

HEALTH

Health conditions among the Navajos may be summarized as follows:

A relatively high overall death rate; a high birth rate; a high rate of infant mortality; a high incidence of tuberculosis; a high rate of diarrhca and dysentery; a high rate of pneumonia; generally poor home and sanitary conditions; a high rate of dental caries among adults; considerable prevalence of skin diseases; venereal diseases on the increase, and trachoma still present but decreasing.

Only about one-half of the Navajo population is now being reached directly by the medical service. To meet the needs of these 56,000 people spread over 30,000 square miles of rugged and almost roadless country there are 7 general hospitals and 2 sanatoria, with a total of 365 general beds and 182 beds for tuberculosis patients. Additional facilities are required, especially for tuberculosis patients. Additional field nurses and doctors are also required.

Recent studies indicate that under the present Navajo economic and health conditions complete medical coverage based upon a comprehensive program designed to meet all health needs would cost not less than \$1,750,000 annually. Providing, however, their economic condition could be so improved that they would have adequate housing, adequate sanitation and adequate nutrition, the estimated annual cost of an effective health program would be reduced to approximately \$980,000, or an annual saving of \$770,000. The present average annual expenditure for health services is \$652,000, which is entirely insufficient to furnish complete coverage under the existing health and economic conditions.

EDUCATION

The Treaty of 1868 provided, among other things, for a school house and teacher for each 30 pupils. There are at present over 20,000 Navajo children of school age, with school facilities available for not to exceed 6,000. The educational status of these Indians may be summarized as follows: over 50 per cent have had no schooling whatever, while the median number of school years for the group as a whole is less than one year. This compares with 25.2 per cent of the total Indian population of the United States having no schooling, and 5.7 median school years. It also compares with 3.7 per cent of the total population of the United States having no schooling and 8.4 median school years. The Indians, through their tribal council and area leaders are demanding that the Government live up to its obligation under the Treaty and provide adequate school facilities for the entire school age population.

Before the Navajos can reasonably be expected to become an integral part of the social and economic structure of the Nation, they must be provided with educational opportunities equal to those available to their non-Indian neighbors. Under the present Navajo economic condition, combined with the lack of all-weather roads, an adequate educational program must necessarily be based upon providing boarding schools for a considerable number of children. In some areas roads suitable for school bus operation can be constructed at a cost which would make the day school the most economical. In many areas, however, the cost of all-weather roads precludes the consideration of day schools. Exclusive of the construction expenditures for school facilities and roads, the average

annual cost of maintaining boarding schools is \$552 per pupil. This compares with \$257 per pupil in the day schools, which indicates that an annual saving of \$295 per pupil can be made where and to the extent that day schools are feasible.)

SOCIAL AND ECONOMIC CONDITIONS

The economic level of the Navajos is probably the lowest of any comparable group in the United States and it will become critical within a short time, due to the reduction of their war time income. The total 1945 gross income was a little in excess of 13 million dollars, or an average of about \$1,200 per family. This income was distributed approximately as follows:

<u>Income per family</u>	<u>Number of families</u>
Below \$500	1,600
Between \$500 and \$1,000	3,000
" 1,000 and 2,000	4,500
Over 2,000	1,500
Average, 1,200	10,600

Of the total income, about \$7,800,000, or 60 per cent was from wages, the major portion of which was from war work; and about \$1,600,000 or 12 per cent was service men's allotments. These two major sources of income, aggregating over 70 per cent of the total, have been materially reduced since the end of the war, and will be further reduced as additional servicemen are discharged from the armed forces. This will result in a severe shock unless a cushion of work on the reservation is provided.

The social conditions on the reservation are almost directly proportional to the average family income. Indians generally, share their possessions, but this trait is perhaps more firmly grounded in the Navajo than in most other groups. It is probably safe to say that the difference in the actual level of living between the families in the \$500 annual income group and those with incomes of \$2,000 and over, does not exceed \$300.

RESOURCES

The resources presently available to the Navajos consist of a relatively small amount of standing timber; an undetermined amount of coal, oil and other minerals; a large area of poor grazing land; a small area of irrigated land; a small annual income from Arts and Crafts, and a limited market for their labor.

TIMBER: The commercial timber consists of a stand of Ponderosa pine covering an area of about 160,000 acres. The estimated volume is one billion board feet. Present plans provide for an annual cut of approximately 20 million board feet during the first cutting cycle of twenty years, after which the cut will be limited to the annual growth, estimated at eight million board feet. The capacity of the present day sawmill is 10 million board feet per year, on a one-shift basis. The 1945 cut amounted to about 6,750,000 board feet.

It is estimated that an average of 250 Navajo families can be supported through labor in the logging, sawmill, planing and shipping operations, and that,

if facilities can be provided for the manufacture of finished or semi-finished products such as sash and doors, the average employment can be materially increased. It is estimated that the average annual income for the 250 families engaged in the timber operations will be \$1,240, distributed as follows: 150 families, \$1,000 each; 80 families, \$1,500 each; 20 families, \$2,000 each.

COAL: An extensive coal deposit underlies the Black Mesa area, which includes all of the Hopi Reservation as well as a considerable part of the Navajo. To date this resource has not been developed except for a few small mines for local and school plant use. This coal appears to be somewhat superior to the Gallup coal. It evidently belongs on or about the dividing line between bituminous and sub-bituminous, and has a rather high ash content. In Geological Survey Bulletin No. 431 it is stated that this coal has a specific gravity of 1.3, or a weight of 81.25 pounds per cubic foot. The total volume is estimated at over 14 billion tons, of which about 8 billion tons are recoverable. This deposit is worth further study in order to determine its actual potential value. Based upon information presently available it is estimated that 250 Indian families can be supported at an average level of \$1,200 per year through activities in connection with developing this resource.

OIL AND GAS: Some oil leases have recently been made but the income from this source is not expected to exceed \$100,000 per year during the next five years. A lease for Helium production has also been made which, if approved by Congress, will result in the early payment of \$150,000 as advance royalties for twenty-five years. Additional revenue from this source will depend upon production, which is not contemplated in the near future.

OTHER MINERALS: There is a possibility that copper and other minerals in commercial quantity and grade may be located on the reservation. Insufficient information is available, however, to estimate their potential value, nor how many Indian families could be supported by the development of these resources.

GRAZING LAND: The total area of the Navajo Reservation is 15,444,952 acres, of which something over 10 million acres are classified as grazing land. In addition to the reservation area the allotted and public lands east of the reservation contain about one million acres of grazing land, making a total of approximately 11 million acres available. The average year-long safe carrying capacity of these lands is estimated at not to exceed 600,000 sheep units. Although the stock reduction program has been successful in reducing the herds, overgrazing is still serious in some parts of the reservation. This is adding materially to the erosion problem and thus progressively reducing the safe carrying capacity.

Recent studies indicate that a breeding herd of 250 sheep units is required to support a Navajo family. Such a herd will produce an average annual gross income of not more than \$1,000, which, after necessary expenses are deducted, will result in a net income of about \$750. This is considered the minimum income required to provide the essentials of a bare subsistence. On this basis the grazing resources available to the Navajos will support 2,400 families.

IRRIGABLE LAND: There are at present 78 small irrigation developments on the reservation with an aggregate area of 20,000 acres. The gross area of these projects is estimated at 60,000 acres, but additional facilities including the development of a supplemental water supply is required before more than 20,000 acres can be successfully cultivated. These small tracts are fairly well scattered over the reservation and contain from a few acres to several thousand acres each. On account of their dispersal they fit in well with the stock economy of the Navajo and their full development is considered essential.

Each acre of irrigated land on the Navajo with a dependable water supply and adequate irrigation facilities is considered equivalent in productive capacity to 6-1/4 sheep units. On this basis 40 acres of irrigable land is equal to 250 sheep units and the 20,000 acres of presently irrigable land will therefore support 500 families. The estimated gross income per farm family on 40 acres of irrigated land is \$1,200 which, after deducting the average annual expense, will result in about \$800 net. This income can be increased materially by an adequate extension program.

ARTS AND CRAFTS: Rug weaving and silversmith work constitute the principal arts and crafts activities on the reservation. A considerable number of families augment their income by the sale of rugs and jewelry. Under present conditions rug weaving does not bring in sufficient revenue to enable the weaver to support a family entirely by this activity. It is a supplemental source of income. Silver and other jewelry prices are such, however, as to enable the worker to derive a modest but satisfactory living. During 1945 about \$364,000 was realized from these two sources which, on the basis of the average per family income of \$1,200 for that year, would have been sufficient to support 300 families.

With the cessation of war work and the return to the reservation of large numbers of war workers and servicemen, it is expected that the amount of arts and crafts work will be materially increased and that it is reasonable to assume that an annual income from these activities sufficient to support 600 families may be expected.

LABOR: During 1945 wages from non-government employers, principally war industries, accounted for \$6,700,000 of the total Navajo income, and soldier allotments accounted for \$1,600,000. On the basis of \$1,200 average family gross income for 1945, these two amounts were sufficient to support 6,900 families, or over one-half of the total Navajo population. The income from war work has practically ceased and the soldiers' allotments have already been materially reduced and will be practically eliminated within a year or two.

The average amount of off-reservation labor, principally in the towns contiguous to the reservation, which is expected will be available to these Navajos in the immediate future, is estimated at sufficient to support not to exceed 2,000 families, and then only with proper encouragement and organization. It is expected that the labor market may expand in the future but probably not faster than the increase accruing to the 2,000 families which can now be expected to earn a livelihood in this way.

SUMMARY: There are about 56,000 Navajos, comprising 11,000 families dependent upon the resources described above. The number which it is estimated can

support themselves at a reasonable level of living under present conditions is as follows:

Timber cutting, sawmill operations, etc.,	250	families
Coal mining, hauling, etc.,	250	"
Livestock and dry farming,	2,400	"
Irrigation farming, 20,000 acres,	500	"
Arts and Crafts,	600	"
Labor; wage work, mostly off reservation	<u>2,000</u>	"
Total - from available resources	<u>6,000</u>	

The above analysis indicates that only 6,000 families, comprising about 50 per cent of the present population, can be expected to support themselves at a reasonable standard of living from the resources presently available. This leaves 5,000 families which must be provided with the means of attaining self support, in order to prevent the entire group from reverting to a substandard of living. On the basis of a livestock economy the deficiency in range grazing capacity is equivalent to 1,500,000 sheep units for the present population. It is not feasible or practical to try to supply more than 20 million acres of additional range. The deficiency cannot be overcome in this manner, but there is an opportunity to fill the void through the full development of the available timber and coal resources, and of potentially irrigable land.

SUGGESTED RESOURCE DEVELOPMENT

TIMBER: By stepping up the timber operations to 20 million board feet per year, together with the expansion of the mill operations to include the manufacture of sash and doors and other products, it is believed employment can be increased to a point where not less than 500 families can support themselves at a reasonable level. This would require an increase in the present capital investment, but it is believed that funds for this purpose could be secured through a loan. The important need in this respect is a careful study of the possibilities and the development of a sound program. It is estimated that \$75,000 would be sufficient to cover the cost of such a study.

RANGE IMPROVEMENT: The Navajo reservation comprises 14 per cent of the watershed area above Boulder Dam. It is estimated that it contributes about 3 per cent of the annual water supply and 22 per cent of the silt entering Lake Mead. Erosion is proceeding at a high rate on about 50 per cent of the area and at what may be considered a normal rate on only 13 per cent. Most of the natural water courses are cut by one or more gulleys and, in general, fingers extend from the larger channels. Sheet erosion is also serious in many areas. Following torrential rains the percentage of silt by volume carried in some of the larger channels approaches 50 per cent. The average rate of erosion is estimated at from 110 to 150 acre feet of silt per 100 square miles.

The development of irrigation on a large scale will relieve the pressure on the range to such an extent that stock can be reduced to the actual carrying capacity and even below, for short periods. This will do much toward restoring the range and reducing erosion, but destruction has progressed to such an extent that nature will need to be assisted to some extent. The work required consists principally of small flood and silt control dams; stockwater reservoirs; range re-seeding; stream bank protection, and water spreading. It is estimated that approximately 12 million dollars would be required at current prices for labor,

equipment and material to do the job properly, of which 3 million dollars is urgently needed for stockwater development and 1 million for seeding, fencing and erosion control. The development of additional stockwater would go far toward meeting the most immediate needs.

COAL: The possibility of creating a substantial income for the Navajos through the development of the Black Mesa coal deposit warrants detailed study. The immediate need is a survey by qualified geologists and mining experts to determine the actual extent and quality of the deposit, and how it can best be developed. It is estimated that such a survey would cost about \$175,000 to \$200,000, and would require a period of two years. The potential value of this deposit to the Navajos and the Nation would seem to justify the cost of such a study. Approximately 50 to 75 Navajos would be employed on this work for a two-year period.

IRRIGATION: The potential irrigation developments consist of (1) expanding to their ultimate areas the small miscellaneous projects; (2) the construction of the San Juan-Shiprock unit; (3) the inclusion in the Bureau of Reclamation Animas La Plata Project of all irrigable Indian land in the Monument Rocks area, and (4) the inclusion in the proposed Bureau of Reclamation South San Juan Project of all irrigable Indian land which can be served.

(1) EXISTING SMALL UNITS: There are 78 existing small irrigation units, varying in area from 50 to 6,500 acres each, which have been constructed over the past several years. The aggregate area of these units presently supplied with adequate irrigation facilities and a dependable water supply is approximately 20,000 acres. The estimated ultimate area of these units, including a few possible new units, which can be provided with an assured water supply, is 60,000 acres. The work involved in expanding them to their ultimate area and placing the land in condition for Indian use consists principally of extending and improving the lateral systems, the development of some additional storage, and the preparation of the land for farming. Surveys and the preparation of plans are sufficiently advanced so that this work can be started immediately. The Budget request for fiscal year 1948 includes an item of one million dollars for this purpose.

The reimbursable expenditures to date on these units amount to \$4,270,000, or \$213.50 per acre for the 20,000 acres supplied with adequate irrigation facilities. The estimated cost of completing these units to their ultimate irrigable area is \$8,130,000, based upon current prices. Assuming that prices of materials, equipment and labor will remain at approximately the present level until this work is completed, and that funds are made available as needed to permit an economical construction program to be carried out, the total estimated cost of these miscellaneous units, including expenditures to date, is \$12,400,000, or about \$235 per acre. On the basis of 40 acres per family the completion of these units would provide for 1,000 families.

(2) SAN JUAN SHIPROCK PROJECT: South of Shiprock and the San Juan River is a large body of Indian land susceptible of irrigation from the San Juan. The possibility of developing this area has been under intermittent consideration for over fifty years. The first written report regarding such a project was prepared by Jay Turley in 1901. Surveys have since been made by one or more State Engineers of New Mexico, the Bureau of Reclamation, and the Indian Bureau. Our recent studies were started in 1945 and are being continued this year with funds made available in the 1947 fiscal year appropriation act. All of the prior reports have been analyzed.

REPRODUCED FROM THE HOLDINGS OF THE NATIONAL ARCHIVES - LOS ANGELES BRANCH

and addition field surveys have progressed to a point where it is now possible to recommend a project for immediate consideration.

The area of the project recommended is 117,000 acres, of which 115,000 acres are Indian, and 2,000 acres non-Indian land. Supplemental water would also be supplied to about 3,700 acres of Indian land in the Captain Tom Wash area. Of the 117,000 acre area, about 88,000 acres, including the 2,000 acres of non-Indian land, would be irrigated by gravity and 29,000 acres of Indian land would be served by pumping through a lift of 150 feet. In the event the South San Juan Project is not constructed, it would be possible to expand this Shiprock development to about 130,000 acres by pumping for an additional 13,000 acres of Indian land. A decision in regard to this possible expansion can await the result of the surveys now being carried on by the Bureau of Reclamation.

The irrigable area of this proposed development lies at an elevation of between 5,000 feet and 5,650 feet above sea level. In general, the land is fairly smooth except for occasional areas broken by sandstone, shale and igneous rock formations. A soil survey of the area has been made and the land to be irrigated all falls within Class 1 and Class 2. The climate is relatively dry and subject to wide variations of temperature. The maximum temperature normally reached is 100 F. but 110 F. has been recorded. The normal minimum temperature is from 0 to -10, and the minimum of record is -21. The average precipitation on the proposed project area is 8 inches, the minimum being about 4 inches and the maximum 16 inches.

The project works as now planned consist of a storage reservoir of 403,000 acre feet capacity in the San Juan at the Pump Canyon site; a supplemental or regulating reservoir near the south end of the irrigable area with a capacity of 107,000 acre feet; 80 miles of main canal including 9.8 miles of tunnel and 14.2 miles of siphon; 200 miles of principal laterals; 4 pumping plants; a distribution system for 117,000 acres and a 16,300 kilowatt hydro-electric generating plant at the Pump Canyon Dam. The hydro-electric plant would furnish 16,600,000 kilowatt hours of energy at a cost of 4.82 mills per Kwh. for sale in the Farmington area, and 23,600,000 kilowatt hours at a cost of 3.88 mills per Kwh. for pumping.

It is estimated that a power market with an immediate demand of 1,500 kilowatt and an annual consumption of 6 million kilowatt hours now exists in the area, and that this market would develop to a 4,000 kilowatt demand with a consumption of 16,600,000 kilowatt hours within a few years. The pumping demand is estimated at 12,300 kilowatts, with a consumption of 23,600,000 kilowatt hours. In addition to the irrigation requirements the Pump Canyon reservoir will provide 150,000 acre-foot capacity for silt retention, as well as some flood control benefits. It is estimated that one-half of the cost of the reservoir should be allocated to silt retention and flood control.

The supplemental reservoir, in addition to supplying the irrigation requirements, will make possible the release of 265 second feet during the winter months for the generation of firm power for sale in the area and a part of its cost would be charged to commercial power. The estimated cost of the proposed development, based upon 1940 prices, together with the credits which

REPRODUCED FROM THE HOLDINGS OF THE NATIONAL ARCHIVES - LOS ANGELES BRANCH

should be allocated to silt retention and flood control and commercial power, is shown in the following tabulation:

<u>ITEM</u>	<u>ESTIMATED COST</u>
Pump Canyon Reservoir - 403,000 acre feet capacity	\$ 14,325,000
Supplemental reservoir, 107,000 " " "	5,820,000
Main Canal - 1,440 second feet capacity; 80.4 miles	20,674,000
Main laterals - 200 miles	2,650,000
Pumping plants - 4	1,230,000
Distribution system - 117,000 acres	2,340,000
Drainage system	1,200,000
Power plant for pumping	1,325,000
Transmission lines - 120 miles	500,000
	\$ 50,064,000

Less Credits:

Silt retention and Flood control -	\$7,162,000	
Commercial power development	<u>1,000,000</u>	8,162,000
Total charge to irrigation		\$ 41,902,000

Per acre irrigation charge (1940 prices) \$ 358.

The present price index for labor, materials and equipment indicates that current prices are approximately 160 per cent of those prevailing in 1940. An economical construction program, however, would be spread over a period of 7 to 10 years and it is estimated that the average price index for that period would not exceed 125 per cent of 1940 costs. On that basis the construction costs are estimated as follows:

Total cost of proposed development	\$ 62,500,000
Less credits - silt, flood control and power	<u>10,200,000</u>
Costs charged to irrigation	\$ 52,300,000
Per acre irrigation charge	447
Per acre clearing, leveling and seeding Indian land	<u>53</u>
Total per acre cost, Indian land	\$ 500

The development of this project for a total area of 115,000 acres of Indian land would provide 2,875 farm families with an opportunity of attaining self support through their own efforts.

(3) ANIMAS LA PLATA PROJECT: Within the proposed extension of the Animas La Plata Project there is an area of 25,000 acres of Indian land which is susceptible of irrigation. This land lies in the Monument Rocks area, and would be served by extending the Animas La Plata Project canal system. The Bureau of Reclamation is currently designing this project for a total of 111,000 acres, of which about 24,000 acres of non-Indian land is now under constructed works. The enlarged project involves the construction of 9 reservoirs with an aggregate capacity of 357,000 acre feet; 2 hydro-electric power plants with an aggregate generating capacity of 52,000 kilowatts and a firm production of 192 million kilowatt hours, together with a canal and distribution system. The total project

costs allocat to irr tion are estimated at 35 milli dollar .t 1940 prices, or 56 million dollars at current prices. At current prices the per acre irrigation cost is estimated at \$505, to which would be added \$65 per acre for the subjugation of Indian land, making a total of approximately \$570 per acre. On the basis of 40 acres per family, this development would provide for 625 farm families.

(4) SOUTH SAN JUAN PROJECT: South of the San Juan River in New Mexico is a large area of undeveloped and unclassified land, part of which could be irrigated from the San Juan River. Storage would be required on the east and west forks of the San Juan and on the Rio Blanco and Navajo rivers. The main canal would be approximately 300 miles in length and it is probable that the development, if undertaken, would be limited to 75,000 acres, of which 22,000 acres would be Indian land. Studies of this potential project are being made by the Bureau of Reclamation and if it is constructed, the work would be done by that Bureau. Detail cost estimates are not available, but at current prices for labor, and materials, the preliminary estimate is 56 million dollars, or \$750 per acre, to which would be added approximately \$50 per acre for subjugation of the Indian land, making a total of \$800 per acre. If this project is found to be feasible it is likely that a part of the cost would be charged to flood control, power and silt retention, which would reduce the amount allocated to irrigation. On the basis of 40 acres per family, this development would provide for 550 Indian families.

These irrigation development possibilities on the Navajo, together with the estimated costs allocable to Indian land, based upon current prices for the miscellaneous units; 125 per cent of 1940 prices for the Shiprock unit and current prices for the potential Animas La Plata and South San Juan projects, are summarized in the following tabulation:

SUMMARY OF TOTAL POTENTIAL IRRIGATION DEVELOPMENT

ITEM	UNIT	AREA ACRES		ESTIMATED CONSTRUCTION COSTS		
		PRESENT	ULTIMATE	TO DATE	TO COMPLETE	PER ACRE
1.	78 miscellaneous units	20,000	60,000	\$4,270,000	\$8,130,000	\$ 235.
2.	San Juan-Shiprock	---	115,000	100,000	57,500,000	500.
3.	Animas La Plata	---	25,000	---	14,250,000	570.
4.	South San Juan	---	22,000	---	17,600,000	800.
TOTALS		20,000	222,000	4,370,000	97,480,000	\$ 460.

AGRICULTURAL EXTENSION SERVIC

An important item in connection with irrigation development on the Navajo is a well planned Extension program. This is essential if the Navajos are to be taught how to make a decent living by farming. The type of Extension work provided generally for non-Indian farmers falls short of meeting the need. The potential Navajo farmers will be selected at random from among people whose knowledge of irrigation farming is practically zero. They will be obliged to learn how to live and work under different conditions than those to which they are accustomed. Cooperative effort will be necessary and the success of the individual farmer will depend, to a considerable extent, upon his willingness to accept the new type of economy. They will need encouragement and assistance, but it is believed the Navajo will embrace the opportunity afforded, and under the proper guidance, will become a successful farmer within an average period of ten years or less.

In order to assure reasonable success one agricultural extension worker should be provided for each 50 farm families. Women workers should also be provided to teach and assist the Navajo women in improving their homes and the home life of their families. It is estimated that one home economic worker should be provided for each 200 families. The agricultural extension workers should have the advice and assistance of a well trained agronomist; a livestock specialist; a horticulturist, and a veterinarian, and the home economic workers will need the guidance of a nutritionist and home management specialist. A certain number of credit workers will also be required, as these potential farmers will have to depend largely on government credit for agricultural and other loans.

The ratio of workers to families can be progressively decreased as the Indians develop ability, but for the purpose of estimating the total cost of this necessary work it is assumed that an equivalent of one agricultural extension worker should be provided for each 50 farm families, and one home economic worker for each 200 families, for a period of ten years, after which the ratio will be reduced to that common to non-Indian families generally.

The annual salary and expenses of these employees, including necessary clerical help, will average \$4,000. Therefore, for each 50 families the annual cost will be \$5,000, or \$100 per family, which, spread over a period of ten years, is equal to \$1,000 per family.

RECOMMENDATIONS

An orderly program for the development of the potential resources of the reservation is recommended. The expenditure is justified, first because the welfare of the Navajo is the responsibility of the Federal government; second, the tangible benefits will exceed the costs in the ratio of about 2 : 1; and third, the permanent rehabilitation and integration of this group of American citizens, now confronted with disintegration, disease and hunger, will remove problems with which the affected states cannot cope, and will improve the financial social and economic condition of these states and the Nation.

The first step in the development program should include surveys and the preparation of plans for increasing the production of lumber and lumber products; stockwater development and range improvement; a detail study of the coal deposit and the preparation of plans for the development of this potential resource; the

constructor. Items 1 and 2 of the ultimate irrigation plan, namely: expanding the 78 existing units to their ultimate area of 60,000 acres and the construction of the Shiprock unit for 115,000 acres of Indian land.

The funds required for this first step total 82 million dollars, of which \$500,000 for enlargement of the timber operations could probably be made available through a loan to the tribe; \$890,000 would be repaid by non-Indian water users; \$1,780,000 would be repaid with interest at 3 per cent through the sale of hydro-electric power, and \$8,950,000 would be charged to silt retention and flood control, leaving about 70 million dollars chargeable to Indian resource development. The various items of the program, together with the funds required, are summarized in the following tabulation:

<u>Feature of Program</u>	<u>Funds required</u>	
<u>Timber:</u>		
Surveys and development of plans	\$ 75,000	
Enlargement of mill, etc.,	300,000	
Working capital	<u>200,000</u>	\$575,000 (1)
<u>Range improvement:</u>		
Stockwater reservoirs	2,500,000	
Deep wells and windmills	500,000	
Seeding, fencing, erosion control	<u>1,000,000</u>	4,000,000
<u>Goal:</u>		
Surveys and studies of volume and quality	175,000	175,000
<u>Irrigation:</u>		
Expanding 78 miscellaneous units	8,130,000	
Shiprock unit, Indian land	57,500,000	
" " non-Indian land	890,000 (2)	
" " commercial power	1,780,000 (3)	
" " silt and flood control	<u>8,950,000 (4)</u>	<u>77,250,000</u>
Total funds required for ten-year development period		\$ 82,000,000

- (1) Part or all to be made available through loan to tribe
- (2) To be collected from water users without interest
- (3) To be amortized in 50 years with interest at 3 per cent
- (4) Non-reimbursable silt and flood control item.

BENEFITS

The estimated tangible benefits which will accrue as a result of the recommended development are as follows:

TIMBER: The full development of the timber resource, which probably can be financed through a reimbursable loan to the tribe, would provide work opportunities for a substantial number of Indians. It is estimated that 500 or more families could earn their support at a reasonable level of living from this activity if it is developed to its capacity.

RANGE IMPROVEMENTS: The range improvements would be financed by Congressional appropriations. The immediate needs, estimated to cost 4 million dollars, would make the entire range available for grazing without the necessity, as at present, of the stock being required to travel long distances to water. The improvements contemplated should result in materially increasing the carrying capacity of the range, thereby raising the standard of living of those families dependent upon stockraising.

COAL: The immediate need in connection with this potential resource is to determine the quantity and quality of the deposit, and the preparation of plans for its future development. It is believed the necessary cost of such a study is fully justified.

IRRIGATION: The analysis of potential irrigation developments indicates that completion of the 78 existing miscellaneous units and the construction of the Shiprock Unit should be started immediately, as part of the first step of the development program. The aggregate irrigable area of Indian land in these units is 175,000 acres which, on the basis of 40 acres per family, would provide for 4,375 farm families. In addition to the farm families it is estimated that about 1,625 non-farm Indian families would eventually derive a livelihood as a direct result of the development, making a total of 6,000 families provided for. This is approximately the present deficiency in human carrying capacity of the reservation resources.

The total cost of the development chargeable to Indian lands, including expenditures to date is estimated at \$69,900,000, or \$11,600 per family, to which would be added approximately \$1,000 per farm family for extension work, to be spread over a period of ten years. This would make the total cost about 75 million dollars, or \$12,500 per family.

It was pointed out that an adequate Health program for the Navajos under their present economic condition would cost \$1,750,000 annually, and that an annual saving of \$770,000 in the cost of such services could be effected on the assumption that adequate housing, sanitation and nutrition would result in the health status approximating that of the general population of the United States. The average rate of interest on the Public Debt is approximately 1.96 per cent. Assuming that interest will remain at approximately the present figure, it would seem to be reasonable to capitalize the annual saving on the Health program at 2 per cent in order to arrive at the justified expenditure. This amounts to \$38,500,000.

It was pointed out that there are 20,000 Navajo children of school age on the reservation and that a saving of \$295 per pupil could be effected where day schools instead of boarding schools were feasible. Assuming that one-half of the school age population would be settled on irrigated land where day schools would be entirely feasible, and that the average annual saving of \$295 per pupil be credited to about one half of the school age population of the area, or, say 5,000 children, the result would be an annual saving of \$1,475,000 which, capitalized at 2 per cent, would be \$73,750,000.

Assuming that reasonably adequate Health and Educational services will eventually be provided for the Navajos, and capitalizing the savings in the annual cost of these services which would result from the development of their resources as recommended, the ratio of tangible benefits to costs is $1\frac{1}{2} : 1$. The intangible benefits are of even greater importance to the affected states and the Nation.

REPRODUCED FROM THE HOLDINGS OF THE NATIONAL ARCHIVES - LOS ANGELES BRANCH

Chicago
November 14, 1946

14

402