SRPDOC046

5-358

INSPECTION REPORT
(Facing Sheet)

Report of F E BRANDON

Agency or school WESTERN NAVAJO

Date of report 10-25-22

7 SECTIONS
Section 5 Subject WATER

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Inspection's call-up.

Action should be taken or memorandum prepared on each of the following matters referred to in the report:

DEC 5 1922

6—1951

Education - Industries: Irrigation

The water situation and its importance to the Navajo Indians is discussed. Irrigation is not considered practicable and the Supervisor recommends that only such funds be expended as are necessary to maintaining the present system. On the other hand, he strongly recommends and urges the development of water and springs for the range, and sets forth his ideas on the subject, which should be carefully considered and receive necessary action.

Inspection.

DEC 12 1922

All Action including filing of this report must be sent thru
INSPECTION

INSPECTION

SRO000474

INDEXED

Industrial Survey
Western Navajo
By F. E. Brandon,
10/25/22

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WATER

Generally.
1- It is not necessary to repeat the well known arid conditions in this section. The annual precipitation of 5 1/3 inches is taken up by the sandy soil and the surplus is carried to the Colorado River by two principal washes or creeks, namely, Moenkopi and Navajo creeks or washes.

Irrigation.
2- The largest area of agricultural land on the reservation is in the Moenkopia Canyon near the agency. There is approximately 1,000 acres of such land, the east part being farmed by the Hopi Indians, the central 260 acres is the school and agency farm, and the west part is farmed by the Navajo Indians. This land is under irrigation and sufficient water is available so long as the present method of one flooding is continued by the Indians, but if regular irrigation farming methods and diversified crops was attempted, there would not be sufficient water.

3- Gregory says of this water course:

> "Topographically it is sepearable into 3 Sections of subsequal length. The upper third (25 miles) is intrenched in the Cretaceous strata of Black Mesa, forming a narrow, steep walled canyon, joined by tributaries that occupy the valleys of similar shape. The terraces and flats on the canyon floor are a few acres in extent and are discontinuous. The stream is fed during the dry season by a few springs and seeps distributed along its course, which supply an uninterrupted flow of 10 to 30 gallons a minute. At Blue Canyon the intermittent stream emerges from the dark gray rocks of the upper canyon and enters the second part of its course, where it is confined between low walls of brilliantly colored sandstone of Jurassic age. During this stretch of 30 miles, between Blue Canyon and the cliffs west of Tuba, the stream is alternately buried by sand and brought to the surface by ledges of rock. Patches of alluvium, 10 to 50 acres in extent, flanking the stream channel, from time to

time have been reclaimed by irrigation, occasionally at considerable expense. Near Moenkopi village the underflow of the stream is brought to the surface by expand rock ledges and is supplemented by supplies from Reservoir Canyon and from numerous springs in the vicinity. The combined flow of water from these sources amounts, even in dry seasons, to perhaps 5 second-feet and exceeds that at any other locality on the reservation. Fortunately wide valley flats below Moenkopi village are favorably situated for irrigation, and agriculture has here reached a higher stage of development then elsewhere in the Navajo country. The Spanish pioneers found at Moenkopi cultivated fields of corn and of cotton, and the Mormon settlers of the Tuba oasis used these same fields for corn, wheat, oats and alfalfa. Under the direction of the Indian Office, Hopi, Navajo and white men now work side by side in cultivating this garden spot, surrounded by an inhospitable desert.

The lower part of the Moenkopi wanders for 20 miles through the Painted Desert to join the Canyon of the Little Colorado. Throughout this stretch of subdued topography its flow is intermittent and the Triassic shales which form its bed-yield alkali which renders the water unpalatable."

4- That is a good description of the principal water course on the reservation, and one must see it to appreciate the full meaning of the description. For many miles at a stretch it is nothing but a bed of wind-blown dry sand. In other places water flows on the surface in quantity comparable with a spring branch in the east.

5- It does not appear practical to attempt to make considerable extensions of irrigation projects for the reason there is no adequate water supply and without irrigation agriculture is impossible. I recommend that expenditures for irrigation projects be confined to upkeep of those now installed and such minor extnsions as may be shown to be practical considering the supply of water.

Stock Water.

6- There are miles and miles of desert range suitable for sheep, cattle and horses, which is now useless for the reason there are no available watering places. Watering places

should be developed about 10 miles apart wherever possible. That may be done by drilling wells and erecting windmills, constructing earth dams to hold surface water in ponds, and by developing and properly protecting numbrous springs.

7- The Indian Irrigation Service has had charge of water development in the Navajo Country, so I have been told, and have been expending 25,000 dollars or more a year for sometime in that work. I have not yet visited the eastern section of the country where the work has evidently been done, for there is no completed work of that kind on this reservation, so far as I can find, excepting one uncompleted project at Red Lake.

8- Stock water on the range is of vital importance to the development of the live stock business, the principal dependence of more than 6,000 people on this reservation.

(a) Drilling wells should be a last resort where no springs can be found in the vicinity, or if it found impractical to construct earth dams to hold surface water.

(b) Where no spring is to be found, then an effort should be made to locate a suitable place and build a dam to hold the surface water.

(c) Wherever possible springs should be developed and protected. There are numerous springs on different parts of the reservation, undeveloped and not being used at this time. Springs should be developed by digging and walling a large basin, putting a substantial roof over it to keep out live stock and drifting sand. A buried pipe should lead the water 50 feet from the spring to a large cement watering trough for cattle and horses. Another pipe should lead the surplus water for at least 100 feet from the last trough into a drain. Such development and equipment would be permanent, the full flow would be obtained, the spring protected from live stock and drifting sand, and a constant flow of water through the troughs obtained. This is probably the cheapest and most practical plan for obtaining a permanent water supply and I recommend that it be pushed vigorously.

9- This is the biggest problem on this reservation, as it regulates the live stock industry and apparently has not received attention in proportion to its importance. There is a big work

to do in this line and as the supplies are known, I recommend that developing springs be given first consideration in the work. I fully realize the vital importance of stock water on the range to these people and wish I had the ability to so impress it on those in charge so they would also see and do the work so badly needed.

10- Recommendations in this section are made in the following paragrahps:

Paragraph No.	Subject.
5	Irrigation
8	Developing water.

F. E. Brandon,
Spl. Supervisor.

No action required -
Information herein contained is far better set out in other reports on file in the Indian Office -
The engineering advice given herein is not concurred in by me
W. H. Reed