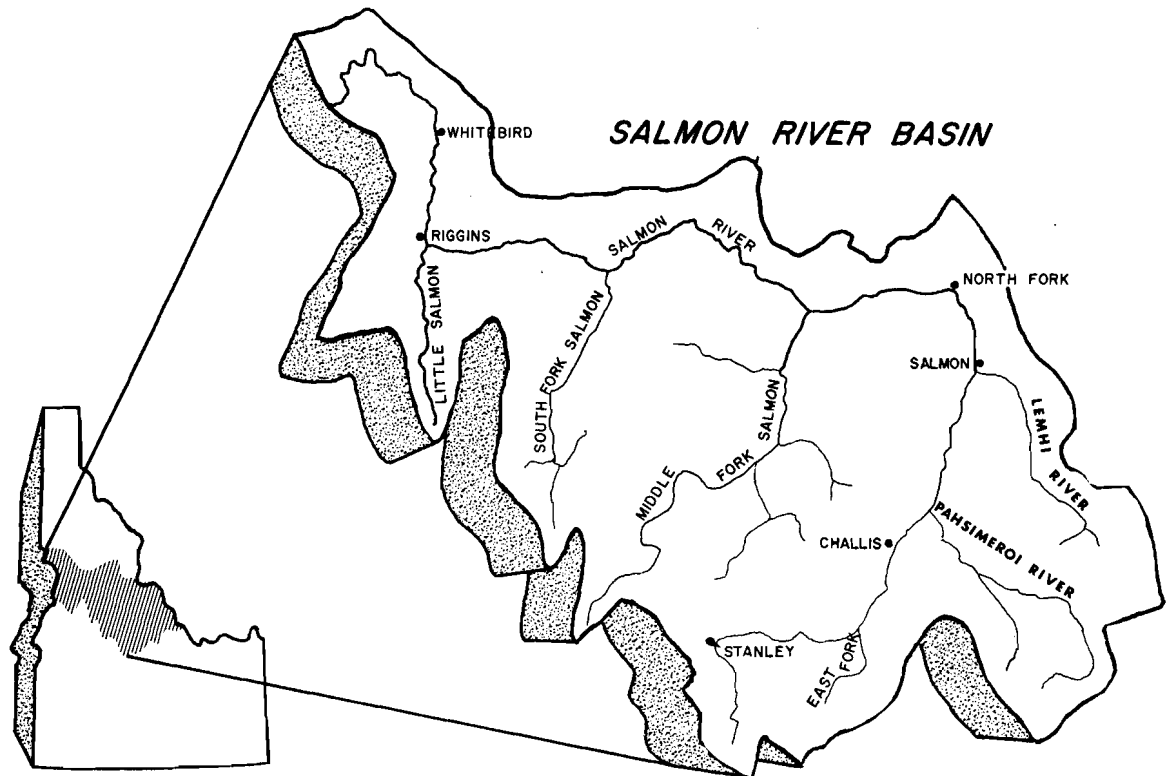


A Methodology Study To Develop Evaluation Criteria For Wild And Scenic Rivers



Report of

The Archaeological Resources Of The Salmon River Canyon

by
Earl H. Swanson, Jr.

Water Resources Research Institute
University of Idaho
Moscow, Idaho
September, 1970

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PREFACE

Public Law 90-542 provides for a National Wild and Scenic Rivers System. The purpose of the law is to protect for the enjoyment and benefit of the people of the United States certain rivers which in conjunction with lands bordering the waters possess outstanding scenic, recreational, fish and wildlife, geologic land forms, and other such desirable features.

Two categories of rivers are specified by the Act. "Instant Rivers" are authorized for immediate inclusion in the National Wild and Scenic Rivers System. The Middle Fork of the Salmon River and The Middle Fork of the Clearwater River are the two rivers located in Idaho included in this category. The second category "Study Rivers" includes rivers which are to be studied for possible inclusion in the Wild and Scenic Rivers System. The main stem of the Salmon, and the Bruneau, St. Joe, Priest, and Moyie Rivers are the five Idaho rivers placed in the second category.

The Act specifies three classes of wild rivers: wild, scenic, and recreational. A "wild river" refers to a river free from impoundments, with non-polluted water and essentially primitive shorelines. A "Scenic river" is free from impoundments with shorelines and watersheds still essentially primitive and undeveloped but which is accessible in places by roads. A "recreational river" is readily accessible by roads and railroads, may have development along the shorelines and may have undergone some impoundment or diversion in the past. Public Law 90-542 specifies a ten-year time limit on classification studies after which recommendations on the disposition of study rivers are to be made to the Congress.

There is little valid criteria available for evaluating rivers for wild or scenic classification. For this reason the Water Resources Research Institute of the University of Idaho has organized a Scenic Rivers Study Unit for the purpose of developing methodology to evaluate wild rivers. The goal of this study is to establish criteria which can be used to identify and determine the economic, aesthetic, and scenic and other values of wild rivers.

The Salmon River in Idaho has been selected as the study river. This river originates in central Idaho and flows about 410 miles generally through precipitous undeveloped canyon country and discharges into the Snake River 49 miles above Lewiston. The average annual discharge of the Salmon River at its mouth is about 8,000,000 acre feet.

The portion of the Salmon from its mouth to the town of North Fork has been designated as a "study river". However, for the methodology study the entire Salmon drainage basin will be studied. There are two reasons for this. First, because any economic development--impoundments, diversions, mining, paper, industry, logging, etc.,--would affect the main stem wild river section. Second, because it is more convenient and is more meaningful to include all the activities in a river basin. The hydrologic basin unit (the Salmon drainage basin) was used for some portions of the Idaho Economic Base Study for Water Requirements and in the Idaho Water Resources Inventory.

The purpose of the methodology study is to develop information pertinent to decision-making and planning as it pertains to the selection, use, and management of wild and scenic river systems. The methodology study has four broad objectives:

1. Inventory present quantities and qualities of natural resources in the river basin area, and estimate future quantities and qualities of these resources, establishing their values in both situations.
2. Identify, describe, and quantify, where possible, benefits from scenic beauty, personal enrichment, and other aesthetic experiences derived from the river.
3. Develop a series of models to evaluate or determine the resource use pattern consistent with a wild rivers system, and the resource use pattern which would exist under various levels of development in the river basin area.
4. Present recommendations for alternative uses of resources for the entire river basin area, recommend restrictions if classification is applicable, and describe the economic and social ramifications of each of the alternatives considered.

The plan for the methodology study is to divide the research work into a series of subprojects, each covering an important economic activity related to the river. These subprojects consist of eleven resource and service functions:

1. Forest and range resources
2. Minerals
3. Outdoor recreation
4. Commercial fisheries
5. Irrigation
6. Water for municipal and industrial use

7. Water quality control
8. Hydroelectric power
9. Flood control
10. Navigation
11. Transportation and access

Each of these eleven resource and service functions will be examined on an individual basis at their present level of development and at projected levels of development.

Once the above subprojects have been completed, a series of economic models will be developed which will make relatively accurate estimates of costs and benefits for each of the resources included in the subprojects. This will permit comparisons of potential costs and benefits of alternative resource uses. The technique will be modified and extended to the years 2000 and 2020, consistent with the time projections of the Columbia-North Pacific Region Comprehensive Framework Study.

It is at this stage of the analysis that one purpose of the methodology study will be realized. This purpose is to make an economic evaluation of the Salmon River in its natural state. The evaluation will be made consistent with the present levels of resource use indicated by the subprojects. This evaluation at the current level of resource use will then be compared with simulated levels of development on the river, and within the river basin area. At this stage of the analysis it will be possible to include in the study certain general considerations such as population, and economic growth, and the demand for recreation, electricity, timber, and minerals and other resources in the area in the future.

Two general evaluations of the river resource base can then be made. First, the current and projected levels of economic activity based on the status quo. Second, a determination of the benefits foregone, (if this turns out to be the case) as a result of maintaining the river in its natural free-flowing state. Efforts throughout the study will be to try to identify and quantify the aesthetic and personal enhancement values for which the expressed national desire is to protect and conserve.

THE ARCHAEOLOGICAL RESOURCES OF THE SALMON RIVER CANYON

by Earl H. Swanson, Jr.

The antiquities of the Salmon River Canyon have scientific and historic value for several reasons. First, these prehistoric resources may shed light on cultural relations between two different peoples, who spoke different languages and were most closely related to the cultures of different geographic areas. Second, the canyon appears to be a special environment, which people entered and left along its tributaries and from its rim rather than along its main course. Third, the Salmon is a pro-glacial river whose terraces reflect glacial history of the Salmon River Mountains. Any evidence of Early Man should, therefore, reflect man's relationship to the glacial history of the region. Fourth, the canyon contains a variety of archaeological sites which indicate man made wide use of the canyon over a long period of time.

Recognition of these values is based on anthropological studies which began before the turn of the century and upon historic documents which start with Lewis and Clark in 1805. The two historic cultures which had a nineteenth century boundary along part of the Salmon River Canyon were the Nez Perce (Spinden-1908) and the Northern Shoshoni (Lowie-1909). The former spoke a language known as Sahaptin (Aoki-1970) belonging ultimately to a great group of languages called Penutian. The Northern Shoshoni spoke one of a series of languages known as Shoshone-Comanche (Lamb-1958), which ultimately belongs to a great language family known as Utaztekan. Linguistic studies have shown much borrowing between speakers of the two languages,

and the cultures of each have many traits in common. These suggest a long period of time in which the prehistoric ancestors of the Nez Perce and the Northern Shoshoni were in close contact. Since the Salmon River Canyon was a nineteenth century border between them (Kroeber-1939; Liljeblad-1957), its antiquities should be of primary historic importance in a study of their cultural relations.

The prehistoric hunting pattern of the Northern Shoshoni, referred to as the Bitterroot Culture (Swanson-1962a), has been under study in eastern Idaho since 1960. The results of intensive archaeological field work point to an old big-game hunting pattern under continental climatic conditions in the northern Rocky Mountains. A distinctive artifact pattern associated with major environmental changes has permitted the preliminary definition of an ecological structure and function in the ancient human communities of eastern Idaho (Swanson-1966a, 1966b, 1966c; Swanson and Bryan-1964; Swanson, Butler, Bonnicksen-1964). This pattern was extended into the Salmon River Canyon below Shoup by archaeological excavations in 1965 (Swanson and Sneed-1966). That work indicated early presence of the Bitterroot culture pattern at a time around 8,500-8,000 years ago. In the Birch Creek Valley, farther south and east, the Bitterroot pattern is underlain by an older big-game hunting pattern, which begins in that region about 11,500 years ago (Butler-1966, 1968; Swanson-1961).

In the lower Salmon River Canyon near Cottonwood, Idaho, the Idaho State University Museum has carried out excavations at several sites. These indicate a big-game hunting pattern at an undated but early time more than 8,000 years ago (Butler-1962, 1969). A long cultural sequence has been dated at the Weiss rockshelter on the edge of Camas Prairie at an early village about 2,000 years old which was excavated in 1964. Since 1967 archaeological excavations have concentrated on the Clearwater River Valley

(Toups-1969), which was a population center of the historic Nez Perce. Recent work has concentrated on a village near Lenore in an effort to uncover community patterns and their changes through time. In this way a search is being made for the development of historic Nez Perce culture and its evolution in prehistoric time.

These investigations in northern and eastern Idaho provide information by which the prospective importance of the Salmon River Canyon may be judged. The different patterns which are now emerging suggest that there have been major boundary changes which may be related to environmental changes in the last 12,000 years.

As the Salmon River travels from east to west, it drops nearly 2,000 feet between North Fork and its confluence with the Snake. In doing so it travels from the western slope of the Rockies to the eastern foot of the Columbia Plateau. The canyon is a physical environmental transition zone between the ethnographic landscapes of the Northern Shoshoni and the Nez Perce. In the past 12,000 years there have been three major environmental climatic cycles, each beginning dry-presumably warm, turning cool-moist, then warm-moist, and back to dry at the beginning of the next climatic cycle (Ranere-1970; Swanson and Sneed-1966). The first cycle began about 12,500 years ago and lasted until 7,000 years before the present. The second cycle began with the end of the first and lasted until 3,500 years ago, when the third cycle began and lasted until A.D. 1850. Archaeology in eastern Idaho has shown that prehistoric people changed their residences with changing climatic conditions so that dry episodes led to contraction in spatial distribution. People moved to higher altitudes and more northerly latitudes. Conversely, during wet-cold intervals they spread out over lower altitude land surfaces and moved southward (Swanson-1970; Swanson, Butler, Bonnicksen-1964). Evidence of these changes is beginning to appear

in the Clearwater River Valley so that the changing physical environments of the Salmon River Canyon will have a special relationship to the history of prehistoric Nez Perce and Northern Shoshoni peoples. For example, we might expect to find the Betterroot culture pattern, the prehistoric hunting pattern of the Northern Shoshoni, north of the Salmon River Canyon in its upper regions during dry episodes. On the other hand, we might expect the prehistoric pattern of the Nez Perce south of the Salmon River Canyon during moist intervals, particularly along its lower course. There should also be distinctive changes in upriver-downriver distribution of these two prehistoric culture patterns. In this sense, the Salmon River Canyon has an extraordinary worth for the history of these two important native peoples.

The Salmon River Canyon offers another opportunity to students of Early Man in the evolution of Quaternary life. It is a proglacial stream which drains high mountain areas subject to multiple glaciation during the Quaternary Period (Dort-1962, 1965; Richmond-1965). The alluvial terraces of the Salmon appear complex because of the structural history of the canyon, but the presence of broad terraces through much of the canyon afforded occupation sites for prehistoric man in a number of localities. Excavations at the Shoup rockshelter in the Salmon River Canyon in 1965 suggested that prehistoric people did not occupy the upper part of the canyon before 8,500-8,000 years ago, because of proglacial stream flow in the Salmon River. Sites occupied after 8,500 years before the present may not have been available before that time because of late Pinedale glaciation in the Salmon River Mountains. To the east, Early Man occupied the Birch Creek Valley by 11,500 years ago, and the Snake River Plain was in use by 15,000-14,500 years B.P. (Gruhn-1961,1965). In the Northwest prehistoric man was in the Columbia Plateau by no later than 11,000 years ago. What,

therefore, were the limits of prehistoric occupation on the western slope of the Rockies during Pinedale time? Was the canyon available for human occupation at any point before 8,500 B.P.? If not, when did the ancestral patterns of the Nez Perce and the Northern Shoshoni first enter that river valley? To answer that question properly will require investigations outside the Salmon River Canyon before detailed studies are completed within the canyon. The reason is simply that basic prehistoric culture patterns for Nez Perce and Northern Shoshoni are only partially known at the present time. To work on the margins of the main culture areas without knowing more of the basic patterns in the heartland of the culture pattern would raise difficult questions. To be sure, preliminary work can be done and preliminary questions can be studied by limited investigations within the Salmon River Canyon, but major studies which are intended to examine the relationships between community and culture patterns should not now be done.

A variety of sites occurs in the Salmon River Canyon. These can be classified into several elementary types: open camps, rockshelters and caves, villages, burials, and paintings. A camp lacks features, being marked primarily by the presence of artifacts. It is the most common kind of archaeological site and may occur in almost any location. This is because camps tend to reflect special seasonal activities so that a camp may be found along a game trail, near a fishing hole or mussel bed, in a berry patch, or a camas meadow. Most camps in the Salmon River Canyon are small, though some may have a linear dimension of one-fourth to one-half mile or more.

Rockshelters and caves are really two different kinds of human environments. The first is an overhang in a cliff face or any large boulder, while the second has some part of its chamber in total darkness under all circumstances. Rockshelters are more common, but true caves also occur in the

Salmon River Canyon. They are valuable because they function as hotels for traveling hunters or food collectors, and they contain the superimposed record of successive events with the passage of time. Most shelters are small and have shallow deposits, but there are a few which are larger and have sediments which suggest they may represent the last 11,000-12,000 years of time. For this reason, they are of great importance in recording the prehistory of the Salmon River Canyon. They have another significant aspect: the deposits have accumulated in a similar topographic position and in a similar fashion to the deposits of rockshelters elsewhere in Idaho, the northern Great Basin, and the Columbia Plateau. For this reason, it is possible to examine the changing physical environments of the Salmon River Canyon in those few large rockshelters that occur there. They afford an opportunity to study human history and human ecology by criteria that can be widely compared.

Villages are sites with houses, and there are houses or constructional features of several types in the Salmon River Canyon. The villages are of special importance because they permit archaeologists to study prehistoric community patterns. They require the greatest length of time to excavate and the use of the most sensitive excavation techniques. Houses similar to those in the Columbia Plateau (Ray-1939; Swanson-1962b, 1965) occur in the lower portions of the Salmon River Canyon. On the other hand, houses similar to those in prehistoric villages in historic Northern Shoshoni country (Steward-1938; Swanson, King, Chatters-1969) occur in the upriver portions of the canyon and overlap in distribution with plateau-like houses in the lower canyon. Tipi rings have also been found in the Salmon River Canyon and these identify the presence of horse-mounted villagers or proto-historic and historic localities.

Burials and paintings are uncommon in the Salmon River Canyon on present evidence. There may be more of both kinds of sites, and they will be useful because painting localities tend to have distinct regional patterns. Burials are also characteristic of certain regions, and the pattern of burials in prehistoric plateau sites has been studied in some detail (Sprague-1967).

II

Information on the archaeological sites and artifacts of the Salmon River Canyon between Corn Creek and Bull Creek was gathered by an Idaho State University Museum survey team under contract with the National Park Service in July 1958 and by another team under contract with the Water Resources Research Institute, University of Idaho, in August 1970. Thirty-seven sites were recorded in the 1958 survey and 31 new sites were found in 1970. Twelve of the 1958 sites were revisited in 1970.

The evidence from the two archaeological surveys provides some information about site density in the Salmon River Canyon. The average is not quite one site per mile for the river canyon as a whole between Corn Creek and Bull Creek. However, the canyon can be divided into five zones: (1) Corn Creek to Arctic Creek, just above Salmon Falls. (2) From Salmon Falls to Bargamin Creek. (3) From just below Bargamin Creek at Bailey Rapids to the foot of Growler Rapids. (4) From the foot of Growler Rapids to the head of the canyon below the mouth of the South Fork of the Salmon at Mackay Bar. (5) From Mackay Bar to Bull Creek. Zone 1 covers 22 miles; zone 3, 14 miles; and zones 2, 4, and 5, 13 miles apiece. The number of sites per mile varies in each zone. In zone 1 there is an average of one site per linear mile of river valley; in zone 2 it is 0.8 of a site per linear mile, or about one site per mile, so that zones 1 and 2 encompassing

the reach from Corn Creek to Bargamin Creek have approximately the same kind of site density. Zone 3 from Bailey to Growler Rapids has a density of 0.3 of a site per mile or, to put it another way, one site about every three miles. This smaller number of sites may be owing in part to the fact that the stretch of rapids in zone 3 has been less well surveyed than the other zones in the Salmon River Canyon. However, it may also reflect some aspect of the canyon and of the sequence of rapids in the river. Zone 4 has three sites every 2 miles on an average, and zone 5 one site per mile.

The number of sites or their density per mile is less important than what the sites may indicate in the way of prehistoric population density. This is so partly because the reconnaissance of 1958 and 1970 are not complete surveys of all the available land surfaces along both sides of the Salmon River Canyon. No inventory exists and we must rely on the projection of averages for each of the areas examined more intensively than some others. Further, we lack appropriate geomorphic data on the alluvial terraces of the Salmon River Canyon, so that some types of site locations cannot be estimated on present evidence.

To get a relative measure of population density in the Salmon River Canyon, we gave weight to differences of size and to differences in the types of sites. Villages were scored as being worth 10 or 20 points, according to size, on the premise that they represented longer residence in one locality by larger numbers of people. For scientific purposes they offer the possibility of studying community patterns, and they are, therefore, of high value. Rockshelters were scored at five points apiece if their deposits offered the prospect of 11,000-12,000 years of time, but were given two points if the sediments were shallow. Large camps were given five points, and small ones, two points, on the assumption that large camps with little depth and few features are likely to represent large

numbers of people using the area in a relatively limited period of prehistoric time. Burials forming a cemetery were counted at 10 points because they imply semi-permanent residence of the kind associated with villages. By adding the scores for each zone, a measure of relative density was obtained by which greater or less scientific value might be attached to the zone for purposes of scientific investigation. Zone 1 had 37 points; zone 2, 31 points; while zone 3 had only 18, reflecting in its human density the lower site density value given above. Zone 4 had 157 points reflecting again the higher site density value for that region around Mackay Bar. Zone 5 had 54 points which makes it intermediate between the heavily settled zone 4 and the lighter zones of human settlement upriver. Present evidence suggests that population movement into the Mackay Bar region was from downriver, or from the hinterlands flanking the Salmon River around and below Mackay Bar. Sites with different house types occur in zone 4, and there may be either a cultural difference, i.e. between prehistoric Shoshoni and Nez Perce, or there may be a temporal difference reflecting changes with the passage of time. A cultural difference would not be surprising, since the South Fork of the Salmon heads in terrain which in the nineteenth century was Mountain Shoshoni country, while the lower Salmon River reaches well into the southern area of historic Nez Perce occupation of northern Idaho. Upriver and downriver house types overlap in zone 4, so that zone 4 appears to be an important area of cultural overlap in prehistoric and perhaps historic times.

Artifact types from the archaeological survey tend to suggest an upriver-downriver differentiation in prehistoric culture pattern. The matter is not simple because the sample is small, but the specimens available reach from Corn Creek to Bull Creek and can be compared in each instance with excavations further upriver at Shoup or downriver at Slate

Creek, the Weiss rockshelter, and the Double House sites. Beyond that the artifacts can also be compared with excavations in the Birch Creek Valley of eastern Idaho and in the Clearwater River Valley of northern Idaho.

Some kinds of stone tools are common throughout the Salmon River Canyon. These include pestles; fleshers, presumably used for removing flesh from mammal skins; bifacial choppers, whose purpose is not certain; and some projectile point types. However, there are some notable differences. In zones 4 and 5 so-called scrapers are casual and do not form easily defined coherent artifact types. In zone 1 distinctive well-made steep endscrapers on blades have been recovered. The potpourri of downriver scrapers is characteristic of many late Columbia Plateau collections, while the well-made steep endscrapers are a hallmark of eastern Idaho archaeological collections. There are some differences in point types. For example, in zone 1 sharply barbed corner-notched points occur, while in zone 5 bluntly barbed corner- and basal-notched points occur. In each case they are characteristic and common in upriver and downriver areas respectively.

Archaeological excavations near Shoup, Idaho, in 1965 suggested that prehistoric man did not enter the Salmon River Canyon before 8,500-8,000 years ago. The collections made from sites in the canyon and recorded where they were in the hands of private collectors tend to confirm this limiting age. The oldest artifact types seen occur in zone 4 where they include Bitterroot side-notched points and some lanceolate point types which in either case probably are no older than 8,000-7,000 years B.P. Bitterroot side-notched points are characteristic of high country in eastern Idaho, but one possible Cascade point also occurs in a collection from zone 4. Cascade points are a hallmark of the Old Cordilleran culture (Butler-1961, 1966), whose origins are apparently on the Pacific Coast and represent a people moving inland about 8,000-7,500 years ago. This

implies that older material should occur in zone 5, although the oldest artifact seen to date belonged to a period of time perhaps no more than 3,000 years old, as indicated by large corner- or basal-notched points.

Site density, population density, and artifact types suggest an overlap of different prehistoric culture patterns. These elements also confirm that zone 4 is the area of overlap and the area of greatest site and prehistoric human density, so that it is therefore probably the most important area in the Salmon River Canyon. Most of the sites in zone 4 are in excellent shape and should provide basic scientific information of great value.

III

We assume that archaeological sites have intrinsic value. This follows from their status as a non-renewable scientific and historic resource. Archaeological sites have information to give which no written records supply, as classical archaeology long ago showed for Greece and Rome. Where people left no written records, archaeological remains are the primary source of information, as in the Salmon River Canyon.

In this century particularly after World War II, archaeologists have had from time to time federal funds for the rescue of some antiquities threatened by construction programs. In the Columbia River Basin, as in most other river basins, the sample was intended to be ten per cent, on the basis of which some people presumed that a representative or random sample had been obtained. In fact, less than one per cent of the archaeology of the Columbia River Basin in Washington and Oregon has been rescued by federal funds provided for archaeological explorations. While some important discoveries have been made as a direct result of salvage archaeology, the fact remains that far more has been lost through inadequate support of archaeology by federal and other construction agencies.

The loss of antiquities is partly a function of inadequate reconnaissance work which was done before excavations were carried out and partly a result of the fact that many reservoir areas underwent excavation without any reconnaissance because of the shortage of funds. Federal agencies have not yet learned to inventory archaeological sites as they inventory trees, soils, and other natural resources within their jurisdiction. There have been some exceptions in Idaho, but these are uncommon when compared with the general program of salvage archaeology elsewhere in the nation. The Idaho Department of Highways has established one of the two finest inventory and rescue programs in the United States, but no other state or federal agency has done so in Idaho. The Birch Creek Valley has been inventoried by an archaeological survey supported by funds from the National Science Foundation. The valley is about 30 miles long from its headward springs and tributary canyons to its dry lake basin on the northern Snake River Plain. From crest to crest it has a maximum width of about 15 miles, but in most places it is no more than six to seven miles wide. In that valley 141 sites have been recorded by inventory survey, and we estimate that this represents perhaps 60-70 per cent of the archaeological sites in that valley. Many sites are covered by sediments and can be discovered only by limited excavation techniques, something which was done in the Birch Creek Valley but has rarely been done elsewhere. In 1966 the Salmon District of the Idaho Bureau of Land Management was surveyed by one team for three months and another team for one month. In a singular type of terrain (piedmont and pediplain) 248 sites were recorded, which represent perhaps 75 per cent of the archaeological remains in that district. On this basis, the 68 sites found in the Salmon River Canyon so far may represent 20 per cent of the actual remains within the rim of the canyon between Corn Creek and Bull Creek.

To get some idea of the funds available for salvage archaeology in the Pacific Northwest, we need turn only to those excavations which have been completed along the Columbia River and the lower Snake River Valley. Until the last two-three years, the largest single contract for excavation anywhere was for \$50,000.00 within The Dalles Reservoir in the mid-1950's. The Dalles was one of the most densely populated areas in the entire Northwest, and it would have been more reasonable to spend perhaps \$500,000.00 between 1953 and 1957. That kind of money has not been spent because the study of antiquities and the conservation of non-renewable resources has a low national priority compared with progress.

Even if more money were available, there is another element in the study of archaeological sites which needs to be considered. The survey and excavation of archaeological sites is a slow, time-consuming process by its very nature of recovering information from the earth. For every hour in the field several hours must be spent in the laboratory. Further, the rapid improvement in techniques since World War II has made it highly desirable to leave parts of archaeological sites intact for others to visit later or to excavate as a test of earlier interpretations and explanations. In short, if ideas, data, and explanations drawn from archaeology are to have any scientific merit, they must be subject to testing, and one of the most important means to accomplish this is to revisit older excavations with much-improved techniques and new questions. In most of the Columbia drainage basin this is no longer possible.

There are several alternatives in considering what to do about the antiquities of the Salmon River Canyon and their possible bearing on the status of the Salmon River as a wild river: (1) Protect some of the archaeological sites altogether as part of the natural setting, while allowing others to be partly excavated in the study of human history;

(2) Excavate some of the sites as a sample of the Salmon River Valley canyon's prehistory and let the remainder go; (3) Excavate all of all of the sites known in the valley. For any of these cases, further reconnaissance would be required. I recommend the first alternative because it would guarantee that those interested in the wild river concept would see antiquities as part of the wild river habitat. At the same time this position would permit scientific excavation of limited numbers of sites in answer to particular questions. We oppose No. 2 because the sampling procedures developed in salvage archaeology are unreliable and do not provide representative or random samples of man's past in the area. Further, salvage archaeology is normally done in great haste, which means that excavation techniques are less than refined much of the time. A study of archaeological remains requires some time, and it is important that one be able to return after considering one's written data for further exploration and for filling of gaps in one's knowledge. Number 3 is undesirable because it leaves no opportunity to verify explanations or data. It also deprives citizens of the chance to see the record of man in relation to a wild river.

There are two aspects of the canyon which cause some concern. The first and most pressing is that archaeological sites are being destroyed by untrained collectors. Much of this is being done by residents of the canyon, and some is being done by travelers along the river. In either case, the U. S. Forest Service has been seriously derelict in enforcing the Antiquities Act and needs to be reminded that it is a legal as well as moral obligation of the Forest Service to see to the protection of archaeological sites along the Salmon River. The other threat to antiquities is represented by development of the canyon. A number of areas show old farming now discontinued, but the threat has been replaced by the development of commercial lodges which expand the potential for visitor traffic.

Since most of the sites are located on Forest Service lands, it will have to be the task of the Forest Service to enforce the law and to inform the lodge owners and operators of their obligations to see to the preservation of the habitat they exploit for commercial purposes.

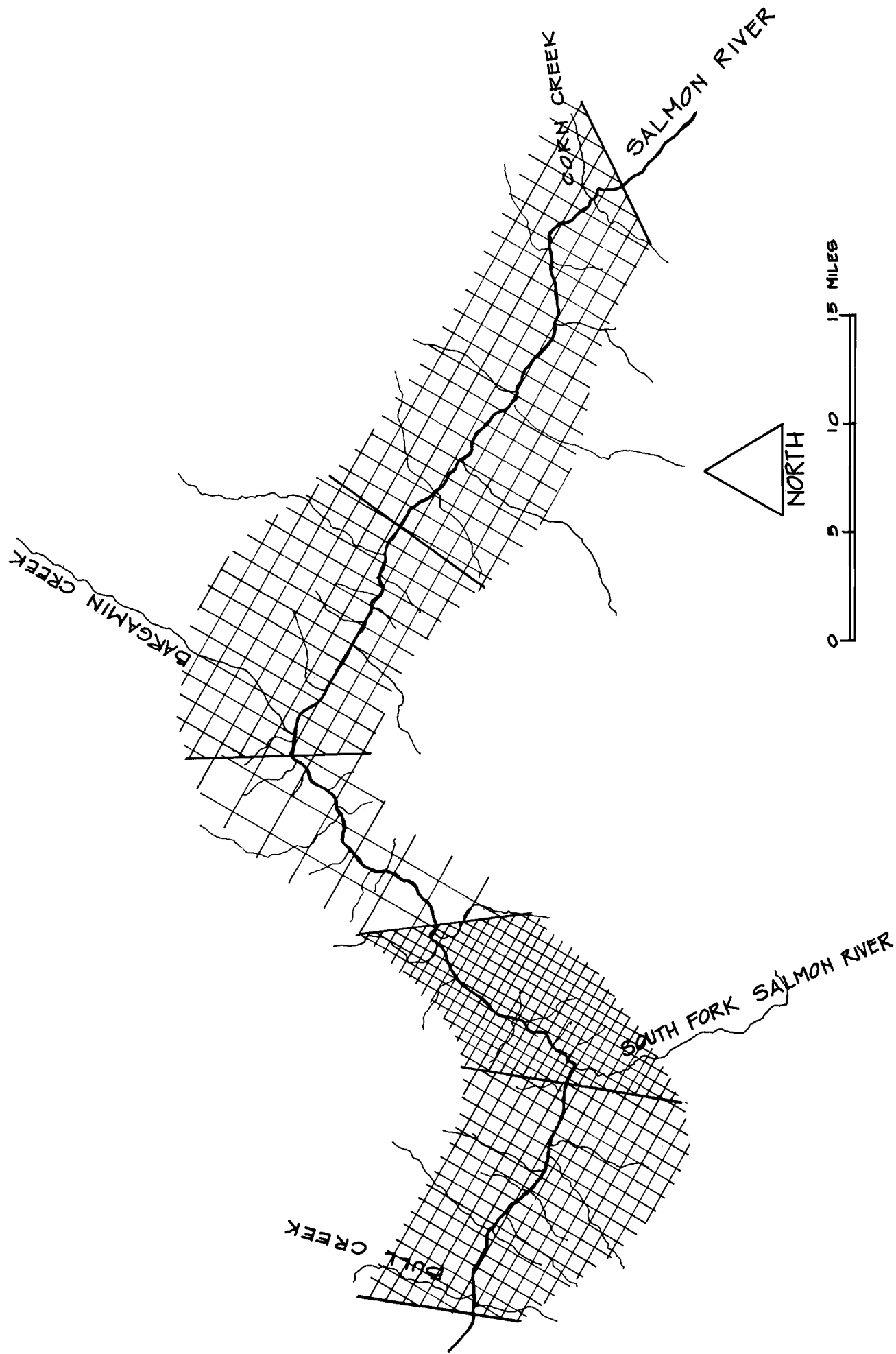
Archaeological resources do not lend themselves to comparison in numerical value with other kinds of values such as kilowatt hours or other presumably tangible benefits expressed in benefit cost ratios. Antiquities can only be conserved and/or properly excavated. To date they have been swept aside by agencies such as the Corps of Engineers and the Bureau of Reclamation on the premise that nothing should block industrial progress. It has been necessary for the archaeologist to justify why an archaeological site should be excavated or money spent to protect it, but it has rarely been necessary for the dam builder to show that his work will not adversely affect our understanding of man's past. Even more rarely has any construction agency been required to pay for the rescue of antiquities. The situation is similar to those who oppose the use of chlorinated hydrocarbons by the U. S. Department of Agriculture. The USDA has never been asked to prove that its insecticides do not destroy life or cause permanent destruction of critical parts of the food chain. On the contrary, those who would preserve life have been forced to demonstrate that DDT and other hydrocarbons have a lasting effect, a matter which takes years to demonstrate. In other words, from my point of view the shoe of responsibility has been on the wrong foot. We have successfully destroyed in massive portions man's prehistoric past in the Pacific Northwest, and it is now time to stop and reconsider whether some of that finite record should not be saved at all costs. The antiquities of the Salmon River Canyon have undoubted scientific and historic value pertaining to two important peoples of the region. They should also provide us with useful data on man's relationship to his changing physical environments in that area.

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