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W. M. Reed, Chief Engineer,

U. S. Indian Service,

Washn., D. C.

FISCAL YEAR

1914.

H F Robinson Superintendent of Irrigation
Albuquerque N M July 1914.

Annual Report
Fiscal Year 1914
M. P. Robinson
Supt. of Irrigation.

Chief Engineer Files

DEPARTMENT OF THE INTERIOR

UNITED STATES INDIAN IRRIGATION SERVICE

SUPERINTENDENT OF IRRIGATION

July 21, 1914.

W. M. Reed,

Chief Engineer,

Washington, D. C.

Sir:

I herewith submit my annual report for the fiscal year 1914.

The territory, the operations in which are included in this report and which is under my jurisdiction, is known as District No. 5 and comprises northern Arizona, New Mexico, that portion of Utah containing part of the Navajo Reservation and the Ute lands in Colorado, and includes the following reservations and pueblos:

Reservations.	Pueblos.
Navajo	Taos
Moqui	Picuris
Zuni	San Juan
Supai	Santa Clara
Mescalero Apache	San Ildefonso
Jicarilla Apache	Nambe
Southern Ute Allotted	Tesuque
Southern Ute Diminished Res.	Cochiti
Navajo Allotted (Pueblo Bonito)	Santo Domingo
	San Felipe
	Sandia
	Santa Ana
	Zia
	Jemez
	Isleta
	Laguna
	Acoma

If any use is ever to be made of the water of the Dolores on this land, it must be done promptly to forestall extensive investments to bring other lands under cultivation and the actual utilization of the water.

The project will not prove abnormally expensive, in fact, will cost less money per acre than many of the U. S. Reclamation projects already built.

I would recommend that some action be taken by the soon regarding this proposed project.

G A N A D O P R O J E C T .

This project is the constructing of a reservoir at about 3 miles from Ganado, Arizona, by diverting waters of the Rio Pueblo Colorado through a diversion canal and impounding them in a reservoir on the flat on the north side of the stream where lake now exists, by the construction of an earthen dyke some 3200 feet long.

The plans submitted and upon which Congress made ific appropriation of $60,100 for the construction project, will cover 707 acres of land and with a lateral extension, some 75 or 80 acres more. A extension of the same line will bring in several additional acres. Another branch of the canal north side of the stream, some three miles long

cover 800 to 1,000 acres more or a total of over 2,000
s.

The first construction is about 60% completed and
diversion works and canal are finished with the ex-
ion of a very little work. The reservoir dyke is
under way and is now high enough to impound a con-
rable amount of water were it not that this would
the borrow pits and prevent further work on its
truction. The outlet from the reservoir is com-
with the exception of the foot bridge from the
to the bank, which can not be constructed until
yke has been brought to its final height. The dis-
ing canal is very nearly completed for a distance
miles with the exception of some of the structures
flume and culvert material is on the ground and
e erected as rapidly as possible.

On completion of the work that has been authorized,
storage system and ditch system for 707 acres) the
sions mentioned should be immediately undertaken as
is no doubt but what all of the land can and will
ken by the Indians within a short time, and it is
ved that the water supply will be ample for the
acres of land.

The first construction will be nearly enough com-
to store water and run the same through the ditches

next spring, if necessary, but the amount stored will, of necessity, be limited that the available material for the balance of the dyke be not covered by water. No irrigation has begun as yet.

N A V A J O .

M O E N C O P I W A S H .

What is known as the Moencopi Wash lies in the Western Navajo Reservation and drains a large tract of country but during most of the year, carries very little water, and at other seasons, becomes a raging torrent, destructive to any structures that may be put in to control it.

This stream passes through a little valley about a mile south of Tuba and this valley has been put under cultivation. 280 acres are comprised in the school and Agency farm, and about 320 acres are cultivated by the Navajo Indians. To irrigate this land, water was diverted in an early day from Moencopi Wash.

In the early days when the lands belonged to the Mormon settlers, it is said that a temporary rock and brush dam was constructed in there once or twice a year and after the acquisition of the property by the Government, the dam was rebuilt a number of times but always

with the same result; it going out with the first flood of any magnitude.

In 1909 and 1910, a new heading was built for the ditch some 1800 feet up the stream and a loose rock dam was constructed. A very heavy flood in 1910 damaged the structure and it was repaired by covering it with a concrete slab. The dam, as built, had a spillway of 140 feet, the normal width of the stream above and below being less than 100.

In 1911, a large flood came down the stream, the quantity being so great that it passed over the top of the canal headgate which was 13 feet above the crest of the dam. This flood took out the center section of the dam.

Owing to various causes, no attempt was made to repair this dam until this spring. Just before he left the service, Acting Chief Engineer Granville visited the point with me and general plans were decided upon for its repair. In March of this year, Engineer Ritter was sent out there to look over the situation and to decide on what modifications of the original plans were necessary to fit the conditions now existing. These plans were made, approved by you while in Albuquerque, and Asst. Engineer Baker was sent out to take charge of the construction.

It was thought that the spring and early summer would be the best time to do this work as this is the

season of the year of the least rainfall and low runoff. As the usual thing, there are no rains during May and June in that section. However, the rains began six weeks earlier than usual and during the first week in June, after the work was all opened up and concreting had commenced, a large rain and sudden rise in the stream brought down great quantities of mud and sand and covered the proposed work to a depth of about 5 feet. Nearly a month elapsed before the damage caused by this storm was cleared up and concreting commenced again and it is hoped to complete the work during July.

L A G U N A P U E B L O .

MESITA DAM.

The Laguna Indians living in Mesita Village secure their water from the little Rio San Jose and they, being the last on the stream, get little or no water at low stages, though at flood time, the stream carries a big flow, and it is necessary to utilize this flood water in order to raise any crops.

This ditch was built by the Indians a great many years ago and the Indians have put in temporary rock and brush dams after every flood for years. In 1907, a rock

and while a further effort will be made to get them to do this, it is doubtful whether it can be done without some action, either by the Department in forcing their hand or by condemnation through the courts, and the latter course is not one to take at this time as it would set a precedent, admitting that the Department had no control over their lands.

S A N T A C L A R A .

No work has been done on this pueblo during the year but it is proposed at an early date to endeavor to develop water in Santa Clara Creek just below the mouth of the canon, in a way similar to that followed at San Ildefonso.

The general project has received your approval and I will make the necessary surveys as soon as practicable to decide on the details of the work.

U N D E R G R O U N D W A T E R D E V E L O P M E N T .

This includes Well Drilling on the Navajo and Hopi Reservations, Spring Development on the same reservations, Well Drilling on the pueblos and Well Maintenance.

This work is, to my mind, the most valuable that this service is doing in the southwest. For the fiscal year 1914, a specific appropriation of $15,000 was made for well drilling on the Navajo Reservation but this amount was entirely too small to keep the four well rigs going. Being a specific appropriation, under the law no other funds could be used for this purpose so Rig No. 2 was laid off the entire year; Rig No. 1, which is exploring for artesian water, was operated only a portion of the year, and Rigs 3 and 4 were kept at work.

At the end of the year, Well Rig No. 1 is at work in the Choiskai Valley, about 9 miles from Tohatchi and is preparing to put down a deep well for artesian water. This site was recommended by Professor Gregory of the Geological Survey, and lies some 25 miles west of where artesian water has already been developed, just east of the reservation.

From lack of funds, the wells in the Navajo Reservation have not been properly inspected at regular intervals, in order to put into running order and consequently, many of them are temporarily out of commission. For the same reason, they have not yet been equipped with tanks and troughs. It is hoped to be able to overcome this during the next fiscal year and the matter of their future maintenance has been taken up in a communication to the Indian Office a few days ago.

The drilling of these 54 good wells has extended the area available for grazing and has been of great benefit to the Indians on this account.

The spring development has continued in connection with the well maintenance. The work has been of the highest value to the Indians, increasing the range for stock as well as giving them good water. The Indians living at the various mesas now have clean water for domestic purposes instead of the filth they were forced to use before this work commenced, with a great increase in health and decrease in mortality.

Rig No. 5 has been drilling on the pueblos of the Acomas and Lagunas. Heretofore, the Indians have depended almost entirely upon the little water in the Rio San Jose, which has been very bad a good portion of the year. The underground water is not good, being more or less impregnated with salts and alkali but is more wholesome than the muddy or alkaline water of the stream, whether taken direct from it or from the canals the Indians have for irrigation.

The following shows the result of the well drilling operations, and the logs of the wells are graphically shown elsewhere in this report.

The following is the record of the wells.
(Navajo and Hopi)

Rig No.	Time of operation.	Good wells. Holes	Good wells. Ft.drilled	Dry holes or bad water. Holes	Dry holes or bad water. Ft.drilled
2	Fiscal year 1912	8	708.	18	1169
	Fiscal year 1913	6	533	15	1097
		14	1241	33	2266
3	Fiscal year 1912	12	924	1	90
	Fiscal year 1913	7	516	5	637
	Fiscal year 1914	2	263	7	774
		21	1703	13	1501
4	Fiscal year 1912	3	352	1	116
	Fiscal year 1913	10	410	2	68
	Fiscal year 1914	6	205	5	188
		19	967	8	372
	Grand total,	54	3911	53	4149

Rig No. 1 put down a hole 1308 feet deep at Keams Canon in 1912-13 and is now located in the Choiska Valley, about 9 miles from Tohatchi and put down one hole 5½ inches in diameter to secure water of operating the rig during the deep drilling, being 9 miles from the nearest good water. Put down one hole 294 feet, but developed no water. A second hole was 225 feet deep and good water was secured.

Pueblos.

Rig No.	Time of operation	Good wells. Holes	Good wells. Ft.drilled	Dry wells or bad water. Holes	Dry wells or bad water. Ft.drilled
5	Fiscal year 1913	10	681	6	443
5	Fiscal year 1914	12	671	5	294
	Total,	22	1352	11	737

PLOYEES.

Acknowledgment is due of the efficient work of the various employees, and especially those in charge of work. The various projects being located at such diverse points, it is impossible to visit them at as frequent intervals as might be desirable, and the fact that the work progresses with as few hitches and mistakes as it does, speaks well for the man in charge and those under him.

I wish to convey, in this way, my thanks to all of the employees without whose cooperation, the work could not be successfully carried on.

Cost data sheets, diagrams, photographs, logs of wells, etc., are hereto attached, forming a part of this report.

As heretofore stated, many maps, plats and photographs that would ordinarily have been incorporated in this report have been used in the Histories, and in consequence, are omitted from this report.

Very respectfully,

F. H. Robinson

Superintendent of Irrigation.