2-1-1985

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February 1985

Study Paper #85-11

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INDIAN WATER RIGHT CLAIMS

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February 1985

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Abstract

Legal-Economic Evaluation of Indian Water Right Claims

Indian claims for large amounts of water in the West are based on the contention that the water was intended or implied at the time the reservations were created. Courts have established broad criteria for quantifying rights. Guidelines for appropriate analysis to test these criteria are presented.
LEGAL-ECONOMIC EVALUATION OF INDIAN WATER RIGHTS CLAIMS

Introduction

Considerable attention has been given recently to Indian water rights claims in the western United States. For example, see a group of articles in the Natural Resources Journal, including DuMars and Ingram (1980), Back and Taylor (1980), Palma (1980), Dellwo (1980), Burness et al. (1980), Bond (1983), Brookshire et al. (1983), and Burness et al. (1983). A few claims can be traced to rights presumably obtained in the very distant past in which Indians actually used water. These are called "aboriginal rights" and were generally associated with Pueblo dwellers in the southwest. The primary basis for Indian claims, however, is the so-called "Winters' Doctrine" (Winters vs. United States, 1907) in which it is claimed that as Indian reservations were set up, even though no water is mentioned, the government intended to, or it is implied that there is reserved water for irrigation to make the reservation productive and to provide a permanent home and livelihood for the Indians. The Supreme Court in the Winters case held that the Congressional intent was to transform the Indians into a "pastoral and civilized people." Thus, the rights claimed are often referred to as Indian Reserved water rights.

Generally, the provisions of the prior appropriation doctrine of western water law provide for prioritization of rights in that "first in time is first in right" and that "beneficial use" of the water must be maintained. Indian water users have not conformed to state laws in appropriating water. In fact, to date, there has been only limited water actually placed in use after allocation to Indians.
It has been estimated that 2 million acre-feet of water per year could be adjudicated to be used on 500,000 acres of the 14 million acre Navajo Reservation (Back and Taylor 1980). Two million acre-feet compares with the estimated virgin flow at Lee's Ferry of 13.5 million acre-feet. Arizona's entitlement under the court ruling in Arizona vs. California (1963) is 2.8 million acre-feet. Other states face similarly large claims. Thus, states and individual non-Indian water users are seriously concerned that equities in property rights might be overturned.

In 1874, Congress reserved a large area in Montana for the Gros Ventre, Peigan, Blood, Blackfeet, and River Crow Indians. In 1888, the area was reduced to the Fort Belknap Reservation, which adjoined the Milk River. Several individuals and a cattle company settled upstream and appropriated under Montana state law 120 cubic feet per second of water from the river for irrigation. Later, in 1898, the tribes developed an irrigation project which also required 120 cubic feet per second from the same river. Insufficient water was available to fulfill both claims. In the legal action, the court found for the Indians and awarded a prior appropriation to the Indian claim since the date of the establishment of the reservation predated the claim by Winters and the others. This was upheld even though Winters had actually placed the water to beneficial use and the Indians had not. The water was needed to "fulfill the primary purposes for creation of the reservation."

Thus, the name "Winters' Doctrine" has applied to subsequent Indian vs. prior user's actions.
Over time, the definition of the basis and nature of Indian claims has been refined but remains contestable. A major definition occurred in the landmark legal case of Arizona vs. California (1963) in which the special master held that Indian claims to water depended on the amount of "practically irrigable acres." The special master appointed when the case was reopened for reconsideration of omitted Indian lands concluded: "For present purposes, a finding that annual benefits exceed costs will suffice for a finding of practicable irrigability" (Tuttle 1982). This has been equated to economic feasibility.

An Analytical Framework

In many cases, special rules have been proposed for making benefit/cost analyses favorable to Indian claims. In particular, use of low interest rates, counting of secondary benefits, no accounting for secondary costs, long-term employment benefits, and no necessity for using the water for the purpose for which it was claimed, have been areas of analysis and data presentation, which have been propounded by advocates of Indian claims. See the article by Burness et al. (1983) as an example. It is the contention in this paper that these approaches are inappropriate measures of the extent to which the rest of society should redress alleged social ills and inequitable resource distributions to Indians. If property rights are deemed by courts to be owed to Indians, then there is no basis in efficiency or equity considerations to conduct a distorted analysis as a windowdressing to supposedly lend respectability to the action. Courts and judges are concerned with equity. They can respond directly. If the decision to respond to the efficiency criterion by using benefit/cost analysis is accepted, then
standard, well-documented, regulated, benefit/cost procedures promoting efficiency would be most appropriate. Social redress, if it is owed, may or may not be through water allocation. Indeed, much redress has probably already occurred.

Because valuable inputs are absorbed and valuable outputs are produced, there is an opportunity to measure the benefits of public natural resource projects as well as their costs. Explicit procedures to account for expected benefits and costs have been mandated by law for nearly fifty years. The basic criterion was formally outlined in the Flood Control Act of 1936 (U.S. Congress 1936). It stated that the federal government might undertake such investments "if the benefits to whomsoever they accrue exceed the costs." This criterion still guides evaluation efforts in natural resources.

Precisely because there was so much creative benefit inflation by public development interests, the nature of benefits that may be counted and the costs that must be accounted for are well-standardized. It seems inappropriate for the entire academic and bureaucratic process to be reopened after the intensive work that has transpired for so many years in standardizing and codifying evaluative procedures.

**Interest Rates in Project Evaluation**

Water resource development projects have a long life. It is characteristic of projects that high investment costs must be incurred in the early stages of a project, then operation and maintenance costs are spread over the project life. The benefits resulting from a project are often nonexistent at the project's beginning, build-up, and then are
sustained at higher values over the life of a project. Typical benefit and cost streams are shown in Figure 1.

Assume that the total of benefits, whenever they occur, is greater than the total of costs in Figure 1. The area under the benefit curve is greater than the area of costs. Without discounting, total benefits exceed total costs over time, therefore, the project has a benefit/cost ratio greater than unity. But, the whole array of costs and benefits must be brought to a common time frame by means of an interest charge or discount rate. High initial costs are discounted less heavily than the later benefits. The higher the discount rate, the more the loss in later benefits. Thus, discounted benefits could easily be less than discounted costs in contrast to Figure 1.

By way of example, investment X is expected to cost $5 million next year. The project is expected to yield benefits or revenues of $600,000 per year for the next twenty-five years, which, if simply added up, total $15 million. It requires the continued expenditures of $100,000 per year to keep it in operation (Table 1). From the calculation displayed in Table 1, the necessity for accurate and consistent discounting is clear. The expected benefit/cost ratio of the example project is 2.0 if no discounting is applied. The ratio drops to 1.3 with an interest rate of 5 percent and to below unity with a rate of 10 percent.

The discounting procedures now mandated were specified by the Congress in the Water Resources Development Act of 1974 (P.L. 93-251, Sec. 80) (U. S. Congress 1974). This law stated:
Figure 1. Typical annual costs and benefits in a water development project.
Table 1. The Effect of Discounting on the Evaluation of a Typical Investment, Using Discount Rates of 0, 3, 5, and 10 Percent (Dollar Amounts in Thousands)

<table>
<thead>
<tr>
<th>Interest Rate (in Percentages)</th>
<th>0</th>
<th>3</th>
<th>5</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value today (present value) of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>total benefits</td>
<td>$15,000</td>
<td>$10,448</td>
<td>$8,456</td>
<td>$5,442</td>
</tr>
<tr>
<td>total costs</td>
<td>7,500</td>
<td>6,741</td>
<td>6,409</td>
<td>5,906</td>
</tr>
<tr>
<td>Benefit/cost ratio</td>
<td>2.0</td>
<td>1.45</td>
<td>1.32</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Discount Rate

The interest rate to be used in plan formulation and evaluation for discounting future benefits and computing costs, or otherwise converting benefits and costs to a common time basis, shall be based upon the average yield during the preceding fiscal year on interest bearing marketable securities of the United States which, at the time the computation is made, have terms of 15 years or more remaining to maturity. Provided however that in no event shall the rate be raised or lowered more than one-quarter of one percent for any year.

The history of discount rates required to be used in federal water resource planning since 1957 is shown in Table 2.

The procedure adopted in 1974 assures a reasonable, stable rate and is still used today. In recent years, the provision to limit the yearly change has held the rate down significantly.

Haveman (1970) draws a conclusion with which we agree:

Most observers now agree that the government, in pursuing national economic efficiency, should undertake no expenditure which earns a smaller return than the same resources would earn in an alternative use. Because the resources used by the government would be alternatively used in the private sector, the government must look to private interest and profit rates to determine the appropriate public interest rate for discounting. This position reflects the application of the basic "opportunity cost" principle—the cost of the resources used by the government is equal to the loss of the value which these resources would otherwise produce (p. 161).

A Congressional subcommittee (U. S. Congress 1968) placed the issue in perspective as follows:

Private citizens should not, in general, be forced to give up a portion of their incomes in the form of higher taxes to support public undertakings which are of less social value than the uses to which their funds would otherwise be put. The way for the federal government to assure this result is to adopt in public investment appraisal an interest rate policy which reflects the private sector opportunities foregone (pp. 5-6).

Baumol (1967) indicates that

the literature of economics agrees both on the importance of a correct choice of discount rate and on the basic criterion which
Table 2. Mandated Discount Rates for Use in Government Project Evaluations

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>B.B.C. A-47</th>
<th>S.D. 97</th>
<th>WRC 1968 Reg.</th>
<th>Prin. &amp; Sec. 80 Stand.</th>
<th>WRDA 1974 Notice</th>
</tr>
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<tbody>
<tr>
<td>1957</td>
<td>2.500</td>
<td></td>
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<tr>
<td>1958</td>
<td>2.500</td>
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<td>1959</td>
<td>2.500</td>
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<td>1960</td>
<td>2.500</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>1961</td>
<td>2.625</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1962</td>
<td>2.625</td>
<td>2.625</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1963</td>
<td>2.875</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1964</td>
<td>3.000</td>
<td></td>
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<tr>
<td>1965</td>
<td>3.125</td>
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<tr>
<td>1966</td>
<td>3.125</td>
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<td>1967</td>
<td>3.125</td>
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<td>1968</td>
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<td>1969</td>
<td>3.250</td>
<td>4.625</td>
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<tr>
<td>1970</td>
<td></td>
<td>4.875</td>
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<td>1971</td>
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<td>5.125</td>
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<td>1972</td>
<td></td>
<td>5.375</td>
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<td>1973</td>
<td></td>
<td>5.500</td>
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<tr>
<td>1974</td>
<td>5.625</td>
<td>6.875</td>
<td>5.625</td>
<td>5.625</td>
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<tr>
<td>1975</td>
<td></td>
<td>5.875</td>
<td>5.875</td>
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<td>1985</td>
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</table>

Effective dates of the indicated documents:

- Senate Document 97 (May 15, 1962 to December 24, 1968)
- Water Resources Council (December 24, 1968 - October 25, 1973)
- Principles and Standards (October 25, 1973 to March 7, 1974)
- WRDA of 1974 (Section 80) (March 7, 1974--continuing)
- Water Resources Council (74) (August 14, 1974--continuing)

should be used in its determination. The logic of the issue dictates that opportunity cost is the relevant criterion and this conclusion is universally accepted by the profession.

In summary, the decision to devote resources to investment in a public project means that these resources will become unavailable for use by the private sector. The social rate of discount must, then, be chosen in such a way that it leads to a project being selected only if its benefits exceed its opportunity costs in other public projects or in the private sector.

Use of Secondary Benefits

The evaluation of the use of funds in public and private sectors is similar except that private entrepreneurs are concerned only with gains and losses accruing to their firm. Great care must be exercised that in a public sector undertaking all impacts on those secondarily or indirectly affected are accounted for. Irrigation projects must include such things as downstream water quality and quantity diminution and the drainage facilities to be needed for long-term project viability, which may not be needed initially. When evaluation is from the national perspective, gains to all beneficiaries and losses sustained by all cost-bearers are included in the analysis. It is not generally true that what is good for a small region is good for the United States.

The above illustrations lead to the basic criterion of analysis that applies to water development agencies. That is, that federally financed water project investments require a national accounting stance in evaluating social benefits and social costs. Local unemployment and
income distribution problems can be very adequately characterized in alternative accounts.

If secondary benefits are induced by a public project, and if resources are fully employed outside the project area, then employment of similar resources in the project are offset by decreases elsewhere. The conclusion is that all kinds of secondary net benefits should be dropped from consideration in project evaluation if the concern is with a national account. Indirect or secondary costs of a project may include burdens of excess agricultural capacity that is spread diffusely among taxpayers. For many specialty crops, the income and asset value impacts may be substantial. The procedures for benefit estimation advocated by the Water Resources Council take into account ten widely grown crops where it is assumed one additional project would not induce significant negative price effects. Other crops (usually high-value crops) would be treated as indicated in the following.


National economic development (NED) benefits from irrigation elements of water resource projects are computed as the increased net returns that would result from reduced production cost, or intensification benefits through production of current crops and increased acreages of rice, cotton, pasture, corn, oats, soybeans, wheat, milo, barley, or hay. The intensification benefits are computed as the difference in net income with compared to without project. Increased acreages of other crops are evaluated as the efficiency gained in the project area compared to typical lands in the WRC assessment subarea (ASA) (U. S. Water Resources Council 1980).

Conclusions

Tools of economics have been misused in application to Indian water right claims. Two particular aspects have been examined. First,
the treatment of the discount rate is not in harmony with the long-established and thoroughly negotiated procedures that have been mandated by the Congress as an acceptable compromise. Second, it is recommended that "economic" analysis must be from a national perspective as indicated by the NED account of the Water Resources Council's Principles and Standards. The regional perspective and other social effects can best be expressed in other ways. The location of high-value crops is determined by principles of costs and returns and comparative advantage. It is not determined by high cost of production (especially water in this case). To assume that high production costs attract high-value crops is equivalent to saying that grapes and bananas should be grown in Alaska and Greenland.

If any one of several erroneous procedures were corrected in application of the benefit/cost criterion as a measure of "economic feasibility" which has been interpreted to determine "practically irrigable acres," then a negative finding would result. Multiple use of inappropriate criteria is falsely giving economic respectability to social action which, if done, needs to be justified on other grounds.
References


Winters vs. United States. 207 U.S. 564. 1907.