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ABSTRACT

Focusing on cultural influences and minority control over water and mineral resources, this workshop collection contains two papers and two sets of comments regarding those papers. Studying the relationship between rural poverty and water resources in the Southwest, the first paper, by Helen Ingram and five others, examines how water is important to the poor and basic preconditions to improved water use by the poor. After identifying the Southwest's poor as mostly Indian and Hispanic people, the paper discusses regional patterns of water control, water use by the poor, economics of water, the poor who do and don't control water, and communal values of water. Conclusions suggest water control by poor people and strong community in-put regarding water allocation could positively affect economic development. Proposing areas of policy analysis based on current issues confronting natural-resource-owning Indian tribes as landowners and governments, the second paper, by Susan Williams, provides an historic overview focusing on tribes as landowners and their different resources including water, and minerals. It then suggests a research agenda and concludes that although resource development demands careful consideration by tribal members, resource-owning tribes can improve their economic well-being. Comments provide examples of cultural differences illustrating difficulties any outside intervention may face. (PM)

Rural Development, Poverty, and Natural Resources
Workshop Paper Series

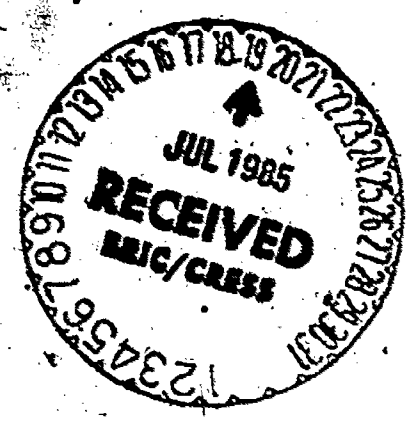
Part VI

Water and Poverty in the Southwest

Helen Ingram, F. Lee Brown, Gary Weatherford, Gil Bohem, Steve Mumme, and Wade Martin

Indian Natural Resource Development—The Impact on Poverty: Overview of Issues, and Proposals for Research

Susan Williams
with comments by John Folk-Williams and Allen V. Kneese



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1

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29

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PREFACE

In the summer of 1983, with a grant from the Ford Foundation, Resources for the Future convened a workshop on "rural development, poverty, and natural resources." Over forty leading researchers and community development leaders participated in the two-and-a-half day workshop. Workshop discussions were organized around ten commissioned papers, commentators' remarks, and a luncheon address. The papers covered broad issues of rural development, resource ownership and use, and the incidence of poverty and its relationship to natural resources including six case studies focusing on specific resources in various geographic settings.

The workshop papers and the comments on them are available in a six-part series as follows. An overview paper summarizing the key topics and issues discussed will be available in the spring of 1984.

Part I

Sociodemographic and Economic Changes in Rural America, by Kenneth L. Deavers and David L. Brown, Economic Research Service, U.S. Department of Agriculture; with *comments* by Ronald C. Powers, North Central Regional Center for Rural Development, Iowa State University.

Rural Policy: An Independent View, by Edward J. Blakely, Institute of Government Studies, University of California, Berkeley.

Part II

Income Distribution, Poverty, Natural Resources, and Public Policies: Conceptual and Research Issues, by Emery N. Castle and Mark Goldstein, Resources for the Future, Inc.; with *comments* by Philip M. Raup, Department of Agricultural and Applied Economics, University of Minnesota.

Part III

Real Income, Poverty, and Resources, by Irving Hoch, Julie Hewitt, and Vicky Virgin, Resources for the Future, Inc.; with *comments* by Edna Loehman, Department of Agricultural Economics, Purdue University.

Part IV

Ownership Patterns of Natural Resources in Rural America: Implications for Distribution of Wealth and Income, by Marion Clawson, Resources for the Future, Inc.; with *comments* by Robert G. Healy, Conservation Foundation.

Part V

The City House and the Country House: Land-Use Policies and Rural Poverty in the Northeast, by Frank J. Popper, Resources for the Future, Inc.

Coal, Poverty, and Development Policy in Eastern Kentucky, by Cynthia L. Duncan and William A. Duncan, Mountain Association for Community Economic Development.

Development and Management of Forest Resources for Rural Development in the Pacific Northwest, by Joe B. Stevens, Department of Agricultural and Resource Economics, Oregon State University.

Natural and Human Resources: Major Public Policy and Minority Rural Land Ownership, Management, and Use, by T. T. Williams, Richard Morse, and Avery Webber, Tuskegee Institute; with *comments* by Paul Barkley, Department of Agricultural Economics, Washington State University; Brady J. Deaton, Department of Agricultural Economics, Virginia Polytechnic Institute and State University; and Marty Strange, Center for Rural Affairs.

Part VI

Water and Poverty in the Southwest, by Helen Ingram, University of Arizona; F. Lee Brown, University of New Mexico; Gary Weatherford, Santa Clara University; Gil Bonem, the Center for Natural Resource Studies; Steve Mumme, Colorado State University; and Wade Martin, University of New Mexico.

Indian Natural Resource Development: The Impact on Poverty: Overview of Issues, and Proposals for Research by Susan Williams, Fried, Frank, Harris, Shriver and Kampelman; with *comments* by John Folk-Williams, Western Network, and Allen V. Kneese, Resources for the Future, Inc.

The six-part series and the overview paper are available from: the National Center for Food and Agricultural Policy, Resources for the Future, Inc., 1755 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Kenneth R. Farrell, *Director*
National Center for Food and Agricultural Policy

WATER AND POVERTY IN THE SOUTHWEST

by Helen Ingram, F. Lee Brown, Gary Weatherford,
Gil Bonem, Steve Mumme, and Wade Martin

Introduction

Western water institutions are undergoing fundamental change.[1] The confluence of essentially full appropriation of surface water supplies, mining of groundwater aquifers, expanding economies and population, and declining federal development funding has created strong pressures that are shifting the region's water institutions from their historical, almost exclusive, focus on development. Increasingly the functions performed by these institutions are better described as water management in which conservation, reallocation, and quality enhancement assume greater importance relative to the traditional development activity.

Yet, amid this changing institutional setting, the Southwest[2] remains the location for some of the more intractable problems of poverty in the nation, particularly those found on many Indian reservations in the region. Moreover, in the arid Southwest water is commonly perceived to be the single most important determinant of general human welfare.[3] The relationship between water and poverty in the Southwest therefore offers an important case study for the general investigation into the connection between poverty and natural resources that is the subject of this workshop. Of even broader significance for the region's poor, given the changing "rules of the water game," it is important to ferret out a clear understanding of the ways in which water is important to the poor if broad strategies relative to water are to be formulated and successfully implemented.

The principal research underlying this paper was conducted through a grant from the Ford Foundation to the Center for Natural Resource Studies of the John Muir Institute with which all of the authors are associated. Additionally Helen Ingram is Professor of Political Science at the University of Arizona, F. Lee Brown is Professor of Economics at the University of New Mexico, Gary Weatherford is Visiting Professor of Law at Santa Clara University, Gil Bonem is with the Center for Natural Resource Studies, Steve Mumme is Assistant Professor of Political Science at Colorado State University, and Wade Martin is a Research Assistant at the University of New Mexico. Substantial assistance from the following associates is gratefully acknowledged: Dean Mann, Ann Jones, Karen Tsao, Denise Antolini, Maureen Burdetti, Catherine Vandemoer, and Ramona Peters.

In this paper we will provide tentative answers to two questions about water and poverty in the region.

1. How is water important to the poor in the Southwest?

2. What are the basic preconditions to an improved use of water by the poor of the region?

In answering these questions, we will first provide a brief overview of rural poverty within the region, the changing pattern in control of water, the general pattern of regional water use, and the use of water by the poor. Subsequent sections will examine both the economic and communal values that underlie the control and the use of water by the region's poor. The interplay of those values is summarized in a section entitled "Water is Different;" which is followed by a concluding section that provides tentative answers to the second question posed above.

Some Basics About the Rural Poor and Water

Who are the Southwestern rural poor? To address this question we must first give some context to the meaning of poverty. Low income is clearly an element in the poverty condition, but it is not the relative economic status alone that signals poverty. Instead, poverty also connotes an inability on the part of people to exercise substantial control over their own lives and to cope effectively with outside pressures. Poor people often lack the level of education necessary to perform successfully in complex modern society. Further, they evidence symptoms of social stress, such as high levels of alcoholism. Very frequently poor people also suffer substantial social and political barriers when their poverty condition is combined with an accompanying status as racial or religious minorities.

Using income as our initial poverty screen, and culling the available 1980 Census statistics,[4] we conclude that the Southwestern rural poor are mainly Indians, Upper Rio Grande rural Hispanics, and some Mexican-American immigrants along the border. Of course, there are poor Anglo farmers and not all Indians are poor. But indians and rural Hispanics are the main groups constituting the rural poor. This conclusion was reached in a series of steps. First, we analyzed available census data that involved county aggregates. These aggregates hide intracounty variation but should yield valid comparisons between counties. We employed a dual income criterion, including both county per capita income and percentage of persons

below the official poverty level. Our informal "rules of thumb" for designating a county as a poverty county were: (1) its per capita income was less than 75 percent of the 1980 U.S. level of $9,411; and (2) the percentage of persons living under the poverty level in the county was 20 percent or more.[5] Table 1 contains data on per capita income and percentage of persons below poverty level for the Southwestern poverty counties.

Table 1. Poverty Counties of the Southwest

	1980 per capita income (dollars)	Percent below official poverty level, 1980
Arizona	8,814	13.2
Apache County	5,437	40.0
Coconino County	7,040	20.4
Navajo County	6,229	29.7
Utah	7,681	10.3
San Juan County	5,092	31.9
Wayne County	6,354	22.3
Colorado	10,033	7.4
Conejos County	4,139	30.4
Costilla County	5,967	36.1
Huerfano County	6,177	20.2
Los Animas County	7,056	20.4
Saguache	5,698	26.8
New Mexico	7,878	17.6
Catron County	5,171	23.0
Dona Ana County	6,328	22.7
Guadalupe County	5,691	30.5
Luna County	6,985	23.3
McKinley County	6,032	36.8
Mora County	4,473	38.3
Rio Arriba County	5,588	28.3
San Miguel County	4,894	30.8
Socorro County	5,366	29.6
Taos County	6,128	27.5
Torrance County	6,016	23.3
United States	9,411	13.0

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, April 1982, volume 62, no. 4; U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Summary Tape file 3, table 50, state summaries.

When we review demographic data for these counties we find that they are mainly Indian and rural Hispanic although exceptions exist. All of the three poverty counties in Arizona are in the northeastern part of the state where the huge Navajo reservation dominates census statistics. One of the two Utah poverty counties (San Juan county, Utah) is also located in Navajoland. The other Utah poverty county is quite small with less than 2,000 people. The poverty counties in Colorado are all in south central Colorado, mainly in the Upper Rio Grande drainage. Demographically these rural Colorado counties are characterized by high proportions of Hispanics. All have more than 40 percent of their population of Spanish origin and for two of the counties this proportion exceeds 60 percent. New Mexico has twelve poverty counties and five of these are in north central New Mexico, in the Upper Rio Grande drainage. In all five of the northern New Mexico counties over 65 percent of their population is of Hispanic origin. Another New Mexico poverty county, McKinley, is dominated by the Navajo reservation. A portion of New Mexico poverty is also in the southern part of the state and appears to be related to Mexican immigration.

That low-income people in the Southwest should also tend to be racial minorities is not surprising, given the syndrome of multiple disadvantages which typically accompanies poverty. Lack of education and high levels of drug abuse also tend to fall upon the shoulders of these same low-income, minority people. We examined census data on educational levels in Southwestern states and also the National Institute of Alcohol Abuse[6] data on alcoholism rates by counties. With some rare exceptions the poverty counties had low levels of educational attainment and high levels of alcohol abuse.

We have noted that American Indians are a key group in the southwestern rural poverty picture, and brief note may be made that there were some 176,000 Indians living on reservations in the Southwest in 1980.[7] There are additional Indians living in towns and cities of the Southwest. Of the reservation Indians, 110,000 are Navajo; 18,000 are Pueblo; and 7,000 are Papago. Table 2 lists American Indian reservation population by state.

Table 2. American Indians on Reservations in the Southwest, by State

State	Number
Arizona	113,754
Utah	6,878
Colorado	1,966
New Mexico	53,518
Total	176,116

Source: U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, General Population Characteristics, table 55, state summaries.

Control Over Water

The water rights system of the Southwest is highly complex. Moreover, it treats most Indian tribes differently from rural Hispanics. A brief summary description is needed for context. For hunters and gatherers[8] who moved from water source to water source in the region for thousands of years, water-use customs were relatively simple. Subsequent agricultural settlement, particularly during Spanish colonialization (1540-1821), gave rise to the need for a system of enforceable rights to the use of water. Formally, the Spanish colonial system honored grants of water made on parchments issued under authority of the king.[9] In practice, disputes over water use were seldom resolved by courts and officials on the basis of written title alone but also took account of prior use, need, third party rights, intent, governmental priorities, municipal and Pueblo preferences, and notions of equity and common good.[10] Both the Spanish and the later Mexican (1822-1846) reign saw water allocated in a process balancing formal title claims with people's needs and expectations.[11]

Water rights created under Spanish and Mexican rule were recognized by the United States by a protocol accompanying the 1848 Treaty of Guadalupe de Hidalgo. Congress did not prescribe a water rights system for the region, leaving the territorial legislatures and courts free to declare a public interest in water while rushing to make rights private through the rule of prior appropriation (first-in-time, first-in-right).[12] Federal

rights in navigable water were announced only occasionally and the legal doctrine of reserved water rights for Indians was not pronounced by the U.S. Supreme Court until 1908,[13] long after most Indian reservations had been created. Similar rights for reserved federal lands, such as national forests and national parks, were recognized even later, in 1963.[14]

Several strata of water rights thus were laid down in the settlement of the Southwest and persist today: (1) pre-1848 rights of use officially granted or awarded under Spanish and Mexican rule; (2) post-1848 appropriative rights perfected under territorial and state law; (3) sundry rights asserted by states over their public waters; (4) federal navigational and reserved rights; and (5) Indian reserved rights. Hispanics hold both pre-1848 and post-1848 rights. Indians variously hold or claim pre-1848 rights (for example, Pueblo or aboriginal) and reserved rights. Many of these latter rights have not been quantified or adjudicated, leaving considerable uncertainty about their extent.[15]

Regional Patterns of Water Control and Use

The assertion, exercise, and maintenance of Hispanic and Indian water rights occur within a larger regional context of water allocation, control, and management. The regional water context is characterized by competition, complexity, and change.[16] Shifts in the control of water are visible and will affect the poor of the region. The trends include rising non-irrigation demand for water,[17] both off-stream municipal-industrial and instream environmental-recreational;[18] reallocation[19] and improved management,[20] reflecting fiscal austerity, water rights quantification[21] and transfers, and higher standards of efficiency;[22] and altered governmental roles in water management, most notably a declining federal presence.[23]

Overall the regional picture is clearly one of rapid population growth,[24] meaning mounting demand for domestic, municipal, and industrial water as seen in table 3. Although the largest consumer of water continues to be irrigated agriculture, its share in the regional total consumption dropped significantly from 1970 to 1980. In terms of control over water, the pattern is seen as more pronounced because the acquisition of rights for substantial, but untallied, amounts of agricultural water by energy extraction, refining, and production companies has escaped full notice. Much of that water continues to be used for irrigation pending the deferred

Table 3. Southwestern Water Consumption by Use, 1960-1980

	Water consumed (millions of gallons/day)		
	1960	1970	1980
Public supply	237	453	899
Rural uses	98	158	137
Irrigation	11,300	14,400	11,700
Self-supplied industry	100	299	529
Total	11,735	15,310	13,265

Sources: U.S. Geological Survey, K. A. Mackichan and J. C. Kannerer, Estimated Use of Water in the U.S., 1960, Geological Survey Circular 456, U.S. Department of the Interior; C. R. Murray and E. B. Reeves, Estimated Use of Water in the U.S., 1970, Geological Survey Circular 676, U.S. Department of the Interior; and W. B. Solley, E. B. Chase, and W. B. Mann, IV, Estimated Use of Water in the U.S., 1980, Geological Survey Circular 1001, U.S. Department of the Interior.

industrial development. The combined municipal-industrial demand is selectively shown in emerging markets and escalating water prices (illustrated by over $10,000 for the right to a consumptive acre-foot of water in Santa Fe, New Mexico),[25] and in the imposition of water conservation rules (see, for example, the Federal Reclamation Reform Act).[26] Generally speaking, there is a marginal shift of control over water in the Southwest to those having the greater ability to pay,[27] posing challenges and choices to the poor who now control or lay claim to water. For those tribes which do not control, or only partially control, the water to which they have entitlement on paper, the rising economic value of water makes actual control increasingly difficult politically. Even for rural Hispanic communities that contain adjudicated rights, the increased market and policy emphasis on economically efficient water use brings increased need for careful maintenance of title and pressure for individual sale of rights.

Water Use by the Rural Poor

Far and away the largest use of water by the rural poor is in agriculture. What crops are grown, the size of farm, and whether or not there is

irrigation vary with locality and culture. Rural Hispanics of the Upper Rio Grande have quite small farm units, and agriculture is often part-time employment for men who hold jobs in nearby cities. Produce supplements both the family diet and income. Many Hispanics farm very much as their forebearers have for hundreds of years, using the ancient irrigation systems, the Acequia Madres. Alfalfa, hay, and a few vegetables, including chili, are the major produce, and the alfalfa and hay are fed to livestock. Crops are irrigated, and fairly sizable amounts of water are used. The share of consumptive use of water in agriculture for rural Hispanic counties in 1980[28] was as follows: Mora 86.6 percent, Rio Arriba 96.6 percent, San Miguel 92.4 percent, and Taos 95 percent. The proportion of water allocated to irrigated agriculture in these counties is generally higher than for the State of New Mexico as a whole, which according to the State Engineer's Office, is 86.4 percent.[29]

The backbone of the Navajo agricultural economy is sheep and goat grazing. By custom, a Navajo's herd is a sign of status and wealth and has represented security against bad times. Today, herding is done by older members of the family, by young children, and by the most traditional members of the tribe. Changing patterns of land use, including strip-mining of coal, has threatened grazing in some parts of the reservation. Because forage is rain-fed, the percentage of water consumptively used in irrigated agriculture in Navajo-populated counties is relatively small, for instance 73.1 percent in San Juan County in Utah,[30] and 39.9 percent in McKinley County in New Mexico.[31] But a newer activity, the Navajo Indian Irrigation Project, plans to irrigate 110,000 acres with 45,000 acres presently under cultivation. The volume of water used by this project is fairly large, although small in comparison with total Navajo water rights claims.

Water use by the Papago is in flux. The Papago dealt with their desert environment through migration and seasonal agriculture that took advantage of "monsoon" rains. The use of water in agriculture is still important to the Papago in providing a home base from which they migrate, often to part-time, or seasonal, employment in town, but the nature of agriculture has changed. The construction of wells was crucial to cattle grazing, an activity that is still of considerable economic importance. A few hundred acres is under irrigation, raising cotton and alfalfa near

Tucson, but falling water tables caused by groundwater overdraft by Tucson and the mines have delivered only an insecure supply of irrigation water from Papago wells. A significant amount of Papago water is being used in copper mining on leased reservation land. The 1983 water rights settlement contemplates large increases in irrigation, but is not yet implemented.[32]

Although water use differs considerably among different groups of the rural poor, the above discussion reveals some constants. Agriculture is everywhere a primary consumptive user, although agriculture varies. In every case, the agriculture upon which water is used brings more than simple economic benefit. Typically it is an important part of the life-style, even though it may be a part-time activity. Such agriculture attaches indigenous people to a place and provides a link to the past. Even the part-time farmer may gain from agriculture a sense of security and independence from the predominantly Anglo world in which he or she may be employed.

The Economic Importance of Water

With this background, let us now focus on the first question posed. How is water important to the region's poor? More narrowly, let us initially focus exclusively on the economic dimension of an answer.

Given the predominance of irrigated agriculture as a consumer of water in the region, it is not surprising that there have been a number of empirical studies of the economic value of water in that use, particularly relative to other uses. In a 1963 study of New Mexico, Nathaniel Wollman and associates first documented the conclusion that irrigated agriculture typically yields a lower economic return on water than municipal, industrial, and energy uses.[33] Kelso, Martin, and Mack provided additional, extensive documentation of the same conclusion in a 1973 study of southern Arizona.[34] They indicated that forage and small grain crops--alfalfa, hay, barley, sorghum--have the lowest returns on water. Cotton and corn are somewhat higher. Only a few fruits yield returns on water that match those in industrial and municipal purposes. In a 1974 study, Howe and Orr showed that in western Colorado and eastern Utah the economic return on irrigation water is also fairly low.[35] Both Keith[36] and Gisser, et al.,[37] have shown that the economic return on water in irrigated agriculture is much lower

than in the energy sector in Utah and New Mexico. Moreover, recalling the discussion above concerning the pattern of water use by the rural poor, it is precisely the crops that they customarily grow that provide the lowest returns on water.

Thus, an initial conclusion seems clear. To the extent that the rural poor control and use water for irrigation, the results are relatively low valued economically.[38] Note the qualifying phrase, however, for it is an important distinction to which we will return below.

A second conclusion is really a corollary of the first. For those rural poor who control water, water per se is not a barrier to their economic improvement. For clarity, consider first a similar conclusion for the region as a whole. Namely, water availability is not a barrier to economic growth in the Southwest at present or in the foreseeable future. To see this, suppose that the Southwestern economy is expanding at a moderate rate but encounters increased scarcity of water relative to the number and extent of desired uses for it. If this occurs and if, moreover, water institutions are sufficiently flexible, then water will be transferred in the market place from uses with low economic value to uses with higher economic value. Water will be transferred from alfalfa, sorghum, and barley production to municipal, industrial, and energy uses, and economic growth in the Southwest will continue. But this is just the process that is already occurring. Thus, water does not impose a barrier to regional growth although it does significantly affect the structure of that growth by imposing limits on existing patterns of irrigated agriculture.[39]

Returning to the original, parallel conclusion for the rural poor, a similar reasoning applies. To the extent that Hispanics and some Indian tribes control water and use it in low-valued economic ways, then the water itself is not a barrier to economic improvement because with control goes the authority to shift it to higher economic uses as opportunities arise.[40]

Control of water is therefore an important separator of the Hispanic and Indian water situations, with some tribes in an intermediate status because of restrictions on transferability. We will have to consider the two cases individually.

One last strictly economic conclusion, however, applies generally to those who control and those who do not. With continued regional growth combined with nearly full appropriation of water supplies, the market value

of water can be expected to increase over coming decades. Although future increases may not be as dramatic as those in the recent past, the greater ability to pay of the newer uses promises to maker water an increasingly valuable asset within the region. In short, water provides a significant opportunity for future economic gain.

Those Poor Who Control Water

For those rural poor who control water and continue to use the water in producing low-valued economic crops, both of our original questions require that we ask why. If economic improvement is a goal, then why does the current pattern of use persist?

1. Rural Hispanics and Indians who control water use it in low-economic-value activities because there are no alternatives. This hypothesis might be labeled the "economic stagnation" hypothesis. Because there is general economic stagnation on Indian reservations and in the Upper Rio Grande drainage, there are no alternatives for using water; that is, there are very few municipal, mining, industrial, or recreational opportunities for using water.

2. For rural Hispanics, we can hypothesize that water is used in low-economic-value activities because there is awareness that the real value of their water rights is rising rapidly, and they use water currently only to preserve these rights for future sale or lease. This hypothesis can be labeled the "speculation" hypothesis. It cannot be readily applied to Indian tribes since these rights are not held individually. In addition, the previously mentioned restrictions on the transferability of Indian rights make them less suitable for speculative holdings.

3. Although water itself may be available for other uses, problems with other related factors complicate a shift from the current pattern. Possible examples include lack of access to capital, the partible inheritance tradition (which has divided a land into small plots), or lack of developed entrepreneurial skills.

4. Water is used in low-economic-value activities because there are higher communal and cultural values that are currently better served by the existing pattern of use than by other uses.

This hypothesis portrays water as a socially and culturally integrating factor for rural Hispanics and Indians. It necessitates a broader understanding of water as different from other commodities. To the extent it is behaviorally descriptive, it has strong implications for the design of water-oriented strategies for improving the lot of the rural poor.

Each of the above hypotheses has some cogency on the basis of available evidence, and it is possible that each is at least partially descriptive since they are not mutually exclusive. The last hypothesis, which may be termed the "water is different" hypothesis, has strong, supporting circumstantial evidence and, as mentioned, strong strategic implications. Moreover, it has been the center of at least intellectual debate for some time. It consequently deserves expanded attention and is, in fact, central to the theme of this paper. Before undertaking that task, however, we return to the second grouping of the rural poor.

Those Poor Who Lack Control Over Water

For those poor who lack control over water, notably most Indian tribes of the region, the economic importance of water must be cast in the subjunctive. What would they do with the water if they had control over it? Would it make a difference to their impoverished condition? The answer to these questions is even more complex than in the case of the Hispanics in the Upper Rio Grande.

Some would undoubtedly argue the contrary: namely, that the best evidence of what Indians would do with additional control over water is simply determined by looking at what they do with water they already control. The pattern of water allocation that presently exists on the Navajo or Papago reservations, for instance, concentrates water use in agriculture, primarily in low-value crops. Indications are that additional supplies would be allocated in the same pattern, emphasizing agriculture. Witness the prospective use to be made of the 508,000 acre-feet of San Juan water for which the Navajo Tribe may have bargained away some of their Winter Doctrine rights. The Navajos plan to eventually irrigate 110,630 acres of cropland in the huge Navajo Indian Irrigation Project. The financial returns from the venture have so far not been impressive, and operations have yet to show a profit. The project has been plagued with management

problems and a limited market for the products.[41] The Papago Tribe plans to allocate a substantial portion of the water they received in the Southern Arizona Water Rights Settlement Act (through which Congress settled their Winters claims) to irrigated agriculture. The economic benefits of such a project are difficult to predict, but the experience of the Papago with irrigation projects in the past has been disappointing.[42] Yet, in our judgment the proposition that control over water would not economically benefit the Navajo or the Papago since water would only be allocated to agriculture fails to take account of the severe institutional and political constraints under which these tribes have had to make allocation decisions. The circumstances under which Indian people have wrested actual control of water have so preconditioned decisions that it is impossible to tell from experience how Indian people would allocate their water if unfettered.

The practicable irrigable acreage standard established by the Supreme Court in Arizona v. California[43] to quantify Indian water rights compels tribes to plan in terms of irrigated acreage in order to get maximum amounts of water in quantifications. Further, it is legally uncertain whether Indians can lease or sell water gained from the Winter Doctrine off the reservation. Congress placed language in both the San Juan Diversion legislation[44] and the Papago Settlement Act[45] that can be construed to limit water use to agriculture. Equally as important, the political circumstances under which Indian people have had to make water decisions have done anything but foster rational consideration of economic or other values. Navajo tribal attorneys warned that all chances of gaining federal support for water development would be lost if the Navajo Indian Irrigation Project was not authorized along with the San Juan Diversion which the people of New Mexico and their Congressional delegates badly wanted.[46]

It seems fairly clear that the constraints related to the process by which Indians gain control of water tend to predetermine agricultural uses of lower economic benefit. Relieved of those constraints, their water use practices might well follow a different course.[47] On strict economic criteria a different path would be expected.

Ultimately the answer as to what economic difference actual control of water would make remains elusive and speculative, for the Indians simply do not control "wet water" to match their paper rights. Regardless of the

economic answer, however, there is a more fundamental consideration involved in Indian control of water that is not economic in nature. Consider the words of Wendell Chino, President of the Mescalero Apaches:

> In the nineteenth century, direct force was used to take over Indian lands. The danger today is more subtle. Under the cloak of legal strategy and executive department policy decisions, a real threat is stalking all Indian leaders. These decisions regarding legal strategy and policy are designed to dry up the water from what little land is left to us. We must be alert. We must protect our own rights. The consequences of losing our water would be as serious as those following the loss of our lands in the nineteenth century.[48]

Stated negatively, the failure of Indian people to achieve control over so basic a resource as water may well have a debilitating effect upon community characteristics that are essential to successful economic development. Stated positively, the acquisition of secure control of water through largely their own initiative and effort may provide the key sense of efficacy needed to spark economic improvement.

As in the case of the Hispanics, the role of water in promoting an improved condition for Indian tribes potentially far exceeds an exclusively economic analysis. It would seem that communal values are driving Indian actions just as may be the case with Hispanics.

The Communal Value of Water

Valuing water in more than economic terms is not peculiar to the rural poor in the Southwest. After examining six irrigation communities in Spain and the American West, Maass and Anderson observe that:

> Economic growth, however, is in the case of irrigation agriculture so competitive with other objectives that farmers typically refuse to treat water as a regular economic good, like fertilizer, for example. It is, they say, a special product and should be removed from ordinary market transactions so that farmers can control conflict, maintain popular influence and control, and realize equity and social justice.[49]

Water scarcity in arid lands has historically raised basic questions about resource use and distribution, questions that could be answered only by institutionalizing arrangements to produce socially sanctioned decision. Spanish water law, from which much of our present Western water law is derived, went to great lengths to protect the public interest and to place

it above private parties' claims, and even above claimants invoking the doctrine of prior appropriation.[50] We suggest that together with providing for common defense, security of life and property, and enforcement of law, one of the most basic tasks of a political community, acting through its leaders, is to oversee the maintenance and distribution of water supplies. Since water and society are so inextricably intertwined, particularly in the arid West, a threat to the system for allocating water is seen as a threat to the communal enterprise. Exemplifying this communal value of water, most western law, and even state constitutions, declare water to be publicly owned.[51] Water rights give rights to use, but there are no natural, innate, or fixed authorities of rights holders to dispose of water in ways other than permitted by the public interest, publicly decided.[52]

Water as a social good, owned by the community at large, directly relates water to democratic values. In consequence, we would expect water to be closely associated with such fundamental, emotional, and symbolic concepts as full and open participation of individuals in decisions which affect them, fairness, and equal opportunity.

What we have said so far is a theoretical statement of the communal importance of water. But we need also to ask how important this perspective is in the politics of the region and to the poor rural communities in the Southwest. This led us to examine five regional newspapers to verify and refine the communal value of water. We also collected other public statements made by a number of the participants in water decisions. These statements reflect their values and motivations. Since it is the function of novelists to tap the enduring values and themes of human experience, we analyzed a number of novels by prominent Western writers for evidence concerning, and clarification of, the communal value of water. We found that a high proportion of the discourse about water is in symbolic terms that are consistent with its communal value.[53] The data that emerged from this effort can be discussed under the categories of self-determination, participation, fairness, and opportunity.

Self-Determination

Alienation of a community from control of its water resources is perceived as a direct threat to community survival. The Milagro Beanfield War portrays the loss of water rights by Hispanics in northern New Mexico as

symbolic of their loss of land, political power, and dignity.[54] Joe Mondrogon's diversion of water to his small beanfield in the manner of his ancestors was a claim to self-determination to which the whole community could relate. Similarly Paul Tafoya, Governor of Santa Clara Pueblo, described the stakes of opposition to a water project as "involving the survival of our people; we cannot lose our identity. We have to have something to leave for our grandchildren."[55] In another case, Senator Pete Domenici of New Mexico said of the acequias (ditches), "If you want to preserve the culture, then the ditches are well worth preserving."[56]

Participation

Since communities view water as fundamentally important, participation in water decisions is closely associated with a sense of efficacy and social justice. The importance of participation in water decisions is strongly reflected in the newspapers we surveyed. Out of a total of 1,163 water articles, 103 or nearly 10 percent referred to participation, and of these more than a quarter treated participation in symbolic and emotional terms. A sense of injustice resulting from lack of participation was frequently expressed. In one case, for example, the apportionment of funds by the state legislature for a common water system to service two small New Mexico villages, Canjilon and Cebolla, was vigorously protested by Canjilon because its residents had not been notified of pending legislation. One resident termed the measure, "a political maneuver which would rob Canjilon of water which rightfully belongs there."[57] Injustice stemming from disenfranchisement is also an important theme in Western novels. Hispanics in People of the Valley[58] by Frank Waters were tricked through misinformation by rich and greedy Anglo merchants into supporting a flood control district that resulted in loss of their land.

Fairness

Water is frequently treated by newspapers and novelists in the context of equity. While what seems fair often varies with the interests represented, there are some dominant themes. Fairness seems to mean respect for many different values; that is, as long as there is no harm to others, it seems fair for communities to do what they want to do with their own water irespective of market notions of higher uses. Thus, newspaper articles

concerning the El Paso-New Mexico suit were full of assertions of the fairness of New Mexico's reserving its water and choosing to develop it more slowly.[59] Fairness also implies reciprocity, and a willingness to share. An editorial in the Arizona Daily Star, for instance, argued with respect to drought on the Colorado River, "sacrifices to drought should be economically proportionate. None should go high and dry."[60] Western novelists stress the sharing of both water and the work of ditch maintenance--a situation that characterizes the Acequia system in northern New Mexico.[61]

Opportunity

Prevailing Western dialogue indicates that if you have water, you have a chance; if not, you are done for. The opportunity value of water has frequently been stressed in newspaper articles. State Engineer Steve Reynolds tersely described water as "simply the limiting factor."[62] Utah Governor Scott Matheson asserted "water has suddenly surpassed time as the traditional Western luxury and we have little time left to take charge of the small amount of water that gives us life."[63] The Albuquerque Journal described the fate of a small New Mexico community in this way, "Colonias has been dying for lack of water...the loss of Pecos water doomed the village. The town just gradually died as people moved away."[64]

Since the communal values of self-determination, participation, fairness, and opportunity appear to be general elements of water discourse in the West, it is reasonable to suppose they might also be important to the rural poor, perhaps especially important.[65] Unlike dominant cultures that are secure in their connection to the past and the security of their future, poverty, especially when experienced by minorities, creates a crisis of identity. Under such circumstances, there is a tendency to go back to first principles and to emphasize the importance of basic resources such as water.

Water is Different

The communal values Westerners place upon water suggest that water is different. It is both a "social good" and a market resource, and emotions are ambiguous as to which is dominant. Our understanding suggests mini-

mally that water cannot be treated simply as a market commodity, subject to the usual supply and demand and to calculations of efficiency, but rather that it must be treated also in the terms Westerners, including the poor, perceive it--as too important to be evaluated exclusively in terms of economic welfare. The result of disregarding communal values in water decisions in the past, whatever their economic merit, has been strong perceptions of inequity.

The Colorado River has been called the White Man's River, and it has generally been recognized in the West that water has gone to those with political power, legal skills, technical knowledge, and sheet tenacity; others have been excluded.[66] There exists today widespread perception of inequities among poor rural people in relation to water which spring from unmet communal values. Many Hispanics and Indians feel that their aspirations for self-determination have been undercut, their cultural values swept aside, and their future imperiled.

In this century, the loss of some Hispanic water rights has been linked to the encroachment of Anglos and the creation of irrigation districts, causing tax delinquencies and forced land sales.[67] Some federal water development, such as the San Juan-Chama diversion into Rio Chama, reportedly has damaged ancient headgates and distribution works of Hispanic Acequias furthering Hispanic perception of inequity.[68] It may also be that water rights are being lost through simple disuse.

Of the early history of Colorado River development, Norris Hundley writes, "Indians were the forgotten people in the Colorado Basin, as well as the country at large; and their water needs, when not ignored, were considered to be negligible."[69] Anglo water development, supported by the federal government, has drawn off water and subsidies that might otherwise have gone to Indian tribes. Examples include federal approval of the diversion of upper Gila water away from the Pima Indians, leaving "impoverished a group of people" who before had been "a satisfied, viable people with a sound agricultural base."[70] At the same time Indian reservations have gone without water distribution and irrigation facilities. Those that have been built, such as the Navajo Indian irrigation project, have experienced delayed Congressional funding. It has been generally acknowledged that the federal government has historically avoided its trust responsibilities concerning Indian reserved water rights and has instead pursued Anglo development.[71]

The "water is different" theme is controversial, particularly to those who emphasize the need for economically efficient uses of water. Yet, ironically, one of the strongest arguments in support of it is economic in nature. In the above discussion of the economic importance of water, the conclusion was reached that water is not an economic barrier to regional economic improvement or, to the extent that it is controlled by the poor, is it a barrier to their improvement. Yet despite this conclusion, both regional leaders and some activists among the poor, as reported, continue to speak of water in symbolic and emotive terms. While it can be argued that "they simply don't understand" and that what is needed is an "educational" effort, a simpler hypothesis is that communal or noneconomic values have fundamentally as much importance as economic values, or even perhaps more. Fieldwork is needed for stronger conclusions.

Conclusions

This paper has addressed two questions about poverty and water in the Southwest, the tentative answers to which can be summarized as follows:

1. How is water important to the poor in the Southwest? While fieldwork is needed to firmly answer this question, there is strong circumstantial evidence supporting the view that water is as important from the perspective of communal values as for economic progress. Economically, water is allocated to fairly low-value uses by the rural poor. For those who control it, water represents an opportunity for economic progress through allocation to more economically beneficial uses. The principal barrier to such allocation may be conflicting communal values. For those who do not actually control water, water may be related to poverty in a deeply held psychological and sociological sense. The debilitating influence of failure to control so basic a resource as water adversely affects community characteristics essential to economic development including leadership and participation. Economically, water may be more important to Indians than their present pattern of water use makes it appear. It cannot be assumed that the Indians would not allocate water to economically beneficial purposes if they controlled it. Past patterns of water allocations by Indians have been severely constrained by political and institutional factors.

2. What are the preconditions for an improved use of water by the poor in the Southwest? Economically, water represents a real opportunity for poor rural people who have or can achieve control over water to improve their lot. However, whether or not water can achieve the values of economic progress may depend to a large degree upon whether communal values can also be satisfied. The symbolic content of actions and the processes by which decisions are made appear to be essential to achieving communal values. Decisions about the allocation of water must be directed by decision processes within the community rather than imposed from outside. Value pluralism, including concerns not related to economic progress, must be respected. Full and open participation in water decisions is essential to avoid perceptions of inequity.

That communal values may be a real restraint on economic use of water raises doubt about the viability of some of the suggested strategies for dealing with water resources issues. Currently there is great emphasis on market solutions as a means for moving water into economically higher uses. Yet, in the context of northern New Mexico, the piecemeal sale of individual water rights without a communal decision about goals undercuts the value of self-determination. Instead of leaving everyone better off, the entire community may be impoverished by the results. The precondition for a successful water strategy in this case is a community decision about the public interest concerning water use.

There is a strong movement toward the quantification of Indian water rights, particularly in order to make way for competing Anglo development. It is important to understand that the value which Indians are pursuing may be as much opportunity and self-determination as it is the economic rewards that come from achieving a particular quantity of water. The Winter Doctrine promises sufficient water to practice the arts of civilization, an open-ended promise that water will not be a limit to future possibilities. Quantification must occur in the context, therefore, of expanding rather than limiting the future. In a similar fashion, there is a great deal of talk about cash settlements of water rights. The Southern Arizona Water Rights Settlement Act envisages compensating Indians for water not delivered. Yet, if the above hypothesis about communal values is correct, it seems unlikely that money settlements will be an acceptable alternative to "wet water." While it may not be necessary that indians themselves put

water to use, it would be important that Indians control where their water goes.

The arena in which decisions about the allocation of water is made appears to be shifting away from the local level. This is unfortunate for localized indigenous values. Further, decisions appear to be shifting away from judicial tribunals toward legislative and executive agency decisions. This places at a considerable disadvantage Indian people who have concentrated upon developing legal expertise in recent years. Further, decisions appear to be shifting from the political arena to the market, where individual rather than community decisions take place. To the extent that community values are to be addressed, the political process of consent building must be heavily involved.

Notes

1. Two notable examples are the 1982 Sporhase decision of the U.S. Supreme Court (Sporhase v. Nebraska, U.S., 102 S. Ct. 3456, 1982), which declared water a commodity subject to interstate commerce, and the creation of the Arizona Active Management Areas (Ariz. Rev. Stat. Ann. sec. 45-402.18) as state institutions for managing groundwater.

2. Although subject to various geographical definitions, the Southwest region in this paper is defined to be the Four Corners states of Arizona, Utah, Colorado, and New Mexico.

3. Arizona's Senator Barry Goldwater perhaps put it most plainly, "A Westerner's priorities are in order (1) water, (2) gold, (3) women; you may tamper with the latter two but not the first." Arizona Daily Star.

4. For the United States as a whole in 1980, 13 percent of the population had incomes below the poverty level.

5. (1) U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business, April 1982, volume 62, no. 4;
(2) U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, Summary Tape File 3, Table 50, State Summaries.

6. U.S. National Institute on Alcohol Abuse and Alcoholism, U.S. Alcohol Epidemiologic Data Reference Manual Section 3: County Alcohol Problem Indicators, 1975-1977 (U.S. Department of Commerce, National Technical Information Service, June 1981) PB82-187105.

7. U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, General Population Characteristics, table 55, state summaries.

8. For a description of Indian movement along New Spain's northern frontier from the 16th through the 19th centuries, see Albert Schroeder, "Shifting Survival in the Spanish Southwest," in David Weber (ed.), New Spain's Northern Frontier (Albuquerque, University of New Mexico Press, 1979) pp. 237-255.

9. See discussion in State v. Valmont Plantations, 345 S.W. 2d 853, 859 et seq. (1961).

10. See, generally, Michael Meyer and Susan Deeds, "Land, Water and Equity in Spanish Colonial and Mexican Law," (Unpublished monograph, August, 1979); also Charles DuMars and Utton, "Pueblo Indian Water Rights and the Treaty of Guadalupe Hidalgo: Balancing Historical Equities," (Unpublished Monograph, 1982).

11. Ibid.

12. See, generally, Wells A. Hutchins, Water Rights in the Nineteen Western States, Vol. I (U.S. Gov. Printing Office, 1971) pp. 159-175. The territorial legislature of New Mexico recognized prior appropriation in 1851; Colorado in 1861; Arizona in 1864; and Utah in 1881.

13. Winters v. United States, 207 U.S. 564 (1908).

14. Arizona v. California, 373 U.S. 546 (1963).

15. For a survey of current Indian water disputes, see John A. Folk-Williams, What Indian Water Means to the West (Santa Fe, Western Network, 1982).

16. See, generally, Allen Kneese and F. Lee Brown, The Southwest Under Stress (Baltimore, Johns Hopkins University Press for Resources for the Future, 1981); Helen M. Ingram, Nancy K. Laney, and John R. McCain, A Policy Approach to Political Representation: Lessons from the Four Corners States (Baltimore, Johns Hopkins University Press for Resources for the Future, 1980); and Gary Weatherford (ed.), Water and Agriculture in the Western U.S. (Boulder, Colo., Westview Press, 1982).

17. See Kenneth D. Frederick, with James C. Hanson, Water for Western Agriculture (Washington, D.C., Resources for the Future, 1982) pp. 95-98.

18. See U.S. Fish and Wildlife Service, In-Stream Flow Strategies for Colorado (May, 1978) and the same titles for Arizona, Utah, and New Mexico.

19. See F. Lee Brown, et al., "Water Reallocation, Market Proficiency, and Conflicting Social Values," in Weatherford (ed.), Water and Agriculture in the Western U.S. (Boulder, Colo., Westview Press, 1982) pp. 193-265.

20. Increases in operating efficiency, for example, may be achievable in federal projects in most major river basins. See letter from Daniel Sheer, Director, Cooperative Water Supply Operations on the Potomac, to William R. Gianelli, Assistant Secretary of the Army, March 19, 1982.

21. For a survey of Indian water rights adjudications, see Folk-Williams, supra, note 15. Numerous adjudications of water rights generally are ongoing in Colorado and New Mexico.

22. For a summary of water conservation programs, see Survey of Water Conservation Programs in the Fifty States (Washington, D.C., Environmental Policy Institute, 1982).

23. Exemplified by ongoing negotiations in which the Reagan Administration is seeking local cost sharing in federal water projects.

24. The following is the percentage change in population for the United States and the states of the Southwest during the decade 1970-80: United States, 11.4 percent; Arizona, 53.5 percent; Colorado, 30.9 percent; New Mexico, 28.2 percent; Utah, 37.9 percent. U.S. Department of Commerce, Bureau of the Census, 1982-83 Statistical Abstract of the U.S., table 10. Southwest - U.S. Department of Commerce, Bureau of the Census, 1980 Census of Population, General Population Characteristics, table 14, state summaries.

25. R. Khoshakhlagh, F. Lee Brown, and C. DuMars, Forecasting Future Market Values of Water Rights in New Mexico, Water Resources Research Institute No. 092, November 1977.

26. 43 U.S.C. Sec. 390jj.

27. See F. Lee Brown, supra, at note 19.

28. E. Sorensen, "Water Use by Categories in New Mexico Counties and River Basins, and Irrigated Acreage in 1980," Technical Report 44, New Mexico State Engineer, 1982.

29. Ibid.

30. Information provided by the Utah Department of Natural Resources, Division of Water Rights, Salt Lake City, Utah.

31. See note 28, supra.

32. Southern Arizona Water Rights Settlement Act, 1983.

33. N. Wollman, R. L. Edgel, M. E. Farris, H. R. Stucky, and A. J. Thompson, The Value of Water in Alternative Uses (Albuquerque, N.M., University of New Mexico Press) 1962.

34. Maurice Kelso, William Martin, and Lawrence Mack, Water Supplies and Economic Growth in an Arid Environment (Tucson, Arizona, University of Arizona Press), 1973.

35. Charles Howe and Douglass Orr, "Effects of Agricultural Acreage Reduction on Water Availability and Salinity in the Upper Colorado River Basin," Water Resources Research, October, 1974.

36. John Keith, K. S. Turna, S. Padunchai, and R. Narayanan, The Impact of Energy Resource Development on Water Resource Allocations, Utah Water Research Laboratory, Logan, Utah, 1978.

37. M. Gisser, R. Lansford, W. Gorman, B. Creel, and M. Evans, "Water Trade-Off Between Electric Energy and Agriculture in the Four Corners Areas," Water Resources Research, June 1979.

38. From the above studies (notes 34, 35, 36, 37), the marginal value product of water, in 1982 dollars, is as follows:

(a) forage and feed crops (alfalfa, barley, sorghum)--$25-35/acre ft.
(b) vegetable and fruit crops--$120+/acre ft.
(c) energy uses--$100-3,000/acre ft.

39. An important note here is that the amount of water that will be transferred from agriculture to urban and industrial uses need not be large in percentage terms.

40. An important caveat concerns the intermediate status of those tribes who actually physically control water used in irrigation, as contrasted with the paper entitlement of most tribes. It remains judicially and legislatively ambiguous as to their ability to shift water to other uses, particularly off-reservation.

41. Charles DuMars and Helen Ingram, "Congressional Quantification of Indian Reserved Water Rights: A Definitive Solution or a Mirage?" Natural Resources Journal, January 1980.

42. Henry F. Manuel and Bernard Fontana, "Dressing for the Window: Papago Indians and Economic Development (The Hague, Mouton, Inc. 1978).

43. See note 14, supra.

44. Public Law 87-483, June 13, 1962.

45. See note 32, supra.

46. Fritz Thompson, "Showdown on the San Juan," Albuquerque Journal Magazine, Nov. 22, 1977, p. 9.

47. The Mescalero and Jicarilla Apaches of New Mexico have emphasized recreational uses of water heavily in their development plans.

48. Indian Water Policy in a Changing Environment, American Indian Lawyer Training Program, Oakland, California, 1982, p. 56.

49. Arthur Maas and Raymond L. Anderson, And the Desert Shall Rejoyce: Conflict, Growth, and Justice in Arid Environments (Cambridge, Mass., MIT Press, 1978) p. 5.

50. Meyer and Deeds, supra, note 10.

51. New Mexico Constitution, Article XVI, subsections 2 and 3.

52. The Supreme Court, however, considers public ownership to be a "legal fiction." (See note 1.)

53. For the empirical results of the survey, see Helen Ingram and Stephen P. Mumme, "Public Perceptions of Water Issues in the Four Corners States As Indicated Through a Survey of Regional Newspapers: A Preliminary Report," unpublished paper presented at the Western Social Science Association's 25th Annual Conference, Albuquerque, N.M., April 27-30, 1983.

54. John Nichols, The Milagro Beanfield War (New York, Holt, Rinehart and Winston, 1974) p. 629.

55. "Opposition to Jemez Geothermal Project Organizes," Espanola Rio Grande Sun, May 29, 1980.

56. "Domenici Pledges Help for Damaged Acequia," Espanola Rio Grande Sun, April 26, 1979.

57. "Bill to Finance Water System, Villages Divided Over Method," Espanola Rio Grande Sun, Feb. 28, 1980.

58. Frank Waters, People of the Valley (Denver, Sage Books, 1941) p. 309.

59. "Judge Rejects New Mexico Ban on Water Exports," Albuquerque Journal, January 18, 1983.

60. "Sharing CAP Losses," Arizona Daily Star, Aug. 1980.

61. Raymond Otis, Little Valley (London, Cresset Press, 1937); Oliver La Farge, Mother Ditch (N.Y., Houghton Mifflin, 1954).

62. "Water Battle in the Northwest: Coal, Uranium Firms Go After Rights," Albuquerque Journal, July 9, 1978.

63. "Matheson Urges Conserve Water Now," Salt Lake Tribune, December 16, 1977.

64. Steve Winston, "A Slow Death on the Pecos," Albuquerque Journal, February 25, 1980.

65. An even higher level of symbolic language was found in articles referencing low-income rural communities in our newspaper survey, 57 percent, as contrasted with a 21 percent figure for all water articles.

66. Phillip Fradkin, A River No More (N.Y., A. Knopf, 1981) p. 155.

67. For example, see Marta Weigle, ed., Hispanic Villages of Northern New Mexico (Santa Fe, N.M., The Lightning Tree, 1975) reprint of Vol. II of the 1935 Tewa Basin Study of the Soil Conservation Service, p. 68. Also, Roxanne Dunbar Ortiz, Roots of Resistance: Land Tenure in New Mexico, 1680 to 1980 (Los Angeles, Calif., U.C.L.A., 1981).

68. Interview with Luis Torres, field representative of American Friends Service Committee, of Espanola, New Mexico, Feb. 17, 1983.

69. Norris Hundley, Jr., Water and the West (Berkeley, Calif., University of California Press, 1975) p. 80.

70. Rodney Lewis, Tribal Attorney, Gila River Indian Community, Arizona, comments appearing in "Indian Water Policy in a Changing Environment" (American Indian Lawyer Training Program, 1982, p. 142).

71. See, for example, Newsweek's June 13, 1983 coverage of "Indian Water Wars." For an extended discussion of water and equity, see Helen Ingram, Lawrence A. Scaff, Leslie Silko, "Replacing Confusion with Equity: Alternatives for Water Policy in the Colorado River Basin," paper presented at Colorado River Working Symposium, Bishop's Lodge, May, 1983.

INDIAN NATURAL RESOURCE DEVELOPMENT: THE IMPACT ON POVERTY, OVERVIEW OF ISSUES AND PROPOSALS FOR RESEARCH

by Susan Williams

Issues Overview

The purpose of this discussion is to propose areas of technical, legal, and policy analysis based on the current issues confronting natural-resource-owning Indian tribes as landowners and as governments. If developed, these resources potentially could provide substantial economic benefits to tribal members, most of whom are in lower income classes. The emphasis here is on energy and water resources because, in many respects, the more difficult and concrete tradeoffs that prevail in the development of natural resources generally are more evident in these areas. The main themes discussed, however, are applicable to questions concerning agricultural, forestry, and wildlife development.

Several themes throughout this discussion are important to understand. First: all economic and resource development choices should be guided first of all by the social and cultural values which are fundamental to the community in question.

Second: to achieve the foregoing in Indian country, requires a thorough and culturally unbiased understanding of the values and cultural institutions that prevail in the Indian community under study. It is also important to note that lessons can be drawn from the Indian experience that are valuable for similar analyses in non-Indian communities.

Third: Indians, and those interested in their lives, are presently confronted with intense, competing demands for Indian-owned resources. In this situation, the danger is that those with access to the greatest financial and human resources will be most successful in obtaining access to the

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resources. But this may not be the most equitable outcome and, perhaps, not even the most efficient outcome.

Fourth: the criteria under which most Indian resource use and management choices are made simply cannot be applied to choices facing Indians because the criteria contain assumptions that are culturally biased. To insist upon the use, for example, of an "economic feasibility" standard for Indian water rights and management in Indian country ignores the nonfinancial objectives associated with religious, cultural, and aesthetic values that are vital to Indian cultural life.

Finally, despite ownership of extensive and economically valuable resources, most tribal members remain poor by any standard. This injustice is directly related to intentional and de facto natural and human resource exploitation, both cultural and financial, by non-Indian governments and businesses. Tribes, however, no longer are unaware and incapable of a critical and legally effective response. The background necessary to appreciate these themes is below.

Indian natural resources development cannot be viewed outside its historical, economic, and cultural contexts. Historically, many energy-resource-owning tribes have experienced simultaneously, as a result of development, relatively substantial, though often inadequate, revenue benefits and severe human, environmental, and cultural degradation. Past development has been characterized by the dominance of tribal affairs by outsiders. Grossly unfair leases and contracts with powerful corporations were approved, and in some cases encouraged, by the Bureau of Indian Affairs (BIA). In addition, the federal government's exercise of the trust responsibility often has led to excessive and negligent management of the tribes' trust resources. This problem can be attributed to the fact that the Indians' concept of trust is unique and legally vague at the same time that it has been considered, albeit erroneously, largely outside the scope of judicial review, at least in those cases in which Congress has taken action. In virtually every instance, the primary benefit from the development of tribal resources has accrued to outsiders through low-cost energy and water, state taxes, and business profits.

A further consequence of such exploitation is that tribes have not necessarily enjoyed the highest and best use of their lands. At the same time, tribal government has been relegated to a symbolic presence with respect to development activity. In addition, improvement of reservation

roads, housing, and the tribal labor force were not priorities of the non-Indian corporations. Such corporations often brought in their own equipment, labor, and service capabilities. Thus, little progress was achieved in building the foundation for tribally directed and sustained economies. Without such foundation and indigenous economic activity, the reservation multiplier is low and, thus, federal funds and tribal resource royalties typically are spent only once before leaving the reservation primarily for the benefit of nontribal businesses and governments.

Culturally, exploitation of natural resources poses difficult questions. Potential conflicts exist between more traditional tribal members who might emphasize greater concentration on subsistence economic activities and stringent restrictions on mining in areas of religious significance, and more assimilated tribal members who might be more interested in high profits generated through off-reservation marketing of resources. Similarly, debates arise regarding the aesthetics of reservation communities and whether people would prefer, for example, strip mining activities or family farms in their communities. Other questions arise from predictable demographic changes associated with most resource development. For example, the boomtown phenomenon associated with rapid development requires a substantial influx of outside expertise and other inputs. In addition, equity considerations arise, such as whether the direct and indirect benefits accrue to all tribal members and to both men and women.

In terms of economics, with federal funds expected to continue to diminish over time, tribes throughout the country currently are searching for alternative means to provide a likelihood for expanding tribal populations. Tribal natural resources are an attractive potential economic base. But, experience now has proven that high costs (which appeared artificially low in the past since most human, environmental, political, and cultural costs were not identified and included in the cost-benefit ratio of resource projects) can be expected along with relatively high gross cash benefits. Apart from assuring full cost calculations, the foregoing discussion on cultural factors demonstrates a further need for economic indicators and benefit-cost criteria that can incorporate non-tangible values in resource-use decisions. Because fundamental cultural and individual human rights are at issue here, analysts ought to err on the side of assessing higher rather than lower values to these non-tangible factors.

Significantly, the decisions tribal people make with regard to whether and how to develop the tribes' natural resource base not only are a major concern for much of the Indian population but often also carry regional, if not national, consequences. Thus in the 1980s throughout the West, tribes are claiming title to substantial amounts of water in water-scarce areas. Also, in 1980, Indians held 5.7 million acres of commercial timber lands with an annual cash yield of $731.9 million.[1] In the Northwest, tribes have won the right to take 50 percent of the salmon harvest.[2] Moreover, tribal resources constitute the primary supply of the nation's energy. In 1980, of all production from federal and Indian lands in the United States, 5 percent of oil and gas, 25 percent of coal, and 100 percent of uranium were produced from Indian lands.[3]

The supply of the nation's energy also touches the lives of a substantial portion of the Indian population. In 1980, of 1.4 million Indians, 29 percent were members of tribes whose reservations contained nearly 5 percent of proven reserves of U.S. oil and gas, 30 percent of strippable low-sulfur coal west of the Mississippi, and 50-60 percent of uranium.[4]

Despite ownership of substantial portions of the nation's energy supply, up to now the opportunity for tribes to influence regional or national energy policy has not been exercised because of a lack of tribal expertise, the existence of grossly unfair contracts that took control over development away from the tribal landowners and government, and inadequate information about resource value and management alternatives.

More ironically, despite the apparent means to achieve material wealth, tribes remain very poor by any standard of economic wealth in this country. Indian per capita income in 1980 was $3,200 (1/3 national average); current unemployment commonly exceeds 50 percent, and often reaches 80 percent; and substandard housing, inadequate health care, and high school drop-out rates at 70-90 percent prevail along with a variety of resulting social problems.[5]

To view tribal well-being solely in terms of these indicators of material prosperity, however, would perpetuate misunderstandings of important tribal perspectives maintained by tribal ancestors for centuries. For many tribal people, a simple but rich life is obtained from the land. Land provides both physical and spiritual sustenance and, for these rea-

sons, must be protected carefully for use by future generations. The remaining land base also is vitally important as the only place to which tribal people can return for community and family support and cultural survival.

These tribal perspectives make the calculation of the tradeoffs of reservation resource development uniquely complex and challenging for present and future tribal leaders and the technological and policy experts working on behalf of tribes. Indeed, the issues raised by these perspectives are at the heart of the problem of defining appropriate and workable Indian economic development. This problem is compounded where tribes intend to use non-Indian capital for development which, unavoidably, carries with it non-Indian expectations and requirements.

Historic Overview

At least as far back as the 19th Century, tribes used coal for cooking and heating purposes.[6] The recognition by non-Indians of potential energy riches beneath Indian lands did not occur until the late 1800s.[7] Once discovered, however, the means for exploiting these resources were soon put in place. The first Indian mineral leasing statute was passed by Congress in 1871,[8] followed by numerous other leasing statutes, which have caused confusion and overlap about Indian mineral sales authorities and standards.[9] Under these earlier statutes, the BIA typically sold the minerals without tribal participation in the process, since most tribes had not derived a centralized form of government.

Later, based primarily on a need to obtain tribal approval of mineral sales, the United States began encouraging the formation of tribal governments, particularly for the energy resource tribes. This effort proved difficult since most tribes had never had a central government to conduct the affairs of the people. Fragile and often isolated governments were in fact created and the tribes, for the first time, began to participate in mineral sales, all of which require the approval of the Secretary of the Interior.[10]

Participation in the mineral sales was largely symbolic, however. Few tribes had the data base (resource size, value, possible environmental and social impacts) or the expertise (council members even today possess rela-

tively small amounts of formal education) or access to expertise (the BIA always has been underfunded and understaffed) to make sound decisions over whether and how to sell the tribal resources. The results were some of the worst sales agreements in terms of health and environmental impacts, low revenues not adjusted for inflation, and interference with sites of religious significance.

In addition, many valuable minerals were found beneath allotted tribal lands. This form of individual Indian ownership resulted from the 1887 Dawes Allotment Act and comparable acts for each tribe.[11] These tribal allottees were left by the BIA with even less assistance than tribes and, as a result, signed similarly unfair agreements. With respect to allottees, many corporations purchased mineral rights as long as twenty years ago primarily as backup supply sources or as investments and have held the reserves without developing them, waiting for better prices and expanded supply needs. meanwhile, the allottees have received negligible benefits.

With the rise in the OPEC oil prices in the early 1970s, the scope and pace of activity on Indian lands escalated. Younger and more formally educated Indians at the tribal level as well as within the BIA began to appreciate the magnitude of the problems associated with historic leasing practices. A number of critical studies emerged and Indian country moved away from being the complacent, vulnerable supply source it once was. Perhaps most important, Indians began to win major legal battles over resource ownership and control. The energy companies, predictably, reacted antagonistically. They criticized the tribes for proposing to violate the sanctity of contracts and ridiculed their governments. More recently, however, the natural resource markets have slowed, resulting in mine closures and exacerbated unemployment, particularly in the uranium industry.

Chief among the issues emerging as important from this era of tribal development experiences are:

A. What opportunities and approaches are available to renegotiate the worst leases on behalf of tribes and individual allottees?

B. What statutory or legal authority, if any, exists to support the substantial state taxation of energy resources development on tribal lands?

C. What are the legal authorities and general mechanisms for tribes in the areas of taxation and adequate protection for air, land, and water quality and human health?

D. What are the risks of basing tribal development on an economic foundation vulnerable to shifts in world economic and political events?

E. How does the tribe resolve conflicts over whether mining should occur and what areas should be mined?

Overview of Current Issues and Law Relating to Natural Resource Development

Indian Tribes as Landowners

The purpose of this section is to provide a legal context for the question of current resource policies as they have an effect on Indian tribes.

Indian Water Rights. Indian tribes have suffered major losses in the area of water rights in the 1983 Term of the U.S. Supreme Court. In two cases, the Court held that the United States suffers no conflict of interest in representing potentially competing federal users in the same stream adjudication.[12] More significantly, the Court twice has declined to correct earlier errors by the United States in its representation of Indian water claimants, resulting in the irretrievable but possibly compensable loss of Indian water. The Court openly acknowledges its preference for the interests of non-Indian private and governmental users, which are the foundation for high-profit western economic development.[13]

Tribes now are on notice that, at least in court, the very best capability to quantify the tribes' water rights must be assured since no second opportunity will be available. General Indian water rights principles remain intact, however, as discussed below.

In 1908, the U.S. Supreme Court handed down a decision in Winters v. U.S., 207 U.S. 564 (1908), in which the Court held that upon recognition of an Indian reservation by Congressional action, sufficient water implicitly was reserved to fulfill the purpose of the reservation: that is, to create a livelihood for tribal members. In 1963, in Arizona v. California, 373 U.S. 546 (1963), the Supreme Court articulated a substantive standard for the amount of water to which tribes are entitled, namely, sufficient water to irrigate the practicably irrigable acreage on the reservation. In subsequent cases, the courts have noted that the Winters water can be used for

nonagricultural purposes, most significant of which will be energy development. See, for example, Master's Report in Arizona v. California, supra.

Significantly, the foregoing Master's Report recommended a standard for determining irrigable acreage that exacerbates the main difficulty with the standard, namely, that tribal subsistence and religious values are ignored in the calculation of how much water belongs to a tribe. This report recommends "economic feasibility" as the standard, which, in addition to being culturally biased, is an administratively vague standard that complicates Indian water quantification.

The Winters water right also has had a procedural component. Until 1952, Indian water rights could be determined only in federal courts. With the passage of the McCarran Amendment and subsequent interpretive case law, Colorado River Conservation District v. U.S., 424 U.S. 800 (1976), however, state court jurisdiction over Indian water rights was recognized in the context of a general stream adjudication. Recently, the U.S. Supreme Court confirmed that the disclaimers of jurisdiction over Indian reservations contained in many western states' constitutions and enabling acts do not prevent their state courts from taking jurisdiction over Indian water rights.[14]

With respect to Indian water rights, key issues are whether Winters waters can be sold apart from land, whether the water can be sold for off-reservation uses, and whether tribal governments may exert exclusive regulatory jurisdiction over Indian water sources. Clearly, the politics of water allocation, especially in the West, is weighted heavily by non-Indian state and private interests.[15] Should tribes win rights to substantial amounts of water, these interests are certain to pursue judicial and legislative efforts to limit trial rights and, where necessary, to authorize Indian water sales to off-reservation users. Implicit in these efforts is an assumption that Indians will not devote water to the most efficient uses--defined narrowly as the most financially profitable uses. Such assumptions, however, should be considered dangerous for both Indians and non-Indians.

Clearly, water availability will provide the most significant constraint on western energy development, with the result that the issues relating to Indian water rights have become intensely intertwined with the question of western states' economic development (and energy resource

development in particular). The incorporation of nonfinancial valuation criteria, the availability of technical expertise, and the degree of success regarding intergovernmental cooperation in regional resource management will be the ultimate determinants of whether efficient and equitable resource use and distribution occurs for both Indians and non-Indians.

Mineral Resources. The focus of current efforts in Indian country is to renegotiate the earlier, more inequitable, leases and to explore new resource agreements which provide greater opportunities for tribes to earn revenues while exerting greater landowner control over the pace and manner of development. In addition, important legislative and executive branch initiatives have occurred recently that enable tribes, as landowners, to exert greater control over the development of their resources. These initiatives are discussed below.

In 1982, two laws were passed significantly changing the standards under which tribal minerals are sold. Most important is the Indian Mineral Development Act of 1982, which authorizes tribes to enter into various agreements to develop and sell mineral resources, and, in allowing tribes greater flexibility in this area, is intended to further self-determination and to maximize the financial return for tribes from the development and sale of their mineral resources.

More specifically, the act authorizes tribes, as permitted by their own internal governing documents and subject to the approval of the Secretary of the Interior, to enter into various kinds of commercial agreements for the development and, when part of an overall development plan approved under the act, the sale of their mineral resources. While different kinds of agreements (joint venture, operating, production sharing, service, managerial, lease, or other agreements) are enumerated in the act, the committees in both the House and the Senate specified that those enumerated are not intended to limit the scope of authority granted by the legislation. Provisions also are made for the inclusion of individually owned Indian lands in tribal mineral agreements.

The other statute is the Federal Oil and Gas Royalty Management Act of 1982. This legislation requires the Secretary of the Interior to put into place new and more effective accounting and audit procedures for federal and Indian lands royalty management. The act also authorizes the secretary to enter into agreements with the state and Indian tribes to conduct on-

site monitoring of the leasing operations. The BIA currently is revising regulations to implement these laws which, together, give tribes expanded opportunities to negotiate, police, and enforce their own mineral agreements.

Within the Department of Interior, a new Minerals Management Service (MMS) has been set up to exercise responsibility for the accounting function of federal lands minerals management. This new agency resulted from the criticisms of ineffective royalty accounting raised in the Linowes Commission Report of 1982, which was charged by Secretary James Watt to explore allegations of Indian lands oil and royalty thefts.

The MMS now is complemented by the new BIA Denver Technical Assistance Office, which is designed to provide engineering, geological, and hydrological expertise to tribes pursuing development of their minerals.

Some of the principal issues facing tribal landowners with regard to minerals sales are:

1. Should the tribe or individual Indians remain passive lessors or should they acquire capital through investment or loans and become an active development partner. A variety of forms of agreements and development vehicles are being explored, including tribal enterprises, management contracts, joint ventures, and limited partnerships. Tribes and banks are beginning to structure innovative financing that assures lenders the collateral they require and that cannot be obtained from trust property which is not mortgageable. Some of these mechanisms include (1) commercial deposits at off-reservation banks in which the income streams are assigned to the lender and (2) assignment of lease and royalty income. In every instance, tribes are realizing that real control means equal access to information guaranteed under the agreement and equal participation rights in decisionmaking. Buying these options entails investment risks which few tribes, without significant federal backing through loan guarantees, are able or willing to take.

2. Tribes also are exploring creative ways to ensure more profitable projects by using their tax immunities in tandem with the tax benefits to which non-Indian investors are entitled. For example, in the early days of a project, a tribe might shift project ownership largely to the non-Indian investor until the associated tax investment and drilling cost write-offs were exhausted and all initial costs were recouped. Once profit is being

generated, the tribe might gain greater ownership so as to shelter the income from taxation.

3. Increasingly, tribes are realizing that if they desire successful cash economies they must acquire the expertise to manage and market the production of reservation-based resources and to protect the value of their financial assets. Correlatively, to the extent outside capital is used, tribes may be asked to compromise important tribal values and to create new tribal institutions, which ensure protection of the non-Indian investment.

Indian Tribes as Governments. Historically, tribal governments have posed an uneasy presence on the reservations. The earlier governments were not popularly supported but often had access to vital and relatively substantial federal revenues and jobs and, more important, made major decisions with long-term consequences regarding land use. In exchange for revenues and a few jobs, these earlier governments, without effective BIA assistance and with inadequate and often negligent contracted expertise, frequently bargained away the tribes' rights as governments to police and enforce laws and agreements applicable to the non-Indian developers. In other cases, tribes simply did not have the labor or financial capability to oversee and regulate energy development on the reservations.

New initiatives, however, now are under way to enable tribal governments to exert greater control over reservation resource development. First, some tribes are attempting to renegotiate leases to ensure, among other things, that tribal government authority is recognized.

Second, many tribes are expressing an interest in taxation to provide revenues for expanded government services made necessary by the presence and impacts of mining in the local communities. Taxation also can be a means by which social goals are achieved through incentives or disincentives, such as deductions or penalties applied to certain activities.[16]

With respect to taxation, the Department of the Interior recently promulgated final guidelines for their review of tribal taxes placed on mineral activities. The guidelines require tribes to provide notice and opportunities to be heard to potential taxpayers before enacting tax ordinances and further provide criteria for disapproval of such ordinances by the secretary.

In addition, Congress in 1982 passed the Indian Tribal Governmental Tax Status Act. This law will enhance tribal taxing capability since pay-

ments made to tribal governments now clearly will be deductible from federal income tax liability. Essentially, the act provides important federal tax benefits to Indian tribes which are accorded at the present time only to state and local governments under the Internal Revenue Code. In doing so, the Tax Status Act confirms a government-to-government tax relationship between Indian tribes and the federal government and also eliminates the discriminatory tax treatment the tribal governments have received under the Code.

Despite the changes which were made to the original version of the Tax Status Act by the conference committee, it is an extremely important piece of Indian legislation which establishes a valuable precedent concerning the status and treatment of tribal governments and which confers a number of substantial benefits on tribes. Those benefits can be summarized as follows:

1. Those paying taxes imposed by tribes would be entitled to deduct the tribal taxes for purposes of computing their federal tax liability.

2. Gifts of cash and other property to tribal governments will be deductible for federal income, estate, and gift tax purposes.

3. Subject to the qualification described above, tribal governments will be exempt from a number of excise taxes, including those on special fuels, manufacturers, highway use, and telephone service.

4. Tribal governments will be able to offer Section 403(b) tax-deferred annuities and public retirement benefits to certain employees.

5. Tribal governments will be able to issue certain tax exempt bonds. As explained above, however, the exemption does not extend to private-activity bonds, including certain industrial development, scholarship, and mortgage subsidy bonds. All public needs related to development, however, are eligible for bond finance, such as roads, sewers, and the like.

Third, tribes increasingly are concerned with adequate regulatory protection of human health, water supplies, and land. With few exceptions, tribes do not have the necessary regulatory capabilities in place to supervise their activities as well as the activities of reservation-based business. Moreover, baseline data frequently are missing and the crucial links of pollutants to disease are difficult to describe because of long-term effects and a scarcity of epidemiological work. The foregoing problems are not unique to Indian country since insufficient knowledge

exists worldwide regarding how to assess long-term risks to human health and to safeguard land, groundwater, and other natural resources. In addition, adequate protection often entails substantial expenses which some tribes and certainly most companies are not anxious to incur without substantial and reliable data. Nevertheless, almost thirty tribes presently are pursuing the creation or implementation of tribal air and water quality programs on their reservations. Balancing the interests in revenue with environmental protection will be a complex endeavor for those tribes who undertake it.

Fourth, tribes are considering numerous proposals for economic development. Some of these proposals consist of land uses that conflict with or would be endangered by mining. Increasingly, tribes are viewing natural resource development in the context of their overall economic development plans for land and water use, as well as tribal culture considerations, and, for some tribes, energy development may pose too great a sacrifice of other goals and needs for the benefits obtained.

Finally, an increasingly important issue will be how to enforce tribal agreements and laws with respect to non-Indian developers. Recent case law regarding tribal court jurisdiction over non-Indians raises, for the first time, questions about whether tribal courts can provide forums for resolution of disputes and enforcement of tribal laws. See Swift Transportation Inc. v. John (D. Arizona, 1982).

The question of state versus tribal government jurisdiction over non-Indian reservation-based developers also is an area of federal Indian law which presently lacks clarity and principled bases for decision.[17] The most recent U.S. Supreme Court statement on this question, however, was a holding that New Mexico may not regulate hunting and fishing on the Mescalero Apache Reservation, citing strong tribal and federal financial and governmental interests and relatively insignificant state interests.[18] Many of the factors and tests articulated in this decision have bearing on the question of state versus tribal taxation and resource management with regard to reservation-based activity.

An Agenda for Research

A great deal of technical and policy research and analysis is needed in the area of Indian economic development and natural resource development

in particular, especially with regard to the impacts and benefits for low-income populations. The following are suggestions of some of the more important areas of research needed.

- Technology issues
  a. water use modeling and criteria
  b. water quality modeling
  c. land reclamation potential
  d. irrigation systems for arid lands
  e. renewable energy systems--wind, solar

- Legal issues
  a. tribal taxation and the structuring of enterprises to maximize tribal and non-Indian tax benefits
  b. tribal commerical, zoning, and environmental codes
  c. restructuring tribal government, for example, implementing the principle of separation of powers or deriving governments and management systems based in part on traditional governing mechanisms
  d. alternative methods for conflict resolution
  e. tribal government and court jurisdiction over non-Indians

- Economics issues
  a. generating economic indicators, such as cost/benefit criteria, gross reservation product, and reservation multipliers which are based on assumptions consistent with tribal culture
  b. marketing techniques for tribally-produced goods and services, including building upon the links between the reservation and urban Indian communities
  c. market forecasting for agricultural and other natural resource products

- Social and cultural issues
  a. guaranteeing the free exercise of traditional tribal religions--how to define and protect religious sites

b. integrating communities into decision making regarding natural resource use and protection
c. training programs for tribal resource managers
d. ensuring equal participation of Indian women in development decisions and benefits

Conclusions

Indian tribes which own economically valuable mineral resources possess the potential to improve the economic well-being of the tribal members, most of whom are in low-income classes. Without adequate precautions, however, the potential also exists to destroy the remaining land and water base on the reservations, as well as the social, political, and cultural integrity of the tribe.

Before proceeding with development of any resource on any scale, tribes will have to address numerous complex and deeply felt concerns of tribal members over the appropriateness, for example, of mining, as compared with agriculture, as an economic base for the reservations. Beyond this, tribes will be required to ensure access to adequate monitoring and business capability to protect the tribal investment, should a tribe choose to go forward.

Much of the expertise can and should come from Indian people. In this regard, tribal government should be encouraged to coordinate with the educational systems on the reservations to ensure that proper and accurate incentives are provided for the students as they begin to form career interests and make higher education choices.

Finally, Indian resources rarely are contained within convenient political boundaries. Therefore, the cooperative efforts of tribal members and the sharing of information and resource management efforts among other tribes, states, and other local governments are vital to ensuring a future for all. Historical disregard of tribal values and governments by non-Indian governments and businesses, however, has soured the tribal trust in these institutions. Accordingly, the initiatives for such cooperation and the complementary expression of good faith now rest in non-Indian hands and the tribes are watching with interest.

Notes

[1]Bureau of Indian Affairs, U.S. Dept. of the Interior. Annual Report of Indian Land and Income from Surface and Subsurface Leases, 1981.

[2]Washington v. Fishing Vessel Ass'n, 443 U.S. 658 (1979).

[3]U.S. Geological Survey, Conservation Division, Federal and Indian Lands Oil and Gas Production, Royalty Income, and Related Statistics, June 1981; and Federal and Indian Lands Coal, Phosphate, Potash, Sodium and Other Mineral Production, Royalty Income and Related Statistics, June 1981.

[4]Bureau of the Census, U.S. Department of Commerce, 1980 Census of Population; Forbes Magazine, Nov. 9, 1981; U.S. Dept. of Commerce, Federal and State Indian Reservations, GPO, 1974.

[5]John Folk-Williams and Susan Williams, "Native American Consultancy," Report to the Ford Foundation, October 1982.

[6]J. T. Hack, The Changing Physical Environment of the Hopi Indian Reservation, Peabody Museum Papers (Cambridge, Mass., 1942).

[7]Schmeckebier, The Office of Indian Affairs, Its History, Activities and Organization (1927), p. 183, in Felix S. Cohen, Federal Indian Law, 1940 ed. (Albuquerque, N.M., University of New Mexico Press, 1940) p. 454.

[8]25 U.S.C. S397.

[9]See 25 U.S.C. SS396, 396a, 396b, 396d, 398a, 398b.

[10]Indian land is held in trust on behalf of the tribes or individual Indians, and the U.S. holds the legal title while Indians hold beneficial title.

[11]F. Cohen, Handbook of Federal Indian Law, 1982 ed. (Charlottesville, Va., Bobbs Merrill, 1982).

[12]Nevada v. United States, No. 81-2245 (1983); Arizona v. California.

[13]Arizona v. California, supra.

[14]Arizona v. San Carlos Apache Tribe, 81-2247 and 81-2188, (1983).

[15]See, for example, the Supreme Court's recent decision in Arizona v. California, in which the court declined to recalculate an earlier erroneous quantification of five Arizona tribes' practically irrigable acreage, noting expressly that it was persuaded by the interest in finality of its decree and the weight of non-Indian states and private interests who allegedly had based water use plans on the earlier decree.

[16]See, for example, the Navajo Tribe Sulfur Emissions Charge and Business Activities Tax.

[17]See Pelcyger, Justices and the Indian: Back to Basics. Oregon Law Review 29 (1983).

[18]New Mexico v. Mescalero Apache Tribe (1983).

COMMENTS ON THE INGRAM ET AL. AND WILLIAMS PAPERS

by John Folk-Williams

I am privileged to react to these papers before a group of economists and social scientists but I must admit that I have not been trained in economics. I am a writer who has been traveling among and analyzing the problems of the rural poor for the past fourteen years. I have been especially concerned to understand the motivation of groups that are poor and that tend to break the rules of economic self-interest. I could give examples of dozens that come to mind. I have been looking at some of the motivational factors for people like these:

- A Chicano farmer in the lower Rio Grande Valley in Texas who insists on sowing seed by hand instead of from a tractor because he needs to see it touching the ground before he feels right about his farming.
- A Navajo woman who owns a valuable grazing permit from her tribe. She is in a dilemma because a coal company wants her to lease that grazing land to them so that they can mine the land. This woman, who lives on a cash income of perhaps $2,000 a year, cries and is depressed at the thought of taking $100,000 for the permit and facing the destruction of her home and rangeland, and the move to another community.
- A Colorado tribe that is poor, in a cash sense, that votes in a referendum to reject a $100 million natural gas exploration deal that would limit Indian access to a completely uninhabited part of the reservation, which is used at present for subsistence hunting.
- A Utah farming community--which is not poor, and which chooses, after years of selling irrigation water rights to an energy company, to forbid further transfers because the cultural impact of the transactions was beginning to disrupt the community values of the area.

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I could go on and on telling you about ranchers in Montana who refuse to allow their land to be used for coal mining or farmers in Colorado who prefer small-scale fruit production to profits from the mineral industry

What is happening in the rural America that I am familiar with is a complex process of cultural and political change--it has economic dimensions, undeniably; but it cannot be construed simply as economic development.

The policies needed to meet the problems of broad social change cannot be based on narrow economic definitions. I applaud the paper of Lee Brown, Helen Ingram, Gary Weatherford, and the other authors as a courageous and carefully reasoned statement about the cultural imperatives and the political constraints which affect Indian and Hispanic decisions about water.

And I find Sue Williams' paper about tribal resource strategies a brilliant summary of current legal developments and cultural realities that are the background for the range of Indian choice in considering resource uses.

Let me make a few points to try to bring together the issues about cultural change, political adaptation, and economic use of resources.

Of course we have heard a great deal at the conference about the need for local involvement in and control of rural development. In the Indian case, I would suggest that something very different from what we could call economic development is occuring as Indians make resource-related decisions. This is a process of cultural change. It has a high price, and it is achieved with great internal struggle.

We tend to think of Indian tribes as being in a really ideal position to emerge from the condition of poverty. I would suggest, though, that escaping poverty does not adequately describe the way that the Indians look at what they are doing--and the ideal conditions that they have, namely, corporate ownership of very valuable resources, in some cases, coupled with governmental authority to put those resources to use--have a lot of constraints about them.

Let us look at the case of how tribes are dealing with centralized government on the federal model--a potentially important tool for economic change. As Sue was telling you, that is a model that has been imposed on tribes--and while there are a great many abstract legal rights that Indians

can put to use, they are still grappling with the problem of how to integrate this culturally and politically alien system into their own traditions. And that process is very far from complete. So one's relationships with Indian governments tend to be very different from relationships with county or state or federal governments.

The use and power of that sort of government is a matter of sharp internal debate, and the kinds of decisions that are being made on reservations are the result of local community pressures, local community concerns, and realities which are not expressed via the goal of simply escaping from poverty.

Indian people are coming to terms with a great many problems that are as cultural as they are economic in nature, and this puts outsiders in an unusual and difficult position.

Indians tend to look upon outsiders not so much as the nice guys who have come to help but as agents of institutions that are potentially dangerous, institutions that have a long history of trying to get control over things Indian--whether they are cultural, political, or economic.

And I have seen many cases where the decision to accept or reject a proposal from one of these institutions--whether it is a proposal for putting a power plant on a reservation, a proposal to use bilingual educational materials, or a proposal to accept a written constitution,--is often made in the context of complete suspicion about the motives of the non-Indians making these suggestions. This even applies to a suggestion to accept a grant of money from a private foundation. If the non-Indians find it so much in their interest to be putting a lot of energy into promoting this proposal, whatever it might be, the common reaction in Indian country is, "Well, there must be something wrong here--they must be getting something out of this and we have got to find out what it is."

That kind of thinking protects Indians and has really been an important element in their survival. Nevertheless, anyone who is trying to do economic development on an Indian reservation had better be prepared to deal with that attitude.

Indians today have often tried to shut the door and to keep outsiders out--while they go through this difficult process of internal decision making.

Now while Indians have survived by this ability to keep their affairs separate from those of non-Indians, current non-Indian pressure on the tribal resource base no longer really permits this. This is an important element that I think applies to all rural poor communities. At some point, those rural poor communities that do have access to resources--either abstract rights, claims, or actual control--have to exercise a comparative economic advantage if they are really to succeed, and especially if they are to emerge from their poverty and become participants in the U.S. economic system.

Notwithstanding the cultural and political experience of Indian communities, non-Indians are very concerned about the economic value of Indian resources--they want them. In the case of water and some other resources, non-Indians are already using the resources that the Indians have rights to. In addition, the Hispanic communities have extensive rights to land, land that is also being used by non-Hispanic, Anglo Americans.

When these rural groups actually win resource rights--to water, fish, minerals, or whatever--you have to watch out; there is going to be inevitable reaction.

Market forces will make it very difficult for this emerging economic group to have an impact; competing users of these resources will resist their emergence. I can think of a couple of examples.

There is a very unfortunate situation just north of Santa Fe, where I live, of a conflict about water rights between Indian and Hispanic communities, both of them poor, both of them functionally very traditional in some ways, but because of the peculiar circumstances of the way water rights are handled in New Mexico, these groups have been pitted against one another. In fact, the real long-term concern that they have to worry about is the pressure on the water base represented by urban growth and urban water demand, reflected in the political actions of Santa Fe and Albuquerque to gain control over as much water in the region as they possibly can.

After many years of legal struggle, Indians in the Pacific Northwest won a right to harvest half of the salmon catch, a very valuable commodity. Their victory precipitated one of the most bitter struggles over control of a natural resource that I have ever seen.

And that struggle continues. I would argue that the tribal choices about resource use will be drastically constrained unless--and until--they can participate in what have been non-Indian decisional processes in the past in such areas as federal coal leasing, power plant siting, Bureau of Reclamation water contracting and project development, river basin management, public capital investment, and many others.

If they wait for non-Indians to make resource choices in critical areas that transcend reservation boundaries, their own choices about resource use will be quite limited. In other words, Indians have to enter the general political process for defensive reasons, because it is in this realm that so many of the economic decisions are made.

I would argue that this is true of any rural poor group which is operating on cultural imperatives that are very different from ours and which is not quite as skilled in the economic competition that the rest of the country thrives on.

The political bargaining process that results in our country's resource decisions, I argue, does allow almost any constituency to build power and win a place at the bargaining table and thus to share in decisional power--if they have a large enough following and sophistication in using the tools of politics, publicity, research, litigation, electioneering, demonstrations, lobbying, and the like. But once the rhetoric of these battles is over, once they have actually gained power, they have to be ready to give and take with the opposition.

Now in this sense, I see the legal and political constraints on Indian and Hispanic water decisions, for example, as essentially no different from constraints on any resource user or authority: the coal company that wants to open a mine on federal land, an environmental organization that wants to designate a new wilderness area, or a Bureau of Reclamation that wants to finish constructing the Central Utah Project.

The difference is that Indians, Hispanics, and other culturally different rural poor groups are generally less advanced in adapting their strategies to fit the political realities, or in building their power to ensure themselves a share of decisional authority. Because they are driven as much by cultural as economic imperatives, they have a much harder time making their policy needs understood in the context of institutions designed to deal with purely economic or legal issues.

Examples come to mind in the area of Indian religious freedom. Often Indians are trying to control resources for completely noneconomic reasons, and when judges decide cases by applying primarily economic criteria, how can Indians win a resource dispute that pits a purely religious use of a resource against an economic use of that same resource? To date, they have lost most of those cases because judges will balance the comparative benefits to society of opening a new ski resort against doing nothing in that area, and simply allowing a religious use of the land. Economic criteria in decisionmaking in many non-Indian institutions can spell disaster for Indian religion. And similarly, any public policy that emerges from debate structured on purely economic terms is likely to be catastrophic for Indians or, as I say, for any constituency that is trying to protect noneconomic values in resource use.

But even though it may be difficult for rural constituencies that are poor to achieve their aims, through processes of cultural adaptation and political participation they may be able to acquire a share in decision-making power by using the tools of advocacy. But the price of this is that success may change them in ways that they do not altogether like by making them give up or modify some of the values they cherish through the very act of defending those values.

The alternative, however, is for them to lose all hope of gaining control over essential resources.

The rural poor thus face a dilemma: on the one hand, they can remain isolated from the economic and political mainstream and risk losing control of their resources, or on the other, they can enter that mainstream and risk losing the traditional values that have sustained them.

I would simply close by pointing out that while I very much encourage and agree with the line of exploration in Lee Brown and Helen Ingram's paper, I would say that perhaps the issue is not so much that water is different; I would argue that people are different: social groups are different, and they value resources in different ways.

I would also say that in the West, perhaps all social groups value water differently from other resources, but there are many social groups--Indians, Hispanics, many farmers and ranchers--who value land in a cultural context, as well as valuing it as an economic resource. And this is one of the most important things that I hope you all as economists and other

professionals will keep in mind in theorizing about economic change in the rural West.

COMMENTS ON THE INGRAM ET AL. PAPER

by Allen V. Kneese

My paper can be viewed as kind of an addendum to the Brown-Ingram paper because I want to talk a little bit about water allocation in a specific place. I am going to say some hypothetical things about a real place, and I hope that that may be helpful in understanding some of the problems of resource use in poor rural communities.

As was pointed out in the Brown-Ingram paper, the really poor in the area are mostly Hispanics and Indians. It was pointed out also that the use of water by those people is generally in low-value agricultural applications, and that this condition probably will persist because there are very few opportunities for transferring to higher uses within the cultural group.

The paper also mentioned the study of the San Juan diversion Nat Wollman and I did many years ago, The Value of Water in Alternative Uses, and he did in fact correctly point out that municipal and industrial uses carry much higher economic value than even high-level agricultural uses in the Southwest. But another conclusion of that study was that in the context of New Mexico, recreational uses have a much higher value than agricultural uses, generally speaking.

Now, I want to turn to a situation in which there may be an opportunity for reallocation of water from low-value agricultural use to high-value recreational use, but then point out why I think that the idea of such reallocation may be a mare's nest.

High in the Sangre de Cristo Mountains of New Mexico in a mountain valley of idyllic beauty, by a river called the Truchas, is a village called Truchas. Found there is a classic case of the type of irrigation that was described in the paper--the poverty, the outside work dependence, the water that is devoted primarily to alfalfa and hay and fruit and vegetables. Truchas is the kind of community of which there are a number in this region--rural, poor Hispanic communities. It is also, or else some community very like it, the setting of Richard Bradford's wonderful auto-

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biographical novel called Red Sky At Morning. Truchas means "trout" in Spanish, and that suggests that the Truchas River was a fabled trout stream at one point in its history--and seeing it, seeing the circumstances, one can easily believe that that would be the case.

The setting is, as I said, of extraordinary beauty; the elevation is high, on the order of 8,000 feet--therefore, it is relatively wet; it is surrounded by beautiful mountain countryside. My friend Nat Wollman, with whom I have gone on many fishing expeditions in the Sangre de Cristo, and have often discussed that this would look like almost an ideal setting for a really high class recreational trout fishing development, involving both the free-flowing stream and small impoundments. And, most likely, in addition, there would be opportunities to develop certain kinds of winter sports in the area, skiing and ice skating perhaps. The area is very accessible from both Santa Fe and Albuquerque, and a recreational development there might indeed produce very large economic returns for the people of the village.

Now why do I say that the idea may be a mare's nest? There are several reasons. Perhaps looking at them in a little bit of detail will help us to understand the complexity of what is involved in a resource allocation issue in this type of setting.

Some of the problems are pretty straightforward. There is no internal capability to conceive of or plan for such an enterprise, nor any entrepreneurial ability available to carry it out. Second, there is no capital for an investment locally available for this kind of development.

These are things that might be helped from the outside. It is possible that if society took an interest, planning could be done, capital could be lent, and the enterprise could be launched.

But there are some other problems that I think are much harder. One is that such a development would require surrendering individual families' rights to water to a communal enterprise, and it would mean a very large change in the style of life for many of the people there.

The word "traditional" has been used in several statements here, and Truchas certainly is a traditional community, but it is also a radical community, and I will come to that point shortly. There is great division between the older people and the younger people in that particular community and many others like it.

A second in this group of not so obvious problems is that the consequences of failure might be disastrous for the community if it tried unsuccessfully to undertake a reallocation of water to a higher use. There is no guarantee that if there were a failure it would ever be possible to return to the status quo ante. I will indicate some reasons for that later.

A third point, which is a much more delicate matter but which is very real in all of these Hispanic communities, is that over the last two decades or so a very severe alienation from the dominant culture has taken place, especially among the young people. I would like to illustrate that with a story.

For about twenty years, off and on, Nat Wollman and I have gone on expeditions into the Pecos Wilderness Area. The trip there from Albuquerque takes us through Truchas. About fifteen or sixteen years ago, coming back from one of these expeditions, we stopped at Pacheco's venerable bar in Truchas to haye a drink. We went in and we ordered scotch and water. That gave rise to a good deal of good-natured joshing among the Coors drinkers who were sitting there about the type of people who drink scotch.

However, Senor Pacheco allowed as how he thought that he did in fact have a bottle of scotch, so this led to a lot of opening and closing of cabinets and clanging bottles, and finally, Senor Pacheco produced a bottle of real scotch, Johnny Walker Black. It was so dusty that he first had to go and dust it off before he could even open it.

Well, then we discussed some more about the virtues of various kinds of drinks. Then as we were going out the door, Senor Pacheco handed me the bottle of scotch and said, "Here, take this with you--I don't need it any more." There was obviously never, ever anyone who had ordered scotch in Pacheco's bar before. That illustrates one end of the spectrum of intercultural relationships.

An illustration of the other end is that several years ago, the state of New Mexico erected some picnic shelters and restrooms on a site overlooking Truchas--a very beautiful setting, one of the finest sights in the Rocky Mountains in my opinion.

In the course of the next couple of months, those facilities were razed to the ground by vandals. I don't mean that they were marked up or

something, they were literally demolished. And at this point in time, people who used to use the parking lot at the head of the trail into the Pecos Wilderness that starts at a place called Trampas will not leave their cars in the parking lot any more. Their tires get slashed. So this alienation is another aspect of what would be involved in trying to do something that would mean a much greater involvement of the dominant culture in the life of this village.

Then finally, in New Mexico law, instream recreational use of water is not a beneficial use, and if this community were to decide to develop as a trout resort, so to speak, and leave the water flow in the stream, they would lose the right to the use of that water. This would mean that agriculture could probably not be reestablished.

It is for these kinds of reasons that I think even in those cases where reallocation looks promising, there is such an amount of history, culture, sometimes animosity, that is just not captured in the simple idea of reallocating water. A total economic and cultural restructuring is implied.

But it has nevertheless been done sometimes. Not perhaps in as difficult a circumstance, but I think, for example, this is true in the case of the Jicarilla and the Mescalaro Apaches, who have made very effective use of their mountain recreational resources. I feel that it would be quite a useful thing to take a careful look at some of these case experiences, and see what the factors were that permitted some of them to work.