VALUATION OF AMERICAN INDIAN LAND AND WATER RESOURCES: A GUIDEBOOK

Miriam Z. Hammer

February 2002

Table of Contents

Introduction: Why this guidebook?	3
Section 1: The Issue	5
Economic Valuation Techniques and American Indian Responses	5
American Indian World Views	6
Justification for Resource Use in the Context of Unitheism	8
Economic Skepticism	9
Responses to Skepticism	9
Section II: What to do?	14
Solution I: Ensure the Resources' Importance is Fully Described and Referenced	14
Solution II: Utilize Non-Monetary Valuation Techniques for all Benefits and Costs	19
Solution III: Obtain Tribal Consent to Partially Value Resources	19
Use and Non-Use Values	19
Replacement Value Method (RVM)	19
Habitat Equivalency Analysis (HEA)	20
State Preference Methods	21
Implicit Price/Hedonic Method, Revealed Preference Method, and Losses to Way of Life and Losses Associated with Pain and Suffering	22
Solution IV: Obtain Tribal Consent for Administratively Assigned Monetary Values	24
General Comments about All Methods	25
Conclusions and Suggestions for Further Research	26
Suggestions for Further Study	26
Discounting	26
"Group" Versus "Individual" –Based Economies and The Inculcation of Public Goods Values On Individuals	26
References	27
Bibliography	35

Introduction: Why this guidebook?

This guidebook was undertaken in response to concerns that U.S. Bureau of Reclamation (Reclamation) Environmental Impact Statements (EIS), Environmental Assessments (EA), and other project assessments and proposals sometimes pay too little attention to the significance of land and water resources to American Indians. The problem is apparent especially in those sections of the papers dealing with the economic impacts of the proposed actions.

Of course, there are sections of project proposals, EA and EIS that require the consideration of projects' impacts on cultural and archeological resources and on Indian Trust Assets (ITA). American Indian cultural, religious, and historic resources are one of the primary areas of focus of such requirements. (See National Environmental Policy Act 1992, sections 1501.5, 15.02.15, 1502.16; National Historic Preservation Act, 16 U.S.C. 470, U.S. Bureau of Reclamation 2000, Sections 3.13.4-3.13.7; U.S. Water Resources Council 1983 Chapter III, Environmental Quality (EQ) Procedures; 36 CFR 68.3; 40 CFR Parts 1500-1508; 43 CFR 3; 43 CFR 7). The economic impacts of data recovery and mitigation of effects to artifacts and archeological sites is described. However, the economy of American Indian land and water resource use is generally not characterized at the same level of detail as the non-Indian economy. In addition, without enough reference to the cultural resources sections of project assessments in the sections on economic impacts, the cultural value of resources could be given less than adequate consideration in decisions made.

Thus, finding some way to bridge the gap between the information provided in the sections of reports dealing with cultural and natural resources, and the information in the economic sections of project assessments might improve the chances that American Indian cultural values for resources will be taken into greater consideration in decision-making.

The first section of this guidebook will explain the difficulties of putting actual dollar values on many of the resources valued culturally by American Indians. American Indian beliefs often assert the full integration of the spiritual with the physical, and the sacredness and interrelatedness of all creation. Thus, while some American Indian tribes or individuals are quite comfortable with putting dollar values on land and water resources, many other tribes or individuals find this highly offensive. Nonetheless, economists are often skeptical of the assertion that natural resources are infinitely valuable to American Indians, an assertion that would appear to follow from such beliefs. An examination of such criticism is offered.

The second section of the guidebook will discuss possible ways to bridge the gap between descriptions of the cultural importance of resources and their economic values. The first solution suggested involves two phases. The first phase is to ensure that those sections of assessments and reports that deal with the cultural and religious aspects of resources is detailed and complete enough to allow decision makers to have a good

understanding of the degree of the importance of the resources to the Tribe(s) in question. As will be explained, it may be necessary to supplement the cultural and social analysis sections of documents with other economically relevant information. The second phase is to ensure that these descriptions are thoroughly referenced in the economic sections of reports and assessments in order to ensure they receive the proper attention by decision makers.

The second solution suggested involves avoiding putting any values in monetary terms. Instead, all values would be described according to Meyer Resources' (1999) "Hierarchy of Needs" and five additional "non-Tribal indicators" (pp. 25-37).

The third suggestion is to obtain the agreement of the Tribe(s) to do economic valuations of their resources using one or more of several different econometric techniques. These techniques are described in general terms. The fourth suggested solution involves obtaining the agreement of the Tribe(s) involved to have a dollar value administratively assigned to the resources in question. Should such an agreement take place, some economic assessments could be used in order to aid decision makers with 'target' values.

It is recognized that none of these methods may ever fully describe the total cultural value of water resources to American Indians. However, tradeoffs are often necessary between projects and project beneficiaries. Such tradeoffs require an understanding of the relative value of the resources to all parties. The additional methods described in this guidebook are merely intended to enable decision makers to have a greater appreciation of the importance of water resources to American Indians than they may have had without the methods being employed. This greater knowledge and understanding should aid decision makers to make tradeoffs and decisions that result in greater benefits to the society than might have resulted without this understanding.

Of course, it is also understood that there are wide variations in religious and cultural beliefs and opinions between American Indian tribes, just as there are wide variations of similar beliefs among non-American Indians. It is hoped that the generalizations used to describe American Indian attitudes toward the value of resources are not seen as stereotypes, but rather as means by which to identify very common themes in many American Indian cultures. The purpose is to try to develop understanding between two (or more) very different cultures, in terms that the larger, non-American Indian culture can understand and appreciate.

Section 1: The Issue

Economic Valuation Techniques and American Indian Responses.

According to economic theory, there are aspects of all water resources that can be valued monetarily. For instance, there is an objectively determined dollar value of an acre-foot of water for the irrigation of a particular crop. To the extent that such monetary values accrue to American Indian economies they should always be determined and included in project proposals and documents required under the National Environmental Policy Act (NEPA). As these methods are thoroughly described elsewhere, they will not be repeated in this guidebook. (See The U.S. Water Resources Council's *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (P&Gs) 1983). Such dollar amounts are called *market* values because (usually) the free market assigns a dollar value to one unit of the resource.

However, many aspects of resources are not assigned a dollar value in the market. Some examples of *non-market* goods are: The fun and rest a family gains from rafting a river in a public park, the appreciation people have for a scenic view of farmland, and the joy and sustenance received when an angler brings back a good catch and shares it among his family and tribe.

Reclamation economists have attempted to elicit dollar values for non-market goods from American Indians using what are known as S*tated Preference Methods*. In these methods, the respondent is usually asked to accept or reject a suggested monetary value on some unit of a resource. However, in many cases American Indians have become offended by the suggestion of putting any monetary value on resources that have cultural and social importance. When asked to do so, the responses range from simple refusal to such statements as, "How much money would you be willing to pay to save your daughter from being killed?" (Meyer 2000, Mushinski 2000) Some Tribes have initially indicated a willingness to put dollar values on some resources, only to decide against doing so later in negotiations (Vinton 2001).

Likewise, if American Indians are generally affronted by monetizing resources themselves, they are unlikely to be receptive to such valuation by non-Indian survey respondents. This may be the case even though non-Indian respondees might believe American Indian resource uses are more valuable than the marketplace suggests and place correspondingly high values on those resource uses compared to other uses.

When American Indians refuse to suggest a dollar value for a resource, the non-Indian economic paradigm could interpret such a response in one of two ways. Either the value of the resource to American Indians is zero or it is infinite. Traditional economic thinking generally does not accept the implication of infinite values. Infinite values imply that everything else may be sacrificed in favor of the infinitely-valued resource.

Thus, there is a danger that American Indian values for the resource will be interpreted as non-existent instead of infinite (Ekstrand 2000, Duffield 2001).

The problem facing economists is that while American Indians would like to see greater weight placed on their cultural and religious values for their water and land resources, it may be very difficult to describe these values in dollar terms in a manner which is culturally inoffensive. As a result, even when projects are designed to provide greater resources to American Indians, some of the most important values to American Indians to be derived from the projects may not be measured in the same dollar terms as other aspects of the projects, such as the costs of construction and maintenance. This may give the erroneous impression that American Indian's do not have significant values for the benefits or costs of a project. As Meyer Resources explains,

> These differences in perception of value [between non-American Indians and American Indians] pose strong risks that economists may culturally encapsulate project impacts on tribes. Too often in the past, economic valuation models have misrepresented tribal effects and damaged tribal interests. Alternatively, tribal values have not been treated substantively – and such values have been marginalized and appendicized in related reports[1]. This has been damaging to reasonable consideration of tribal effects. (1999 p. 37)

American Indian World Views

Religious and cultural beliefs are at the core of the issue that is being discussed. Thus, it makes some sense that American Indian religious and cultural beliefs need to be understood to appreciate the issues at work. Of course, there is no one religion or culture among all American Indians, or indeed even among American Indians within the same tribe. However, there are very similar themes that run throughout quite a few of the American Indian religions.

One of the most common themes is to see all of creation as being related and interdependent. Thus, in most tribes it is considered fundamental for each member to maintain a balance and harmony with the world around him or her, even with the non-living world.

To support such responsibility, many American Indian religions assert that a creative force forged the world and all things on it. Subsequently, all things and beings have a certain degree of sacredness and all things and beings are interconnected. One author describes this belief system as "Unitheism" meaning that everything is sacred and the sacred is everything (Kaelin 1998). For instance, the Lakota frequently say, "Mitakuye Oyasin" (me-tah-KOOH-ye o-yah-SIN). The phrase means (depending on the

[1] U.S. Army Corps of Engineers, Bonneville Power Administration, and U.S. Bureau of Reclamation. 1995. *Columbia River System Operation Review: Final Environmental Impact Statement. Main Report*. p.2-21.

translator), "We are all related," or "Everything is one." In a similar vein, the Hopi claim that all archeological sites on their lands are sacred because they are all footprints of Mesawa, who is the deity that brought the Hopi up from the underworld (Coulam 2001). Hanes (1995) bases his entire analysis of the impacts on American Indians of the northern intermontane region of western North America on the premise that the relationship of American Indians to the land and resources is such that "the sacred is embedded in all natural phenomena" (p. 6). Below are several other statements explaining this belief.

> …So I say that the Arapahoes and all tribes were religious people. Before the white mans' contact they prayed to God. According to the stories of the old people, they prayed to God because he was the creator of this world. So for that everything they did was in holiness, in sacredness; everything was this way with the Arapahoes…. (Friday, 1989, p. 1).

> …Belief that the Sacred is present in all creation is the heart of traditional Plains Indian tribal religions. Knowledge of the presence of the Holy in all creation is the 'essence' of Plains Indian life. (Powell 1989, p. 48).

> Among American Indians the sacred is… founded on the idea that it is an embedded attribute of all phenomena. For example, among the Lakota this attribute is *wakan*, whereas among the Algonkians it is *manitou*. Accessing this sacred attribute is a major ritual goal found in all American Indian cultures and entails actually entering sacredness rather than merely praying to it or propitiating it (Walker, 1991 p. 103).

Walker also states,

> Throughout the Northern Rocky Mountain region, American Indian religious leaders attest that the geographical location of rituals is vital. Unless rituals are performed at the proper locations, they have little or no efficacy. In a literal sense the natural environment becomes an altar or church in these religions. Similar conceptions are recorded for other American Indian groups throughout the Northwest, Southwest, Eastern Woodlands, Subarctic, and Arctic regions of North America. It is the rule rather than the exception that American Indian ritual life is inextricably tied to the natural environment. (p. 110)

> Traditional tribal members believe that elements of the natural environment retain their own spiritual essence and that man is an integral part of this system (Curtis 1992, p. 67).

> For tribal people, who see the world as a whole, the essence of our work is in its entirety. In a society where all are related, where everybody is someone else's mother, father, brother, sister, aunt or cousin, and where you cannot leave without eventually coming home, simple decisions

require the approval of nearly everyone in that society. It is a society as a whole, not merely a part of it that must survive. This is Indian understanding. It is understanding in a global sense." (Smith 1994 citing First Nations Financial Project 1991, p. 188)

Previous ethnographic studies, including those in this analysis, indicate that American Indian people often perceive cultural resources to be elements of a single whole. This epistemological premise is often expressed through the concept of the integration of humans, nature, and the supernatural. …One implication of this premise is that Indian people perceive themselves to be a functional and essential part of the natural elements in their traditionally occupied lands. They perceive this relationship to have been caused by the supernatural (Stoffle and Evans 1990 pp.91-92). Traditional lands, therefore, are their Holy Lands. (Stoffle and Evans 1990 citing Spicer 1957 p. 92)

Justification for Resource Use in the Context of Unitheism

Note that Unitheism and cultural beliefs in the balance of creation do not preclude the use of resources, or even the destruction of some resources. Rather, Unitheistic beliefs require an appreciation for the balance between all creation. Thus, American Indians are free to hunt, fish, build, and gather so long as their activities are seen as not disturbing the balance between humans and all other creation. This is supported by Stoffle and Evans:

…these Indian people [in the 11 studies discussed] believe that they have a right to use the land because they have a supernaturally derived responsibility to care for it and to do so they must subsist as ethnic groups. Second, each American Indian ethnic group will have culturally prescribed procedures for using the land, plants, and animals. Southern Paiutes, for example, have use procedures that derive directly from the epistemological belief that the animals, plants, and even the land have a life force. These Indian people believe that everything has human-like rights, which derive from the human-like life force bestowed upon them at creation" (1990 p. 94).

Meyer's experiences with American Indians and their beliefs are consistent with this.

"…my sense is that …[American] Indians believe the beliefs and actions of people and animals, etc. occur in <u>balance</u> in the world. So it is necessary to respect each other – but also to take what we need from each other. If this is done in a respectful and balanced way, nothing more need be explained. This might be

considered a philosophy for living – of which spirituality plays an important – but not exclusive -- role. (Meyer 2001)

Skepticism

When confronted with these kinds of assertions, many economists respond that despite the professed sacredness of all creation, American Indians nonetheless have destroyed parts of the natural world in apparently disrespectful and wasteful manners. For instance, burning fields in order to increase the fertility of the field until all fertility was destroyed; and wasting whole animals or most of the meat on animals (Anderson 1997).

Along similar lines, Vernon L. Smith (1999), citing Paul Martin (1967, 1984, 1990), and others believes that it was the prehistoric predecessors of modern American Indians that killed off many species of game animals, including a larger, slower relative of the modern American Bison (Smith 1999, pp. 63-66). Implied in Smith's writing is that a major part of the reason for the extinctions is the wide use of mass kills, such as stampede jumps or traps, in which hundreds of animals could be killed (pp. 64-65). In such kills not all of the animals were butchered for food or other uses, and of those animals that were used, much of the animal was left to rot (Anderson, citing Baden, Stroup, and Thurman 1981).

Such wastefulness, it is argued, cannot support the contention that American Indians treat all creation as sacred. This argument might be seen to cast doubt on the legitimacy of American Indian claims that their resources are 'above' monetizing.

Finally, this behavior is seen by economists to suggest that some American Indians' refusal to put a dollar value on a resource is *strategic behavior*. Strategic behavior occurs when a respondent to a stated preference question does not answer with the dollar value they truly believe should be assigned to the resource. Instead, the respondent answers in such a way that he or she believes will either better benefit him/her or his/ her tribe, or answers in such a way that he/she believes will gain the approval of the interviewer. Such behavior can lead to problems with correctly valuing a resource using stated preference methods, such as the Contingent Valuation Method (CVM).

Responses to Skepticism

First, with respect to the assertion that American Indian use of resources has not demonstrated enough reverence for these resources to be considered sacred, prehistoric overkill might be explained by a combination of the theory of the Tragedy of the Common (Hardin 1968) and the relatively blunt and inefficient methods that were available to peoples primarily operating on foot, with stone tools, and with dogs.

The Tragedy of the Common explains how, without established property rights, no individual or group has an incentive to take responsibility for the maintenance of the fertility of a parcel of land. Each individual/clan sees only what can be gained by resource extraction from the land, and extracts until the land (the "common") can no longer supply any individual with resources. Thus, the loss of the fertility of the common to all members of a society is the "tragedy" in the theory's title.

The inefficient methods referred to are such methods as hunting game with jumps or traps and the clearing of fields with fire. Hunting large game on foot was a highly dangerous activity. Thus, it makes sense that prior to the introduction of the horse, clans and Tribes would work together to corral animals into *cul de sacs* or drive them over cliffs. Using such methods, human injuries and death would be greatly reduced over that of attempting to kill a large animal 'man-to-beast' or even 'group-to-beast.' However, the amount of meat wasted would necessarily be large.

As for clearing farmland with fire, it might be expected that people would use whatever method presented itself for such an arduous task. It is hard to imagine that using stone tools, prehistoric tribes would clear large areas of farmland by hand. It should also be noted that prehistoric farming techniques, while primitive and appearing to be more destructive at first blush, are analogous to current farming practices in the repeated use of a parcel of land. The only difference is that in prehistoric times, few fertilizers were available to rejuvenate depleted soils as they are today.

Finally, it may be that as a result of over predation, and the subsequent loss of many important game species, early American Indian tribes and clans began to develop their conservationist and Unitheistic beliefs and to improve the definition of property rights in order to prevent further Tragedies of the Commons. Smith suggests this in his article.

> Major losses of hunted game animals in the prehistoric period can also help to account for the enculturation of self-serving conservationist principles in the myths, rituals, and beliefs of aboriginal societies. Thus the Choctaw had rules regulating the game that could be killed by one family. The Kaska trapped marten in a game area only every two or three years. The Iroquois and many other tribes spared the females of hunted species during the breeding season. The Yurok had "game laws" – whose violation would case loss of "hunting luck." Many tribes believed that game was watched over by supernatural deities who would be angry if too many animals were killed or if they were merely wounded. …Thus tribal property rights were conservationist. (1999 p. 72)

Anderson's description of property rights schemas in American Indian culture may provide some support for this contention as well (1997).

Explaining current wastefulness as cited by Anderson (1997 p. 780) may be seen as more problematic. However, there certainly appears to be plenty of reasons why many

American Indian conservationist belief systems may have broken down in the time since contact with Europeans.

First, the death rate among American Indians has been (and unfortunately continues to be) extraordinary (Barrington 1999 pp. 6-8, Young 1997 pp. 153-158). One cannot expect a culture to function according to older tribal beliefs, if at all, if elders and other important Tribal and spiritual leaders are dead and oral history and traditions have been lost with them. Curtis (1992 p. 68) gives some examples of this.

Second, to the degree that these were successful, attempts to convert American Indians to western, agrarian lifestyles has led to the loss of traditional communitarian and Unitheistic beliefs. Similarly, the forced relocation of American Indian tribes is known to have disrupted the practice of land-based theology and property rights for many tribes, further eroding cultural cohesiveness and the efficient use of resources. (Curtis 1992 pp. 67-68, Stoffle and Evans 1990 p. 93-96, Meyer Resources 1999 p. 31 quoting Trafzer 1997)

Third, the combining of tribes and clans that traditionally did not work together or who held antipathy for one another onto the same or co-mingled reservations, (E.g. the Navajo and the Hopi), and the splitting of unified tribes onto different reservations (E.g. The Lakota) has often resulted in ineffective reservation management and leadership. For example, the Crow Nation was more of a group of individual hunting bands. While the bands would occasionally come together, generally each band operated independently of the others. The Crow were combined onto a reservation and forced by the Indian Reorganization Act to utilize a democratic decision-making structure in the form of the Tribal council. However, the tribal council finds it difficult to enforce their decisions on a tribe made up of independently-acting groups (Cornell and Kalt 1992 p. 236).

Fourth, until recently tribes have not been allowed to control most of their own resources. Even after the Indian Self Determination Act of 1975, the Bureau of Indian Affairs (BIA) ran many on-reservation programs and controlled most tribal resources. Furthermore, other agencies, including Reclamation had a great deal of power over resources that impact tribes. This is supported in an observation by Harold Culpus, a Warm Springs leader when Indian over-fishing was cited as the reason for many problems with Columbia River salmon in the early 1980's. Quoted by Meyer (2001), he says, "…it is very hard for our Indian leaders to get our young men to be responsible when we are given little or no authority to manage the salmon." This seems to support the contention that failure to adequately assign property rights to those who utilize resources can lead to the "Tragedy of the Common."

Fifth, modern hunting technology allows the killing of more game then ever was envisioned in the time when conservation theologies and property rights were developed in prehistory. Thus, such theologies would need to be 'updated' to adequately prevent overkill that can easily occur since the introduction of the horse, long-range rifle, truck, and powerboat.

Finally, in every social organization, there are "rogue" individuals who do not head the pre and proscriptions of their society. The larger, non-American Indian society is a good example of this. People regularly disobey traffic laws, steal, lie, cheat, hurt each other, and destroy property and biota despite cultural proscriptions against such activity. Tribal admonishments to remain balanced with all creation may not be adhered to by every individual member of a tribe. Similarly, it clear not every individual American always adheres to the requirements of the Endangered Species Act or other environmental laws.

Now, with respect to the issue of strategic behavior, there is a good deal of reason why American Indians may choose to give strategic responses to questions regarding their values for resources. Historically, virtually all American Indian tribes have lost the ownership and/or control of large tracts of land and areas of water. In addition, pollution, dams, species extermination, and other environmental factors have led to tremendous decreases in the availability of traditional American Indian foods and resources, leading to significant negative affects on American Indian health and cultural stability. (Meyer Resources 1983; Prince 1993 pp. 39-246; Fluharty 1994 pp. 20-21, 25-33, 51; Hanes 1995 pp. 11-47; Narayan 1997 pp. 169-177; Young 1997; Barrington 1999b; Meyer Resources 1999 pp. 41-210; Neihardt 2001; Goldtooth 2001)

American Indians have often been subject to unfair or unequal trades. Within the 19th century, the 1888 Allotment Act was intended to make American Indians more agrarian by forcing individual Indians to buy or sell 160-acre parcels of their reservations. The land was so often marginal and water rights so thin that the only way to make any money at all was to sell the parcels of land to non-American Indians at well below market prices. Thus, American Indian reservations, which were already small portions of once enormous areas under American Indian control, became even smaller and tribes became more diverse as Indians left the reservation to find work (Prince 1993 pp. 193-268, Barrington, 1999 pp. 33-36, Neihardt 2001, Tribal Wisdom Foundation 2001).

There is also the issue of mineral leasing rights and other Trust Assets sold off by the Bureau of Indian Affairs (BIA) to non-American Indians, effectively limiting the use of and/or control of land and resources to American Indians. Frequently, these are sold at well below market rates. Thus, not only are significant portions of American Indian lands frequently under the control of non-American Indians, but the lands are often polluted and the compensation for the leases is inadequate. (Prince 1993 pp. 247-254, Barrington 1999 p. 36, Goldtooth 2001)

With this history in mind, it is understandable that American Indians may not be willing to suggest any dollar amount for the purpose of valuing their land and water resources. There would always be the threat that non-American Indians would offer the amount suggested in an attempt to buy the resource. History has demonstrated that government agencies will sell important Tribal assets for money. Thus, American Indians may be concerned that offering a monetary value for land and water resources would threaten these essential pieces of their tribal identities and cohesiveness.

This is not to say that stated preference methods are useless. Rather, it is incumbent upon any researcher using a stated preference method to develop the trust of the tribes studied. As Murray et al. has shown, in-person interviews with an interviewer who has developed a very good rapport with the tribe may be more successful than phone or other interviewing methods (1995). Other successful techniques and the advantages and limitations of the Contingent Valuation Method (CVM) and other Stated Preference Methods are discussed in Section II: What to Do?

Finally, note that strategic behavior on the part of American Indians does not mean that they have discarded their religious or cultural values. Refusals to assess a monetary value for resources may indicate that the degree of scarcity of important resources has reached the point that American Indians are willing to take unusual measures to save them.

Section II: What to do?

For better or worse we live in an economic world. That is, we live in a world in which choices must be made between different uses of resources when there are not enough resources to fulfill everyone's ultimate desires. For society to make the best decisions regarding the use of resources, it is essential to be able compare the impacts of different uses on the same criteria.

Although economics may be unable to provide a total value for American Indian resources that includes cultural and religious values, some economic methods are able to assess some amount short of this total monetary value. If even this is unacceptable, economics can at least provide frameworks for comparing alternatives and their impacts. Following are some suggested methods by which to accomplish these goals. These involve, (a) full descriptions of the importance of the resources to the Tribe'(s') way of life, (b) using only such descriptions to compare impacts to both non-American Indians and American Indians, (c) obtaining the consent of the Tribe(s) to partially value the resources, and (d) obtaining the Tribe's(s') consent to use administratively assigned dollar values.

Solution I: Ensure the Resources' Importance is Fully Described and Referenced

The first solution is simply to ensure that an adequate description of the cultural/religious importance of the resource is included in the report, Environmental Assessment, or Environmental Impact Statement, and that thorough references are made to these descriptions in the economic impact portions of the papers. Below are some details about accomplishing this goal.

First, it is important for economists to develop good working relations with archeologists and anthropologists working on the project. It helps to speak with the archeologists and anthropologists about providing information that will aid decision makers in assessing the relative importance of various resources by focusing on how the religious and cultural aspects of resources function in the current lives of the Tribes. It is a good idea to ensure that the social analysis of such reports (as in EA or EIS) are completed in such a way that economic information may be derived from them. Used in this sense, economic information may or may not be monetary (dollar value) information; a thorough description of the manner in which a particular resource plays a role in the tribal economy could be satisfactory.

It may be necessary to supplement these sections with indicators of value that can be more easily analyzed. A good example of this is Meyer Resources' *Tribal Circumstances and Impacts of the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs and Shoshone Bannock Tribes* (1999 p. 27).

Tribal Circumstances is based on Maslow's "Hierarchy of Needs" Model (1968). Maslow's model was originally developed for psychology, and intended as a model of a healthy individual's needs for physical, mental, and social fulfillment. Used by Meyer Resources, it is applied to the tribe as a whole.

The Meyer Resources framework is founded first on "Food and Shelter" which are derived from land, water, fish, game, plants, other resources, and trading and commerce. Next, there are "Safety Needs" derived from tribal control over territory and speaking the native language. The next level of needs are "Belongingness and Love" derived from the tribal family, communities and spirituality. Finally, "Self-Esteem" is derived from tribal control and self-sufficiency, and worthwhile activities.

In addition to these categories, five "non-Tribal Indicators of Tribal Circumstances and Potential Impacts" are described. These are: 1) Tribal poverty, 2) Tribal unemployment, 3) Tribal per-capita income, 4) Tribal health, and 5) Tribal assets and the associated values they produce. According to Meyer Resources, the Federal Court in *United States of America et al. v. State of Washington et al*. (1994) agreed to apply the first four Tribal health indicators. For each non-Tribal indicator, Meyer Resources also gave the corresponding data for non-American Indian peoples living in the area of study.

Let us go into detail about each 'non-Tribal' indicator:

1. Poverty: The U.S. Bureau of the Census provides the percentage of persons, and the groups of persons living below the poverty line.

2. Unemployment: Data can be found provided by both the Bureau of the Census and by the Bureau of Indian Affairs. The Census data is more rigorous but tends to overestimate employment. Meyer Resources offers unemployment figures from both Bureaus and uses it to draw the following conclusions, "…how it [unemployment] compares to Tribal circumstances at Treaty time - how it is related to unemployment levels for citizens in general at present – and how it may be affected by project alternatives." (p. 29)

3. Per Capita Income: Available from the U.S. Bureau of the Census.

4. Tribal Health: Meyer Resources practiced a four-part procedure to assess the health of the tribes:

> 1. Gather data from cited sources to develop a baseline health and health services comparison between Tribes and non-Tribal residents… [in the affected area] and in the United States as a whole.
>
> 2. Utilize historic information to contrast Tribal health today with that in earlier times.

3. Consult with health professionals at referent tribes to test a hypothesis recently discussed by Trafzer (1997), involving analysis of death certificates for Yakamas living on their reservation between the years 1888 and 1964….

> All the elements surrounding mortality on the Yakama Reservation, including the destruction of food resources, are difficult to quantify, but we know they influenced mortality on the reservation throughout the twentieth century. As a result of the destruction of food resources, white invasion, treaty making, the Plateau Indian War, political subjugation, Christian conversions, forced removal, relocation, and the reservation system, Indians living on the Yakama Reservation suffered a social anomie or depression that contributed to ill health and death…
>
> This is a condition that cannot be quantified or measured scientifically, but anyone–native or non-native—familiar with Native Americans living within the early reservation system will attest to its existence. It surely had some effect on Indian health and one's vulnerability to disease. It is known that Yakama people lived in abject poverty with substandard housing, inadequate food, poor water, few sewer facilities, insufficient health care, little economic opportunity, and limited political power…People lived to die and to die young… (pp. 1-9)

To gather further information concerning this hypothesis, expert health officials at each subject reservation, including Yakama, were asked the following questions.

> *Is it your judgment that the hypothesis that the causal factors listed by Trafzer contributed significantly to Tribal ill health and death [is] historically valid for your Tribe?
>
> *Have the present health circumstances on this reservation changed? If so, in what way?

4. Finally, during the study the same panel of experts on Tribal health were asked:

> *Would continued loss of fisheries be expected to have any health effects on Tribal members? Can you categorize the effects that would be expected?

*Would restoration of Lower Snake River salmon be expected to have any health effects on Tribal members? Can you categorize the effects that would be expected?

(Meyer Resources 1999 pp. 30-31)

Virtually all of these indicators can be determined in most projects to be considered. The only necessity is to change small parts of the analysis and questions to better reflect the circumstances and history of the Tribe(s) in question.

Tribal Assets: Meyer Resources also values what are described as Tribal Assets. These are all of the natural resources under tribal control. These should not be confused with Indian Trust Assets (ITA) that have a specific definitions within the Department of the Interior, and for which specified procedures must be followed in EA, EIS and other reports. Meyer Resources' Tribal Assets are likely to be a larger group of resources than ITAs. This allows for the economic section to deal with all the impacts to the tribe in question, not just to the tribe's ITAs. Meyer Resources' procedure to value tribal assets is:

1. Identify trends in the availability to the tribes of Tribal Trust Assets (particularly, land, water, fish and wildlife) from contact times to the present.
2. Relate trends in the availability of these Assets, and the annual benefits flowing from them, to present **material** and **cultural** values provided annually to each referent Tribe. This assessment will consider the range of indicators discussed previously.
3. Examine the effect, if any, of Lower Snake project alternatives on Tribal Assets, and consequently, on the annual steam of values they produce at benchmark time periods. (p. 35)

Again, the same procedures can be used in almost any project assessment, with the appropriate project description taking the place of "Lower Snake" in the procedures.

Once the descriptions are completed in such detail as is necessary and acceptable to the Tribes involved, it is essential to then repeatedly and thoroughly reference them in the economic sections of the reports. It is at this point that adequate caveats be made indicating that the economic measures of value shown do not include the potentially significant cultural and religious values ascribed to the resources by the Tribe(s) involved. As a result, references to the archeological, anthropological, "Hierarchy of Needs," and "non-Tribal" indicators sections are made.

Finally, note that several new academic fields are beginning to address the issue of resource use and trade in subsistence societies. These new fields offer many insights into resource tradeoffs made by subsistence economies without the necessity to monetize the transactions. Other metrics, such as caloric intake, land area, etc. are used. It might aid the researcher to examine works by such individuals as Bruce Winterhalder

(University of North Carolina, Chapel Hill, Ecology Department), Eric Smith (University of Washington, Department of Anthropology and Smith 1991), Eugene Hunn, (University of Washington, Department of Anthropology), and Ricardo Godoy (2001), (as noted by Winterhalder 2001), and Jorgensen (1995). Addressing this new area is beyond the scope of this guidebook, but may be useful in the future.

Solution II: Utilize Non-Monetary Valuation Techniques for all Benefits and Costs

One potential solution to the incomparability of monetary and non-monetary values, especially across cultures, is to simply put all values in non-monetary terms. Thus, there will be no danger of greater attention and weight being given to one culture's values, or to one expression of values over another. Clearly, this could be labor intensive. However, it is not expected to be much more labor intensive than it would be to obtain the indicators listed in the first suggested solution. Of course, this technique may be offensive to non-Indian cultures in which monetary value are often quite important.

Solution III: Obtain Tribal Consent to Partially Value Resources

The Replacement Value Method (RVM), an adaptation of the Habitat Equivalency Analysis (HEA) (Skrabis 2001a), Stated Preference Methods, the Hedonic/Implicit Price Method, and valuing losses of way of life and pain and suffering, are five techniques by which analysts may derive values for culturally-significant resources. Each of these methods has the potential to be effective, either singly or in combination with one or more other suggested methods. However, note that all the methods have both advantages and drawbacks, and some methods may be strongly objected to by some, if not many tribes.

Use and Non-Use Values: Before discussing the individual methods, it is important to understand use and non-use values. Appreciating a resource even if one cannot experience it directly, is an example of what is called *non-use* values. An example of this would be the desire an individual has to know that an old-growth forest has been left undisturbed, even if this individual never sees the forest. There has been recent recognition in economics of positive monetary values for resources even when these resources are not directly or indirectly used. When a resource is utilized, such as for recreation or for irrigation, that utility is said to have *use value*. Traditionally, use values have been what are measured in economics. In order to directly measure both use and non-use values for a resource, researchers must use either a Stated Preference Method, or they must value the loss of a way of life and the pain and suffering from that loss.

Replacement Value Method (RVM): The RVM is perhaps the simplest of the methods, but one that provides a monetary value far short of the actual, total value of the resources to Tribe(s). The standard method is to calculate the amount of and kinds of foods and other resources the Tribe(s) obtain from the environment, and to determine the market value of foods and resources that could be used to replace them and that are available in the market. These replacement values are projected over the number of years of the project. Each project year's costs and replacement values are discounted back to the start year of the project, using the chosen discount rate (discussed below), and these discounted costs are then summed to arrive at a total replacement value for the resources.

One advantage of the Replacement Value Method is that it results in smaller, more discrete values than other methods, thus making its results more acceptable in the courts than other methods. Second, the method and the values received are easy to understand both for the researcher and the decision maker.

However, it cannot reflect some very important "use" and "non-use" values. The method is unable to capture values for the quality of the goods and services the natural environment provides. For example, it cannot account for the greater nutrition provided by game meats over domestically raised meats, when domestically raised meats are used as replacements for game. Thus, the RVM will necessarily underestimate the value of game meats to the Tribe(s).

Second, there may be no substitute good available on the market. For example, certain plants used for spiritual or medicinal purposes may not be sold in the market at all. Thus, it is left up to the judgment of the researcher what market goods, if any, to use as a basis of valuation.

Finally, this method cannot account for the social, spiritual, and "non-use" values associated with the resources. For example, it cannot account for the enjoyment experienced by traditional hunters in the field, the religious importance of special places in which ceremonies are held or places that have other cultural importance to the tribe(s), or the satisfaction received by non-American Indians that American Indians are able to practice their traditional lifestyles. For a more thorough discussion of the limitations of RVM in the context of subsistence societies, see Beckley and Hirsch (1997 pp. 19-22).

Habitat Equivalency Analysis (HEA): HEA has several of the advantages of the RVM, however it appears to come closer to a more accurate value for the resources lost. HEA was originally designed to offer Federal litigants in "Superfund" court cases a means by which to arrive at realistic, discrete, and quickly calculated values for losses of ecosystem services due to pollution (Unsworth and Bishop 1994). A modification of HEA may be able to be used for arriving at dollar values for land and water resources valued by American Indians.

As used in superfund cases, the method calculates the total amount of land and/or water impacted by the pollution and the resultant percent of ecosystem services that were lost due to the pollution, as determined by an expert ecologist or biologist. Then, for each year in the recovery process, the percentage of the ecosystem services that will remain lost is calculated up to the final year when as much recovery as can be expected will occur. The next step is for the ecologist/biologist to determine how much replacement land and water will be necessary to make up for the lost ecosystem services in each year from the start of the pollution to maximum recovery of the original land.

To obtain monetary values, the cost of obtaining each year's parcel of land and the costs of the recovery plan are discounted by the agreed rate back to the project start year. Each discounted year's costs are then summed to arrive at a total HEA value. For a more detailed and involved explanation, see Unsworth and Bishop (1994).

To apply HEA to American Indian land and water resources, one first needs to re-interpret "habitat" as traditional tribal land and water resources. Second, the percentage of "ecosystem services" lost or gained needs to be re-interpreted as a percentage of "societal services" lost or gained. The rest of the procedures should flow very similarly to those for ecosystems.

The advantage of this method is that a value can be obtained regardless of the complexity of the ecosystem or societal services that are obtained from, or inherent in the land and water resources. There is no need for expensive and elaborate study to determine the precise nature of such services. In addition, Skrabis (2001a) indicates that courts have upheld the use of HEA so long as the assumptions about the nature of the injury are correct.

The disadvantages of HEA are reflected in the assumptions necessary to use the method. First, it is assumed that the value of the ecosystem services are constant through time (Unsworth and Bishop 1994 p. 38). If this assumption is violated, adjustments to the valuations on a per-year basis will need to be made.

Second, it is assumed that the cost of replacement land and water resources, or the cost of their improvements do not under- or over-state the actual value of the original resources (Unsworth and Bishop 1994 p. 38). Applying this to Tribal resources, it is assumed that all resources on the land and in the water were in fact important, if not essential to Tribal health and well-being & none detracted from these. Should this assumption be violated, adjustments will also need to be made in the per-year valuations. It may be necessary to use a system in which the per-year percent reduction in "societal services" is weighted by the services' relative importance to tribal and tribal member survival. This weighting system might be defined by the Tribe, or Meyer Resources' *Tribal Circumstances* discussed above could be utilized.

Stated Preference Methods: In past attempts to obtain monetary values for resources with cultural value to Tribes, researchers have mostly attempted to use either a Stated Preference Method, such as the Contingent Valuation Method (CVM) (Peterson 2000), or the Replacement Value Method (RVM) (Beckley and Hirsch 1997). In the Contingent Valuation Method researchers generally utilize surveys or questionnaires that ask respondents either how much they would be willing to pay for an amenity they do not have, (called Willingness to Pay or WTP) or how much money they would insist upon receiving for an amenity they would give up, (called Willingness to Accept or WTA). The CVM is discussed at greater length in Carson (1999), Carson, Flores and Meade (2000), Ekstrand (1996), and Platt (2001).

Other Stated Preference Method techniques are available. Discussions of the possibilities for using such techniques are found in Murray et al. (1995), Adamowicz et al. (1998) and Haener et al. (2001). Alternative techniques include the use of calories or other numerical estimates of nutritional or resource value instead of dollar values (Adamowicz 2001), and the use of extensive in-person interviews with a researcher who

has obtained the trust of the members of the Tribe instead of paper questionnaires or phone interviews.

The advantage of such methods is that they theoretically can capture total resource values, including the "non-use" values of existence and cultural importance. The first disadvantage of note is the difficulty in amassing the time, money and resources necessary to successfully administer a high-quality survey. Currently, the Office of Management and Budget will not allow the use of the CVM unless expensive privacy issues are dealt with to their satisfaction. While this does not necessarily preclude the use of CVM for Reclamation purposes, it does put a significant burden on any researcher wishing to perform CVM.

Skrabis (2001b) also indicates that courts appear to be unwilling to accept future loss estimates based on CVM. Courts apparently object to the use of projections based on a "snapshot" in time.

Finally, as discussed previously, if CVM and other stated preference methods are to be performed successfully with American Indians, care must be taken to avoid either insulting the respondents or eliciting too many responses based on strategic behavior. One apparently successful CVM study was completed with a tribe in the northeast. This tribe was familiar with referendums, and thus the CVM study utilized a referendum approach to increase member's comfort with, and response rate to the CVM questions (Skrabis 2001a).

In another study mentioned previously, the values determined were for forests used for traditional hunting (Murray et al. 1995). This study utilized a single interviewer who was well known to the members of the tribe. The interview sessions were similar to casual "chat" sessions with each of the sampled participants. However, despite the success of this study, the authors of this paper caution against assuming that such techniques will work cross-culturally. Native and Non-American Indian values found in this study were so widely divergent as to suggest that significant cultural differences would preclude the aggregation of the two groups' values (Murray et al. 1995 p. 3). This inability to aggregate these values would in turn not allow the use of established economic analyses to compare the impacts of various forest management plans if they impact both non-American Indian and American Indian groups.

Duffield (2001) advises against using stated preference methods unless the analyst is experienced both with such techniques and with the Tribe(s) in question. Using such techniques is not recommended for inexperienced researchers.

Implicit price/Hedonic Method, Revealed-Preference/Hedonic Method, and Losses to Way of Life and Losses Associated with Pain and Suffering. Used in combination, values calculated from these methods may approach the total value to the Tribe(s) of their resources. The theory behind the implicit price/hedonic method is that if American Indians choose *not* to live like their non-American Indian neighbors, then the value of this American Indian lifestyle must be at least as large as the wages necessary

for non-American Indians to maintain their lifestyles in the same area. "Individuals choosing to participate in the subsistence livelihood reveal that it has a greater value to them than the wage foregone in a more market-oriented economy" (Duffield 1997 p. 105).

In the *Exxon Valdez* case Duffield made use of a 1987 'pre-spill' model on 98 Alaskan communities, the intent of which was "…to interpret the factors affecting the viability of subsistence economies." Duffield's results indicate

> …a trade-off of about $118 per pound of subsistence harvest (1982 dollars). Based on this value and the estimated total pounds of lost subsistence harvest over a 10-year post-spill period, the 411 natives claimed between $24 million and $44 million in losses with a mean estimate of $34 million. (1997 p. 105)

The advantage of such a method over that of replacement value is that it acknowledges that choice of lifestyle expresses a value beyond simple physical survival.

Lind (1993) uses a revealed-preference-hedonic method in the same case to estimate "minimum per capita damage awards given different probabilities of long-term disruption to the Alutiiq way of life." The estimates of loss based on this method ranged from $187 million to roughly $1 billion (Duffield 1997 pp. 104-105).

Finally, Lind "…noted that pain and suffering awards often are based on value-per-statistical-life, which tend to be three to four times greater than the present value of expected future disposable income" (1993 p. 18, as cited in Duffield 1997 p. 106). This technique, too, is more likely to approach the total value of the resources to American Indians than others.

Valuing loss of life and loss of quality of life is not uncommon in the environmental economics literature. The U.S. Environmental Protection Agency must often use such techniques when comparing potential benefits and costs of various pollution mitigation programs (2000 pp. 88-90). Thus, there is good administrative support for the methods and some direction in accomplishing the methods. However, this author is not familiar with these techniques; it is advised that further research be conducted before attempting these methods.

Non-American Indians and Stated Preference Methods. Non-American Indians may be willing to complete CVM or other stated-preference surveys and offer dollar values for the preservation of American Indian resources for cultural purposes. While American Indians may still find this offensive, such a method may produce large values for American Indian resources because the average values found in the study will be multiplied by all households in the United States to produce an estimate of the total value to non-Indians. However, it is also possible that some non-American Indians may express negative values for American Indian resources.

Solution IV: Obtain Tribal Consent for Administratively Assigned Monetary Values

There is a possibility that American Indian Tribes might be willing to accept a trusted administrator's or expert's valuation of their resources, rather than stating a dollar value themselves. In such a situation, it is still likely to be necessary to provide the administrator with some benchmark values using one of or a combination of the techniques described above. Without some guidance it is possible that the administrator could lose perspective on what is an appropriate value. Also, it is usually necessary either in the courts or in assessment documents have some evidence justifying such decisions.

The administrator chosen should:

1. Understand enough about economics to appreciate that benefits and costs do not accrue in one year alone. That is, the administrator should be aware that values generally occur as a stream of benefits and costs over time. It is the net sum of the stream of benefits and costs that accrue over time that needs to be estimated. Such a stream of values ultimately can amount to quite a large sum of money and administrators should be prepared for such an outcome. In the *Exxon Valdez* case, it may have been the large value of the damages estimated by the experts working for the Alaska Native plaintiffs that caused both the judge and lawyers on both sides of the aisle to balk (Neher 2001, Duffield 1997 p. 109). In fact, a Federal judge recently overturned the $5 billion award, stating that it did not meet the Supreme Court's 4:1 punitive to compensatory award proportion test. (Faegre and Benson 2001, and Kravetz 2001).

2. Be sensitive enough to cultural differences to understand that the same physical damages occurring in two different cultures could have different valuations. For example, Jorgensen (1995) and Duffield (1997) critique the judge's decision in the *Exxon Valdez* oil spill case to effectively exclude from consideration any compensation to Alaskan Natives for damage to resources that were integral to their cultures or to their culturally-derived expectations. Ultimately, the only damages the judge allowed were for replacement cost of lost food (1997 p. 108). Thus, care should be taken to select an administrator that will not misunderstand cultural sensitivities.

In the case when an administrator cannot be chosen, such as in the courts it is recommended that economic analysts read Jorgensen (1995) and Duffield (1997) thoroughly. Care should be taken to explain to the administrator in lay terms the logical underpinnings of damage assessments based on cultural differences.

General Comments about all Methods

Perhaps the most important statement to make is that no economic method is likely to succeed without the full cooperation of the American Indian Tribes involved. Taking the time to develop cultural sensitivity is essential to the success of any project, and is especially important when working with American Indian Tribes. *Protocol Guidelines: Consulting with Indian Tribal Governments* (U.S. Bureau of Reclamation, Native American Affairs Office 1998) is a good starting point.

In addition, it is very helpful to have an understanding of the preferred decision-making structure of the Tribe(s). Cornell and Kalt (1992), Champagne (1992), and Smith (1994) all suggest that economic development on reservations (and therefore Reclamation projects impacting reservations) will only be successful to the extent that Tribe(s) are a part of the decision-making from the start of the project, and will only be successful to the extent that the development project reflects and enhances their Tribal culture. It may be necessary to obtain the buy-in not only of a Tribal council, but also of the 'informal' decision making groups within the Tribe(s).

One final difficulty for the analyst may be drawing enough of a causal connection between the resources and their impacts on Tribal lifeways and health to convince decision makers to accept the values obtained using any of these methods. Ulrich (1988) suggests some methods by which to draw this connection. Meyer Resources' (1999) Tribal Health indicators described above investigates such a connection. Curtis (1992) also suggests such a connection. Medical science may be a good source for information. For example, see Young (1997) and Narayan (1997). The behavioral sciences, notably psychological literature is also likely to help in this endeavor. Finally, the work of behavioral ecologists, ecological anthropologists and others mentioned in the section describing non-monetary methods may be of some help in drawing causal connections between changes in control over land and water resources and changes in social health. Regardless, it is likely that future research will need to be done in this area to justify such linkages.

Conclusion and Suggestions for Further Research

Obviously, the issue of valuation of American Indian resources is contentious. However, some techniques are less likely to offend American Indians or to significantly underestimate their values for their resources. It is likely that the best method(s) need(s) to be determined on a case-by-case basis, but will probably be some combination of the techniques offered here. Even though valuation of American Indian resources may never be complete in the strictest sense, the approaches and analyses suggested in this guidebook will hopefully lead to more informed decision-making.

Suggestions for Further Study

Discounting: Meyer Resources gives an extensive discussion of the appropriate discount rate to determine the Net Present Value of the stream of future benefits and costs of a project (1999 pp. 32-35). A zero or negative discount rate has been suggested as a means to express the equal or greater importance to the tribe of future generations than the present generation. This guidebook does not address this matter. However, it is important to be aware of the theoretical bases of discount rates in order to choose an appropriate one. An excellent source is Portney and Wyant (1999). Examining Meyer Resources' discussion in addition to more traditional economic theory will give the analyst a better understanding of American Indians' perspectives on the role of time in present value calculations.

"Group" Versus "Individual" –Based Economies and the Inculcation of Public Goods Values on Individuals: Further research should attempt to define similarities and differences between the western economic concept of "individual trade," and the American Indian concept of "group trade" that can be seen in the frequent acts of gift giving in many American Indian cultures. For example, among the Tlingit of Alaska, such acts of gift giving are often means by which to increase one's social esteem in the kinship group or tribe. The expectation being that an individual who accumulates wealth will generously bestow many gifts among the kinship group and tribe. Thus "…The emphasis on the accumulation of wealth among the societies of the Northwest can better be characterized as a form of 'cultural capitalism,' rather than 'market capitalism'" (Champagne 1992 p. 200). Meyer concurs that "reciprocal obligation" can be a "powerful currency" among both Indians and Hawaiian Polynesians (2001).

Similarly, Jorgensen (1984 pp. 15-16, 1995 pp. 19-20), Brown and Burch (1992 p. 205), Glass, Muth, and Flewelling (1990 pp. 5-9), Hanes (1995 pp. 15-16), Beckley and Hirsch (1997 pp. 19-22), and Fluharty (1994 pp. 12-13) all indicate that equating market value with trade value is an erroneous enterprise for most American Indian Tribes. It is virtually impossible to separate out true market transactions from the frequent inter- and intra-tribal gift-giving, feast giving, good-will bartering, and other non-capital-accumulating activities.

REFERENCES

36 CFR 68.3. Standards in *Title 36: Parks, Forests and Public Property, Department of the Interior, Part 68: The Secretary of the Interior's standards for the treatment of historic properties*.

40 CFR Parts 1500-1508. 1992. *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*.

43 CFR 3. Antiquities Act of 1906.

43 CFR 7. Archaeological Resources Protection Act of 1979.

Adamowicz, W., T. Beckley, D. Hatton MacDonald, L. Just, M. Luckert, E. Murray, W. Phillips. 1998. In search of forest resource values of indigenous peoples: are nonmarket valuation techniques applicable? *Society and Natural Resources*. 11:51-66.

Adamowicz, Wictor. 2001. Personal Communication. Washington, D.C.: Resources for the Future.

Anderson, T.L. 1997. Conservation—Native American Style. *The Quarterly Review of Economics and Finance*. 37(4). (Fall) 769-785.

Baden, J., R. Stroup, and W.A. Thurman. 1981. Myths, admonitions, and rationality: the American Indian as a resource manager. *Economic Inquiry*. 19(1):132-143, as cited in Anderson, T.L. 1997. Conservation—Native American Style. *The Quarterly Review of Economics and Finance*. 37(4). (Fall) 769-785.

Barrington, Linda. 1999. Editor's introduction: Native Americans and U.S. economic history in Barrington, Linda. *The other side of the frontier: economic explorations into Native American history*. Boulder, Colorado: Westview Press. 1-50.

Beckley, T.M. and B.H. Hirsch. 1997. Subsistence and non-industrial forest use in the lower Liard Valley. Edmonton, Alberta: Natural Resources Canada, Canadian Forest Service Northern Forestry Centre. (Information Report NOR-X-352.).

Brekke, Kjell Arne, Richard B. Howarth. 2000. The social contingency of wants. *Land Economics*. 76(5):493-503.

Brown, Thomas C. and Ernest S. Burch, Jr. 1992. Estimating the economic value of subsistence harvest of wildlife in Alaska in Peterson, George, Cindy Sorg Swanson, Daniel W. McCollum, and Michael H. Thomas. *Valuing Wildlife Resources in Alaska*. (Social Behavior and Natural Resources Series). Boulder, Colorado: Westview Press. 203-254.

Carson, Richard T. 1999. Contingent valuation: a user's guide. Discussion Paper 99-26. San Diego: University of California, San Diego.

Carson, Richard T., Nicholas E. Flores and Norman F. Meade. 2000. *Contingent Valuation: Controversies and Evidence*. (Forthcoming Environmental and Resource Economics). Webpage: http://weber.ucsd.edu/~rcarson/cvconfinal.pdf, website: http://weber.ucsd.edu/~rcarson/

Champagne, Duane. 1992. Economic culture, institutional order, and sustained market enterprise: comparisons of historical and contemporary American Indian cases in Anderson, Terry L. 1992a. *Property Rights and Indian Economies*. Lanham, Maryland: Rowman & Littlefield Publishers, Inc. 195-213.

Corliss, Dave, Mary Keith (n.d.) Obstacles to traditional gathering on Federally administered Northwest intermontane cede lands. Paper presented at the Northwest Anthropological Conference

Cornell, Stephen, Joseph P. Kalt. 1992. Culture and institutions as public goods: American Indian economic development as a problem of collective action in Anderson, Terry L. 1992a. *Property Rights and Indian Economies*. Lanham, Maryland: Rowman & Littlefield Publishers, Inc.215-252.

Coulam, Nancy. 2001. Personal Communication. Salt Lake City, Utah: Bureau of Reclamation.

Curtis, Sue Ann. 1992. Cultural relativism and risk-assessment strategies for Federal projects. *Human Organization*. 51(1):65-70.

Duffield, John. 1997. Nonmarket valuation and the courts: the case of the *Exxon Valdez*. *Contemporary Economic Policy*. 15(October):98-110.

Duffield, John. 2001. Personal Communication. Missoula, Montana: *Bioeconomics Inc.*

Ekstrand, Earl. 1996. *Handbook for Estimating the Economic Value of Changes in Fish and Wildlife-Related Resources*. Denver, Colorado: United States Department of the Interior, Bureau of Reclamation. (December)

Ekstrand, Earl. 2000. Personal Communication. Denver, Colorado: United States Department of the Interior, Bureau of Reclamation Economics Group.

Faegre and Benson. 2001. Firm News: Exxon Litigation Update. Webpage: http://www.faegre.com/articles/article_192.asp

First Nations Financial Project. 1991. *First Nations Development Institute: Ten Year Report* Falmouth, Virginia: First Nations Development Institute as cited in Smith, Dean Howard. 1994. Commentary: The issue of compatibility between cultural integrity and economic development among Native American tribes. *American Indian Culture and Research Journal* 18(2):177-205.

Fluharty, David L. 1994. Characterization and assessment of economic systems in the Interior Columbia River basin: fisheries. General Technical Report PNW-GTR. Portland, OR: United States Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Foreman, Grant ed. 1937. *Indian-pioneer history*, microfilm. Oklahoma City: Oklahoma Historical Society.

Frasier, Marshall. 2000. Personal Communication. Fort Collins, Colorado: Colorado State University, Department of Agricultural and Resource Economics.

Friday, Ben. 1989. Traditional Sacredness in Horse Capture, George P. (editor) 1989. *The Concept of Sacred Materials and Their Place in the World*. Cody, Wyoming: Buffalo Bill Historical Center. 1-3.

Glass, Ronald J., Robert M. Muth, Robert Flewelling. 1990. *Subsistence as a Component of the Mixed Economic Base in a Modernizing Community*. Radnor, Pennsylvania: United States Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. (Research Paper NE-638).

Godoy, Ricardo. 2001. *Indians, Markets, and Rainforests: Theory, Methods, Analysis*. New York, New York: Columbia University Press.

Haener, M.K., D. Dosman, W.L. Adamowicz and P.C. Boxall. 2001 Can Stated Preference Methods be used to Value Attributes of Subsistence Hunting by Aboriginal Peoples? A Case Study in Northern Saskatchewan (Draft). Edmonton, Alberta: University of Alberta, Department of Rural Sciences.

Hamilton, Robert B. 2001. Formulation and Evaluation of Indian water projects under the Principles and Guidelines (P&Gs) (White Paper). Denver, Colorado: United States Department of the Interior, Bureau of Reclamation.

Hanes, Richard C. 1995. *Treaties, Spirituality, and Ecosystems: American Indian interests in the northern intermontane region of western North America. Social Assessment Report for the Interior Columbia Basin Ecosystem Management Project. Final Report*. Walla, Walla, Washington: Interior Columbia Basin Ecosystem Management Project. (Eugene, OR: United States Department of the Interior, Bureau of Land Management Science Integration Team). (August)

Hardin, G. 1968. The tragedy of the common. *Science* 162:1243-1248.

Indian Self Determination and Education Assistance Act of 1975. PL 93-638; 88 Stat. 2203; 42 USC 450-458

Jorgensen, Joseph G. 1984. Land is cultural, so is a commodity: The locus of differences among Indians, cowboys, sod-busters, and environmentalists. *The Journal of Ethnic Studies*. 12(3)(Fall):1-21.

Jorgensen, Joseph G. 1995. Ethnicity, not culture? Obfuscating social science in the *Exxon Valdez* oil spill case. *American Indian Culture and Research Journal*. 19(4) 1-124.

Kaelin, Celinda Reynolds. 1998. *Journey Song: A spiritual legacy of the American Indian*. Minneapolis, Minnesota: Four Directions Publishing.

Kopp, Raymond, J. and Paul R. Portney. 1999. Mock Referenda for Intergeneration Decisionmaking in Portney, Paul R. and John P. Weyant. *Discounting and Intergeneration Equity*. Washington, D.C.: Resources for the Future. 87-98.

Kravetz, David. 2001. "Court overturns $5 billion Exxon Valdez award." Greenwich, Connecticut: *Greenwich Times*. November 7.

Lind, Robert C. 1993. "The computation of the Monetary Value of the Damages Suffered by the Alutiiq People Affected by the *Exxon Valdez* Oil Spill," presented at the Exxon Valdez consolidated court case, February 13 as cited in Duffield, John. 1997. Nonmarket valuation and the courts: the case of the *Exxon Valdez*. *Contemporary Economic Policy*. 15(October):98-110.

Martin, Paul. S. 1967. Prehistoric overkill. In P.S. Martin and H.E. Wright Jr. (eds.) *Pleistocene Extinctions*. 75-120. New Haven, Connecticut: Yale University Press as cited in Smith, Vernon L. 1999. Economy, ecology, and institutions in Barrington, Linda. The other side of the frontier: economic explorations into Native American history. Boulder, Colorado: Westview Press. 57-85 (71).

Martin, Paul. S. 1984. Prehistoric overkill: the global model. In P.S. Martin and R. G. Klein (eds.). *Quarternary Extinctions*. 354-403. Tucson, Arizona: University of Arizona Press. As cited in Smith, Vernon L. 1999. Economy, ecology, and institutions in Barrington, Linda. The other side of the frontier: economic explorations into Native American history. Boulder, Colorado: Westview Press. 57-85 (71).

Martin, Paul. S. 1990. Who or what destroyed our mammoths?" In L.D. Agenbroad, J.I. Mead, and L.W. Nelson (eds.) *Megafauna and man: discovery of America's heartland*. Flagstaff, Arizona: Northern Arizona University. As cited in As cited in Smith, Vernon L. 1999. Economy, ecology, and institutions in Barrington,

Linda. The other side of the frontier: economic explorations into Native American history. Boulder, Colorado: Westview Press. 57-85 (71).

Maslow, A.H. 1968. *Toward a Psychology of Being*. Princeton, New Jersey: Nostrand, as cited in Meyer Resources. 1999. *Tribal Circumstances and Impacts of the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs, and Shoshone Bannock Tribes*. Portland, Oregon: Columbia River Intertribal Fish Commission. (October) p.25.

Meyer, Phillip A. 2000. Personal Communication. Davis, CA: Meyer Resources.

Meyer, Phillip A. 2001. Personal Communication. Davis, CA: Meyer Resources.

Meyer Resources, Inc. 1983. *The Importance of Salmon and Steelhead of the Columbia River to the Confederated Tribes of the Colville, Nez Perce, Umatilla, Warm Springs and Yakima Indian Reservations, With Particular Reference to Dams of the Mid-Columbia Area: A report to the Bureau of Indian Affairs*. Davis, California: Meyer Resources, Inc. (April)

Meyer Resources. 1999. *Tribal Circumstances and Impacts of the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs, and Shoshone Bannock Tribes*. Portland, Oregon: Columbia River Intertribal Fish Commission. (October)

Murray, E., W. Adamowicz, T. Beckley, D. Hatton MacDonald, L. Just, M. Luckert and W. Phillips. 1995. Non-market Valuation Biases Due to Aboriginal Cultural Characteristics in Northern Saskatchewan: The Values Structures Component. Staff Paper Edmonton, Alberta: University of Alberta, Department of Rural Economy. Website: http://www.re.ualberta.ca/STAFF-PAPERS/sp-95-05.PDF in http://www.re.ualberta.ca/sp-pr-95.htm

Mushinski, David. 2000. Personal Communication. Fort Collins, Colorado: Colorado State University, Economics Department.

Narayan, K.M. Venkat. 1997. *Diabetes mellitus in Native Americans: The problem and its implications*. Population Research and Policy Review. 16:169-192.

National Historic Preservation Act, 16 U.S.C. 470

Neher, Chris. 2001. Personal Communication. Missoula, Montana: Bioeconomics Inc.

Platt, Jonathan. 2001. *Economic Nonmarket Valuation of Instream Flows*. Denver, Colorado: Economics Group, Technical Service Center, Bureau of Reclamation, United States Department of the Interior. (Technical Memorandum Number EC-2001-01) (April).

Portney, Paul R. and John P. Weyant. 1999. *Discounting and Intergeneration Equity*. Washington, D.C.: Resources for the Future.

Powell, Peter J. (Father). 1989. "Sacred Material" in Horse Capture, George P. (editor) 1989. *The Concept of Sacred Materials and Their Place in the World*. Cody, Wyoming: Buffalo Bill Historical Center. 42-48.

Prince, Steven J. 1993. *The Political Economy of Articulation: Federal Policy and the Native American/Euroamerican Modes of Production*. (Ph.D. Dissertation). ___, Utah: The University of Utah, Department of Economics.

Ray, Arthur J., Donald B. Freeman. (1978) *'Give Us Good Measure': an economic analysis of relations between the Indians and the Hudson's Bay Company before 1763.* Toronto, Ontario, Canada: University of Toronto Press.

Sagoff, Mark. 1996. On the value of endangered and other species. *Environmental Management*. 20(6):897-911.

Skrabis, Kristen. 2001a. *Overview of Habitat Equivalency Analysis*. Washington, D.C.: United States Department of the Interior, Office of Policy Analysis.

Skrabis, Kristen. 2001b. Personal Communication. United States Department of the Interior, Office of Policy Analysis.

Smith, Dean Howard. 1994. Commentary: The issue of compatibility between cultural integrity and economic development among Native American tribes. *American Indian Culture and Research Journal* 18(2):177-205.

Smith, Eric. 1991. *Inujjuamiut Foraging Strategies*. New York, New York: Aldine de Gruyter.

Smith, Vernon L. 1999. Economy, ecology, and institutions in Barrington, Linda. The other side of the frontier: economic explorations into Native American history. Boulder, Colorado: Westview Press. 57-85 (71).

Spicer, E. 1957. Worlds Apart – Cultural Differences in the Modern Southwest. *Arizona Quarterly* 13:197-230 as cited in Stoffle, Richard W. and Michael J. Evans. 1990. Holistic conservation and cultural triage: American Indian perspectives on cultural resources. *Human Organization*. 49(2) 91-99.

Stoffle, Richard W. and Michael J. Evans. 1990. Holistic conservation and cultural triage: American Indian perspectives on cultural resources. *Human Organization*. 49(2) 91-99.

Trafzer, Clifford E. 1997. Death Stalks the Yakama: Epidemiological Transitions and Mortality on the Yakama Indian Reservation, 1888-1964. East Lansing, Michigan: Michigan State University Press as cited in Meyer Resources. 1999. *Tribal Circumstances and Impacts of the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs, and Shoshone Bannock Tribes*. Portland, Oregon: Columbia River Intertribal Fish Commission. (October) p.31.

U.S. Bureau of Indian Affairs. 2001. Website: Frequently Asked Questions. http://www.doi.gov/bia/oirm/faq.htm.

U.S. Bureau of Reclamation. 2000. *National Environmental Policy Act Handbook. Public Review Draft*. Denver, Colorado: United States Department of the Interior.

U.S. Bureau of Reclamation, Native American Affairs Office. 1998. Protocol Guidelines: consulting with Indian tribal governments. Washington, DC: United States Department of the Interior. (February)

U.S. Environmental Protection Agency. 2000. Benefits in *Guidelines for preparing economic analyses*. Washington, D.C.: United States Department of the Interior (September).

U.S. Water Resources Council. 1983. *Economic and Principles and Guidelines for water and related land resources implementation studies*. Washington, DC: U.S. Department of the Interior.

United States of America et al. v. State of Washington et al. 1994. *Memorandum Opinion and Order. No. CV 9213, Sub-proceeding No. 89-3*. (December 20):50-52 as cited in Meyer Resources. 1999. *Tribal Circumstances and Impacts of the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs, and Shoshone Bannock Tribes*. Portland, Oregon: Columbia River Intertribal Fish Commission. (October) p.28.

Unsworth, Robert E. and Richard C. Bishop. 1994. Assessing natural resource damages using environmental annuities. *Ecological Economics*. 11:35-41.

Vecsey, Christopher (editor). 1991. *Handbook of American Indian Religious Freedom*. New York, New York: The Crossroad Publishing Company.

Vinton, Richard. 2001. Personal Communication. U.S. Department of the Interior, Bureau of Reclamation Economics Group.

Walker, Deward E. Jr. 1991. Protection of American Indian sacred geography in Vecsey, Christopher (editor). 1991. Handbook of American Indian Religious Freedom. New York, New York: The Crossroad Publishing Company. 100-115.

Winterhalder, Bruce. 2001. Personal Communication. University of North Carolina, Chapel Hill, Ecology Department

Young, T. Kue. 1997. Recent health trends in the Native American population. *Population Research and Policy Review*. 16:147-167.

BIBLIOGRAPHY

Non-Monetary Assessments of Values

Fluharty, David L. 1994. Characterization and assessment of economic systems in the Interior Columbia River basin: fisheries. General Technical Report PNW-GTR. Portland, OR: United States Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Glass, Ronald J., Robert M. Muth, Robert Flewelling. 1990. *Subsistence as a Component of the Mixed Economic Base in a Modernizing Community*. Radnor, Pennsylvania: United States Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. (Research Paper NE-638).

Godoy, Ricardo. 2001. *Indians, Markets, and Rainforests: Theory, Methods, Analysis*. New York, New York: Columbia University Press.

Gottesfeld, Leslie M. Johnson. 1994. Conservation, territory, and traditional beliefs: an analysis of Gitksan and Wet'suwet'en subsistence, northwest British Columbia, Canada. *Human Ecology*. 22(4):443-465

Gregory, R.G., A.E. Daly. 1997. Welfare and economic progress of indigenous men of Australia and the US 1980-1990. *The Economic Record*. 73(221):101-119.

Gregory, Robert G. Annie C. Abello, Jamie Johnson. 1997. The individual economic well-being of Native American men and women during the 1980s: a decade of moving backwards. *Population Research and Policy Review*. 16:115-145.

Hanes, Richard C. 1995. *Treaties, Spirituality, and Ecosystems: American Indian interests in the northern intermontane region of western North America. Social Assessment Report for the Interior Columbia Basin Ecosystem Management Project. Final Report*. Walla, Walla, Washington: Interior Columbia Basin Ecosystem Management Project. (Eugene, OR: United States Department of the Interior, Bureau of Land Management Science Integration Team). (August)

Jorgensen, Joseph G. 1984. Land is cultural, so is a commodity: The locus of differences among Indians, cowboys, sod-busters, and environmentalists. *The Journal of Ethnic Studies*. 12(3)(Fall):1-21.

Jorgensen, Joseph G. 1995. Ethnicity, not culture? Obfuscating social science in the *Exxon Valdez* oil spill case. *American Indian Culture and Research Journal*. 19(4) 1-124.

Lichtkoppler, Rich. 2000. VII. Benefits. *Upper Klamath Lake Draft Environmental Impact Statement*. Denver, CO: United States Department of the Interior, Bureau of Reclamation.

Maslow, A.H. 1968. *Toward a Psychology of Being*. Princeton, New Jersey: Nostrand, as cited in Meyer Resources. 1999. *Tribal Circumstances and Impacts of the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs, and Shoshone Bannock Tribes*. Portland, Oregon: Columbia River Intertribal Fish Commission. (October) p.25

Meyer, Phillip A., Richard Lichtkoppler, Robert B. Hamilton, Charles L. Borda, David A. Harpman, Paula M. Engel. 1995. Elwha River Restoration Project: Economic Analysis: Final technical report. Davis, California: United States Department of the Interior, Bureau of Reclamation, The National Park Service, and The Lower Elwha S'Klallam Tribe. (February)

Meyer Resources, Inc. 1983. *The Importance of Salmon and Steelhead of the Columbia River to the Confederated Tribes of the Colville, Nez Perce, Umatilla, Warm Springs and Yakima Indian Reservations, With Particular Reference to Dams of the Mid-Columbia Area: A report to the Bureau of Indian Affairs*. Davis, California: Meyer Resources, Inc. (April)

Meyer Resources. 1999. *Tribal Circumstances and Impacts of the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs, and Shoshone Bannock Tribes*. Portland, Oregon: Columbia River Intertribal Fish Commission. (October)

Peterson, George L., B.L. Driver, and Robin Gregory. 1988. *Amenity Resource Valuation: Integrating economics with other disciplines*. State College, Pennsylvania: Venture Publishing, Inc.

Trafzer, Clifford E. 1997. Death Stalks the Yakama: Epidemiological Transitions and Mortality on the Yakama Indian Reservation, 1888-1964. East Lansing, Michigan: Michigan State University Press as cited in Meyer Resources. 1999. *Tribal Circumstances and Impacts of the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs, and Shoshone Bannock Tribes*. Portland, Oregon: Columbia River Intertribal Fish Commission. (October) p.31.

Ulrich, Robert S. 1988. Toward integrated valuations of amenity resources using nonverbal measures in Peterson, George L., B.L. Driver, and Robin Gregory. 1988. *Amenity Resource Valuation: Integrating economics with other disciplines*. State College, Pennsylvania: Venture Publishing, Inc. pp. 87-100.

United States of America et al. v. State of Washington et al. 1994. *Memorandum Opinion and Order. No. CV 9213, Sub-proceeding No. 89-3*. (December 20):50-52 as cited in Meyer Resources. 1999. *Tribal Circumstances and Impacts of the Lower Snake River Project on the Nez Perce, Yakama, Umatilla, Warm Springs, and Shoshone Bannock Tribes*. Portland, Oregon: Columbia River Intertribal Fish Commission. (October) p.28.

Established Economic Techniques Applied to Indigenous Americans

Adamowicz, W., T. Beckley, D. Hatton MacDonald, L. Just, M. Luckert, E. Murray, W. Phillips. 1998. In search of forest resource values of indigenous peoples: are nonmarket valuation techniques applicable? *Society and Natural Resources*. 11:51-66.

Anderson, Terry L. 1992a. *Property Rights and Indian Economies*. Lanham, Maryland: Rowman & Littlefield Publishers, Inc.

Anderson, Terry L. 1992b. The property rights paradigm: an introduction in Anderson, Terry L., *Property Rights and Indian Economies*. Lanham, Maryland: Rowman & Littlefield Publishers, Inc. 1-4.

Anderson, T.L. 1997. Conservation—Native American Style. *The Quarterly Review of Economics and Finance*. 37(4). (Fall) 769-785.

Beckley, T.M. and B.H. Hirsch. 1997. Subsistence and non-industrial forest use in the lower Liard Valley. Edmonton, Alberta: Natural Resources Canada, Canadian Forest Service Northern Forestry Centre. (Information Report NOR-X-352.).

Brown, Thomas C. and Ernest S. Burch, Jr. 1992. Estimating the economic value of subsistence harvest of wildlife in Alaska in Peterson, George, Cindy Sorg Swanson, Daniel W. McCollum, and Michael H. Thomas. *Valuing Wildlife Resources in Alaska*. (Social Behavior and Natural Resources Series). Boulder, Colorado: Westview Press. 203-254.

Champagne, Duane. 1992. Economic culture, institutional order, and sustained market enterprise: comparisons of historical and contemporary American Indian cases in Anderson, Terry L. 1992a. *Property Rights and Indian Economies*. Lanham, Maryland: Rowman & Littlefield Publishers, Inc. 195-213.

Cornell, Stephen, Joseph P. Kalt. 1992. Culture and institutions as public goods: American Indian economic development as a problem of collective action in Anderson, Terry L. 1992a. *Property Rights and Indian Economies*. Lanham, Maryland: Rowman & Littlefield Publishers, Inc.215-252.

Duffield, John. 1997. Nonmarket valuation and the courts: the case of the *Exxon Valdez*. *Contemporary Economic Policy*. 15(October):98-110.

Ericksen, Eugene P. 1997. Problems in sampling the Native American and Alaska Native populations. *Population Research and Policy Review*. 16:43-59.

Haener, M.K., D. Dosman, W.L. Adamowicz and P.C. Boxall. 2001 Can Stated Preference Methods be used to Value Attributes of Subsistence Hunting by Aboriginal Peoples? A Case Study in Northern Saskatchewan (Draft). Edmonton, Alberta: University of Alberta, Department of Rural Sciences.

Kopp, Raymond, J. and Paul R. Portney. 1999. Mock Referenda for Intergenerational Decisionmaking in Portney, Paul R. and John P. Weyant. *Discounting and Intergenerational Equity*. Washington, D.C.: Resources for the Future. 87-98.

Lind, Robert C. 1993. "The computation of the Monetary Value of the Damages Suffered by the Alutiiq People Affected by the *Exxon Valdez* Oil Spill," presented at the Exxon Valdez consolidated court case, February 13 as cited in Duffield, John. 1997. Nonmarket valuation and the courts: the case of the *Exxon Valdez*. *Contemporary Economic Policy*. 15(October):98-110.

Murray, E., W. Adamowicz, T. Beckley, D. Hatton MacDonald, L. Just, M. Luckert and W. Phillips. 1995. Non-market Valuation Biases Due to Aboriginal Cultural Characteristics in Northern Saskatchewan: The Values Structures Component. Staff Paper Edmonton, Alberta: University of Alberta, Department of Rural Economy. Website: http://www.re.ualberta.ca/STAFF-PAPERS/sp-95-05.PDF in http://www.re.ualberta.ca/sp-pr-95.htm

Portney, Paul R. and John P. Weyant. 1999. *Discounting and Intergeneration Equity*. Washington, D.C.: Resources for the Future.

Skrabis, Kristen. 2001. *Overview of Habitat Equivalency Analysis*. Washington, D.C.: United States Department of the Interior, Office of Policy Analysis.

Impact of Culture on Tribal and Reservation Development

Champagne, Duane. 1992. Economic culture, institutional order, and sustained market enterprise: comparisons of historical and contemporary American Indian cases in Anderson, Terry L. 1992a. *Property Rights and Indian Economies*. Lanham, Maryland: Rowman & Littlefield Publishers, Inc. 195-213.

Cornell, Stephen, Joseph P. Kalt. 1992. Culture and institutions as public goods: American Indian economic development as a problem of collective action in Anderson, Terry L. 1992a. *Property Rights and Indian Economies*. Lanham, Maryland: Rowman & Littlefield Publishers, Inc.215-252.

Mushinski, David, and Kathleen Pickering. 2000. Inequality in income distributions: does culture matter? An analysis of western Native American tribes. *Journal of Economic Issues*. 34(2):403-412 (June).

Smith, Dean Howard. 1994. Native American economic development: a modern approach. *Review of Regional Studies*. 24(1, Summer):87-102.

Smith, Dean Howard. 1994. Commentary: The issue of compatibility between cultural integrity and economic development among Native American tribes. *American Indian Culture and Research Journal* 18(2):177-205.

Vinje, David L. 1996. Native American economic development on selected reservations: a comparative analysis. *American Journal of Economics and Sociology*. 55(4):427-442 (October).

American Indian Health

Narayan, K.M. Venkat. 1997. *Diabetes mellitus in Native Americans: The problem and its implications*. Population Research and Policy Review. 16:169-192.

Young, T. Kue. 1997. Recent health trends in the Native American population. *Population Research and Policy Review*. 16:147-167.

Explanations and Criticisms of The Contingent Valuation and Stated Preference Methods

Carson, Richard T. 1999. Contingent valuation: a user's guide. Discussion Paper 99-26. San Diego: University of California, San Diego.

Carson, Richard T., Nicholas E. Flores and Norman F. Meade. 2000. *Contingent Valuation: Controversies and Evidence*. (Forthcoming Environmental and Resource Economics). Webpage: http://weber.ucsd.edu/~rcarson/cvconfinal.pdf, website: http://weber.ucsd.edu/~rcarson/

Chambers, Catherine M. Paul E. Chambers, John C. Whitehead. 1998. Contingent valuation of quasi-public goods: validity, reliability, and application to valuing a historic site. *Public Finance Review*. 26(2) 137-154.

Brekke, Kjell Arne, Richard B. Howarth. 2000. The social contingency of wants. *Land Economics*. 76(5):493-503.

Ekstrand, Earl. 1996. *Handbook for Estimating the Economic Value of Changes in Fish and Wildlife-Related Resources*. Denver, Colorado: United States Department of the Interior, Bureau of Reclamation. (December)

Kahneman, Daniel, Jack L. Knetsch. 1992. Valuing public goods: the purchase of moral satisfaction. *Journal of Environmental Economics and Management*. 22. 57-70.

Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler. 1990. Experimental tests of the endowment effect and the Coase theorem. *Journal of Political Economy*. 98(6). 1325-1348.

Kahneman, Daniel, Amos Tversky. 1984. Choices, Values, and Frames (1983 APA Award Addresses). American Psychologist. 39(4) 341-350. Abstract:

Knetsch, J.L. 1990. Environmental policy implications of disparities between Willingness to Pay and Compensation Demanded measurements of values. *Journal of Environmental Economics and Management*. 18. 227-237

Knetsch, Jack L. 2000. Seminar: Context dependency, time preferences, and choice of measure effects on valuation. Fort Collins, United States Department of Agriculture, Forest Service.

McConnell, K.E. 1997. Does altruism undermine existence value? *Journal of Environmental Economics and Management*. 32:22-37

Platt, Jonathan. 2001. *Economic Nonmarket Valuation of Instream Flows*. Denver, Colorado: Economics Group, Technical Service Center, Bureau of Reclamation, United States Department of the Interior. (Technical Memorandum Number EC-2001-01) (April).

Sagoff, Mark. 1996. On the value of endangered and other species. *Environmental Management*. 20(6):897-911.

Economic Techniques Applied to Non-American Indians for American Indian Resources

Lin, Pei-Chien, Richard M. Adams, Robert P. Berrens. 1996. Welfare effects of fishery policies: Native American treaty rights and recreational salmon fishing. *Journal of Agricultural and Resource Economics*. 21(2):263-276.

Loomis, John B. 1996. Measuring the economic benefits of removing dams and restoring the Elwha River: results of a contingent valuation survey. *Water Resources Research*. 32(2):441-447 (February).

Economic Perspectives on Native American History

Anderson, Terry, Steven LaCombe. 1999a. Institutional change in the Indian horse culture in Barrington, Linda. *The other side of the frontier: economic explorations into Native American history*. Boulder, Colorado: Westview Press. 103-123. (108-109).

Anderson, Terry. 1999b. The Political Economy of Indian Wars in Barrington, Linda. *The other side of the frontier: economic explorations into Native American history*. Boulder, Colorado: Westview Press. 206-223.

Baden, J., R. Stroup, and W.A. Thurman. 1981. Myths, admonitions, and rationality: the American Indian as a resource manager. *Economic Inquiry*. 19(1):132-143, as cited in Anderson, T.L. 1997. Conservation—Native American Style. *The Quarterly Review of Economics and Finance*. 37(4). (Fall) 769-785.

Barrington, L. ed. 1999a. *The Other Side of The Frontier: economic explorations into Native American history.* Boulder, Colorado: Westview Press

Barrington, Linda. 1999b. Editor's introduction: Native Americans and U.S. economic history in Barrington, Linda. *The other side of the frontier: economic explorations into Native American history*. Boulder, Colorado: Westview Press. 1-50.

Carlson, Leonard A. 1999. The Economics and Politics of Irrigation Projects in Barrington, Linda. *The other side of the frontier: economic explorations into Native American history*. Boulder, Colorado: Westview Press. 235-258.

Giles, Milton. 2000. Big Chief Elizabeth: the adventures and fate of the first English colonists in America. 1st American ed. New York : Farrar, Straus and Giroux.

Goodman-Draper, Jacqueline. 1994. The development of underdevelopment at Akwesasne: cultural and economic subversion. *American Journal of Economics and Sociology*. 53(1):41-56.

Heizer, Robert F. 1955. *Primitive Man as an Ecologic Factor*. (Kroeber Anthropologic Society Papers, no. 13). Berkeley: University of California Press as cited in Smith, Vernon L. 1999. Economy, ecology, and institutions in Barrington, Linda. The other side of the frontier: economic explorations into Native American history. Boulder, Colorado: Westview Press. 57-85.

Mancall, Peter C., Thomas Weiss. 1999. Was economic growth likely in colonial British North America? *The Journal of Economic History*. 59(1):17-40.

Prince, Steven J. 1993. *The Political Economy of Articulation: Federal Policy and the Native American/Euroamerican Modes of Production*. (Ph.D. Dissertation). ___, Utah: The University of Utah, Department of Economics.

Ray, Arthur J., Donald B. Freeman. (1978) *'Give Us Good Measure': an economic analysis of relations between the Indians and the Hudson's Bay Company before 1763.* Toronto, Ontario, Canada: University of Toronto Press.

Smith, Vernon L. 1999. Economy, ecology, and institutions in Barrington, Linda. The other side of the frontier: economic explorations into Native American history. Boulder, Colorado: Westview Press. 57-85 (71).

Native American Religious and Cultural Beliefs

Antone, Cecil F., Weldon B. Johnson. 1990. AIRFA, traditional lifeways and historic preservation in Klesert, Anthony L., Alan S. Downer. 1990. Preservation on the Reservation: Native Americans, Native American lands and archaeology. (Navajo Nation papers in anthropology number 26). ___, Arizona: Navajo Nation Archaeology Department, Navajo Nation Historic Preservation Department, Arizona Humanities Council. 189-199.

Anyon, Roger. 1990. Cultural values and looting: destruction of the Nation's heritage in Klesert, Anthony L., Alan S. Downer. 1990. *Preservation on the Reservation: Native Americans, Native American lands and archaeology*. (Navajo Nation papers in anthropology number 26). ___, Arizona: Navajo Nation Archaeology Department, Navajo Nation Historic Preservation Department, Arizona Humanities Council. 132-143.

Booth, Annie L. 1999. Does the spirit move you? Environmental spirituality. *Environmental Values*. 8 (1999):89-105.

Brown, Dee. 2001. *Bury My Heart at Wounded Knee*. Henry Holt & Company, Inc.

Corliss, Dave, Mary Keith (n.d.) Obstacles to traditional gathering on Federally administered Northwest intermontane cede lands. Paper presented at the Northwest Anthropological Conference

Deloria, Vine, Jr. 1994. *God is Red: a Native view of religion*. Golden, Colorado: Fulcrum Publishing.

Downer, Alan S. 1990. Life on the reservation and historic preservation in Klesert, Anthony L., Alan S. Downer. 1990. Preservation on the Reservation: Native Americans, Native American lands and archaeology. (Navajo Nation papers in anthropology number 26). ___, Arizona: Navajo Nation Archaeology Department, Navajo Nation Historic Perservation Department, Arizona Humanities Council. 201-206.

Evans, A. Don. 1989. The purpose and meaning of peyote as a sacred material for Native Americans in Horse Capture, George P. (editor) 1989. *The Concept of Sacred Materials and Their Place in the World*. Cody, Wyoming: Buffalo Bill Historical Center. 20-35

First Nations Financial Project. 1991. *First Nations Development Institute: Ten Year Report* Falmouth, Virginia: First Nations Development Institute as cited in Smith, Dean Howard. 1994. Commentary: The issue of compatibility between cultural integrity and economic development among Native American tribes. *American Indian Culture and Research Journal* 18(2):177-205.

Curtis, Sue Ann. 1992. Cultural relativism and risk-assessment strategies for Federal projects. *Human Organization*. 51(1):65-70.

Friday, Ben. 1989. Traditional Sacredness in Horse Capture, George P. (editor) 1989. *The Concept of Sacred Materials and Their Place in the World*. Cody, Wyoming: Buffalo Bill Historical Center. 1-3.

Goldtooth, Tom. 2001. Seminar: National Indigenous Environmental Network. Denver, Colorado: United States Department of the Interior, Environmental Protection Agency; University of Colorado School of Law, Natural Resources Law Center; and Denver University, Native American Law Studies Brown Bag Seminar.

Horse Capture, George P. (editor) 1989. *The Concept of Sacred Materials and Their Place in the World*. Cody, Wyoming: Buffalo Bill Historical Center.

Kaelin, Celinda Reynolds. 1998. *Journey Song: A spiritual legacy of the American Indian*. Minneapolis, Minnesota: Four Directions Publishing.

Klesert, Anthony L., Alan S. Downer. 1990. *Preservation on the Reservation: Native Americans, Native American lands and archaeology*. (Navajo Nation papers in anthropology number 26). ___, Arizona: Navajo Nation Archaeology Department, Navajo Nation Historic Preservation Department, Arizona Humanities Council.

Lawrence, Elizabeth Atwood. 1998. Human and horse medicine among some Native American groups. *Agriculture and Human Values*. 15:133-138.

Powell, Peter J. (Father). 1989. "Sacred Material" in Horse Capture, George P. (editor) 1989. *The Concept of Sacred Materials and Their Place in the World*. Cody, Wyoming: Buffalo Bill Historical Center. 42-48.

Spicer, E. 1957. Worlds Apart – Cultural Differences in the Modern Southwest. *Arizona Quarterly* 13:197-230 as cited in Stoffle, Richard W. and Michael J. Evans. 1990. Holistic conservation and cultural triage: American Indian perspectives on cultural resources. *Human Organization*. 49(2) 91-99.

Stoffle, Richard W. and Michael J. Evans. 1990. Holistic conservation and cultural triage: American Indian perspectives on cultural resources. *Human Organization*. 49(2) 91-99.

Vecsey, Christopher (editor). 1991. *Handbook of American Indian Religious Freedom*. New York, New York: The Crossroad Publishing Company.

Walker, Deward E. Jr. 1991. Protection of American Indian sacred geography in Vecsey, Christopher (editor). 1991. Handbook of American Indian Religious Freedom. New York, New York: The Crossroad Publishing Company. 100-115.

Timelines, Histories and Archeological Theories

Clinton, R. 2001. United States v. Sioux Nation (1980) Lecture Notes. Website: http://wwwuiowa.edu/~rclinton/clinton/Indl/Lecture8/tsld006.htm

Hoxie, Frederick E. 1995. *Parading Through History: The Making of the Crow Nation in America, 1805-1935* (Cambridge Studies in North American Indian History) ____: Cambridge University Press.

Martin, Paul. S. 1967. Prehistoric overkill. In P.S. Martin and H.E. Wright Jr. (eds.) *Pleistocene Extinctions*. 75-120. New Haven, Connecticut: Yale University Press as cited in Smith, Vernon L. 1999. Economy, ecology, and institutions in

Barrington, Linda. The other side of the frontier: economic explorations into Native American history. Boulder, Colorado: Westview Press. 57-85 (71).

Martin, Paul. S. 1984. Prehistoric overkill: the global model. In P.S. Martin and R. G. Klein (eds.). *Quarternary Extinctions*. 354-403. Tucson, Arizona: University of Arizona Press. As cited in Smith, Vernon L. 1999. Economy, ecology, and institutions in Barrington, Linda. The other side of the frontier: economic explorations into Native American history. Boulder, Colorado: Westview Press. 57-85 (71).

Martin, Paul. S. 1990. Who or what destroyed our mammoths?" In L.D. Agenbroad, J.I. Mead, and L.W. Nelson (eds.) *Megafauna and man: discovery of America's heartland*. Flagstaff, Arizona: Northern Arizona University. As cited in As cited in Smith, Vernon L. 1999. Economy, ecology, and institutions in Barrington, Linda. The other side of the frontier: economic explorations into Native American history. Boulder, Colorado: Westview Press. 57-85 (71).

Martin, P.S., C.R. Szuter. 1999. War zones and game sinks in Lewis and Clark's west. *Conservation Biology*. 13(1)(February):36-45.

Neihardt, John G. 2001? Internet Project: Chronology. Webpage: http://www.wayne.esu1.k12.ne.us/neihardt/chron.html.

Remini, Robert V. 2001. *Andrew Jackson and His Indian Wars*. New York, New York: Viking Press.

Rosebud Sioux Tribe Community Environmental Profile. 2000. http://www.mnisose.org/profiles/rosebud.htm

Strom, Karen. 2001? *Hanksville Internet Native American Narrative Project*. Website: http://hanksville .phast.umass.edu.

Tribal Wisdom Foundation. 2001. *Treaties*. Webpage: http://www.tribalwisdom.org/

Welch, James. 1994. *Killing Custer*. New York, New York: W.W. Norton.

Laws, Federal Regulations, Compliance and Guidance Documents, and Interpretations

7 U.S.C. 136

34 Stat. 225. Antiquities Act of 1906.

36 CFR 68.3. Standards in *Title 36: Parks, Forests and Public Property, Department of the Interior, Part 68: The Secretary of the Interior's standards for the treatment of historic properties*.

40 CFR Parts 1500-1508. 1992. *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*.

43 CFR 3. Antiquities Act of 1906.

43 CFR 7. Archaeological Resources Protection Act of 1979.

Environmental Training & Consulting International, Inc. 2000. Participant Manual: Cultural Resources Management Workshop, prepared for the U.S. Bureau of Reclamation. Denver, Colorado: Environmental Training & Consulting International, Inc. (January).

Executive Order 13007. 1996. Accommodation of Sacred Sites.

Faegre and Benson. 2001. Firm News: Exxon Litigation Update. Webpage: http://www.faegre.com/articles/article_192.asp

Hamilton, Robert B. 2001. Formulation and Evaluation of Indian water projects under the Principles and Guidelines (P&Gs) (White Paper). Denver, Colorado: United States Department of the Interior, Bureau of Reclamation.

Indian Self Determination and Education Assistance Act of 1975. PL 93-638; 88 Stat. 2203; 42 USC 450-458

Kravetz, David. 2001. "Court overturns $5 billion Exxon Valdez award." Greenwich, Connecticut: *Greenwich Times*. November 7.

National Environmental Justice Advisory Council, Indigenous Peoples Subcommittee. 2000. *Guide on Consultation and Collaboration with Indian Tribal Governments and the Public Participation of Indigenous Groups and Tribal Members in Environmental Decision Making*. Washington, DC: United States Environmental Protection Agency, Enforcement and Compliance Assurance, Office of Environmental Justice. (November) (EPA/300-R-00-009)

National Historic Preservation Act, 16 U.S.C. 470

P.L. 93-291. Archeological and Historic Preservation Act of 1974.

P.L. 95-341. American Indian Religious Freedom Act of 1978.

P.L. 96-95. Archaeological Resources Protection Act of 1979.

Tribal Self-Governance Act of 1994. P.L. 103-413

U.S. Army Corps of Engineers. 1999. Paragraph 16.a. Ecosystem Restoration Evaluation in *Engineer Pamphlet: Water Resources Policies and Authorities: Ecosystem Restoration -- Supporting Policy Information*. (Engineer Pamphlet 1165-2-502) Washington, D.C.: Department of the Army. (September 30). 22-23.

U.S. Bureau of Indian Affairs. 2001. Website: Frequently Asked Questions. http://www.doi.gov/bia/oirm/faq.htm.

U.S. Bureau of Reclamation.1993. Native American Cultural Awareness Workshop. Notes. Phoenix, Arizona: United States Bureau of Reclamation.

U.S. Bureau of Reclamation. 1998. *Widening the Circle*. Workshop Notes. Denver, Colorado: United States Department of the Interior. (February)

U.S. Bureau of Reclamation. 2000. *National Environmental Policy Act Handbook. Public Review Draft*. Denver, Colorado: United States Department of the Interior.

U.S. Bureau of Reclamation, Native American Affairs Office. 1998. Protocol Guidelines: consulting with Indian tribal governments. Washington, DC: United States Department of the Interior. (February)

U.S. Environmental Protection Agency. 2000. Benefits in *Guidelines for preparing economic analyses*. Washington, D.C.: United States Department of the Interior (September).

U.S. National Park Service. 1993. *Federal Historic Preservation Laws*. Washington, DC: United States Department of the Interior, National Park Service, Cultural Resources Programs.

U.S. National Park Service. 1999. Cultural resources and the Interior Department: an overview. *Cultural Resource Management* 22(4). Washington, DC: United States Department of the Interior, National Park Service, Cultural Resources.

U.S. National Park Service. 2000. Dam good archeology: the Bureau of Reclamation's Cultural Resources Program. *Cultural Resource Management* 23(1) Washington, DC: United States Department of the Interior, National Park Service, Cultural Resources.

U.S. Water Resources Council. 1983. *Economic and Principles and Guidelines for water and related land resources implementation studies*. Washington, DC: U.S. Department of the Interior.

Wagner, Gernot. 2001. The political economy of greening the National Income Accounts. *AERE Newsletter*. 21(1):14-17.