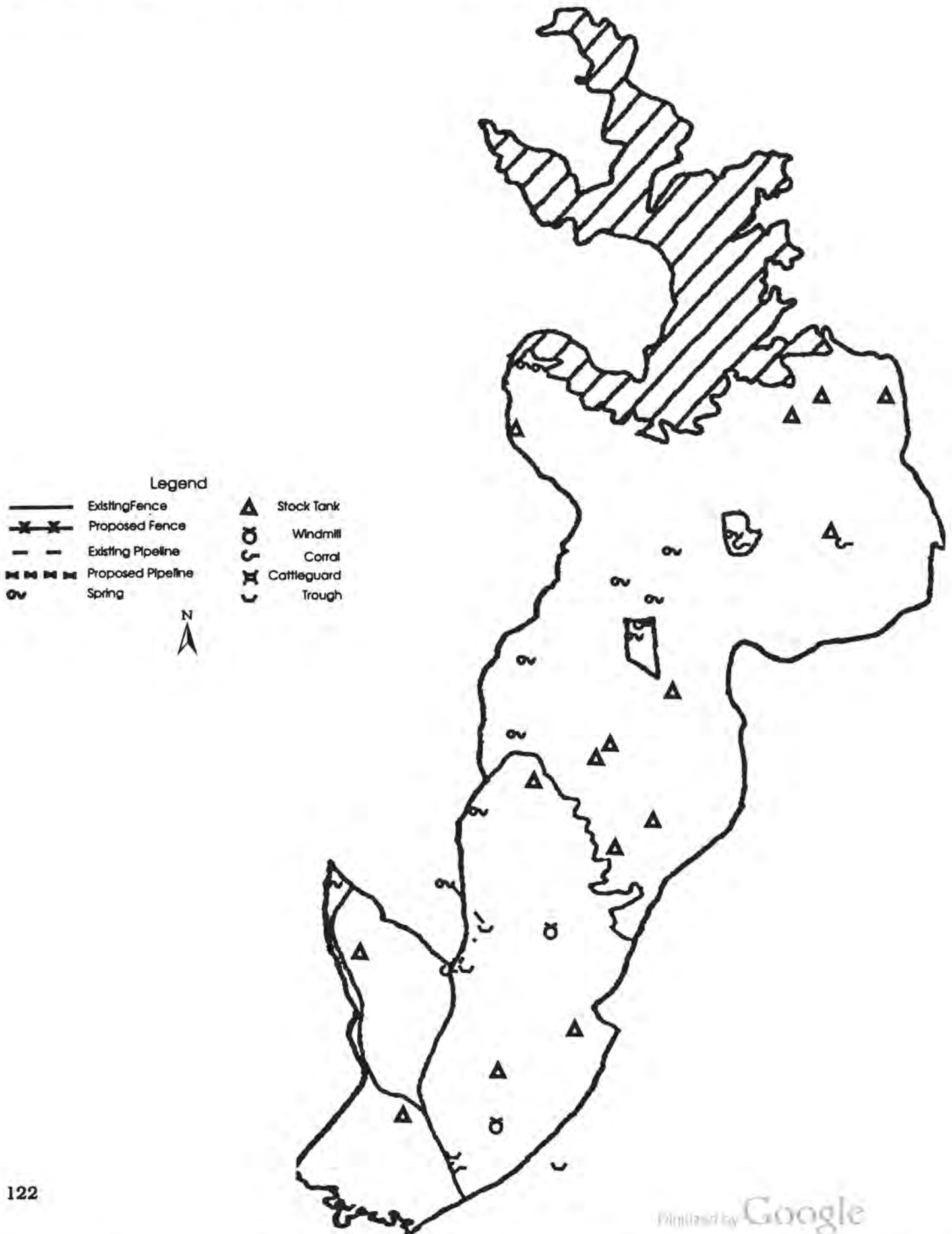
C - Sierra Ancha Project Map



C-5 - Sierra Ancha Pasture Map for Proposed Action



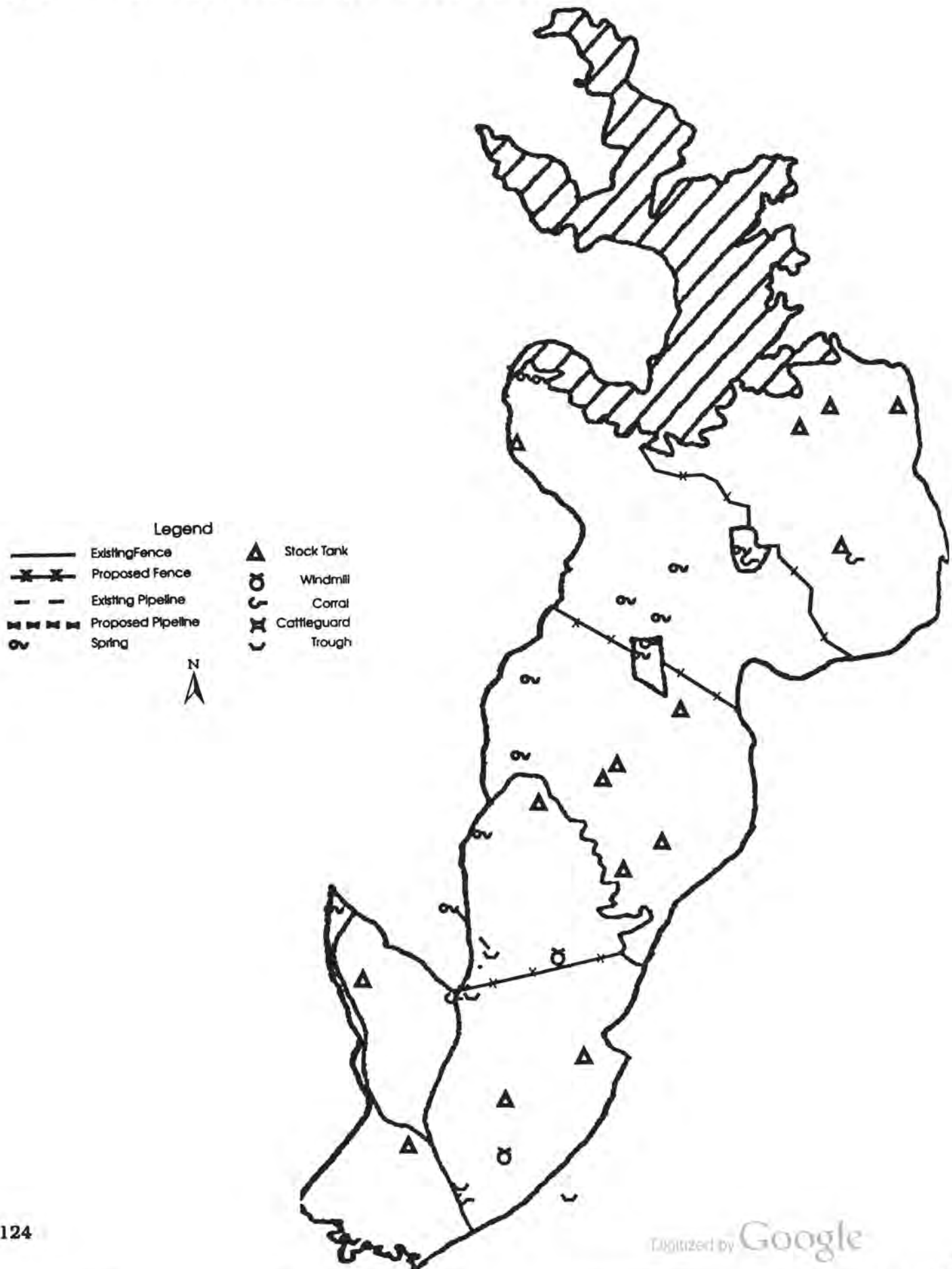
C-5a - Sierra Ancha, Alternative 1



C-5b - Sierra Ancha, Alternative 2



C-5c - Sierra Ancha, Alternatives 3-5



D - Issues Considered But Resolved

The following table indicates specific issues identified by various members of the IDT. The table also outlines the resolution by alternate design, Tonto LMP, and discussion of the affected environment within this document (objectives and alternatives), and "Plan 6" environmental documents.

Issues	Alternate Design	LRMP	Affected Environment	Plan 6
1. Maintain viable threatened, endangered, or sensitive animal and plant populations.	X	X	X	X
2. Maintain or improve dispersed recreational opportunities.	X	X	X	X
3. Maintain or improve road transportation or ORV control.	X			
4. Cultural Resources.	X	X		
5. Provide Interpretation of Cultural Resources.	X	X		X
6. Riparian and Shoreline.	X	X	X	X
7. Livestock Travel Trails.	X			
8. Water accessibility and rights.	X			X
9. Watershed, erosion, pollution, sediment, water quality.	X	X	X	X
10. Meet the objectives through standards and guidelines in LRMP.	X	X		X
11. Range/Wildlife condition.	X	X		X
12. Livestock Distribution - Riparian.	X	X		X
13. Air Quality/Burning.	X		X	
14. User Conflicts - Recreation.	X	X		
15. Visual Quality.	X	X	X	
16. Vandalism.	X			
17. Guiding Operations.	X	X		
18. Viable Livestock Operations.	X	X		X
19. Monitoring of Livestock/Wildlife.	X	X		X
20. Predation/Stock Killer Law.	X	X		
21. Water established for wildlife.	X	X		X
22. Prescribed Burning.	X	X		X
23. Maintenance of Improvements.	X	X		X

E - Typical Project Implementation Examples

This section describes the average amount of surface disturbance expected from specific types of range improvements.

Fence

1. Right-of-way will be cleared with a dozer or by hand, 5 feet on each side of the fence for construction and maintenance.
2. Damage will be kept to a minimum from the dozer by:
 - a. Blade will only be used when absolutely necessary.
 - b. Woody species will be laid down on the ground, not up-rooted.
 - c. If blade is put down, area will be drained properly.
3. Hand clearing of woody species will be sparse.

Corrals

1. A 200 by 200-foot area will be cleared and leveled for placement of the actual corral.
2. An access road will be constructed for livestock removal by trucks with trailers.
3. All road construction will be water barred if necessary and drained.

Cattleguards

1. A 12 by 20 foot hole will be dug with a backhoe.
2. Wings will be installed with a 14-foot gate to allow heavy equipment access.
3. Adequate drainage under and around the cattleguards will be provided.

Pipelines

1. Pipelines will be buried, when possible, with a dozer digging the line.
2. The remaining portion will be placed above ground with no disturbance to the ground or vegetation.

Water Troughs

1. Steel troughs with pea gravel placed underneath (on top of the ground).
2. Steel T-posts will be placed at the four corners in order to keep the trough in place.
3. Cement troughs will be formed and constructed on-site.

Springs

1. Springs will be boxed with cement to be used as a water collector.
2. A ditch will be dug by a backhoe and 1 inch pea gravel placed into the hole. PVC pipe will be placed in the hole also with a one inch pipe to serve as a collector.

F-1 - Armer Mountain Allotment Pasture Rotation and Improvement Information

Pasture Information				Improvement Projects			
Name	Acres	Grazing Dates 5 to 7 Years	No. of Head	Name	Type	Location	Construction Method
Hopkins	10,295	1 - 5/1 to 8/31 2 - rested 3 - 5/1 to 8/31 4 - rested 5 - 5/1 to 8/31	167	None			
Salome	5,552	1 - rested 2 - 5/1 to 8/31 3 - rested 4 - 5/1 to 8/31 5 - rested	167	None			
Thompson Mesa	2,264	1 - rested 2 - rested 3 - 3/1 to 4/30 4 - 3/1 to 4/30 5 - 9/1 to 10/31	167	None			
West Round Mountain	3,435	1 - 9/1 to 10/31 2 - 3/1 to 4/30 3 - 9/1 to 10/31 4 - rested 5 - 1/1 to 12/31 6 - 11/1 to 12/31	167	Round Mountain Division Fence	Conventional barb wire or electric fence	Begins T5N, R13E, Sec. 9, NE, SW, NE; Ends Sec. 21, NE, SW, SW.	Construct 4 miles of fence to FS and wildlife standards
				Canyon Spring and Pipeline	1" plastic pipe and trough	Begins T5N, R13E, Sec. 9, NE, NW, NW; Ends Sec. 8, SW, NE, SW.	Develop spring with 1 mile pipeline and 2 troughs. Pipe will be buried with equipment if possible.
East Round Mountain	2,192	1 - 3/1 to 4/30 2 - 9/1 to 10/31 3 - rested 4 - 1/1 to 2/28 5 - 9/1 to 10/31 6 - 3/1 to 4/30	167	Walker Spring and Pipeline	1" plastic pipe and trough	Begins T5N, R13E, Sec. 16, SE, NW, SE; Ends Sec. 21, SW, SW, NE	Develop spring with 1 mile pipeline and 2 troughs. Pipe will be buried with equipment if possible.

Pasture Information				Improvement Projects			
Name	Acres	Grazing Dates 5 to 7 Years	No. of Head	Name	Type	Location	Construction Method
Schell	3,347	1 - 1/1 to 2/28 2 - 11/1 to 12/31 3 - rested 4 - 1/1 to 2/28 5 - 11/1 to 12/31 6 - rested 7 - rested	167	Cottonwood Mesa Stock Tank Repair	Existing dirt tank and spillway	T4N, R13E, Sec. 4, NW, SE, NE.	Clean out existing dirt tank, add wing ditches, and repair dam and spillway.
				Jack Shoe Road (FDR 97) Maintenance	Existing Road	Begins T5N, R13E, Sec. 28, SW, NW, NW; Ends Sec. 9, SE, NE, SW.	Maintain existing road and repair washed out portions using heavy equipment.
Lake	2,962	1 - rested 2 - 1/1 to 2/28 3 - 11/1 to 12/31 4 - rested 5 - 11/1 to 12/31 6 - rested	167	A Cross Spring and Pipeline	1" plastic pipe with trough	Begins T4N, R13E, Sec. 15, NW, SW, NW; Ends Sec. 16, SE, NE, SE.	Develop spring with 1 mile pipeline and 2 troughs. Pipe will be buried with equipment if possible.
Bull Holding Pasture	566	As Needed	60	None			
Boyer Holding Pasture	275	As Needed	20	None			
Jack Shoe Holding Pasture	850	As Needed	100	None			

F-2 - A Cross Allotment Pasture Rotation and Improvement Information

Pasture Information				Improvement Projects			
Name	Acres	Grazing Dates 5 to 7 Years	No. of Head	Name	Type	Location	Construction Method
Reynolds	7,099	Non-use per MOU	0	None			
Rose Creek	3,676	Non-use per MOU	0	None			
Sierra Ancha Experimental Forest	9,663	Not Grazed	0	None			
Conner Canyon	1,726	1 - rested 2 - rested 3 - 11/1 to 12/15 4 - rested 5 - 11/1 to 12/15	45	None			
Center	3,482	1 - 5/1 to 7/31 2 - 2/1 to 4/30 3 - 8/1 to 10/31 4 - 5/1 to 7/31 5 - 2/1 to 4/30	145	None			
Steer	1,676	1 - 11/1 to 12/15 2 - 11/1 to 12/15 3 - rested 4 - 11/1 to 12/15 5 - rested	45	None			
Swede's	3,060	1 - 2/1 to 4/30 1 - 8/1 to 10/31 2 - 5/1 to 7/31 3 - 2/1 to 4/30 3 - 8/1 to 10/31 4 - 5/1 to 7/31	145	Red Bluff Fence	Conventional barb wire or electric fence	Begins T5N, R14E, Sec. 31, NW, NW, SE; Ends SE, NE, SW.	Construct 1 mile of fence, utilizing natural barriers where possi- ble, to FS and wildlife standards.
				Red Bluff Cattle- guards	Steel Cattleguards	T5N, R14E, Sec. 31, NW, NW, SE; and SE, NE, SW.	Install two steel cattle- guards with bases and wing ditches using a backhoe.

Pasture Information				Improvement Projects			
Name	Acres	Grazing Dates 5 to 7 Years	No. of Head	Name	Type	Location	Construction Method
Pipeline	3,622	1 - 1/1 to 1/31 2 - 11/1 to 3 - 1/31 3 - 11/1 to 4 - 1/31 5 - 11/1 to 12/31	145	Cottonwood Artesian Pipeline Maintenance	1" plastic pipe with troughs.	Begins T5N, R13E, Sec. 34, SW, NE, NW; Ends T4N, R13E, Sec. 10, SW, SE, NW	Complete maintenance on 3 miles of existing pipeline and troughs.
Lake	1,410	1 - 11/1 to 2 - 1/31 3 - rested 4 - 11/1 to 5 - 1/31	145	None			
Bull Holding Pasture	480	As Needed	30	Bull Pasture Fence	Conventional barb wire or electric fence	Begins T4N, R13E, Sec. 10, NW, SE, NW; Ends Sec. 15, NE, SW, SE.	Construct 3 miles of fence, utilizing natural barriers where possible, to FS and wildlife standards.
				Bull Pasture Cattleguard	Steel Cattleguard	T4N, R13E, Sec. 10, NW, SE, NE.	Install one steel cattle- guard with base and wing ditches with backhoe.
				A Cross Spring Pipeline East	1" plastic pipe with troughs.	Begins T5N, R13E, Sec. 15, NW, SW, NW; Ends NE, SW, NW	Develop spring with 1 mile pipeline and 2 troughs. Bury pipe if possible with equipment.

F-3 - Dagger Allotment Pasture Rotation and Improvement Information

Pasture Information				Improvement Projects			
Name	Acres	Grazing Dates 5 to 7 Years	No. of Head	Name	Type	Location	Construction Method
Upper Coon	4,724	1 - 1/1 to 4/30 2 - 9/1 to 12/31 3 - 7/1 to 10/31 4 - 4/15 to 8/15 5 - 2/15 to 6/15	75	None			
Lower Coon	1,052	1 - 5/1 to 6/30 2 - 1/1 to 2/28 3 - 11/1 to 12/31 4 - 8/15 to 10/15 5 - 6/15 to 8/15	75	None			
West Devore	2,636	1 - 7/1 to 9/15 2 - 3/1 to 5/15 3 - 1/1 to 3/15 4 - 10/15 to 12/31 5 - 8/15 to 10/31	75	South Cherry Creek Fence	Conventional barb wire fence	Begins T6N, R15E, Sec. 3, NE, SW, NE; Ends Sec. 10, NE, SW, SE.	Construct 3 miles of fence utiliz- ing natural barriers where possi- ble, to FS and wildlife standards.
East Devore	1,183	1 - 9/15 to 11/15 2 - 5/15 to 7/15 3 - 3/15 to 5/15 4 - 1/1 to 2/28 5 - 11/1 to 12/31	75	None			
Sheep (North and South)	6,522	1 - 1/1 to 4/30 2 - 9/1 to 12/31 3 - 5/1 to 8/31 4 - repeat Yr. 1	180	None			
Rock	4,887	1 - 5/1 to 8/31 2 - 1/1 to 4/30 3 - 9/1 to 12/31 4 - repeat Yr. 1	180	Rock Spring Pipeline	1" plastic pipe with troughs.	Begins T5N, R15E, Sec. 29. Ends Secs. 29 & 28.	Develop spring with 2 miles of pipe- line and 4 troughs. Bury pipe if possible with equipment.
Dagger	10,965	1 - 9/1 to 12/31 2 - 5/1 to 8/31 3 - 1/1 to 4/30 4 - repeat Yr. 1	180	None			

Pasture Information				Improvement Projects			
Name	Acres	Grazing Dates 5 to 7 Years	No. of Head	Name	Type	Location	Construction Method
Cherry Creek	730	1 - rested 2 - 1/1 to 3/31 3 - 1/1 to 3/31 4 - repeat Yr. 1	140	Cattle- guard	Steel Cattleguard	T5N, R15E, Sec. 21, SW, NE, NE.	Install one steel cattle- guard with base and wing ditches with backhoe.
				North Cherry Creek Fence	Conventional barb wire fence.	Begins T5N, R15E, Sec. 21, SW, NE NE; Ends Sec. 28, SE, SW, SE.	Construct 2.75 miles of fence, utilizing natural barriers where possi- ble, to FS and wildlife standards.
				Middle Cherry Creek Fence	Conventional barb wire fence.	Begins T5N, R15E, Sec. 27, NE, SW, SW; Ends Sec. 33, NE, SE, SE.	Construct 1 mile of fence, utilizing natural barriers where possi- ble, to FS and wildlife standards.

F-4/F-5 - Poison Springs/Sierra Ancha Allotments

Pasture Rotation and Improvement Information

Pasture Information				Improvement Projects			
Name	Acres	Grazing Dates 5 to 7 Years	No. of Head	Name	Type	Location	Construction Method
Coon Creek Mesa	4,384	1 - 11/1 to 2 - 2/28 2 - 7/1 to 10/31 3 - 3/1 to 6/30 4 - 11/1 to 5 - 2/28	170	Coon Creek Fence	Conventional barb wire or electric fence	Begins T5N, R14E, Sec. 9, NE, SE, NE; Ends Sec. 25, NE NW, NW.	Construct 4 miles of fence, utilizing natural barriers where possible to FS and wildlife standards.
Oak Creek	4,429	1 - 11/1 to 2 - 2/28 2 - 7/1 to 10/31 3 - 3/1 to 6/30 4 - 11/1 to 5 - 2/28	170	Oak Creek Fence	Conventional barb wire or electric fence	Begins T5N, R14E, Sec. 20, NW, SE, NE; Ends Sec. 27, SW, NE, SE.	Construct 2 miles of fence, utilizing natural barriers where possible, to FS and wildlife standards.
Double Tanks	4,877	1 - 1/1 to 2/28 1 - 7/1 to 10/31 2 - 3/1 to 6/30 3 - 11/1 to 4 - 2/28	170	None			
Hackberry	1,216	1 - 1/1 to 2/28 1 - 7/1 to 10/31 2 - 3/1 to 6/30 3 - 11/1 to 4 - 2/28	170	None			
North Willow	2,158	1 - 3/1 to 6/30 2 - 11/1 to 3 - 2/28 3 - 7/1 to 10/31 4 - 3/1 to 6/30	170	Double Tanks Fence	Conventional barb wire or electric fence	Begins T5N, R14E, Sec. 31, NE, NE SE; Ends T4N, R14E, Sec. 9, SE, SE, NE.	Construct 5 miles of fence, utilizing natural barriers where possible, to FS and wildlife standards.
				Griffin Well	Maintain existing well.	T4N, R14E, Sec. 8, SE, SE, NE	Maintenance of an existing well and replacement of tower.

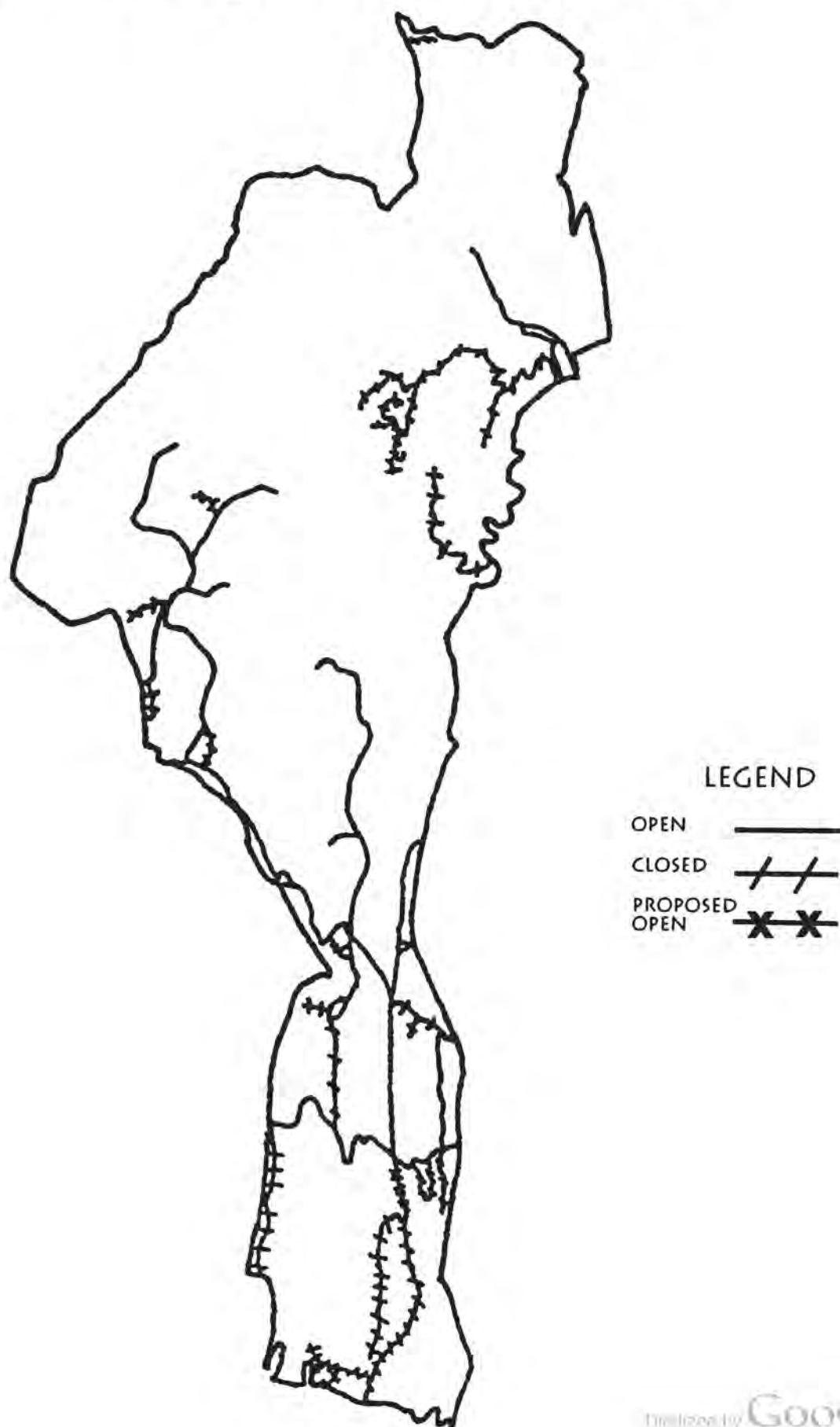
Pasture Information				Improvement Projects			
Name	Acres	Grazing Dates 5 to 7 Years	No. of Head	Name	Type	Location	Construction Method
South Willow	3,230	1 - 3/1 to 6/30 2 - 11/1 to 3 - 2/28 3 - 7/1 to 10/31 4 - 3/1 to 6/30	170	Willow Pasture Fence	Conventional barb wire or electric fence	Begins T4N, R14E, Sec. 7, NE, SW, SE; Ends Sec. 9, NE NW, SE.	Construct 2 miles of fence, utilizing natural barriers where possible, to FS and wildlife standards.
				Bar Eleven Pipeline	1" plastic pipe with troughs.	Begins T4N, R14E, Sec. 20, NW, SW, SW; Ends Sec. 30, SW NW, NE.	Install 1 mile of pipe- line with 2 troughs. Bury pipe with equipment if possible.
East Highway	1,452	1 - 1/1 to 5/15 2 - rested 3 - 1/1 to 5/15 4 - rested	137	None			
West Highway	1,569	1 - rested 2 - 1/1 to 5/15 3 - rested 4 - 1/1 to 5/15	137	None			
Chalk Creek	2,112	1 - 1/1 to 2/28 1 - 7/1 to 10/31 2 - 3/1 to 6/30 3 - 11/1 to 4 - 2/28	170	None			
Baker	2,114	1 - 1/1 to 2/28 1 - 7/1 to 10/31 2 - 3/1 to 6/30 3 - 11/1 to 4 - 2/28	170	None			
Upper Dry Creek	3,080	1 - 11/1 to 2 - 2/28 2 - 7/1 to 10/31 3 - 3/1 to 6/30 4 - 11/1 to 5 - 2/28	170	None			

Pasture Information				Improvement Projects			
Name	Acres	Grazing Dates 5 to 7 Years	No. of Head	Name	Type	Location	Construction Method
Lower Dry Creek	2,377	1 - 11/1 to 2 - 2/28 2 - 7/1 to 10/31 3 - 3/1 to 6/30 4 - 11/1 to 5 - 2/28	170	Coon Creek Fence	Conventional barb wire or electric fence	Begins T4N, R15E, Sec. 8, SW, NE NW; Ends Sec. 28, NW SW, NW.	Construct 2 miles of fence, utiliz- ing natural barriers where possi- ble, to FS and wildlife standards.
North Black Mesa	1,529	1 - 3/1 to 6/30 2 - 11/1 to 3 - 2/28 3 - 7/1 to 10/31 4 - 3/1 to 6/30	170	None			
South Black Mesa	1,529	1 - 3/1 to 6/30 2 - 11/1 to 3 - 2/28 3 - 7/1 to 10/31 4 - 3/1 to 6/30	170	None			
Braddock	4,519	1 - 3/1 to 6/30 2 - 11/1 to 3 - 2/28 3 - 7/1 to 10/31 4 - 3/1 to 6/30	170	Meddler Wash Pipeline	1" plastic pipe with troughs	Begins T4N, R14E, Sec. 20, SW, SW, SW; Ends Sec. 29, NW SE, NE.	Install 2 miles of pipeline with 2 troughs. Bury pipe with equip- ment if possible.
Steer	1,280	1 - 1/1 to 1/31 1 - 2/1 to 5/15 2 - rested 3 - 1/1 to 1/31 3 - 2/1 to 5/15 4 - rested	264 132 264 132	Steer Pasture Fence	Conventional barb wire or electric fence	Begins T4N, R14E, Sec. 21, NW, NW, SW; Ends Sec. 32, NW, NW SW.	Construct 3 miles of fence, utiliz- ing natural barriers where possi- ble, to FS and wildlife standards.

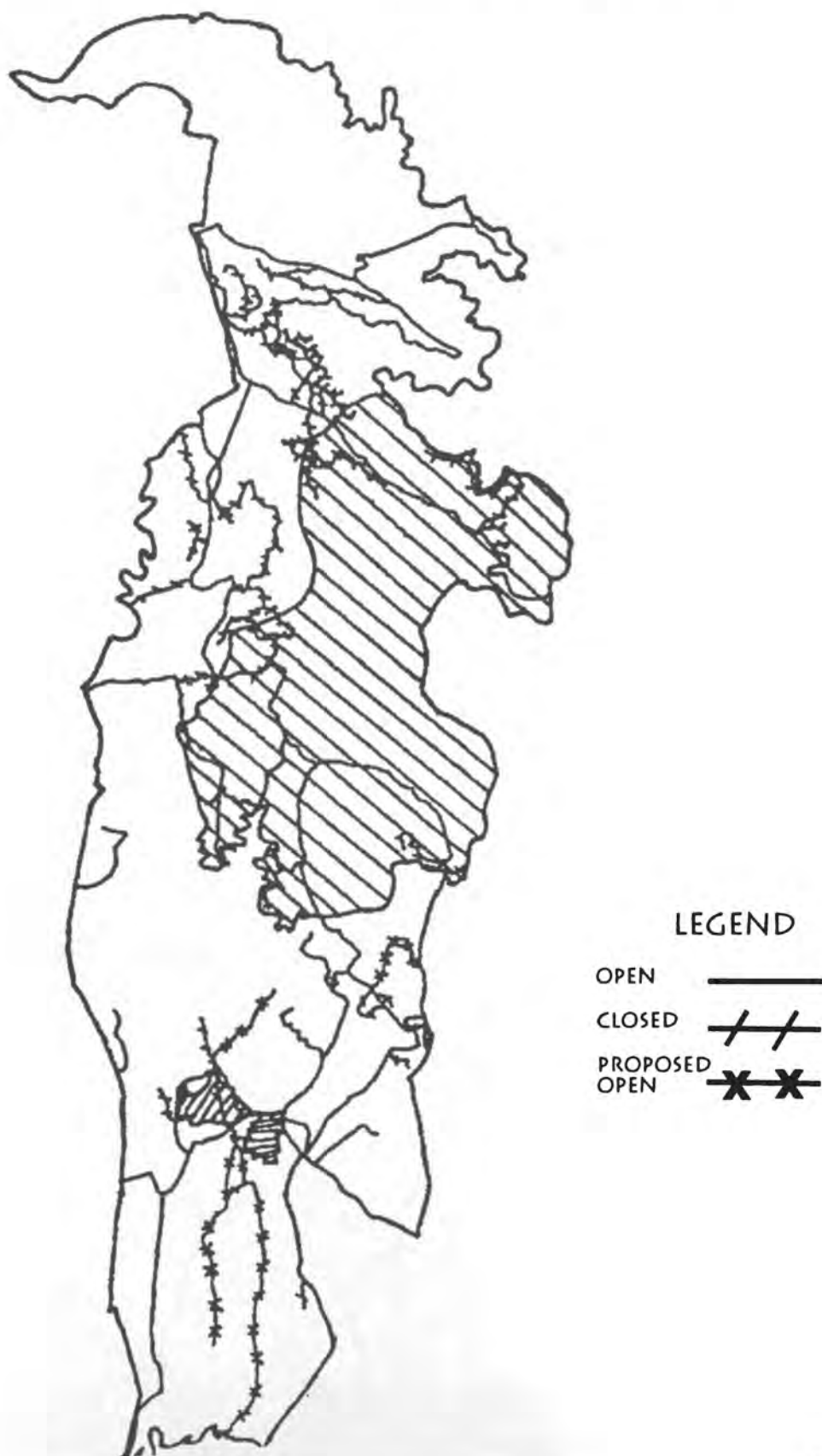
Pasture Information				Improvement Projects			
Name	Acres	Grazing Dates 5 to 7 Years	No. of Head	Name	Type	Location	Construction Method
Lake	4,064	1 - rested 2 - 1/1 to 1/31 2 - 2/1 to 4/15 3 - rested 4 - 1/1 to 1/31 4 - 2/1 to 4/15	264 132 264 132	None			
Bassett	3,171	1 - 11/1 to 2 - 2/28 2 - 7/1 to 10/31 3 - 3/1 to 6/30 4 - 11/1 to 5 - 2/28	16	None			
Intake	3,114	1 - 11/1 to 2 - 2/28 2 - 7/1 to 10/31 3 - 3/1 to 6/30 4 - 11/1 to 5 - 2/28	160	Poison Springs Pipeline	1" plastic pipe with troughs.	Begins T3N, R14E, Sec. 18, SW, SW NE; Ends Sec. 29, SE, SW, NE.	
Clay Tank	1,595	As needed for bulls		Clay Tank Fence	Conventional barb wire or electric fence	Begins T3N, R14E, Sec. 16, NW, SE, SW; Ends Sec. 15, SW, SE, SW.	Construct 1 mile of fence, utilizing natural barriers where possi- ble to FS and wildlife standards.
				Clay Tank Well	Drill and install well.	T3N, R14E, Sec. 16, SW, SW, SE.	Drill and case well. Install 1 mile pipe and 2 troughs.
Klondike	1,957	1 - 11/1 to 1 - 2/28 2 - 7/1 to 10/31 3 - 3/1 to 6/30 4 - 11/1 to 5 - 2/28	160	None			

Pasture Information				Improvement Projects			
Name	Acres	Grazing Dates 5 to 7 Years	No. of Head	Name	Type	Location	Construction Method
Summit	3,025	1 - 11/1 to 1 - 2/28 2 - 7/1 to 10/31 3 - 3/1 to 6/30 4 - 11/1 to 5 - 2/28	160	Summit Well Maintenance	Maintain existing well.	T3N, R14E, Sec. 33, NE, NE, NE.	
North Blevens	3,681	1 - 3/1 to 6/30 2 - 11/1 to 3 - 2/28 3 - 7/1 to 10/31 4 - 3/1 to 6/30	160	Blevens Pasture Fence	Conventional barb wire or electric fence	Begins T3N, R13E, Sec. 36, SE, NW, SW; Ends T3N, R14E, Sec. 33, NE, NW, NW.	Construct 3 miles of fence, utiliz- ing natural barriers where possi- ble, to FS and wildlife standards.
South Blevens	2,160	1 - 3/1 to 6/30 2 - 11/1 to 3 - 2/28 3 - 7/1 to 10/31 4 - 3/1 to 6/30	160	None			
Upper Blevens	1,006	1 - 3/1 to 6/30 2 - 11/1 to 3 - 2/28 3 - 7/1 to 10/31 4 - 3/1 to 6/30	160	None			

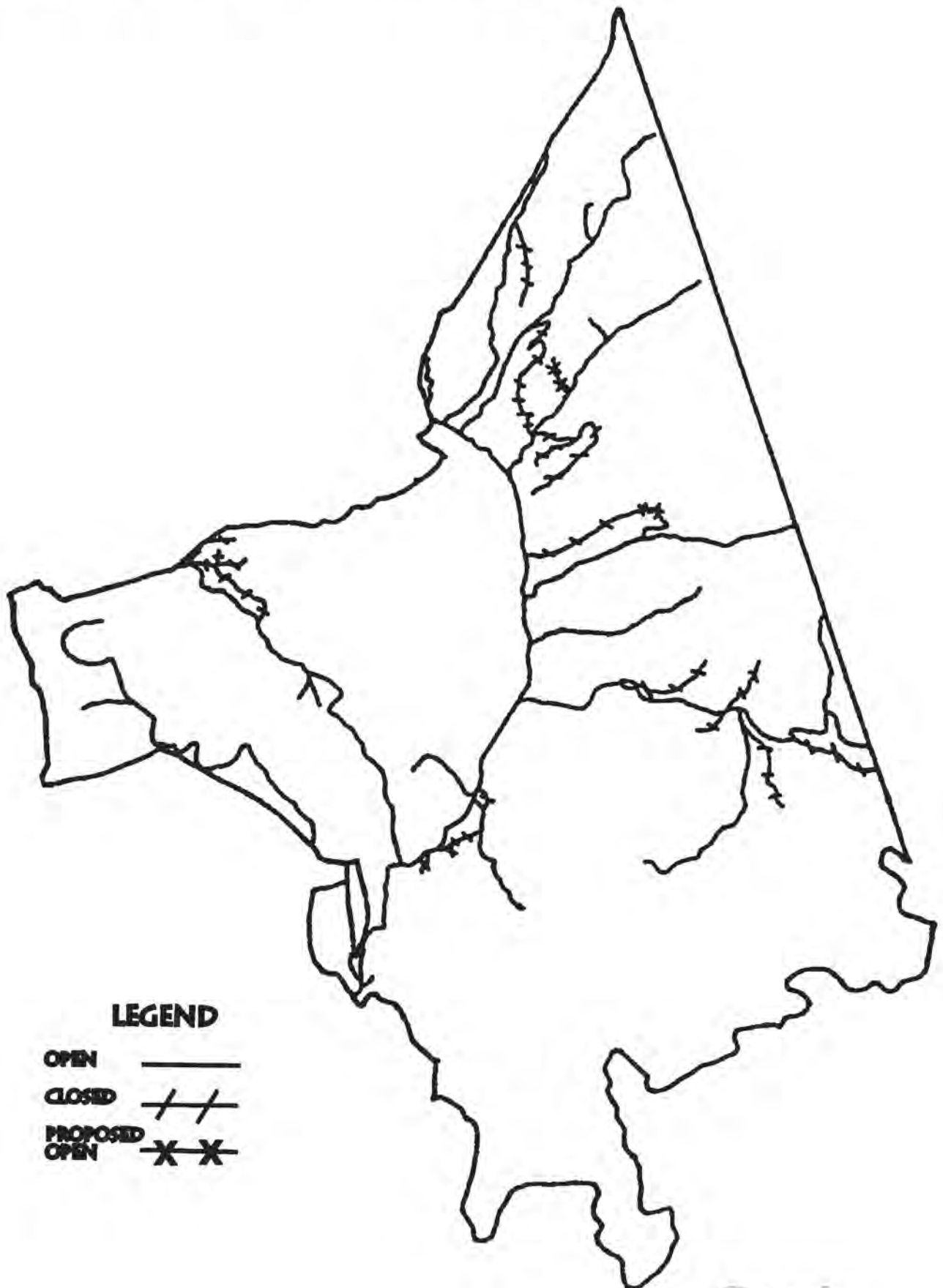
G-1 - Armer Mountain Resource Access/Travel Management Designations and Proposals



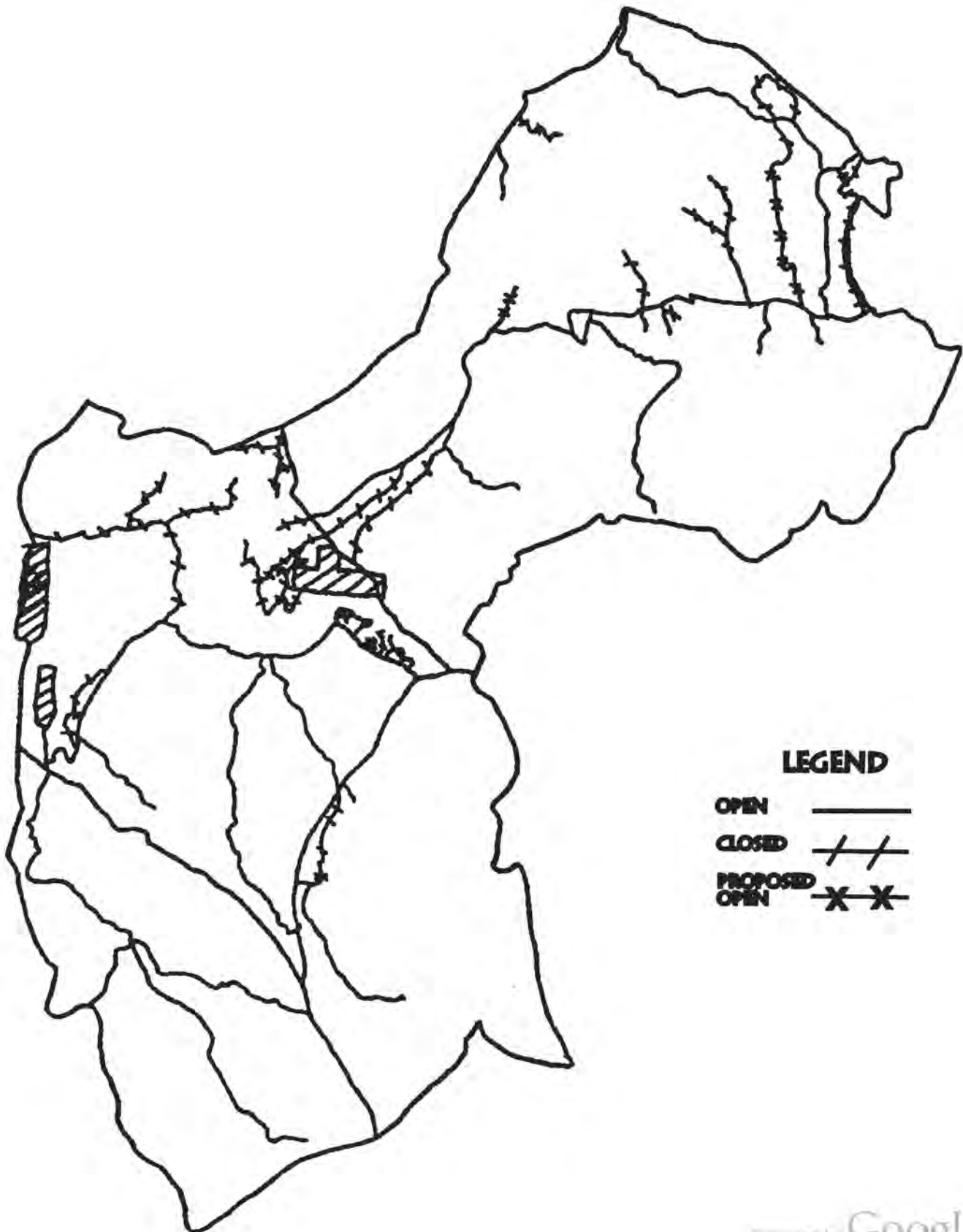
G-2 - A Cross Resource Access/Travel Management Designations and Proposals



G-3 - Dagger Resource Access/Travel Management Designations and Proposals



G-4 - Poison Springs Resource Access/Travel Management Designations and Proposals



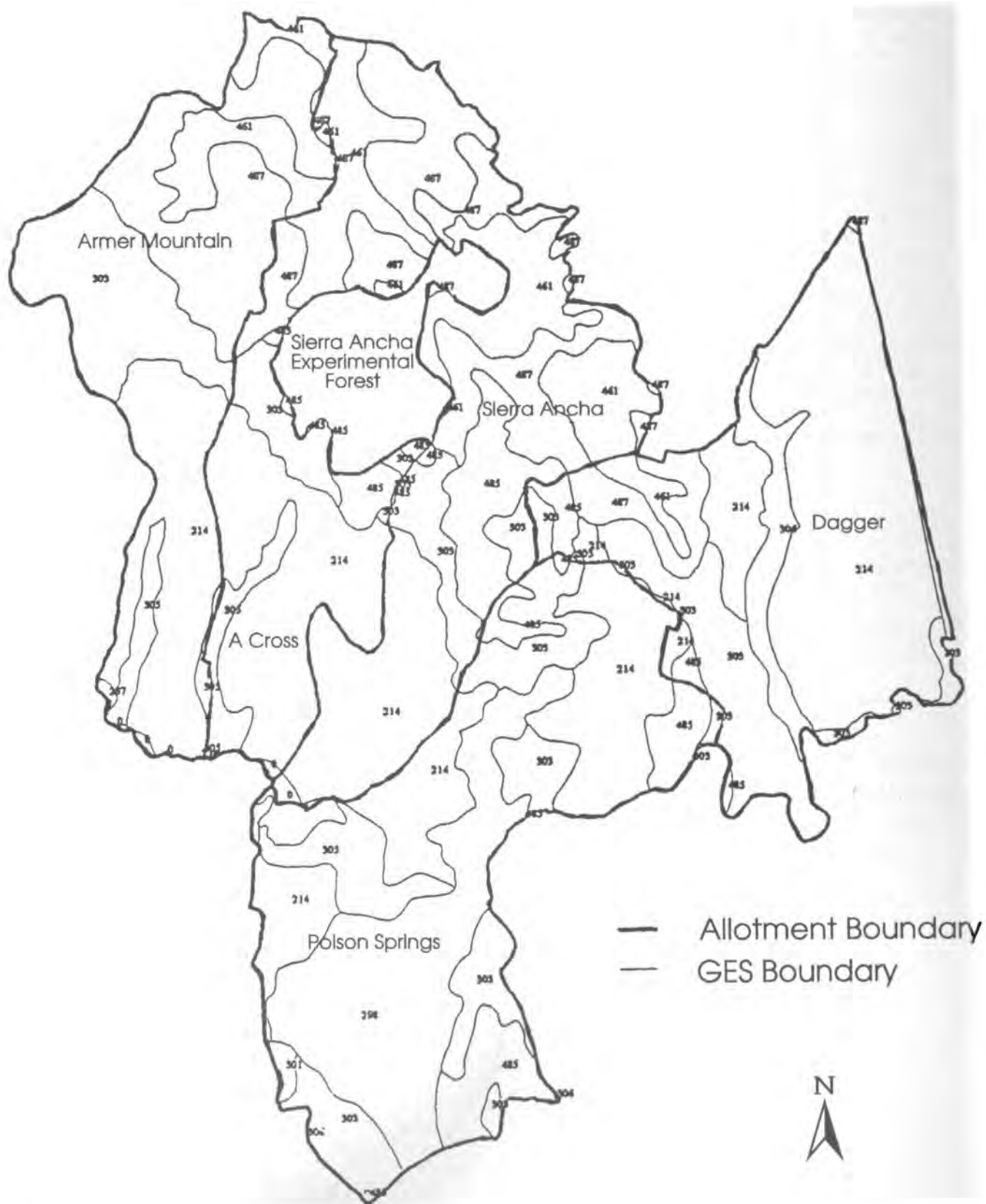
G-5 - Sierra Ancha Resource Access/Travel Management Designations and Proposals



H - Visual Quality Objectives from the Tonto National Forest Land Management Plan

Management Area	No.	Location	Objective	Allotments Included
6F	42	Apache Lake & Roosevelt Lake Recreation Areas	Retention	Armer Mtn., A Cross, Poison Springs, Sierra Ancha
6G	43	Salt River Canyon Wilderness	Preservation	Dagger, Poison Springs
6H	44	Salome Wilderness	Preservation	Armer Mtn.
6J	46	Remaining non-designated area of the Tonto Basin R.D.	Retention = 5% Par. Ret. = 45% Modif. = 23% Max. Mod. = 27%	Armer Mtn., A Cross, Dagger, Poison Springs, Sierra Ancha
5A	30	Sierra Ancha Wilderness	Preservation	Sierra Ancha
5C	32	Salome Wilderness	Preservation	Armer Mtn.
5D	33	Mogollon Rim-Sierra Ancha Area	Retention = 4% Par. Ret. = 47% Modif. = 40% Max. Mod. = 9%	Armer Mountain, Sierra Ancha
5E	34	Sierra Ancha Experimental Forest	Retention = 5% Par. Ret. = 20% Modif. = 1%	A Cross, Sierra Ancha
5F	35	Upper Forks Park Creek Resource Natural Area	Preservation	Sierra Ancha

I - General Ecosystem Survey - Map of Project Area with GES Units



J - Stocking Rates Per Alternative

The following table displays the number of acres per Animal Unit Month (AUM) which would be allowed to graze under the proposed management scheme for that alternative. The "No. of Acres Available" column is the total number of acres on the allotment that would be available for grazing. The "No. of Acres" column is the "No. of Acres Available" column multiplied by the percent distribution which would be realized from the proposed management scheme. The "Acres/AUM" column equals the "No. of Acres" column divided by the "No. of AUM's" column.

Allotment	Alternative No.	No. of Acres Available	No. of AUM's	Percent Distribution	No. of Acres	Acres/AUM
Armer Mountain	1	31,702	2,509	30-40	12,680	5.05
	2	31,702	0	0	0	0
	3	31,702	2,509	70-80	25,362	10.11
	4	31,702	1,700	50-60	19,021	11.19
	5	31,702	4,000	70-80	25,362	6.34
A Cross	1	14,720	2,280	50-60	8,832	3.87
	2	14,720	0	0	0	0
	3	14,720	2,280	70-80	11,776	5.16
	4	14,720	1,704	50-60	8,832	5.18
	5	35,894	3,480	60-70	25,126	7.22
Dagger	1	33,933	3,860	70-80	27,146	7.03
	2	33,933	0	0	0	0
	3	33,933	3,860	75-85	28,843	7.47
	4	33,933	3,296	65-75	25,450	7.72
	5	33,933	5,060	80-90	30,540	6.04
Poison Springs/ Sierra Ancha	1	65,628	84,471	23-30	19,688	2.32
	2	65,628	0	0	0	0
	3	65,628	7,861	70-80	52,502	6.68
	4	65,628	7,261	40-50	32,814	4.52
	5	65,628	10,200	80-90	59,065	5.79

K - Recommended Initial Stocking Rates

The following table displays recommendations for initial stocking rates based from experiments on the Santa Rita Experimental Range near Tucson, Arizona (Reynolds, 1959).

Estimated Yearlong Stocking Rates by Condition Class - Rates are given in Acres per AUM

Elevation	Very Poor	Poor - Fair	Good - Excellent
High Elevations	more than 3.33	2.5 - 3.33	2 - 2.5
Mid Elevations	more than 5.0	3.33 - 5	2.5 - 3.33
Low Elevations	more than 8.33	6.67 - 8.33	5 - 6.67

L - Tonto Land Management Plan Emphasis Areas with Standards and Guidelines

Management Area Descriptions

Below is a description for each of the Management Areas, as identified in the Tonto Land Management Plan (LMP), which are found in the ERLWAA. Included in the descriptions are the management emphasis for the area and the associated standards and guidelines. These descriptions include only information that is relevant to the proposed action. For full descriptions, please see the LMP.

Management Area 5A

Management Emphasis

The Sierra Ancha Wilderness is located in the southern portion of the Pleasant Valley Ranger District. Management emphasis is to manage for wilderness values while providing livestock grazing and recreation opportunities that are compatible with maintaining wilderness values and protecting resources.

Wildfire will be managed consistent with resource objectives and will be suppressed in accordance with suppression guidelines. Suppression of fires, or portions of fires, will be accomplished where they adversely affect forest resources, endanger public safety, or have a potential to damage capital investments. This will be accomplished with a minimum of motorized equipment in wilderness and minimal ground disturbance where possible in any suppression activity.

Standards and Guidelines

- Manage for VQO of preservation.
- Locate and analyze Peregrine Falcon habitat. Document and correct disturbances to birds and their habitat.
- Manage suitable rangelands at Level B to maintain permitted use within forage capacity. Rangeland in less than satisfactory condition will be treated with improved grazing management.
- Minimal range improvements (i.e. boundary and essential interior division fences) necessary for Level B management and protection of forage and soil resources

commensurate with wilderness values. Maintain utilization at acceptable levels within key forage producing and wilderness use areas.

Management Area 5C

Management Emphasis

This Management Area is that portion of the Salome Wilderness located on the Pleasant Valley Ranger District. Manage for wilderness values while providing livestock grazing and recreation opportunities that are compatible with maintaining wilderness values and protecting resources.

Wildfire will be managed consistent with resource objectives and will be suppressed in accordance with suppression guidelines. Suppression of fires, or portions of fires, will be accomplished where they adversely affect forest resources, endanger public safety, or have a potential to damage capital investments. This will be accomplished with a minimum of motorized equipment in wilderness and minimal ground disturbance where possible in any suppression activity.

Standards and Guidelines

- Manage for VQO of preservation.
- Locate and analyze Peregrine Falcon habitat. Document and correct disturbances to birds and their habitat.
- Manage suitable rangelands at Level B to maintain permitted use within forage capacity. Rangeland in less than satisfactory condition will be treated with improved grazing management.
- Minimal range improvements (i.e. boundary and essential interior division fences) necessary for Level B management and protection of forage and soil resources commensurate with wilderness values. Maintain utilization at acceptable levels within key forage producing and wilderness use areas.

Management Area 5D

Management Emphasis

Manage for a variety of renewable resource outputs with primary emphasis on intensive, sustained yield timber management, timber resource protection, creation of wildlife habitat diversity, increased populations of emphasis harvest species, and recreation opportunity. Timber harvesting methods and timing will include improvement of wildlife habitat quality and watershed condition, and will consider impacts on intensive range and recreation management. Mining activities are authorized in conformance with existing laws and regulations.

Wildfires will be managed consistent with resource objectives. Fires occurring under critical burning conditions in this area will do unacceptable damage and will be controlled at the smallest size possible. Fires occurring under more favorable conditions where damage is not unacceptable will be suppressed at the least cost within predetermined perimeters. Suppression strategy will utilize the method which requires the least cost plus net value change. Total burned acres allowable is 20-30% of the type each decade.

Prescribed fire will be used as a tool to achieve desired resource benefits.

Standards and Guidelines

- Manage for VQO's ranging from retention to maximum modification.
- Locate and analyze Peregrine Falcon habitat. Document and correct disturbances to birds and their habitat.
- Wildlife habitat improvement needs will be integrated into range forage improvement projects identified in approved AMP. Habitat improvement opportunities will also be integrated with timber management activities.
- Manage suitable rangelands at Level D. Rangeland in less than satisfactory condition will be treated with improved grazing management along with the installation of structural and non-structural improvements.

- Allotment Management Plans and rotation schedules will be formulated and implemented to avoid elk displacement from identified calving areas.
- Develop structural improvements as prescribed in AMP's to maintain utilization at appropriate levels in key areas and appropriate interior fences.
- Minimal range improvements developed (i.e. boundary fences).
- Use prescribed fire to treat vegetation for water yield, forage, and wildlife habitat improvement.

Management Area 5E

Management Emphasis

The Sierra Ancha Experimental Forest is established and managed for purposes of research on vegetative treatments for increasing water yield. The Experimental Forest is operated by the Rocky Mountain Forest and Range Experiment Station, Tempe, Arizona, often cooperatively with Arizona State University and the University of Arizona.

Wildfires will be managed consistent with resource objectives and will be suppressed in accordance with suppression guidelines. The resource objective will be to improve wildlife forage production and wildlife habitat diversity, as well as to achieve the desired resource condition, a mosaic within the total type, which provides for a mix of successional stages. Fires, or portions of fires, will be suppressed when they adversely affect forest resources, endanger public safety, or have a potential to damage significant capital or research investments. Suppression strategy should utilize the method which requires the least cost.

Standard and Guidelines

- Manage for VQOs of retention to maximum modification.
- Identify and delineate the breeding home range of all Peregrine Falcon nesting territories. Document and correct disturbances to birds and their habitat.

- Manage suitable rangelands at Level A. Little change is expected in range condition in the first decade.
- Minimal range improvements developed (i.e. boundary fences).

Management Area 6F

Management Emphasis

The primary emphasis for this area is water-oriented developed and dispersed recreation. Capacity controls will be established where needed to protect soil and water resources and public health and safety. Recreation sites in this management area will emphasize a mix of day use and overnight use. The visual resource is an important consideration in the management of this area.

Wildfires will be managed consistent with resource objectives. Capital investments within these areas will be protected from fire. Action taken to accomplish this will vary from appropriate initial attack on fires that pose an immediate threat to burning out from the facility in advance of an approaching large fire. Wildfires, or portions of fires, that adversely affect forest resources or endanger public safety will be suppressed.

Standards and Guidelines

- Manage for VGO of retention.
- Manage suitable rangelands at Level C.
- Minimal range improvements (i.e. boundary and essential interior division fences) necessary for Level C management and protection of the forage and soil resources. Maintain utilization at acceptable levels within key forage producing areas.
- Use prescribed fire to treat heavy accumulations of natural fuels in dense mesquite stands to reduce wildfire hazards to the resource, capital investments, and the public.
- Continue periodic inspections and maintenance of existing wildlife exclosures and restoration projects.

- Manage the desert scrub type to emphasize production of javelina, Gambel's quail, cottontail, mule deer, and whitetail deer habitat.
- Locate and analyze Peregrine Falcon habitat. Document and correct disturbances to birds and their habitat.
- Integrate habitat needs through prescribed fires within fire suppression objectives.

Management Area 6G

Management Emphasis

The Salt River Canyon Wilderness is for the preservation of naturally occurring flora and fauna, esthetics and ecological processes while providing a very high quality white-water river-running experience. Special consideration will be given to nesting Bald Eagle home range requirements. Watershed protection is also an important emphasis, and the stream shall be maintained in a free-flowing condition with water quality maintained or improved. Other activities that are authorized by the Wilderness Act will be conducted so as to minimize their impact on wilderness character.

Wildfire will be managed consistent with resource objectives and will be suppressed in accordance with suppression guidelines. Suppression of fires, or portions of fires, will be accomplished where they adversely affect forest resources, endanger public safety, or have a potential to damage capital investments. This will be accomplished with a minimum of motorized equipment in wilderness and minimal ground disturbance where possible in any suppression activity.

Standards and Guidelines

- Manage for VGO of preservation.
- Locate and analyze Peregrine Falcon habitat. Document and correct disturbances to birds and their habitat.
- Manage suitable rangelands at Level B to maintain permitted use within forage capacity. Rangeland in less than satisfactory condition will be treated with improved grazing management.

- Minimal range improvements (i.e. boundary and essential interior division fences) necessary for Level B management and protection of forage and soil resources commensurate with wilderness values. Maintain utilization at acceptable levels within key forage producing and wilderness use areas.

Management Area 6J

Management Emphasis

Manage for a variety of renewable natural resources with primary emphasis on wildlife habitat improvement, livestock forage production, and dispersed recreation. Watersheds will be managed so as to improve them to a satisfactory or better condition. Improve and manage the included riparian areas (as defined by FSM 2526) to benefit riparian dependent resources.

Wildfire will be managed consistent with resource objectives and will be suppressed in accordance with suppression guidelines. The resource objective will be to improve livestock forage production and wildlife habitat diversity, as well as to achieve the desired resource condition, a mosaic within the total type, which provides for a mix of successional stages. Wildfires, or portions of fires, will be suppressed when they adversely affect forest resources, endanger public safety, or have a potential to damage significant capital investments. Suppression strategy should utilize the method which requires the least cost plus net value change. Total burned acres allowable is 30-50% of the type each decade.

Prescribed fire will be used as a tool to meet or achieve desired resource objectives.

Standards and Guidelines

- Manage for Visual Quality Objectives (VQO) ranging from retention to maximum modification.
- Use prescribed fire to treat vegetation for water yield, forage, and wildlife habitat improvement.
- Manage suitable rangelands at Level D. Rangeland in less than satisfactory condition will be treated with improved grazing management along with the installation of structural and non-structural improvements.
- Develop structural improvement in association with Allotment Management Plans (AMP) to maintain utilization levels appropriate with management intensity and AMP objectives.
- Continue periodic inspections and maintenance of existing wildlife exclosures and restoration projects.
- Manage the desert scrub type to emphasize production of javelina, Gambel's quail, cottontail, mule deer, and whitetail deer habitat.
- Locate and analyze Peregrine Falcon habitat. Document and correct disturbances to birds and their habitat.
- Integrate habitat needs through prescribed fires within fire suppression objectives.

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