Navajo Indian Irrigation Project

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1998

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The Navajo Indian Irrigation Project

Most people are far more familiar with the frequently cited cases where reclamation projects have adversely affected Indian tribes than with those created exclusively to serve Indian interests and benefit. Congress approved of the Navajo Indian Irrigation Project (NIIP), a network of irrigation facilities taking water from the Navajo Dam and Reservoir, in 1962 to improve the economic conditions and encourage agricultural settlement for the Navajo Indians. The project also served to partially fulfill promises the government had made to them in a treaty signed almost one hundred years earlier in 1868. The project exemplifies many of the problems and benefits associated with Indian water rights within the purpose and function of the Reclamation Act of 1902. NIIP's implementation is often criticized for poor planning, little or sporadic funding, lack of support, and an arduously slow construction process.

Project Location

The Navajo Indian Irrigation Project is located in San Juan County in northwestern New Mexico in the San Juan River Basin. Presently, the project irrigates about 70,000 acres of relatively flat land south of Farmington, New Mexico. The developed project land primarily lies south of the San Juan River on the Navajo Indian Reservation on an elevated plain 4,400-6,400 feet above sea level. The area's elevation varies by as much as two miles, and the topography slopes to a 3,260 foot basin at the confluence of the Colorado and San Juan Rivers. Melted snow from the San Juan Mountains provides runoff into the San Juan River which flows through canyons below the Navajo Dam site to the city of Shiprock and then continues to the Colorado River.

All project lands are south of the San Juan River except for the Navajo Dam and Reservoir and 36 miles of NIIP's Main Canal. Kutz Canyon and New Mexico State Highway 44

lie to the east, Bisti Canyon to the south, and the Chaco River runs along the project's present western border. The region is semi-arid with variable rainfall, strong winds, and short, but intense thunder storms during the summer and fall seasons. Crops grow best 160 days a year with an average of eight inches annual precipitation. An estimated 45.5 inches evaporates from the project's Navajo Reservoir in southwestern Colorado.[1]

Most of the 19,400 acre Navajo Reservation occupies northeastern Arizona, but it also includes land in northwestern New Mexico, southwestern Colorado, and southeastern Utah. Rolling mountains of ponderosa pine, sagebrush plateaus, red rocks, streams, lakes, and barren foothill valleys known as "badlands" characterize the landscape. The natural water supply consists primarily of intermittent streams and inaccessible groundwater. However, water and soil engineers throughout the twentieth century determined the lands irrigable. The land is poor for grazing cattle and sheep, though raising livestock has been and remains the Navajos' chief source of income.[2] The irrigated lands target a newer agribusiness industry.

Pre-Historic Setting

Though most agree they originally came from northern Canada, scholars have reached no consensus dating the arrival of the Navajos in the American Southwest. Estimates range from AD 1000 until about 1525. Archaeological remains include Navajo objects in the Chama and upper San Juan drainage vicinities. In the seventeenth century, Spanish colonists identified the *Apaches de Nabajó* as those people who lived to the west of the northern Pueblos, north of Zuñi,

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1. United States Department of Interior, Water and Power Resources Service, *Project Data*, (Denver: US Government Printing Office, 1981), 679-83; Project History, "Navajo Indian Irrigation Project," Vol. 1, (1963), 1-3; Project History, "Navajo Indian Irrigation Project," Vol. III, (1965), 1-3; R. H. Rupkey, "Report on Supplemental Investigations, Shiprock- San Juan River, Navajo Reservation, New Mexico," (Office of Indian Affairs, United States Department of Interior, Phoenix District Office, October 1946), 1.
2. Charles S. Peterson, "Headgates and Conquest: The Limits of Irrigation on the Navajo Reservation, 1880-1950," *New Mexico Historical Review*,(July 1993), 270; Peter Iverson, *The Navajo Nation*, (Westport, Connecticut : Greenwood Press, 1981), 6.

and east of the Hopi. They described the community as a semi-sedentary one which planted maize and traveled to distant fields for hunting. With natural resources scattered, Navajos often moved according to season. They frequently traded meat, animal hides, and minerals such as salt and alum to the Pueblo Indians, with whom they shared some agricultural, cultural, and ceremonial concepts. Relations with the Pueblos varied depending on the circumstances. Navajos participated in the 1680 Pueblo Revolt according to most accounts. Early Navajo efforts in flood control entailed intercepting water at the mouth of ravines, diking flat areas to hold springtime floods, and building dams of brush, dirt, and mud.

The Spanish introduced horses, weaving, and metal-crafting skills, as well as other fruits and vegetables to cultivate. Most of the people lived in "underground" homes in *racherías* and built special structures for harvest storage. In 1774, the areas's indigenous residents successfully expelled the Spanish from the eastern portion of their territory. After Mexico achieved independence, additional trade routes opened with the United States and the Navajos became a frequent target for the slave trade. By this time, agriculture, animal husbandry, hunting, gathering, and manufacturing woolen cloth formed their economic base.[3]

Historic Setting

In her dissertation analyzing the NIIP, Geographer Judith Jacobsen places the project in a strong tradition of Navajo economic development, Federal-Indian relations, Indian water rights, and Federal irrigation in the American West. These historical themes serve as useful contexts through which to view NIIP's origins and development. The increasing non-Indian settlement of New Mexico in the nineteenth century and the arrival of the United States army in 1846 altered

3. David M. Brugge, "Navajo Prehistory and History to 1850," in William C. Sturtevant, ed., *Handbook of Native North American Indians*, Vol. 10, *Southwest*, Alfonso Ortiz, ed., (Washington, DC: Smithsonian Institution, 1979), 489-96; John Leeper, "The Impact of Water Control on Small Scale Navajo Irrigation Systems," PhD Thesis, Colorado State University, (Spring 1989), 78-9.

the nature of control the Navajos had over their natural resources and greatly accelerated antagonisms between the Navajo tribe and the United States government.

In 1849, American troops shot and killed Narbona, an influential Navajo leader, in a dispute where a Mexican man in the Americans' party accused the Indians of stealing his horse. The incident raised already high tensions between the Navajos and the New Mexican settlers. The situation only grew worse as Mexicans and Anglos expanded settlements into Navajo lands throughout the 1850s. The 1858 Bonneville Treaty took some of the Navajo's best land for cultivation, grazing, and minerals. Three years later, United States soldiers killed a number of Navajos in the Fort Fauntleroy Massacre. Non-Indian settlement along the San Juan River began around 1880, with agricultural development starting about 1900.[4]

Eventually, New Mexico's army, in charge of controlling the Indians, launched a campaign to crush the Navajos who had proved difficult to defeat because they lived and hid within the rock strewn landscape. At the time, the Navajos' economy consisted of herding large flocks of sheep, tending small gardens and orchards, and plundering New Mexico settlements. At the end of 1863, government troops marched through Navajo settled areas and destroyed most of the crops, hogans, water holes, and orchards while capturing many of the livestock for which Brigadier General Carleton offered bounties. Along the way, the movement killed 301 Indians, wounded 87, and captured 703.

The army forced the weakened Navajos to emigrate to a government reservation located in Pecos Valley called Bosque Redondo (*aka* Fort Sumner) or risk starvation. Navajos refer to "The Long Walk" as one of the most tragic events in their history. Over three thousand died before reaching the fort, settlers often captured stragglers for slaves, referred to in Hispanic

4. Robert A. Roessel, Jr., "Navajo History, 1850-1923," in Sturtevant, 506; Brian J. Boman, "Consumptive Use on the Navajo Indian Irrigation Project," (Farmington, New Mexico: Bureau of Reclamation, 1984), 2.

settlements as "servants." The survivors found very poor conditions at Fort Sumner. Many Navajos became sick from the rations and disease, and they had only small shovels to build shelters. Poor farming conditions also threatened starvation. Finally, in January 1867, the Federal government switched control of the Navajos from the army to the Office of Indians Affairs (OIA). That same year, a report damning the handling of the Navajo situation prompted Congress to set up a commission to negotiate a peace treaty.[5]

The 1868 treaty between the Navajo tribe and the United States of America returned the Navajos to part of their homeland. They numbered about 8,000. Over several years, Congress gradually expanded the reservation due to conflicts with Navajos who technically lived off the reservation. Briefly, the treaty guaranteed that neither party would wage war against the other, the United States government would protect the Navajos from injustices, construct a number of buildings on the reservation, provide housing for the Navajo agent on the reservation, and would establish educational opportunities. In addition, the treaty explicitly encouraged the Navajos to take up farming by promising 160 acres of land and tools to any family or individual desiring to cultivate. However, tempting agricultural opportunities never really arose over the next century and the Navajos built their economy around other resources like livestock raising, forestry, energy, and minerals already on reservation lands.[6]

Over the next few years, trading posts and the railroad spurred interest in a Native arts and crafts industry. The Federal government issued sheep and goats to encourage livestock raising as well as farming– an approach the Navajos found far more successful than depending on scarce and unreliable water supplies for the eight to ten thousand cultivated acres on the

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5. Roessel, 507-14.
6. Treaty of 1868: "Treaty Between the United States of America, and the Navajo Tribe of Indians, June 1, 1868," Articles V and VII, http://www.navajoland.com/treaty1868.html.

reservation.[7]

Throughout the late nineteenth and early twentieth century, assimilationist values guided Federal Indian policy as exemplified in the 1887 Dawes Act. The Dawes, or Allotment, Act required Indian land to be divided into individual property titles. By 1900, Navajo farmers on the San Juan River cultivated 270 irrigated fields from thirty-seven miles of ditches. Cottonwood Wash south of Fruitland, Carrizo Wash, Two Grey Hills, Wheatfields, Red Lake, Rock Point, and Fort Defiance contained agricultural plots as well.[8]

As early as 1901, Jay Turley, a surveyor for the communities of Aztec and Blanco, conducted investigations for irrigation south of the San Juan River.[9] Though his findings concluded that irrigation could produce 1,300,000 acres of agricultural land in the San Juan and Chaco valleys, Turley could not convince private capital or the Federal government to fund it. In 1902, Congress passed the National Reclamation Act which required Federal compliance with state water law. Most states decided water disputes on the doctrine of prior appropriation.[10] However, this method often clashed with the water rights Federal treaties promised to Indian tribes.

In 1908, the Federal court decision of *Winters v United States* upheld Indian water rights reasoning that "the creation of a Federal reservation carries implicit rights of water to serve that reservation." Prior appropriation, the policy by which most states determined water rights, fell at the date Congress established the Indians' reservation. Lastly, the decision indicated that Indians, unlike other water users, do not automatically waive their water right if they fail to use

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7. Marc Simmons, *New Mexico: A Bicentennial History* (New York: W. W. Norton and Company, Inc., 1977), 150-1; Roessel, 513, 517; Leeper, 81.
8. Leeper, 81.
9. Harold J. Boyd and Shirley A. Allison, "A Wait of Many Moons for... Irrigation to the Navajo Tribe," *Reclamation Era* (November 1965), 99.
10. Project History, "Navajo Indian Irrigation Project," Vol. III, 1965, 1.

it.[11] Essentially, the "Winters Doctrine" held that states could not enforce state water rights laws against the rights of Indian reservations. This decision would later prove of great importance to approval of the Navajo Indian Irrigation Project (NIIP) as a participating project of the Colorado River Storage Project (CRSP). The Navajos could claim a large amount of water from the Colorado River based on both Winters rights as well as the doctrine of prior appropriation.[12]

During the 1920s, the OIA reviewed Turley's 1901 proposal, but after conducting a feasibility study, officials decided practical economic conditions still did not yet exist to enact it.[13] Though the government continued to raised the idea of irrigation on Navajo land often over the next few years, neither Congress or the agencies involved, OIA and the United States Bureau of Reclamation (Reclamation), felt a project was economically practical. In the late 1920s, one feasibility study proposed 260,000 irrigable acres entirely on the Navajo Reservation at a cost of $200 an acre.[14]

The Great Depression hit much of the country hard. The depletion of natural resources on the Navajo Reservation paralleled that on the Great Plains. From the turn of the century, the local Office of Indian Affairs sought to remedy the Reservation's problems of soil erosion and overgrazing. OIA included a Division of Indian Irrigation, operated out of Albuquerque, which developed springs, promoted grazing and encouraged irrigation on the reservation. The division built ditches, albeit without much planning, and as early as the 1880s, engineers produced plans for several small projects such as the Ganado Project. In the early twentieth century, they sunk 166 deep wells with pumps, erected a windmill, installed storage tanks, developed 269 springs,

11. In most cases a water right is sacrificed if the owner of that right does not put the water to "beneficial use".
12. Judith E. Jacobsen, "The Navajo Indian Irrigation Project and Quantification of Navajo Winters Rights," *Natural Resources Journal* 32 (Fall 1992); Lloyd Burton, "American Indian Water Rights" in Zachary A. Smith, ed., *Water and the Future of the Southwest* (Albuquerque: University of New Mexico Press, 1989), 155-8.
13. However, the present layout of NIIP roughly reflects the 1920s surveys by Herbert W. Yeo, State Engineer of New Mexico.
14. Boyd and Allison, 99-100.

and built 21 reservoirs. They also tried to initiate voluntary stock reduction, rid the sheep of scabies, control sheep breeding, and eliminate the reservation's wild horses, but none of these measures proved very popular with Navajos.[15]

By the 1930s, drought conditions and demographic increases made the situation even worse. Among the many New Deal reforms of the time period, OIA Commissioner John Collier, a self-proclaimed admirer of Southwestern Native American culture, initiated new policies toward American Indians. The most sweeping legislation took the form of the Indian Reorganization Act which shifted the former assimilation strategy and granted tribes the right to organize and represent themselves through their own governments based on a U.S. democratic model. In addition, Collier felt the best way to preserve the Navajo people meant efforts to expand the reservation and call for mandatory stock reduction. The latter policy directly invaded and disturbed Navajos' daily way of life. Tribal officials accused Collier of starving the Navajos. Both Navajos and scholars consider stock reduction a disaster for Federal-Indian relations, not to mention a severe blow to an economic base to which the Indians had grown accustomed. These circumstances again strongly suggested the need and benefits of irrigation for the Navajos. The OIA tried to remedy the crisis by re-settling families within new irrigation systems on subsistence farms.[16]

During this time, the government built the Hogback and Fruitland projects south of the San Juan River near Farmington with CCC (Civilian Construction Corps) crews. The Indians also constructed their own irrigation systems, like that at Cudai, in an effort to serve more people. After the government cut the individual acreage allotment of its projects from twenty acres to ten, the Indians, resentful because of the stock reduction program, grew increasingly

15. Peterson, 271-5; Iverson, 23.
16. Iverson, 23-45.

irritated. In addition, the subsistence-based systems failed to provide an adequate living for most Navajos. Wage labor often had to supplement farming and ceremonial calendars did not always coincide with the rhythms of agricultural farming. Until construction of NIIP, 600 families tried to make their living like this, but the reservation had no assured water supply and relied on runoff that was susceptible to intermittent rains, snow, and drought. A government sponsored 1934 investigation of the Rio Grande waters resulted in the proposal of a project called the San Juan-Chama Diversion Project. It promised to deliver water to Albuquerque. This prospect alarmed the Navajos and they soon passed a tribal council resolution that vowed to protect the Navajos' water rights in reference to the lands along the San Juan River.[17]

Under section nine of the Reclamation Act of 1939, Congress designated certain groups as preference customers for its projects. This allowed the Secretary of the Interior to enter into contracts to furnish water or power to various groups by granting sales or lease preference to municipalities and other public corporations or agencies; as well as cooperatives and other non-profit organizations financed in whole or in part by loans made pursuant to the REA (Rural Electrification Administration). The Navajo Indian Tribe qualified as a preference customer for the purchase of power marketed by Reclamation. In 1940, a joint study by the OIA and Reclamation identified 132,000 acres of irrigable Navajo land.[18]

Armed with Winters rights, Federal treaty obligations, and the privileges of a preference customer, the tribal council pushed OIA to oppose the San Juan-Chama Diversion Project and help irrigate the Reservation with San Juan River water throughout the 1940s. The Indian Service Superintendent, J.M. Stewart, responded by raising serious discussions about its plans

17. Leeper, 82-4; Judith Eva Jacobsen, "A Promise Made: The Navajo Indian Irrigation Project and Water Politics in the American West," PhD Thesis, University of Colorado, Boulder, (1989), 79, 80; 100; Rubkey, 1-2.
18. Memorandum by Associate Solicitor Weinberg, April 14, 1961, "Reclamation Project Act of 1939," August 4, 1939, ch. 418 53 Stat. 1187 in Richard K. Pelz, ed., *Federal Reclamation and Related Laws Annotated* 1 (Washington DC: United States Department of Interior, Government Printing Office, 1972), 650; Boman, 2-3.

for the Shiprock Project which would support the idea of irrigation farming for Navajos. The OIA issued two preliminary reports from 1945-46 on the project with more complete studies of the area. The Shiprock Project planned a dam on the San Juan River, 80 miles of canals, and pumping stations to irrigate 115,000 acres of Navajo land and 2,000 acres of non-Navajo land.[19]

The 1946 OIA report also prognosticated that when people settled the Shiprock Project, schools, hospitals, and stores would require electricity and that Indian farmers would also purchase electrical power if it became available. While the nearby town of Farmington had powerplants, the local Office of Indian Affairs operated a 369kW 60 cycle generating plant at Shiprock that used butane gas. None of the areas farmed by Indians had distribution lines (though the Farmington system is close to Fruitland and Hogback Projects). In addition, the small communities of Newcomb, Sanastee, Tocito, and Toadelena would be within reach of a new Shiprock Project power system.[20]

By 1946, the Bureau of Reclamation also developed a comprehensive plan to develop the San Juan River. The plan included the Shiprock Project and another called the South San Juan Project which would water land to the east of the Shiprock area. In 1950, the Secretary of the Interior appointed representatives of the Bureau of Indian Affairs (OIA's name changed to BIA in 1947) and Reclamation to the San Juan Technical Committee and charged them with reporting the best ways to use New Mexico's allotment of the San Juan River (800,000 acre feet) through a feasibility study called the Colorado River Basin Report. The Technical Committee analyzed existing data, recommended changes, and at last began to develop plans and issued a report in 1952 estimating the size of both projects. The combined Shiprock Project and South San Juan Projects would eventually become the Navajo Indian Irrigation Project.

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19. Jacobsen, "A Promise Made," 110-5.
20. Rupkey, 1-4, 14-5, 19.

Meanwhile, after World War II, increasing reports of widespread hunger and poverty in Navajo country increased. On December 2, 1947, President Truman issued a statement of emergency for the Navajos and Congress provided money for a thorough investigation in the BIA's 1948 appropriation bill.[21] In response to a 1948 report by the Secretary of the Interior, which included discussion about the Shiprock Irrigation Project and the dire economic straights of the southwestern Indians, Congress passed the Navajo-Hopi Long Range Rehabilitation Act in 1950. The act granted the tribes eighty-eight million dollars to improve living conditions and employment opportunities. The money paid for much needed road and school construction, new hospitals, and other health facilities, and Congress earmarked over six million dollars of the funds for Navajo irrigation projects.[22]

Social and political trends toward increasing Native American control over their own economic and natural resources also influenced the final congressional approval of a Reclamation planned and constructed Navajo irrigation project after so many years of discussion. As with other Americans, World War II had a profound effect on the Navajo tribe. Their active participation in the war effort on both the frontlines of battle and on the home front hastened interaction with the non-Indian society. Their service earned them respect and recognition, but economic conditions on the reservation still remained poor. Encouraged by their performance during the war, Congress adopted a new strategy for assimilating the American Indian after the war. Many legislators felt that too many the Federal dollars targeted perfectly capable Indian groups and set out to lessen Federal control by terminating Federal

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21. Boman, 3; J. A. Krug, *The Navajo: A Long-Range Program for Navajo Rehabilitation* (Washington DC: Department of the Interior), 1948, V; Deputy Solicitor Fritz Opinion, 64 ID 70 (1957), Notes of Opinions, Colorado River Storage Act, April 11, 1956, ch. 203, 70 Stat. 105 in Richard K Peltz., ed., *Federal Reclamation and Related Laws Annotated* 2, Washington, D.C.: Government Printing Office, 1972), 125; Jacobsen, "A Promise Made," 110-2.
22. Iverson, 5; Jacobsen, "A Promise Made," 117, Krug, V-VII.

tribal recognition status of selected tribes through Resolution 108, Public Law 280, and the Indian Relocation Act which designed a program to move Indians into urban areas. Though not identified as a termination tribe, the Navajos responded to the threat of reduced Federal financial support by promoting a doctrine of self-determination and taking more control over their own natural and economic resources. Both oil discoveries at the end of the 1950s helped fill the Navajo treasury and further self-determination and the tribe's decision to create a tribal enterprise called the Navajo Forest Products Industries (NFPI).[23] Both the tribe and the BIA looked to irrigation as another opportunity for self-reliance.

Existing Reservation irrigation systems had unreliable water supplies. Navajo land primarily served livestock. With Indian homes scattered, the Reservation's few small projects had significant areas under cultivation, and individuals outside the tribe used grazing lands under tribal arrangements. At New Mexico Governor Edwin L. Mecham's request in 1953, Secretary of the Interior James Douglas McKay instructed BIA and Reclamation to collaborate on a project to bring San Juan River water into the Navajo Reservation. Meanwhile, the Navajo Tribe insisted on becoming part of discussions for the Colorado River Storage Project (CRSP) in order to oppose the San Juan-Chama Diversion and assert Navajo water rights and irrigation needs.[24]

In 1955, BIA published a feasibility study for the NIIP. The report claimed that something needed to raise the Navajo standard of living and that an irrigation project served as their only significant resource to do so. It estimated that the Navajos could claim 778,000 acre feet of San Juan River water. It suggested building a dam, reservoir, and power plant at Pump Canyon. The reservoir would have a capacity at 403,000 feet, and the canal system would

23. Iverson, 50-1.
24. Jacobsen, "A Promise Made," 11, 117, 124.

deliver water to 137,250 acres, 26,620 of which would serve non-Indians.[25]

At the same time, Reclamation produced a feasibility study diverting 235,000 acre feet for the San Juan-Chama Diversion Project to serve Albuquerque. In April of 1956, the legislation in the Colorado River Storage Project Act cited both a San Juan-Chama diversion and a Navajo irrigation system as participating projects upon final approval. That November, the New Mexico Interstate Stream Commission recommended that the Navajo Indian Irrigation Project be *primarily* for the Navajo Indians and suggested some changes. These included reducing NIP's total acreage to 110,000 acres to make the most efficient use of the best irrigable lands. The BIA submitted its final report to the State of New Mexico, the Tribal Council, local, state, and Federal agencies for approval.[26] Senators Clinton P. Anderson and Dennis Chavez introduced the Navajo Irrigation-San Juan-Chama Diversion bill to the Senate on April 21, 1958. In May of 1962, four Navajos followed tribal chairman Paul Jones to Washington to lobby for passage of the NIIP- San Juan-Chama bill.[27]

Project Authorization

Congress passed the act authorizing the Navajo Irrigation Indian Project and the initial stage of the San Juan-Chama Project as part of the Colorado River Storage Project on June 13, 1962. It was the first major Reclamation bill of the Kennedy administration. Because they competed for the same water source, final approval of the two projects followed complicated and often heated negotiations balancing Indian rights against non-Indian claims to the water of the San Juan River.

Legal scholar Lloyd Burton claims that the proceedings in the landmark water right case

25. Navajo Tribal Council, Minutes to Meeting, NIIP Office, Farmington, New Mexico, December 11, 1957.
26. "Colorado River Storage Act," April 11, 1956, ch. 203, 70 Stat. 105 in Peltz; "Project History, Navajo Indian Irrigation Project," Vol. I, (1963), 1, 2.
27. "Navajos Join Congressmen in San Juan-Chama Lobby," *The Navajo Times* 2 (May 23, 1962), 1; Navajo Tribal Council, Minutes, December 11, 1957.

Arizona v California (1963) influenced the negotiations in progress over the proposal to construct an irrigation project on the Navajo Indian Reservation. The case upheld Winters rights and further argued that the reserved right equaled the amount of water necessary to raise crops. This meant that any water negotiations would have to take Winters rights into account, and the Navajos had a sizable claim. At the San Juan-Chama/ NIIP hearings in 1961, Maurice McCabe, the Navajo Tribal Council director, testified that the Navajos would rather have the project than cash because it promised long term benefits and solutions. However, upper Great Basin states would only approve of the idea if the "tribe agreed to limit and define its rights to the San Juan River."[28]

As a condition of its support for the Navajo project, New Mexico insisted upon a non-Indian companion project that would divert San Juan River water to the Rio Grande watershed (the San Juan-Chama Project). The Navajo Tribal Council agreed to forego the Navajos' claim of the water in that diversion for a guaranteed delivery of 508,000 acre feet a year to 110,630 acres and to share their water during periods of water shortages if Congress reduced the San Juan-Chama in size to an "initial stage."[29] *The Navajo Times* newspaper, a tribally owned enterprise, reported that the majority opinion agreed that without NIIP authorization or its concessions, the San Juan-Chama bill would never have passed.[30]

Many congressmen apparently voted for the bill because they did not want to face the moral or political implications of opposing an Indian project like NIIP. Congressmen who

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28. Lloyd Burton, *American Indian Water Rights and the Limits of the Law* (Lawrence, Kansas: University Press of Kansas), 1991, 30-1; Burton, "American Indian Water Rights" in Zachary A. Smith, *Water and the Future of the Southwest* (Albuquerque: University of New Mexico Press, 1989), 30; "All Navajo Problems Can be Solved by Water," *The Navajo Times* 1 (May 3, 1961), 7.
29. Navajo Tribal Council, Minutes, December 11, 1957.
30. "Victory," *The Navajo Times* 2 (May, 30, 1962), 1; Senator McCabe, Congress. House. Committee on Interior and Insular Affairs, Subcommittee on Irrigation and Reclamation, *San Juan Chama Reclamation Project and the Navajo Indian Irrigation Project:* Hearings, 87th Congress, 1st Session, (Washington DC: Government Printing Office), 1961, 42.

opposed the bill considered the project economically unfeasible, worried over the national problems with surplus agricultural products, and insisted there existed better ways to help the Indians. Planners estimated an expenditure of $135,000,000 and fourteen years completion time. The legislation included provisions for managed and industrial usage, and the Project could include additional capacity upon Congressional approval.[31]

The Navajo Times expressed elation over the final passage of the bill. Tribal Chairman Paul Jones expressed, "This is the culmination of many, many years of hard work by Navajo leaders and non-Navajo people who have been involved in seemingly endless negotiations and encountered many frustrating obstacles."[32]

Though authorized together, Congress did not treat the two projects equally when it came to appropriations allocations. After eight years, only 17% of NIIP had been completed, compared to 66% of the San-Juan Chama project. The question of whether or not the Navajos sacrificed their priority Winters rights by agreeing to share water in times of shortage remains a debate.[33]

Over the past twenty years, a number of Navajos and scholars sympathetic to Indian rights have severely criticized NIIP. Their cynical view suggests that state and Federal agencies manipulated Indian sympathies and priority rights to gain funding for the benefit of non-Indian projects.[34] Some people suggest that Congress's decision to package NIIP with the San Juan-Chama Project indicates that Navajo water resource claims became a negotiating tool after the

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31. United States Congress, Legislative History, 1684-5.
32. "Victory," *The Navajo Times* 2 (May 30, 1962), 1, 12.
33. See Judith E. Jacobsen "The Navajo Indian Irrigation Project and Quantification of Navajo Winters Rights," *Natural Resources Journal* 32 (Fall 1992), 825-53.
34. The civil rights and "red power" movements in the 1960s may have increased sensitivity to under-privileged minority issues. See Judith Jacobsen, "A Promise Made," Daniel McCool, *Command of the Waters Iron Triangles, Federal Water Development, and Indian Water* (Berkeley: University of California), 1987; and Lloyd Burton, *American Indian Water Rights and the Limits of the Law.*

states of Colorado and New Mexico suggested that the Navajo irrigation project be held up until an agreement that ensured protection for the interests of their states could be reached. The Congress, Reclamation, the BIA, and the Navajo tribe itself subjected NIIP to numerous delays. Historian Peter Iverson, however, suggests that NIIP exemplifies somewhat successful use of Navajo Winters Rights because they had a legitimate claim and could get something for it.[35]

Construction History

The NIIP's construction history is replete with re-assessments, engineering changes, low amounts of funding, incremental construction, and delays resulting from such types of problems. The planning process began with several meetings between the tribe and the BIA to inform tribal members of the project's progress. Reclamation gathered data outside the reservation, while BIA collected information inside it. While Reclamation supervises project construction, it transfers all facilities to the BIA based on a 1967 maintenance agreement. On February 21, 1963, Reclamation and the Navajo Tribe met to draft a contract between them for water delivery from the reservoir. Reclamation also held meetings with the Bureau of Sport Fisheries and Wildlife (BSFW) and the Bureau of Land Management (BLM).

The Navajo Indian Irrigation Project was planned as an approximately 600 mile water delivery system for water stored in the Navajo Reservoir behind Navajo Dam. If completed, it will eventually serve 11 blocks of approximately 10,000 acres each. Authorized in 1956 as part of the Colorado River Storage Project, Reclamation completed Navajo Dam in 1963 in anticipation of a Navajo irrigation project. The dam and reservoir would store up to 1.7 million acre feet of water thirty-five miles west of Farmington. Water enters the 46.3 mile long Main Canal through diversion headworks at the dam's left abutment and travels to the southwest

35. Iverson, 110, 113-4; Burton, 84.

through two main tunnels (Tunnel #1 and Tunnel #2) to the reservoir behind NIIP's Cutter Dam.

The Main Canal is capable of delivering 2,120 cubic feet of water every 60 days. It consists of open canal and four tunneled areas. The Main Canal carries water to Blocks 1 and 4 and supplies water to the Gravity Main Canal, the Amarillo Canal, and the Burnham and Coury Laterals. Other planned project facilities included a network of fifteen concrete siphons, seven tunnels in all totaling about 12.8 miles in length, almost 100 miles of canals and laterals, an underground pipe system, and a small 23 megawatt hydroelectric power plant and switchyard. Two hundred miles of drains collect runoff and irrigation return flows. The target date for the first water delivery was 1971.[36]

The hydroelectric powerplant at Navajo Dam would operate seasonally when the system releases irrigation water. Three pumping plants located at various points throughout the system would then lift water to 40.6 miles of lined laterals to convey water to southern and eastern portions or the project. The powerplant's energy would also help furnish energy to two substations, and subsequently 164 miles of transmission and distribution lines at 2.4 to 110kV to project lands.[37]

Reclamation predicted that the entire project required 7,000 on-site man hours and 12,000 off-site. The completion of Navajo Dam on July 25, 1963, made its entire staff available for work on NIIP. Reclamation appointed Leon W. Hill, Region 5's director in Amarillo, to oversee construction which began its early stages in 1963 with the drafting of design data. The General Services Administration (GSA) provided new office space and a motor pool in Farmington though this was the fourth location for the NIIP staff. Motorola Communications

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36. Secretary of the Interior, "NIIP, New Mexico," May 1980; Boyd., 8-11; Project History, "Navajo Indian Irrigation Project," Vol. I, 1963, 1.
37. Boman, 2-4.

and Electronics of Washington, D.C. provided radio equipment on October 25, 1963. The United States Geological Services (USGS) performed topographic mapping and Aero Service Corp took the aerial photography.[38]

Sexton Brothers Drilling of Cortez, Colorado received and accepted the contract on June 29, 1963, to drill the first tunnel (Tunnel #1) of the Main Canal. The following spring saw the beginning of NIIP's first major phase of excavation and construction. In May 1964, Fenix and Scisson, Inc. of Tulsa, Oklahoma won the bid to construct the Main Canal headworks and part of Tunnel #1at $5,402,994. That summer, Reclamation prepared a re-appraisal report to solidify construction decisions and costs which included down-sizing the capacity of the Main Canal. By 1965, the contractors began using a new drilling machine known as "The Mole" for tunnel excavation.

On February 1, 1965, Shea Kaiser- Macco of Redding, California accepted an 8.6 million dollar contract for the second phase of the project to build the Main Canal, it's second tunnel (*aka* Tunnel #2), and about 59 miles of open canal east of Farmington. The work entailed excavation work and concrete lining of five miles of Tunnel #2 from Gobernador Canyon to Cutter Dam in San Juan City. At the upstream end of the tunnel, a 650-foot long lined canal would connect to a siphon crossing the canyon. As 1965 progressed, the NIIP crews and staff dwindled as Reclamation detailed some personnel onto other jobs.[39]

In 1965, BIA, Reclamation, BLM, and the Navajo Tribe met in BIA's project engineering office to discuss the acquisition of project land outside the reservation; similarly the Bureau of Sports, Fish and Wildlife, BIA, the Navajo Tribe, New Mexico's Department of Game, Fish and

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38. Project History, "Navajo Indian Irrigation Project," Vol. I, (1963), 7, 10, 12.
39. Project History, "Navajo Indian Irrigation Project," Vol. 3, 1965; "8.6 Million Contract to NIIP," *The Navajo Times* 6 (February 25, 1965), 1; Tom Roe, Construction Table for NIIP, BIA, Farmington, New Mexico, June 16, 1998.

Wildlife, BLM, and Reclamation met to coordinate planning.[40] In a February meeting, planners from the tribe, BIA, and Reclamation decided to remove reservation lands at Pauline Mesa and put it into trust but added an equal area of arable land to the Navajo Reservation. This change allowed more effective use of good irrigation land and required the relocation of the Main Canal to save six feet of head at the Kutz pumping plant. The meeting participants also decided that the power manufactured at Navajo Dam's powerplant would not be available for purchase. If NIIP needed more power, it could purchase it from the CRSP. To the tribe's dismay, the meeting concluded with the decision to eliminate water for municipal and industrial purposes because no contracts had been approved anyway.[41]

In the following year, several issues arose which foreshadowed the future progress of projects. Chet MacRorie, editor of *The Navajo Times,* reported that Reclamation built the San Juan-Chama Diversion Canal larger than the act originally stipulated without the tribe's knowledge. MacRorie voiced the fear that the system would take the extra water away from NIIP for municipal and industrial use. Efforts throughout the 1960s to train Navajo farm operators failed for various reasons. Ultimately, both the tribe and the BIA determined that family farms were not a viable option on the Navajo Reservation. Workers simply wanted to provide for families rather than become students of farm management and agriculture. Instead, officials adopted the tribal enterprise model that the tribe used successfully in the Navajo Forest Products Industries (NFPI). They contemplated other avenues for tribally run economic and industrial development like using crude oil or natural gas for a fertilizing plant.[42]

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40. 1980 report; Project History, "Navajo Indian Irrigation Project," Vol. 2, 1964. 1; "Tribe protests Funds Cut in NIIP," *The Navajo Times* 9 (February 15, 1968), 14.

41. Project History; "Navajo Indian Irrigation Project," (1965); Jacobsen, 14.

42. Appendices to Re-evaluation Report, NIIP, New Mexico, July 1966; Project History, "Navajo Indian Irrigation Project," Vol. II (1964), 5; Chet MacRorie, "Washington to Hear Navajo Water Issues," *The Navajo Times* 7 (May 26, 1966), 1, 3; "Senator Says Water Series Has One Useful By-product," *The Navajo Times,* (June 30,

(continued...)

Frustrated by delays, setbacks, and low funding, Senator Clinton Anderson of New Mexico and Secretary of the Interior Stuart Udall requested a re-evaluation of the Navajo project in 1966. Anderson wanted to reduce acreage to 77,000, but Secretary Udall, a former Arizonan Senator, agreed that Navajo prospects for industrial development should be considered. Anderson conceded when Navajos threatened to withdraw their support of NIIP entirely, take back all their Winters Rights through the Federal courts. About that time, a Reclamation task force concluded that there were other uses for Navajo water and that plans should be concentrated toward tribal agribusiness rather than subsistence family farms. The Secretary approved the new plan in December.[43] On May 11, 1967, the Navajo Tribal Council passed a resolution to create a tribal enterprise which would administer and develop project lands. In 1968 and 1969, New Mexico Senators and Congressmen requested funding increases for NIIP after the tribe accused Congress and New Mexico officials of "a deliberate and intentional effort to choke off the project" and take Navajo water for non-Indian use.[44] Public Law 91-416 authorized the new plan on September 25, 1970, and the tribe formed the Navajo Agricultural Products Industries (NAPI) to oversee NIIP lands.

The 1970 NIIP Act allowed more lands into the project, eliminated lands west of the Chaco River, and raised the project authorization to 206 million dollars to match inflation to April 1970 prices. The new land provided the project with better soil, a more compact area for irrigation, and allowed some savings in canal water loss. Once the Navajo Dam diversion facilities were completed in 1967, the new irrigation plan included both individual and newly

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42. (...continued)
1966) 1. Project History, "Navajo Indian Irrigation Project," Vol. III, (1966), IV-17; 1980 Report.

43. Iverson, 113-4; Project History, "Navajo Indian Irrigation Project," (1985), 10; Chet MacRorie, "Big Water Grab: Years in Planning," *The Navajo Times* 7 (April 28, 1966), 1.

44. Project History, "Navajo Indian Irrigation Project," Vol. VI, (1968), 1; Project History, "Navajo Indian Irrigation Project," Vol. VII, (1969), 2; "Tribe Protests Funds Cut in NIIP," *The Navajo Times* 9 (February 15, 1968), 1, 14.

adopted collective farming techniques. NAPI would plan and guide NIIP development and supervise the project through directives issued from the Navajo Tribal Council. With such long range operational plans, BIA and the tribe hoped to build an agribusiness complex and growing economic base. An April 6, 1970 tribal resolution established NAPI's plan of operation and a thirteen member management board. Through NAPI, the tribe contracted with Ball Agricultural Systems, Inc to assist their direction of farming operations. Though NAPI assumed all operation and management duties, NIIP remained under Reclamation supervision.[45]

The tribe modeled NAPI after their successful Navajo Forest Products Industries (NFPI) enterprise to train Navajos for agricultural work, encourage productive use of agricultural resources, expand markets on and off the reservation, and promote agribusiness. The Management Board appointed an advisory committee with both Navajo and non-Navajo members. The latter were retired Anglo business executives. The Committee appointed Dr. Bahe Billy, a Navajo and graduate of the University of Arizona, general manager. NAPI required all non-Navajo employees to train a Navajo to replace them in no less than five years. To avoid conflicts of interest, the Navajo Tribal Council forbade anyone working for the BIA to be a member of the management board. NAPI entered into contracts with the BIA for operation and maintenance, farm development, and agricultural testing and research.[46]

Throughout the early 1970s, the tribal council complained that a lack of funding staggered NIIP's construction, though it appears to have enjoyed somewhat steady, if slow, progress. Contractors completed the 1964 contract for Tunnel #1 in August 1967 and Tunnel #2, begun in 1965, in January 1969. A phase three contract of $6,724,000, begun in 1967 to build 2.2 miles of a siphon, and 2.7 miles of an open concrete canal, was only 25% complete.

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45. 1980 Report, 2, 40.
46. Iverson, 164-6; 1980 Report, 41; Bob Krakow, BIA, Phone Interview by Leah S. Glaser, June 10, 1998.

Universal Constructors, Inc. of Albuquerque and Vinnell Corporation of Alhambra, California completed several siphons and concrete lined canals from 1967 through 1975 for over 20 million dollars. Johnson Brothers Highway and Heavy Constructors, Inc. of Litchfield, Minnesota built the $2,364,931 Cutter Dam from September 1970 to June 1972 where the Tunnel #2 emerges and carries water to a 3200 foot unlined canal. The El Paso National Gas Company removed some of its pipelines in August because they intruded on some of the tunnel excavations. In November 1970, Fluor Utah Engineers and Contractors, Inc., of Burlingame, California began working on an $8,681,188 contract for two concrete lined tunnels which formed Tunnel #3 of the Main Canal and began working on an open portion of the Main Canal. They did not complete their work in 1974.

Appropriations for continued construction and project completion indeed fell in the early 1970s. However, to add to the financial burden, the NAPI frequently underestimated their costs. They could not remedy the situation by selling lands since they were in trust, nor could they put them up for loan collateral. In order to make an all Indian project, the government had to claim reservation lands and put them in trust.[47] In response to the problems, the government sought more cost effective solutions for NIIP. Unfortunately, these solutions also meant limiting the Navajos' water allocation. A report issued by the BIA and Reclamation on August 1, 1972 recommended NIIP's average diversion be reduced from 508,000 acre feet to 330,000 to irrigate 105,000 acres of land.[48] Another joint study in 1973 strongly advised converting NIIP to an all-sprinkler irrigation system which reduced the water supply. Engineers felt that such a system served sandy and rolling hills better and that sprinkler reduced the necessary water supply,

47. Federal Public Domain lands were added to the Navajo Reservation in exchange. Navajo Tribal Council, Minutes to Meeting, December 11, 1957.
48. 1980 Report; Jacobsen, "A Promise Made," 160; "Tribe Protest Funds Cut in NIIP," *The Navajo Times*, 14; "Contract Given on Canal," *The Navajo Times* 11 (November 12, 1970), 1.

though labor expenses would rise. The following year the project's technology switched from gravity flow to sprinkler irrigation. The remaining 178,000 acre feet could be made available to generate electrical energy to operate the project pumping plants.[49]

In 1975, the New Mexico Jicarilla Apache's search for water brought about a large state adjudication case based on the negative impact of the San Juan-Chama diversion on their reservation. Granting the Jicarilla's San Juan-Chama water reduced the NIIP water allocation.[50] Still, the project continued to offer promise for economic development. Also in 1975, New Mexico State University and the Navajo Community College agreed to jointly train young Navajos to work on and manage the project for NAPI.

NIIP was able to release water to the first 10,000 acre block of NIIP crops on April 10, 1976. Toward the end of the decade Ball, Ball, and Brosamer, Inc. of Danville, California built the Gravity Main Canal and the Tunnel #5. The Gravity Main Canal originates at the end of the Main Canal at West Gallegos Wash and flow northwest 14.5 miles began serving water to Blocks 2 and 6 in 1977. Albuquerque's Universal Constructors completed the Amarillo Canal, which branches off the Gravity Main at Amarillo Canyon and extends westward 11.2 mils to Blocks 3, 7, and part of Block 8. They completed work in 1979. With the steady progress, NIIP's outlook looked promising and project directors predicted its completion by 1988.[51]

Several instances, however, threatened project completion. In 1977, the National and New Mexico Wildlife Federations filed a suit against the imminent construction of the Navajo Dam's powerplant and switchyard, authorized in the 1962 act for NIIP. The issue was resolved, but the ordeal further delayed project construction. In 1978, Power Constructors, Inc. and

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49. Robert A. Young and Roger Mann, "Cheap Water in Indian Country: A Cost-Effective Rural Development Tool?" in McGuire, 165-84; *Project Data*, 682.
50. Burton, *American Indian Water Rights and the Limits of the Law*, 67.
51. "Irrigation Project is Progressing," *The Navajo Times* 17 (June 24, 1976), 1.

Sanders Construction Company began building the 115kV line and the Gallegos substation respectively.[52] By 1982, NIIP only delivered water to five 10,000 acre blocks out of eleven.[53]

The 1980s proved a time of serious stagnation in the construction of NIIP. Continual problems with escalating costs and management prompted the Office of Management and Budget (OMB) to ask BIA and Reclamation to conduct another analysis in 1980. The office requested that the report address cropping patterns, watering requirements, organizational alternatives, water rights, and productive acreage. OMB also asked the bureaus for suggestions for eliminating deficits and about management of irrigation operations.[54]

Between 1981 and 1989, Federal attempts to control the growing Federal deficit drastically cut already low appropriations. From 1984 and 1986, Congress granted less than 9 million dollars for the project and no more than 11 million until 1991. The 1985 Project History reported a completed 72 mile long conveyance system included the seven tunnels and nine miles of siphons. Transmission lines delivered energy from the Upper Colorado River Storage Project to NIIP's pumping plants. On October 1, 1985, Reclamation transferred responsibility for the project's operations and maintenance to NAPI. By 1986, NIIP served Blocks 1 through 7. Beginning in 1991, project appropriations increased significantly and the past five years NIIP has received over 25 million dollars each. From 1991 to 1993, Albuquerque Underground, Inc. added six canal check structures to the Main Canal under a 4.8 million dollar contract.[55]

Over the past five years, mostly Navajos have taken over NAPI operations from their non-Navajo trainers and supervisors. The project has received an increase in appropriations over

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52. Project History, "Navajo Indian Irrigation Project," Vol. II, (1985), 12-6; "District Court Decision to Cease Work on 23mW Powerplant," *The Navajo Times* 18 (July, 14, 1977), 1.
53. See Young and Mann, 165-84; Boman, 2-3.
54. See Young and Mann, 165-84; Boman, 2-3.
55. Project History, "Navajo Indian Irrigation Project," (1985), 20-1; Wade McIntyre, "Canal Improvements for the Navajo Irrigation Project," *Rocky Mountain Construction* (June 8, 1992), 12-4; Bill Donovan, "Reservation Unemployment Up to 45 Percent: Figures Rise from 39.46 percent," *The Navajo Times* (Spring 1997), A-1. A-3.

the last couple of years which has helped spur progress toward the 110,000 acre goal. NIIP currently serves about 7,000 acres. The Burnham Lateral, which will terminate at Block 11, and the Gallegos pumping and substation are presently under construction. Irrigation on Block 8 is expected in the year 2001.[56]

Settlement of the Project

The construction of NIIP required a significant amount of land title changes and people relocation on the reservation. At the tribe's request in 1965, the BIA solicited appraisals regarding acquisitions of ranches and the relocation of Navajos. Families living on project lands had been using livestock as their chief source of income, and the tribal officials worried over how NIIP would affect the family income, particularly during the intermediate construction period.

Though most changes on the project have been gradual, a total of about 250-300 families (1500 people) had to relocate. About thirty more families are expected to move once construction begins in their area. Some relocated Navajos required compensation for lost homes, grazing, and mineral rights. Those families able to remain where they were gained access to paved roads, electricity and additional employment opportunities. Children who had gone to boarding school were sometimes able to return home to improved facilities. Through new sanitation systems, better transportation and communication systems, improved lighting, and new electrical technology, the additional water and power in this area eventually improved community health and medical services and increased travel to major population centers.[57]

Uses of Project Water

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56. Bob Krakow, BIA, Farmington, New Mexico, Phone Interview by Leah S. Glaser, June 11, 1998.
57. Edward O. Plummer, Land Investigator, Navajo Tribal Council, Minutes, February 17, 1965, Project History, "Navajo Indian Irrigation Project," Vol. II, (1965), Appendix; Morris Thompson, "Navajo Indian Irrigation Project: Final Environmental Statement," (October 12, 1976), p. III-78.

Unlike the San Juan-Chama Project, Congress considered NIIP an all-Indian project administered by the BIA project and Reclamation constructed under Indian law. The BIA's responsibilities included training Navajo farmers, leveling farm units, constructing irrigation ditches, erecting buildings, and farm to market roads. The initial purpose of the NIIP was to provide irrigated subsistence farm units to Navajo families and alleviate economic distress.[58]

Agricultural

As mentioned earlier, NIIP's original concept entailed small family farms irrigated with surface water. Beginning in the late 1960s, the project's irrigation technology shifted to a centralized corporate management system under NAPI, the agricultural tribal enterprise. The chief crops included corn, dry beans, alfalfa, vine crops (watermelon), pasture, grass, sod with the remaining 23% left fallow or set aside for Federal programs. Through aggressive marketing campaigns, NAPI opened large new markets for produce and achieved high yields as a result. Most of the project's potatoes and beans go to major food processors such as "Frito-Lay."[59]

In addition to NIIP, Navajos farm 46,000 acres at over eighty sites on the reservation using more traditional methods. Unfortunately, the deteriorated facilities cause 50% water loss. The yield per acre for hay, pasture, corn, and vegetables, is half that of NIIP and non-Indian lands in the area. The tribe issues farming permits to these lands according to historic use, but many of these farms cannot even provide a subsistence income.[60]

Non-agricultural

NIIP's published legislative history reported that individual Navajo Indians on the reservation had long used future project lands according to tribal assignment for grazing

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58. Project History, "Navajo Indian Irrigation Project," Vol. I (1963), 5; Project History, "Navajo Indian Irrigation Project," Vol. III, (1965), 7.
59. Young and Mann, 177-80.
60. Young and Mann, 176, 180.

purposes, as did Navajos with land allotments and private ranchers outside the reservation. The congressional report also expressed concern for the chronic economic distress of Navajos. A rising population of 85,000 continued to fuel the lack of employment opportunity on the Reservation. Congress felt irrigation benefits would improve the standard of living, support 1120-1400 families on farm units, and employ 2,240 more families. The project would ultimately benefit over 17,000 people on the Navajo Reservation. The legislative history emphasized Navajo support of the project through the development of on-the-farm training program for young married men. The NIIP portion of the act promised water delivery of 508,000 acre feet to 110,630 acres east and west of the Chaco River for irrigation for the Navajo Tribe. The bill excluded the water requirements for the existing Hogback, Fruitland, and Cudei irrigation systems.[61]

In NIIP's earliest planning, Navajos expressed interest in using water beyond irrigation requirements for municipal and industrial use. To ensure this, the tribe agreed to limit its water rights and share in times of shortages.[62] According to NTUA (Navajo Tribal Utility Authority) documents, 40,000 acre feet of NIIP water serves the reservation's four major population centers: Shiprock-Burnham, Window Rock-Ft Defiance, Crownpoint, and the Navajo-Tsaile Area. The non-irrigation water use includes delivery to homes, recreation areas, a cattle feedlot, a food processing plant for potato chips, and an industrial park that manufactures missile harnesses. On January 15, 1981, NAPI granted project water for livestock.[63] As well, wildlife and recreational benefits increase on project and surrounding project lands. Cutter Reservoir

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61. "Farm Training Program To Train Young Men," *The Navajo Times* 1 (December 27, 1961), 8; United States Congress, Legislative History, 1684-5.
62. Reservation Programs, Planning Support Office; "Identified Developmental Uses of Water Other than Irrigation on the Navajo Indian Irrigation Project," USDOI, BIA, Navajo Area Office, prepared by April 1980, 1-2; Jacobsen, "A Promise Made," 165-7; Resolution CD-86-57, Navajo Tribal Council, December 12, 1957.
63. See Young and Mann, 165-84; Boman, 2-3; Jacobsen, "A Promise Made," 165.

allows recreational activities like picnicking and fishing.[64]

Conclusion

Despite the length of time taken for its construction, and problems with economic feasibility, adequate funding, threats of termination, and financial return, the example of the Navajo Indian Irrigation Project illustrates efforts of cooperation between various groups and Federal agencies to improve living conditions for Native Americans. It also illustrates the complex politics and problems associated with such projects. Though displacement of families has been difficult, and NAPI only employs a small fraction of the number for whom it anticipated providing jobs, NIIP continues to look toward the future and the next generation to enjoy its benefits. It continues slow, but steady progress toward eventual completion. While it can certainly be argued that Navajo water rights have been compromised through NIIP, no major project feature has yet been eliminated, nor has the project's acreage been reduced, and most managers and tribal members remain positive about its ultimate long-term success.

About the Author

Leah S. Glaser was born in Miami, Florida, and raised in Alexandria, Virginia. She received her B.A. in History and Art History from Tufts University in Medford, Massachusetts, in 1992 and her M.A. in Public History and Historic Preservation from Arizona State University in Tempe in 1996. She is currently working on her doctorate at ASU in American History with concentrations in Modern U.S., Public History, and the American West, and special interests in Native American and technological history.

64. *Project Data*, 682.

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