RECORDS AND STATISTICS

DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

NAVAJO PROJECT

RANGE MANAGEMENT PLAN - GANADO DEMONSTRATION AREA

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DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALBUQUERQUE, NEW MEXICO
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RANGE MANAGEMENT PLAN

CANADO DEMONSTRATION AREA

Foreword

The Canado area embracing a total of 7,800 acres lies adjacent to and directly north of Canado, Arizona, on the Southern Division of the Navajo Reservation. Agreement providing for setting the area aside for demonstration purposes was signed on April 3, 1934. By June 18, 1934 the area was completely fenced, and all livestock were excluded except those kept up in corrals, cultivated fields and small pastures. Copy of agreement is appended to this plan.

Livestock have been excluded until the present time for the purpose of giving the range a much-needed rest, and to allow plantings a chance to become well established.

It is planned to re-stock the area thismonth.

Range Management Objectives:

1. To restore and maintain a vegetative cover of high forage value that will prevent accelerated erosion, conserve the moisture supply and add to the fertility of the soil.

2. To build up a permanent, stable and economic livestock industry by utilizing the forage crop to the fullest extent possible consistent with sustained forage production, and the protection of related resources.

3. To demonstrate to the Indians how the above may be attained.

Description of the Area:

1. Topography: Generally speaking, the area is a part of the Pueblo Colorado drainage--within the Colorado River System. Actually, only 25% of the area drains into the Pueblo Colorado (Canado Wash), 35% drains into a natural depression in the northern part of the area, and the remaining 40% drains into Canado Reservoir.

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Topography can be best expressed by saying that from west to east across the area there are mesas, breaks, valleys, and rolling hills. The breaks, while not steep on the north end, become increasingly steep as they extend southward until in the southern part of the area an actual rim is evident.

The approximate range in elevation is from 6,700 to 7,100 feet.

2. Water: There are three permanent waters on the area. Canado Lake, Canado Wash, and a spring on the west side. The latter should be further developed so that more sheep can water at one time, also trails should be constructed into the canyon to make the water more accessible. Though there is another spring in the central part of the area, it is not strong enough to furnish stock water. Temporary water is available at times in an old lake bed in the northern part of the area and behind two dams built for erosion control purposes. See map.

3. Soils: Derived from two main geological formations, viz: tertiary sandstones and the shinles or bad lands formation. One finds both residual and alluvial soils, the latter, of course, appear on the lower slopes and in the valleys. In texture, soils range from sandy to clay loam, depending on derivation. In the breaks the residual soil has largely eroded away in recent times and the parent material is exposed in many places. Accelerated erosion is in an advanced stage on all parts of the area except on Canado Mesa.

4. Vegetation: Pinon, juniper, big sage, blue grama, blue stem, drop seed, galleta, yellowbrush, and chamise are among the chief species. Blue grama, blue stem, galleta, and big sage are the principal forage species.

Of the usable area, 40% is woodland, yet this type contributes only 20% to the carrying capacity. 2,200 acres or 30% of the area is classed as 5(1)—browse range which was in all probability originally grass. In this type, yellow brush is the most conspicuous plant and is responsible for the type designation. In the course of time, under proper management, the type should again attain a grass aspect. On Canado Mesa, big sage dominates the landscape, but blue grama is chief in point of forage composition.

5. Poisonous Plants: Pingue is abundant in the grass types in the north-eastern part of the area and is distributed in a lesser amount throughout the browse and woodland types. Whorled milkweed is found along ditches and in low moist places. Loco weed is more or less distributed throughout the area, but since S. C. S. occupancy has not appeared in abundance.

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6. Rodents: Practically all of the open country was heavily infested with prairie dogs. Control measures were taken in the forepart of this year (1935). The dog population should be observed from time to time and as they move in from the outside and increase, appropriate action should be taken to hold numbers down.

7. Predatory Animals: Coyotes are quite numerous in the vicinity. The cooperation of the Project Biologist should be enlisted so that necessary control can be effected. Coyotes will be a menace to lambs in the woodland areas when sheep are properly scattered out to graze; also, there is a possibility of loss from bed grounds.

8. General Condition of Area: Range condition is far from satisfactory; erosion has resulted in deep gullying through the alluvial slopes and in removal of soil, by sheet and gully run-off, from breaks and rolling hills sections of the area; the vegetative stand has undergone a change because of past abuse--abundance of yellow brush, pinque, rabbit brush, etc; sage has been killed out in many places; density of palatable species is generally below what it should be in the environment; vigor of forage species is low, which results in decreased volume growth; removal, by erosion of organic matter has resulted in making much of the soil impervious which in turn reflects on character, density, and growth of vegetation. Only the top of the mesa is in fair condition with respect to vegetative cover and soil stability. The woodland stand is in a deplorable state; all trees are hedged up as far as a goat can reach; there is no reproduction; uncontrolled cutting has left its mark. In the lower part of the area, considerable severe erosion is the result of improper farming methods.

Chief Value of the Land

Resource values vie with each other on this area. The watershed is of great importance because of drainage into Cornado Lake, the Pueblo Colorado, and onto local farms. Between two and three hundred acres are chiefly valuable for agriculture. Grazing values are high up in the scale because of the general dependency of the Navajo people on the livestock industry. The woodland has its value because of the need for fuel, posts, hogan material, etc. Management of the range should be such as to adequately protect all of these resources.

Plan of Action

1. General Policy:

(a) Stock belonging to Indians of the vicinity will

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be grazed on the area.

(b) A cooperative agreement will be entered into with each individual who contributes sheep to the area flock. See sample agreement in appendix.

(c) S. C. S. will hire herder, team, wagon, etc.

(d) S. C. S. will have complete control over stock movements, lambing, shearing, bucking, etc.

2. Class of Stock to be Grazed:

The range forage is suitable for either sheep or cattle. Sheep will be grazed because of the desirability of demonstrating proper methods of handling this class of stock. (Sheep raising is the dominant industry of the locality). No goats will be put on the area because (a) the range is not suitable for goats, (b) it is desirable to permit reproduction of woodland species, and (c) because the presence of goats in a band of sheep makes proper herding difficult.

At a later date it may be desirable to put in a few head of cattle in order to study the effect on range of dual use. In this event, room will need to be made for cattle by reducing the number of sheep.

Two horses will be grazed on the area. These will be used by the herder.

Cattle, horses, sheep and goats were grazed on the area before it was fenced. Absolutely no plan of regulated grazing was in use.

3. Number of Stock to be Grazed:

An intensive grazing survey was made of the area in 1934, and on this basis the carrying capacity was estimated to be 485 sheep year long. However, it is felt that the density estimate was higher than the standard used elsewhere on the Reservation. Therefore, for the present, a margin of safety will be applied which should take care of any doubt. A check survey should be made this year if possible and not later than June 1936 in any circumstance.

Even after a check survey is made the resulting C. C. estimate should not be accepted as final. It is only through trial that a definite figure can be arrived at. Numbers should be adjusted from time to time, so that the range will be properly stocked for the average year. We are arbitrarily using a forage acre requirement of 3 per sheep year long on the Reservation. This is very nearly correct but one object of making intensive surveys of demonstration areas and of maintaining actual use records is to determine definitely what the forage acre requirement should be for the locality. By sheep year long we mean a ewe of breeding age with her lamb, until it

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is sold in the fall. A band of 400 ewes may have only 250 lambs but in figuring against carrying capacity we consider that the range is stocked at 400 head.

See accompanying tabulation for recommended stocking for 1935.

4. Season of Range Use:

The Canada Area will be used as a yearlong range, even though it is not particularly adapted to such use. It is desirable to graze the same sheep on this controlled range for the entire year in order that the application of good range management principles will reflect on condition of sheep, size of lamb crop, weight of lambs and weight of fleeces. This is part of our demonstration.

Seasonal use within the area will be difficult because of the small size of the unit--seven sections of usable land--and because of the nature and location of stock watering places. The Range Foreman will have to exercise his judgment in directing seasonal use. Factors to take into account are: (1) Weather - when it is hot and dry, sheep will have to be herded not too far from shade and water; when weather is cool and when there is wet snow, camp can be moved to the more remote sections of the area; when snow is deep it will be necessary to put sheep where snow goes off quickly or in places where forage, such as big sage, stands at a fair height. (2) Availability of water - when there is temporary water in tanks and pot-holes full advantage should be taken of its presence in order to relieve areas around permanent water. (3) Necessity of reserving range for lambing - a sufficient area should be set aside near water for the lambing period.

It would be useless to subdivide the area into definite units and to designate specific seasons for the use of each. On an area as small as this there is too much fluctuation, one year from another, in weather conditions which control not only the water supply in various sections of the area but the availability of forage. Summer rains are often "spotted," and it is not the intention of this plan to discourage the practice of taking sheep where the feed is, unless there is apparent, at the time, some good reason for holding off.

On this area, seasonal use ties in closely with distribution of stock. It is impossible to consider one and not the other.

5. Distribution of Stock over the Range:

The term distribution is more apt when applied to the management of cattle on the range. When applied to management of sheep

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it means: the herding, watering, salting, and bedding of sheep in such places and at such times and in a manner that will result in the even utilization of forage, and the minimum of trampling, throughout the area.

The location, frequency, adequacy and permanency of water are the largest controlling factors in securing proper distribution. This well-known fact is stated here in order to emphasize the problem that exists on the Canado area. The lake may be likened to a hub, the sheep trails radiating out from the lake are the spokes. Naturally as trails converge, forage becomes shorter. No part of the area is in excess of four miles from permanent water, most of the area is much closer. This does not seem far in the Navajo country but it is too far if we are to put on a proper demonstration in this area.

A "charco" should be put in the dry lake bed in the northern part of the area by the S. C. S. or E. C. W. as quickly as possible. The spring in the rough canyon on the west side of the area should be also further developed.

There are two dams (see map) which were built for control of flood waters which will serve as a temporary stock water supply.

The following rules should be followed as closely as existing conditions permit:

(a) Never use range adjacent to permanent water as long as there is temporary water available elsewhere on the area. Range near permanent water should be reserved for hot, dry periods and for lambing.

(b) Areas remote from water should be used during the winter or during wet periods when it is possible for sheep to go several days without water.

(c) Practice bedding out. Camp should be moved every three to five days. Three-night bedding should be the rule generally.

(d) Practice "open" herding; herder in the lead of his band.

(e) Salt sheep when necessary. Avoid making special trips to "salt bush."

(f) As a general rule, sheep should be grazed, not driven, to and from water. Avoid "shading up" at water.

(g) Allow sheep to graze as early in the morning as weather and other natural conditions permit.

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Avoid taking sheep to camp at noon. Allow them to graze in the evening until they are naturally inclined to bed down.

The Range Foreman will spend sufficient time with herder in the beginning to train him in proper methods of handling sheep, and will inspect the area frequently enough to insure compliance with requirements.

6. Lambing:

Lambing will begin on or about the first of May. The proper place for lambing is in the vicinity of the old lake bed, if there is water there at that time. The blue stem flats will afford green feed and the fringe of timber will afford some protection from the weather. In the absence of water at the above location the area in the vicinity of Canada Lake should be used. There is a chance that forage will be short at this latter location. If so, it is possible that water should be trucked to a place where there is feed.

Lambing procedure, time for castration, and docking, etc. will be in accordance with the best judgment of the Range Foreman.

7. Management of Bucks:

Bucks will be segregated from the ewes at all times except during the breeding season. They will be put with the ewes on or about the 5th of December.

The Branch of Agronomy will be asked to cooperate by raising corn, oats, or similar concentrates on the area in order that bucks can be conditioned for breeding.

One buck should be provided for approximately every 35 ewes. If four hundred sheep are grazed on the area there should be 12 bucks.

8. Supplemental Feeding:

Attention is called to paragraph 8 of agreement (attached.) Since sheep are to be completely under S. C. S. control it is proper that we assume responsibility for supplemental feeding when necessary, on account of deep snow, extreme drought, etc. In order to avoid, if

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possible, the high cost of purchase and transportation of concentrates and baled hay the Branch of Agronomy should, in line with the general demonstration, raise and store sufficient feed to meet any situation. The Range Foreman should determine the approximate amount of feed that should be raised and stored. The Chief of Range Management should enlist the cooperation of the Agronomists.

9. Precaution against Poisonous Plants:

As stated before, there is a fair abundance of pingue and whorled milkweed on the area. So long as sheep have sufficient forage they will not ordinarily take poisonous or injurious plants. However, losses do occur occasionally with the best of management. Because of the fact that sheep will be intrusted to our care, we should take every precaution to prevent losses.

Sheep should never be turned out of a corral or off a bed ground on to a poisonous plant area.

Many poisonous weeds, while young and succulent, can be grazed without ill effect but as they mature they become more toxic. Milkweed and other plants of a similar nature should be avoided during the period when they are most dangerous.

Pingue is seldom touched so long as forage is green. Its danger period is during the winter when grass and weeds are dry. Therefore, sheep should not be grazed in the open country on the north-east side of the area (where pingue is abundant) during the winter.

Sheep sometimes have depraved appetities because of internal parasites, and therefore eat plants, including poisonous ones, that would ordinarily be unpalatable to them. We should eliminate this factor by the use of worm expellents. The Range Foreman will submit requisition for necessary equipment and medicine as soon as sheep are put on the area.

10. Field Days:

The Range Foreman assisted by the Project Manager will arrange to have a field day once or twice a year when neighboring Indians can observe what is being done on the area. At these meetings the important phases of range management and animal husbandry should be explained in detail.

11. Inspection and Reports:

The Range Foreman should visit the areas at 15 day intervals if possible. He should never be away for more than a month.

A Range Examiner should make inspections every three months--

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Oftener if possible. At these times, he will make permanent notes on degree of utilization (general statement). In March of each year he will make detailed examination, by units, of the area and report to the Chief of Range Management in writing: (1) Degree of utilization. (2) Condition of sheep. (3) General condition of range. (4) Recommended changes in management plan if necessary. On the basis of the report, supplemented by his own knowledge of conditions, the Chief of Range Management will take such action as may be necessary, such as requiring the number of sheep to be decreased or increased, causing additional water to be developed, etc.

The Chief of Range Management should visit the area twice a year-oftener if possible. He should arrange to make an inspection at the close of the grazing year-preferably March. He should also observe conditions at the end of the growing season-September.

The Chief of Range Management or his assistant will on July 1 of each year make a detailed written report on progress, conclusions, etc. and will, if necessary, revise this plan.

12. Actual Use Records:

An actual use record will be maintained by the Range Foreman. See appendix for form to be used. It will be satisfactory to keep record by five-day periods. A complete count and classification should be made at such times as dipping, shearing, docking, scoring, etc. and at such other times as may be necessary to gain an accurate count. During the intervals between counts, the record can be kept up to date by adding or substracting known gains or losses. The herder should keep his own record of these changes, and the Range Foreman will bring the tabulated record up to date twice a month.

On the last day of March, each year, the total stocking for the past 12 months will be determined in terms of sheep days, sheep months, and sheep year long. These data should be included in the annual report. Use records should be filed in the management plan folder.

13. General:

(a) It is not necessary to burden this plan with the many details of sheep husbandry. The actual procedure for dipping, shearing, lambing, etc. will be determined by the Range Foreman. Naturally, the best methods should be applied.

(b) Scales should be secured for weighing lambs and fleeces. The setting up of a large platform scale would not be justified. It will suffice to have a portable scale that can be

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used on all areas. All individual lambs need not be weighed; however, it is desirable to get a good cross-section of weights.

(c) A map for field use should be made by a Range Examiner that will supplement the map which now forms a part of this plan. It should show: topography, indicating hills, breaks and barriers by hachures, drainage; all fences; fields, houses and hogans; corrals; lakes, springs, tanks and streams; roads and trails. Forage type lines, forage symbols, etc., should be omitted. Scale, 4 inches = 1 mile.

(d) The annual report should contain all pertinent facts such as annual precipitation and departure from normal, amount of snow, amount of spring moisture, date on which summer rains started, etc., number of lambs dropped, number raised, all death losses and cause of death, amount of supplemental feedin amount of salt used, itemized statement of all costs of operation, prices received by Indians for lambs and wool from area, type and quality of sheep grazed on area, number of of cooperators, results of field days, rodent and predator control results, added improvements (water, fencing, etc.) relative proficiency of herders, etc., etc., etc.

(e) Copy of this plan should be carried by the Range Foreman at all times. The original plan will be kept in the Navajo Project files. Additional copies will be furnished (1) Ganado Area files, (2) Chief of Range Management and (3) the Range Examiner who will be responsible for making utilization studies, etc. (Mr. Turner at the present time.)

(Signed) Robt. W. Boyle
Chief of Range Management.

Approved:

s/g/d W. G. MacGinnies

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ACREAGE, CARRYING CAPACITY AND RECOMMENDED STOCKING

Class of Stock - Sheep

F. A. Requirement - 3

Management Unit	Total Surface Acres	Waste Barren and Water	Culti-vated S.A.	Usable Range S.A.	Usable Range F.A.	Usable Range C.C. S.Y.L.	Margin of Safety	Net C.C. S.Y.L.	C.C. Sheep No.	Desired Use 1935 No.	Desired Use 1935 Class	Desired Use 1935 Season
Total Area	7,800	501	262	7,037	1,455	485	*73	412	4,944	400	2 Horses Sheep	Yrlong. Yrlong.

*This margin of safety represents 15% of the estimated carrying capacity as determined by the 1934 grazing survey which is thought to be 15% too high. As soon as a check survey is made, this table should be revised.

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