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NARRATIVE & COST REPORT
FOR
FISCAL YEAR 1936

NAVAJO SERVICE — IRRIGATION DIVISION
WINDOW ROCK, ARIZONA

E. R. FRYER
GENERAL SUPERINTENDENT

GANADO PROJECT

Neil Campbell, Foreman, Employee in Charge.

This project is located on the Southern Navajo Subdivision in Arizona and is operated and maintained by the Irrigation Division of the Navajo Service. Water is diverted from the Rio Pueblo Colorado into the Ganado storage reservoir and from there distributed to the farm lands. There are 1176 acres on this project, one hundred forty-six acres are held by the Hubbell family and the Presbyterian Mission. The season 1935, while a fairly good year, was not up to the standard of previous years due to the fact that many Indians were not on their assignments; only four hundred thirty-eight acres were under cultivation. Alfalfa, with three cuttings, was the leading crop, with corn, beans and potatoes showing a good yield.

The water stored in the reservoir during the winter and early spring months was sufficient to adequately service the lands under cultivation during the entire irrigation season. Operation of the canal system which was started in April was continued until the last week in October. The siphons were then drained and the canal system closed for the winter. During the winter months repairs were made to several canal structures, and in March and early April of this year all irrigation canals were thoroughly cleaned. The delivery of irrigation waters was started the latter part of April this year, and operation of the system has been continued on a 24-hour basis through May and June.

Details of the construction of the Ganado secondary storage reservoir and the Beautiful Valley diversion dam appear under F. P. 596, Arizona.

WATER SUPPLY, NAVAJO AND HOPI

John J. Schwarz, Foreman, Employee in Charge.

Regular inspections of windmills, wells, tanks and troughs were made throughout the fiscal year 1936 by three regular maintenance crews. An average of sixty drilled wells with windmills and twenty dug wells were inspected each month, and repairs made wherever necessary. Several day school wells were repaired for the Education Division during the year by regular forces.

A program of revamping was started last July and continued throughout the fiscal year. This was a necessary phase of the maintenance program due to the fact that many wells were either dry or in such condition that they could no longer be efficiently maintained. Fourteen drilled wells were revamped during the year in the Black Mountain, Salina Springs, Chinle and Nazlini areas. This work consisted mainly of enlarging, deepening and recasing the wells. In addition to the revamped wells a well was drilled for the National Park Service near Chinle, Arizona.

All dug wells in the Black Mountain, Pera, Carrizo Mountains, Table Mesa, Charcoal, Naschiti, Red Rock, Newcomb, Drolet and Sheep Springs areas were visited and revamped wherever necessary. This work consisted mainly of cleaning out the wells and replacing the old wooden tops with concrete slabs.

Springs in the Red Rock and Tesospos areas were inspected, and a large percentage of them revamped during the spring and early summer months of 1936. The work of revamping springs consisted of cleaning out the springs, replacing the gravel filters and either cleaning or replacing the outlet pipes. Due to the lowering of the water table two springs in the Red Rock area and one in the Tesospos area were converted into dug wells.

GANADO

This project is located on the Southern Navajo Subdivision in Arizona. Funds were allotted to construct a secondary storage reservoir, a diversion dam and a feeder canal. This work was started on November 18, 1935, and continued throughout the fiscal year 1936, at which time it was rapidly nearing completion. The main features on this unit are an earth fill storage dam with a concrete control tower, a rock masonry diversion dam in Beautiful Valley and a feeder canal from the diversion dam to the storage reservoir. The control tower has been completed and the earth work in the dam was approximately 85 per cent complete at the end of June. The excavation for the foundation of the Beautiful Valley diversion dam has been completed and the laying up of the rock started. The feeder canal was approximately 40 per cent complete at the end of the fiscal year 1936. The construction of the earth storage dam is being done with a power shovel and six dump trucks. The work on the diversion dam and the feeder canal is being done under cooperative agreement with the Soil Conservation Service. The Irrigation Service is supervising the work and furnishing the materials and the Soil Conservation Service is supplying the labor and teams.

The total Indian mandays for the period from November 18, 1935, to June 30, 1936, were 987-5/8 and the white 1083. Labor furnished by the Soil Conservation Service is not included in the above figures.

This project is located on Chinle Creek near the Hook Point store. Funds were allotted to complete the construction of this project which was started under the Public Works program in 1935. This work was started on January 20, 1936, and was practically complete at the end of the fiscal year. It was necessary first to rebuild part of the main canal which had been washed out by heavy rains. Two main canals were constructed, one 8,000 feet in length and one 11,000 feet in length with a six-foot bottom from the headworks to the division box and four-foot bottom from there to the end. These two canals were completed on May 1, 1936. A 4,000 foot main lateral in the form of a loop was excavated to take in some additional land which was too high to be watered by the main canals. A concrete division box was constructed where the canals form a "y" and two control gates installed. There were six rock masonry drops constructed at various points along the canal. Eight turnout gates were placed in the canals and laterals run from them to service the farm lands. Seven hundred and sixty acres of land were completely subjugated. This phase of the work consisted of clearing and leveling the lands and excavating farm laterals to service them.

There was expended for labor during the fiscal year \$11,074.00. The total mandays for this period were, Indians 2364-1/8 and white 296.

LOWER MOENCOPI UNIT

This project is located ten miles south of Tuba City, Arizona, on the Moencopi Wash. Funds were allotted for the completion of the construction work which was started under F.P. 242. Work was started on March 23, 1936, and continued throughout the rest of the fiscal year. During this period a concrete blanket was constructed on the downstream face of the dam, containing one hundred and five cubic yards. A retaining wall was poured along the south-east side of this blanket for protection from erosion. To protect the lands adjacent to the wash from further erosion it was necessary to construct six rock and brush jetties. These were completed early in June, 1936. The construction of these jetties was participated in by the Soil Conservation Service to the extent of furnishing labor.

The amount expended for labor during the fiscal year was \$4,861.88. The total mandays for this period were Indian 1,687-3/8 and white 282.

RED ROCK UNIT

This project is located in Arizona eight miles southwest of Red Rock, New Mexico. Funds were allotted for the construction of a storage dam and a small diversion dam. The work was started May 16, 1936 and continued throughout the rest of the fiscal year. The excavation in solid rock for the foundation keyway of the rock masonry arch storage dam was completed on June 28, 1936, and the laying up of the rock masonry started immediately thereafter. The work on this project is being done under cooperative agreement with the Soil Conservation Service. The Irrigation Service is supervising the work and supplying the materials and all labor is being furnished by the Soil Conservation Service.

The amount expended for labor during the fiscal year was \$894.36. The total Indian mandays for this period were 124 and the white 94.

ROUND ROCK UNIT

This project is located on Lukachukai Creek six miles east of the Round Rock store. Funds were allotted for the construction of irrigation canals. This work was started on June 10, 1936, and continued to the end of the fiscal year, with 8,000 cubic yards of earth excavated from the main canal during that short period. The work on this project is being done under cooperative agreement with the Soil Conservation Service. The Irrigation Service is supervising the work, furnishing the materials and part of the labor. The remainder of the labor is being furnished by the Soil Conservation Service.

The amount expended for labor during the fiscal year 1936 was \$1,168.27. The total Indian mandays were 218-7/8 and the white 28.

RED LAKE UNIT

This project is located fifteen miles north of Fort Defiance, Arizona. The storage dam and diversion are in New Mexico and the majority of the farming lands are in Arizona. Work was started on this project on November 12, 1935 and continued until December 14, 1935. The only work that was done during this period was the excavation of the diversion canal which leads from the diversion dam to the reservoir.

There was \$640.43 expended for labor during the year. The total mandays were, Indian 176-1/2 and white 36.

MISCELLANEOUS UNITS

KLAGETOH

This project is located fourteen miles south of Ganado on the Ganado-Chambers highway. The work on this project was started on November 18, 1935. Two main canals, one on the east side of the wash and one on the west side, were constructed including a siphon and seven rock masonry drop structures. A small concrete apron and a cutoff wall were poured on the upstream toe of the dam. The project was completed in May 1936. The work on this unit was done under cooperative agreement with the Soil Conservation Service. The Irrigation Service supervised the work and furnished the materials, and the Soil Conservation Service supplied the labor.

TESNOSPOS

This project is located in Arizona about twenty-five miles northwest of Shiprock, New Mexico. The work on this project was started on November 20, 1935 and completed the last week in March, 1936. A small diversion dam and spillway were constructed on the wash, and a protection ditch excavated along the bank. Sections of what is known as the Slim Ditch were lined with rock paving to prevent further leakage. The boulders and silt which had collected on the upstream side of one of the small diversion dams were removed and used for bank protection. At one place where there was danger of the wash eating away the ditch bank a 1200 linear foot alignment change was made. This work was done under cooperative agreement with the Soil Conservation Service. The materials and supervision were furnished by the Irrigation Service, and labor and teams were supplied by the Soil Conservation Service.

NAVAJO AGENCY, FLOOD CONTROL DAMS

As it was necessary to protect the Agency grounds and buildings from flood waters, the Irrigation Division was requested to design and supervise the construction of two flood control dams just east of the office building. One of these which is known as the South Dam is a rock masonry arch with a concrete cap and control works, the other which is known as the north dam is an earth fill with a rock blanket on the upstream face and a concrete control tower. A spillway was excavated running from the north dam into the arroyo across which the south dam is constructed. Due to the fact that

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(Navajo Agency, Flood Control Dams, Continued)

this spillway was excavated the entire distance through blow sand it was necessary to line it throughout with dry rubble masonry. The work on these dams was started on November 19, 1935, and was continued until the end of the fiscal year. The earth dam, with the exception of the spillway, was completed during the third week of April; and the rock masonry dam was rapidly nearing completion at the end of June. This work was done under cooperative agreement with the I.E.C.W. The Irrigation Service supervised the work, furnished most of the heavy equipment and part of the supplies. The rest of the equipment, supplies and labor were furnished by the I.E.C.W.

The amount expended for labor on the above three projects during the fiscal year was \$3,459.51. The total mandays were, Indian 176-1/2 and white 441-1/2. These figures do not include labor which was furnished by the Soil Conservation Service and I.E.C.W.

F. P. 211, FRUITLAND PROJECT

This project is located on the south side of the San Juan River near Farmington, New Mexico. The construction on this project under F.P. 211 was started in 1933 and continued until November 16, 1935. During the fiscal year 1936 the principal work accomplished was the transportation and placing of earth for several large fills and the construction of a sluiceway structure in the main canal.

The amount expended for labor during this period was \$3291.12. The total mandays were, Indian $41\frac{3}{8}$ and white $468\frac{1}{2}$.

F. P. 224, RED LAKE PROJECT

This project is located fifteen miles north of Fort Defiance, Arizona. The work on this project was started April 1, 1935 and completed October 31, 1935. The work done during the fiscal year 1936 consisted of completing the rock masonry diversion dam and the concrete headworks.

The amount expended for labor during this period was \$2116.14, and the total mandays were, Indian 383 and white $216\frac{1}{4}$.