

# NAVAJO INDIAN RESERVATION

DESCRIPTIVE HISTORY OF IRRIGATION

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The Navajos were a nomadic tribe and generally lived in the territory now included within the reservation. The reservation was established by the Treaty of 1868 and by subsequent executive orders.

An Agent's report contained in the Annual Report of the Commissioner of Indian Affairs for the year 1871, indicated that the Navajo Indians practiced some form of irrigation. He reported that their usual trouble was dry weather and scarcity of water for irrigation, and he recommended the Indians be given more sheep as he did not think it possible to make them self-sustaining by tilling the soil alone.

Subsequent reports of the Commissioner give information concerning Federal Government participation in the irrigation development. In 1882, the Agency at Fort Defiance reported that the farming department for the first time was a success. The Agency Farmer constructed a dam and one-half mile of ditch, and utilized 100 acres of arable land for the benefit of the Indians, Agency animals and boarding school. The Agency farm was divided into plots for the Indians in 1883. A dam was completed in 1885, and they were running water around the plaza and down either side of the valley for a mile or so. In 1887, and until work was stopped by order of the Commissioner in 1888, 15 springs were "developed," five dams, 14 reservoirs and 12 ditches of varying lengths were built on the Reservation, using funds appropriated for that purpose.

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In 1893, Congress appropriated \$40,000 to establish a system of irrigation and develop adequate water supplies. In 1894 a Superintendent of Irrigation was appointed to develop and carry out this program. Just prior to initiation of the construction program only minor works were undertaken and much of the other works previously built in the eighteen eighties had deteriorated from lack of maintenance. Under the construction program new and more permanent works were constructed. In the interim, and before the nineteen thirties, the principal irrigation units in the "Lower Colorado River Basin" portion of the Reservation were; Fort Defiance, Ganado, Kinlichee, Moencopi-Reservoir Canyon and Red Lake. A brief history of each of these units follows:

#### Fort Defiance

The first government construction was probably done on this unit in 1882, when the Agency Farmer put in a diversion dam and constructed a ditch to serve 100 acres of land near the Agency. Under the Superintendent of Irrigation, a new Agency ditch was constructed in 1897 diverting water from Bonito Creek at a point a quarter of a mile above the Agency to irrigate 150 acres of land. A concrete diversion dam, a headgate and 300 feet of new canal were constructed in 1922.

In 1937 and 1938, a masonry diversion dam with outlet gate and 1000 feet of canal were constructed to irrigate lands adjacent to Black Creek north of the Good Shepherd Mission.

#### Ganado

This project, located on the Pueblo Colorado drainage, was begun in 1913 after an agreement was reached between the Department and Mr. J. L. Hubbell on May 31, 1913. Mr. Hubbell, a homesteader on the public domain prior to its inclusion in the reservation, had water rights in this stream which he relinquished to the

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Ganado (cont'd)

government for a reservoir right to 400 acre-feet of storage per annum. He also agreed to pay a proportionate share of the operation and maintenance costs. The irrigation works consist of a diversion dam, storage reservoir and distribution canals. The diversion works were reconstructed in 1931 after being destroyed by floods.

Kinlichee

This project was begun in 1921 by Indians who volunteered free labor in order to get the project built. The project was nearly complete when floods occurring in 1923 did severe damage to their work, causing them to become discouraged. Funds were provided by the government and work was completed in 1925. A new masonry diversion weir, concrete headworks, main canal with two siphons was constructed in 1933.

Moencopi-Reservoir Canyon

This unit is located near Tuba City on land formerly owned by the Mormons. The land was acquired by purchase in 1903.

The Moencopi area lies in Moencopi Wash. The original heading and canal was built by the Mormons. Headings were washed out by floods and rebuilt a number of times before a permanent concrete structure was built in 1915. Subsequent construction was done in providing a sluice gate, wasteway and concrete lining in the canal.

The Reservoir Canyon area is located on a tributary to Moencopi Wash in which the Mormons had constructed three reservoirs. In 1908, two of the dams were rebuilt and raised, and headgate installed. A new feeder canal was constructed in 1937. This area has been farmed by Hopi Indians for many years.

Red Lake

This project was originally constructed in 1895. See Annual Report of the Commissioner for 1895. (Other reports give the original construction date as 1885.) The Superintendent of Irrigation reported in 1895 the construction of a diversion dam on Black Creek; a supply canal from Black Creek to Red Lake; the Red Lake Dam; and

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Red Lake (cont'd)

a canal from Red Lake back to Black Creek. In 1899 a ditch was constructed to serve 500 acres of land below Red Lake, but there was only enough water that year for two small farms. The diversion dam was washed out and repaired several times. For many years no real use was made of the land and works under the project except for the storage facilities which were used to store flood waters for lands further down Black Creek. Consequently the irrigation system was allowed to deteriorate. The project was rehabilitated in Fiscal Year 1928, to irrigate approximately 700 acres of land. In 1936 the present masonry diversion dam was built and the feeder canal was rebuilt. Red Lake Dam was raised in 1953 and the project again rehabilitated.

Other projects, which were begun by the Indians and later improved by using Public Works Funds or by the Soil Conservation, are as follows:

Cornfields

The Cornfields Unit is on the Pueblo Colorado, about six miles below Ganado. In 1922 it was reported that 255 acres were being farmed by using flood waters of the Rio Pueblo. A few improvements were made under the Soil Conservation Service in 1936.

Houck

This Unit on Black Creek, just above the junction of the Rio Puerco, was given assistance by the Soil Conservation Service in the form of bank protection in 1935. A permanent diversion dam and headgate were constructed in 1939.

Moenvave, Upper and Lower Vanzee, and Upper and Lower Littlefields.

These five small units are located in small valleys west of Tuba City. They were old Mormon projects acquired by the Indians in 1900, and are supplied with water from small springs. Construction work consisted of collecting water from these springs into small reservoirs. Some work was done under PWA from 1932-1935. Extensive work was done under Soil Conservation Service in 1935-36, when a system of laterals was built and lands were subjugated.

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Natural Bridge

This original Indian project was improved in 1933-1935 under PWA by construction of a concrete heading, canal and an offstream storage reservoir, together with distribution works.

Oak Springs

This old unit was improved by ECW and the Soil Conservation Service in 1935-1938. The irrigation works consist of a masonry storage dam impounding water from springs and small perennial streams, and a canal serving the lands.

Todilto Park

Todilto Park Unit is an old Indian irrigated area on the headwaters of Black Creek. It was improved in 1935 by ECW construction of a diversion dam and headgate structure. The Soil Conservation Service built a main canal and a number of masonry structures.

New projects which came into being after 1933, are Lower Moencopi, Coldfields, Natoni's and Shonto. Lower Moencopi on Moencopi Wash, nine miles west of Tuba, was constructed under PWA in 1933-1935. Coldfield is above Ganado on Ganado Wash, and was built in 1935. Natoni's Unit is on Dinnebito Wash near its mouth, and was constructed in 1941. Shonto Unit on Shonto Wash, tributary to Moencopi Wash, was constructed in 1942.

See Annual Reports of the Commissioner of Indian Affairs, and Annual and Special Reports of the Indian Irrigation Service for more detailed information concerning irrigation on the Navajo Reservation. Table 1, attached hereto, summarizes the physical data concerning irrigation facilities on each of the units included in the Lower Colorado River Basin.

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Table 1. NAVAJO INDIAN RESERVATION  
Summary of Data on Irrigation Facilities

NAME OF UNIT	Source of water	Available storage capacity Ac-ft.	Type of diversion structure	Date of original const. Fed. Gov. Year	Length of canal Miles	Properties of Canal				
						Bottom width Feet	Water depth Feet	Side slope Ratio	Slope Ft./ft.	Capacity cfs
<b>ARIZONA</b>										
For: Defiance	Bonito Creek	500	Masonry	1887	0.3	2	1.5	1:1	-	10
	Black Creek	-	Masonry		2.4	4	2.0	1.5:1	-	32
Ganado	Pueblo Colorado Wash	4250	Concrete	1913	0.2	12	5.0	1.5:1	.0003	180
					9.4	4	2.0	1.5:1	.002	20
Cornfields	Pueblo Colorado Wash	none	Loose rock	1936	-	6	2.0	1:1	.003	15
Coldfields	Unnamed Wash	none	Rock masonry	1935	3.0	3	1.5	1.5:1	-	10
					3.0	3	1.5	1.5:1	-	10
Houck	Black Creek	none	Loose rock	1939	2.0	4	2.0	1.5:1	.001	20
Kinlichee	Pueblo Colorado	none	Masonry	1925	-	4	2.0	1.5:1	.0015	20
Klagetoh - No. 1 Canal No. 2 Canal	Klagetoh Wash	1780	Concrete	1933	-	4	1.5	1.5:1	-	20
					-	4	1.5	1.5:1	-	20
Lower Moencopi	Moencopi Wash	none	Reinf. concrete & rock masonry	1933	2.5	6	1.5	1.5:1	.001	15
Moenave, Vansee & Littlefields	Many small springs	(14-Res.) 43	Earth & rock	1934	various lengths	-	-	-	-	-
Natoni's	Dinnebito Wash	none	Rock masonry	1941	0.5	24" concrete pipe		.001		30
Natural Bridge	Black Creek	1000	Earth dikes	1933	0.25	10	-	1.5:1	.0027	30
Oak Springs	Springs	2	Masonry headworks	1935	0.4	2	1.4	2:1	-	10
Reservoir Canyon	Pasture Canyon	425	Rock masonry	1908	3.5	2	0.7	1.5:1	-	7
Moencopi-Tuba	Moencopi Wash	-		1909	5.0	3	2.0	1.5:1	.002	15
Red Lake	Black Creek	15000	Rock masonry	1895	4.5	4	2.0	1.5:1	.0008	31
Shonto	Shonto Wash	20	Timber	1942	2.0	2	1.0	1.5:1	-	3
<b>NEW MEXICO</b>										
Todilto Park	Black Creek	none	Rock Sausage	1935	-	4	2.0	1.5:1	-	25
Red Lake	Black Creek	15000	Rock masonry	1895	5.0	3	2.0	1.5:1	.0008	12
					-	8	2.0	1.5:1	-	125

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