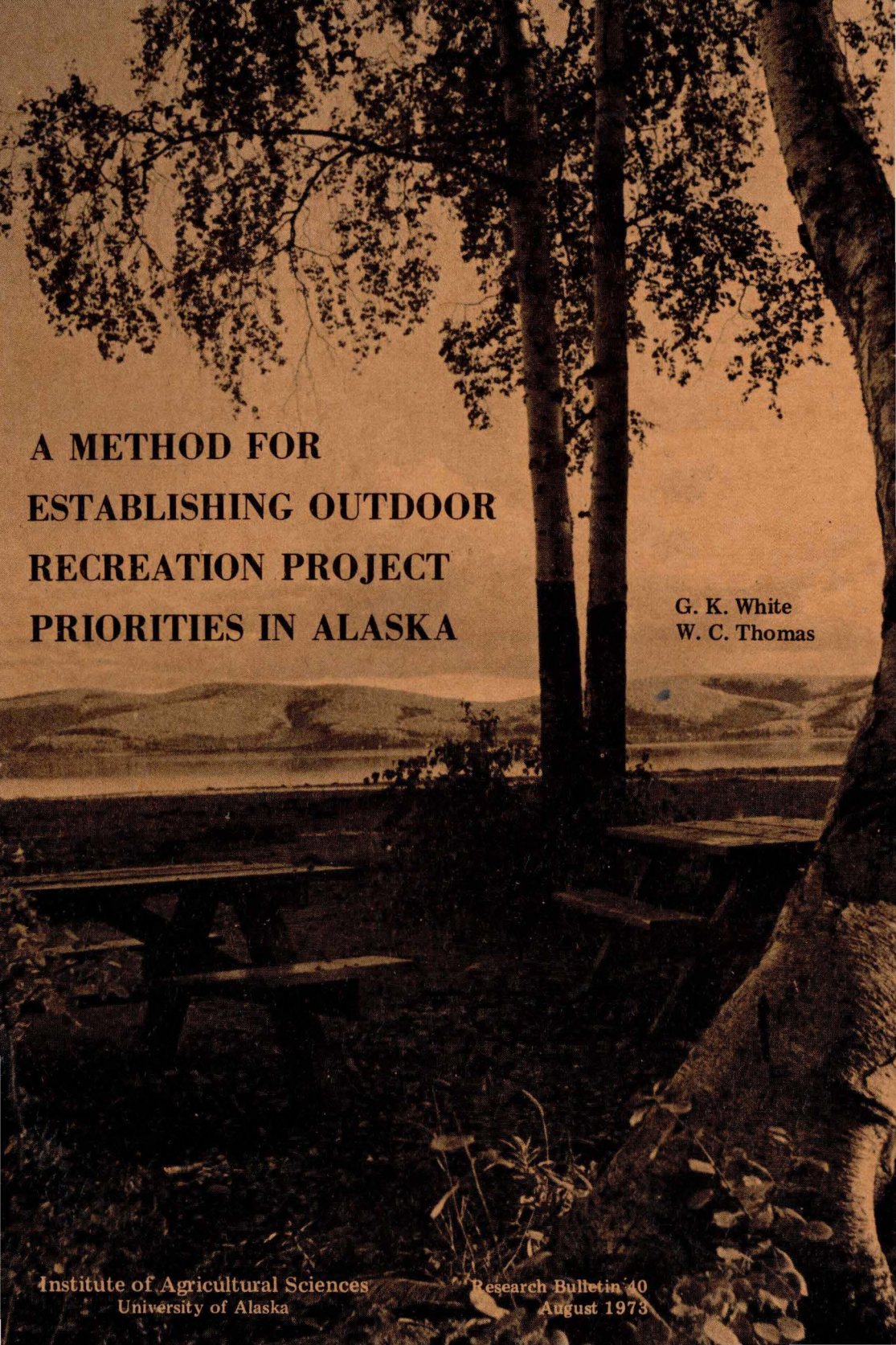

A METHOD FOR ESTABLISHING OUTDOOR RECREATION PROJECT PRIORITIES IN ALASKA

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Research Bulletin 40
August 1973

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ACKNOWLEDGMENT

The authors thank Theodore Smith, Edward Kramer and Nat Goodhue of the Division of Parks for information and comments supplied during this study, and Frank Orth, Charles Marsh, Ed Kramer, C.E. Logsdon, and Frank Wooding for reviewing the manuscript.

Thanks is also due the Department of Business Administration, University of Alaska, Fairbanks, Dale Swanson, Head, for their cooperation in this research project.

Cover photo of Harding Lake by Mary Beth Buza

FUNDING

This research was supported by a grant from the Division of Parks, State of Alaska.

Published by the University of Alaska Institute of Agricultural Sciences, Fairbanks, Alaska 99701.

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SUMMARY

The objectives of this study are to define outdoor recreation benefits to the public and to develop a priority ranking method for proposed outdoor recreation projects. A careful analysis of the benefits which people derive from outdoor recreation provides a frame of reference for evaluating a recreational facility. A project should supply those benefits which are most highly demanded by the public. Fifteen benefits of recreation are defined and discussed. They are divided into two major categories; those which accrue to recreational participants and those which accrue to non-participants.

The study reviews various methods of analysis which have been applied to estimating the value of recreational benefits, and investigates the possibility of applying them to a benefit/cost analysis. Benefit/cost analysis is relatively easy to employ and provides a basis for establishing priorities. However, a major limitation of a benefit/cost approach for recreation is the inability to include qualitative criteria — benefits which cannot be measured in dollars and cents.

The proposed priority ranking method is based on modification of benefit/cost analysis. Intangible benefits of a recreation facility are summarized through the use of an index point system rather than in terms of dollars. This system is identified as the service-potential index. The service-potential/cost ratio is obtained by dividing the index score by the total annual project costs.

All projects are analyzed in five basic areas; (1) the demand for potential services, (2) the possibility that unless immediate action is taken, future action may be difficult, (3) the quality of the proposed project, (4) non-recreational contributions to society and (5) the administrative qualifications of the sponsor.

The system is designed for ease of operation at on-site inspections. All the evaluative criteria and computation steps may be entered on a single form by an examiner in the field.

The service-potential/cost ratio measures the potential ability of an outdoor recreation project to generate public benefits per dollar cost of the project. Since we are not comparing benefit dollars to cost dollars we cannot determine a minimum ratio value (such as 1.0, as used in benefit/cost analysis) to prove the economic worth of the project. The problem of how to allocate resources between recreation and other sectors of the economy has not been solved. This study does, however, provide a method for allocating recreational funds to projects which will return to the public the greatest benefit flow per dollar of cost. It is on this basis that the method offers an economically valid way of establishing priorities among proposed recreation projects.

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INTRODUCTION

THE PROBLEM Recent increases in both leisure time and disposable income have contributed to an increasing demand for outdoor recreational facilities. As the demand has increased, it has also diversified. Despite various sources of funding, there are seldom sufficient financial resources to satisfy the increasing demand for recreation facilities. Therefore, an improved method of allocating resources within the recreational sector is needed.

The Congress annually authorizes Land and Water Conservation Act matching funds to be made available to each state for use on outdoor recreation programs. Each state, in accord with legislative requirements, must determine how best to apply these funds. Attempts to determine recreational priorities are often confused by the intangible nature of most benefits (i.e., not easily expressed in terms of dollar value). Some studies have attempted to establish priorities based only on quantifiable aspects of a project. One recent publication states:

> *In studies of this nature, there is a tendency to ignore intangible criteria because they are difficult to evaluate. This practice can ultimately lead to uneconomic decisions. Intangible criteria must be considered even if nonsubjective, quantitative, evaluation is impossible. The effects of these factors can conceivably be more important than those of the tangible ones. Therefore, the logical choice of alternative systems cannot be made without evaluation by key intangibles [26, p.A-206].*

This paper addresses itself to the problem of establishing priorities when major intangible factors are involved. It presents a methodology with which a governmental unit may analyze opportunities for recreational development, and determine a priority ranking according to the anticipated return of benefits to the public.

THE FEDERAL PERSPECTIVE The Land and Water Conservation Fund program (L&WCF) has been operating since January 1, 1965, under the direction of the Bureau of Outdoor Recreation (BOR). The original legislation (Public Law 88-578, Title I, sec 1(b)) states:

> *The purposes of the Act are to assist in preserving, developing, and assuring accessibility to all citizens of the United States of America of present and future generations . . . such quality and quantity of outdoor recreation resources as may be available and are necessary and desirable for individual active participation in such recreation and to strengthen the health and vitality of the citizens of the United States. . .*

The act authorizes Federal matching funds to states for planning, acquiring and developing needed land and water areas and supporting

facilities. Funds are also available for Federal acquisition and development of certain lands and waters, but this paper will be concerned only with those available to the states.

Operating Provisions of the L&WCF Act

According to the Act, as amended by Public Law 90-401, certain revenues are set aside in the U.S. Treasury in a land and water conservation fund. The revenues arise from admission and user fees collected at federal recreation areas and facilities, the sale of certain surplus federal property, motorboat fuel tax, and certain other sources of funds generally arising from the operation, lease, or sale of public lands. Table 1 shows the amounts of these revenues.

TABLE 1

Land and Water Conservation Fund Receipts (in millions of dollars) From All Contributing Sources*

Fiscal Year	Annual Permits (Golden Eagle)	Other Entrance & User Fees	Surplus Property	Motorboat Fuel Tax	Outer Contential Shelf Lands	Total**
1965	.6	1.3	22.0	4.4	--	28.3
1966	2.8	4.8	74.3	27.6	--	109.5
1967	3.8	5.7	54.1	31.3	--	94.9
1968	4.8	6.1	64.1	28.8	--	103.8
1969	4.8	6.4	35.0	27.0	126.8	200.0
1970	3.9	5.3	56.0	26.8	107.9	200.0
1971	5.0	7.0	65.0	26.0	197.0	300.0
1972	2.6	9.6	38.1	25.1	223.7	300.0

* Source: U.S. Congressional Hearings, Committee on Appropriations, 92nd Congress, 1st Session, Part 2, p. 718.

** Totals rounded to nearest hundred thousand dollars.

Each year funds are appropriated for the program by Congress as a part of the general appropriations for the Department of Interior. At present, there is a $300 million guaranteed fund level. Actual allocations are subject to federal fiscal policy and therefore have averaged approximately 10 percent less than appropriations over the period 1965-1972.

The guideline for distribution of appropriated funds is 60 percent to the states and 40 percent for federal purposes, but a 15 percent variation is allowed.[1] The federal share may be used only for the acquisition of land and

[1]The 60-40 split was only a guideline in the original legislative act. In actual practice the split has reflected the judgment of the administration as to the priorities of state and federal needs. As an example of the flexibility of the split, the 1970 appropriation was split 50-50, while for 1968 it was split 45 to Federal and 55 to state.

water areas. As for the state share, the BOR requires that each state establish guidelines for the relative amounts to be allocated for acquisition and for development as a part of a Statewide Comprehensive Outdoor Recreation Plan. Table 2 presents an outline of funds appropriated since the program began.

Funds allocated to the states are administered by the Bureau of Outdoor Recreation. The BOR considers projects submitted for approval by each State Liaison Officer (SLO) according to the guidelines outlined by the L&WCF Act and refined in the BOR Grants-In-Aid manual. The BOR supervises the operation of the states through on-site project inspection and periodic audits.

TABLE 2
Appropriations From The
Land and Water Conservation Fund*

Appropriations		Federal Portion	State Portion
FY 1965			
PL 89-16	$ 16,000,000	$ 5,625,000	$ 10,375,000
FY 1966			
PL 89-52	125,000,000	40,623,000	84,377,000
FY 1967			
PL 89-435	110,000,000	44,297,000	65,703,000
FY 1968			
PL 90-28	119,191,000	54,191,000	65,000,000
FY 1969			
PL 90-425	90,000,000	45,000,000	45,000,000
FY 1970			
PL 91-47	124,000,000	62,000,000	62,000,000
FY 1971			
PL 91-361	357,400,000	172,000,000	185,400,000
FY 1972			
PL 92-76	361,500,000	106,500,000	255,000,000

* Sources for the data are the individual Public Laws (PL) cited in the first column.

THE STATE PERSPECTIVE A prerequisite for state participation in the L&WCF program is the publication and approval of a Statewide Comprehensive Outdoor Recreation Plan (SCORP). Alaska's original plan

was submitted in September 1965, and a more comprehensive plan [21] was submitted in 1966. There was a second revision of the plan in 1970, and annual updates of basic elements have been published in 1971 and 1972.

The director of the Division of Parks has been authorized by the Governor to perform the duties of the State Liaison Officer. In this capacity he and his staff have three major responsibilities:

1. He is responsible for keeping the SCORP current. Presently, each state has two options for maintaining eligibility. They may present a plan which may then be approved by the BOR for a certain period of time, at the end of which an updated version must be approved. Secondly they may be granted continuing eligibility based on an approved planning program.
2. He introduces the program to local governments and assists them in the preparation of proposals. He is also responsible for coordination of grant agreements, billing consolidation, compliance inspections, etc.
3. He submits to the BOR those completed project proposals which conform to the SCORP and for which the state has been apportioned sufficient funds. If the demand for funds is greater than the amount appropriated, the state must decide which projects it wants. The BOR determines only whether a project is eligible for the program. It does not establish a priority for funding.

In the initial years of the program there was only a limited demand for the matching funds in Alaska from local governments. This was partly due to lack of knowledge of the program and also to a minimal commitment of most local governments to outdoor recreation. Both of these situations have been improving, and the number of requests sent to the State Division of Parks for financial assistance has increased steadily.

Table 3 lists the funds received by the State of Alaska. As can be seen, there has been a marked increase during the past three years. Proposed federal funding restrictions could reduce the amount available in fiscal year 1974 by as much as 75 percent.

TABLE 3

State of Alaska's Allocation From Land and Water Conservation Fund For Years Ending June 30*

1965	$ 92,744.00
1966	717,106.72
1967	515,906.53
1968	561,671.07
1969	413,720.00
1970	549,586.00
1971	1,483,200.00
1972	2,154,750.00
1973	1,577,100.00

* Source: Division of Parks, State of Alaska.

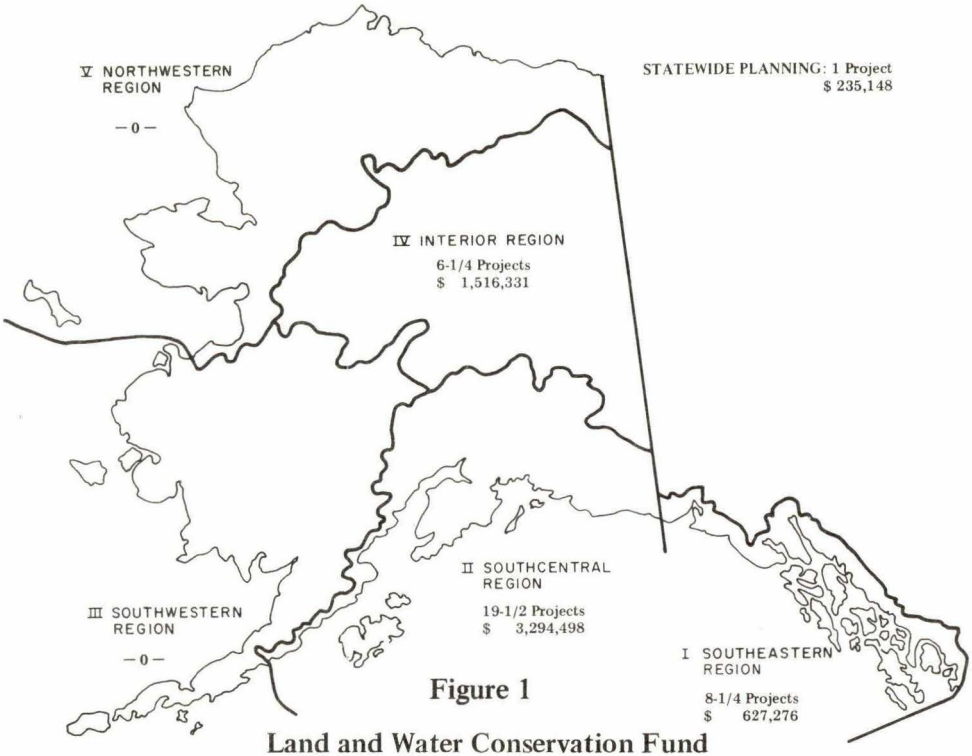

Figure 1

Land and Water Conservation Fund Projects by Region

The State of Alaska has annually been carrying forward a certain amount of the funds in a small contingency reserve, and so, to a degree funds have been sufficient to satisfy the demand of acceptable project proposals. The increasing number of requests and the anticipated reduction of funds indicate that competition for funds will increase. To cope with this situation effectively, Alaska must establish priorities among projects so that the funds will be allocated to best serve the interests of the people.

Figure 1 presents a breakdown of the State's allocation from the L&WCF. Dollar totals are as of June 30, 1972. The number of projects for three regions in Figure 1 are not even because one project was for facility improvement at four separate locations.

Present Method of Establishing Priorities in Alaska

Chapter III, Volume III of the Alaska SCORP outlines six basic goals for recreational development. They are:

1. Provide outdoor recreation opportunities for Alaska's residents and visitors.
2. Preserve the high quality of Alaska's natural environment.
3. Preserve the State's cultural heritage.

4. Contribute to good mental and physical health.
5. Provide educational opportunities.
6. Achieve increased employment and income through the development of additional tourist attractions.

Various criteria are then outlined under each goal. The result is a checklist for project evaluation.

Since there have been adequate funds to cover locally proposed projects, there has been little opportunity to test the effectiveness of the method. The only priority decisions made have been between state and local projects. Virtually all municipally sponsored projects have been funded.

While the method proposed in the comprehensive plan might be satisfactory for some purposes, it does not appear to be sufficiently defined to be valuable in making fine distinctions needed for project priority ranking. The following points should be considered in priority determination.

1. In Alaska, the number of projects requesting funds is increasing while the availability of funds is expected to decrease. This means that projects must be ranked so that those with higher priorities will be constructed first.
2. The decisions pertaining to recreational priorities are determined largely by the political process rather than by economic analysis. Appropriate economic analysis can clarify the trade-offs associated with a given situation [6].
3. Alaska, at present, has only two people to review project proposals and inspect sites, in addition to their other responsibilities.
4. Operational funds for the SLO's staff are limited. This restricts the amount of research and number of man-hours devoted to each proposal.

The method which we will propose will consider these four issues.

An effective method of project analysis oriented to Alaska might easily be adapted to any state's needs. The expected demand for available funds makes the development of such a methodology imperative. Alaska, and probably most other states, would profit from an acceptable way to evaluate proposals for L&WCF funds and assign priority ranking so that recreational benefits are maximized.

OBJECTIVES

The specific objectives of this research are:

1. To define positive attributes which can be derived from outdoor recreation.
2. To develop a method of ranking alternative outdoor recreation development and/or acquisition proposals requesting assistance.

Chapter II

BENEFITS OF OUTDOOR RECREATION

INTRODUCTION The benefits to be derived from a proposed outdoor recreation project should have major impact in the evaluation of the project. Also, little previous effort has been made to define recreation benefits. Usually it was simply assumed that they existed. As a first step, a definition of outdoor recreation is needed. Clawson and Knetsch discuss the term in the following manner.

> **Recreation** . . . *means activity (or planned inactivity) undertaken because one wants to do it. In a deeper psychological sense, recreation refers to the human emotional and inspirational experience arising out of the recreation act; we use the latter to stand for the whole. . . There is no sharp line between recreation and all other activities. The same activity may be work at some times and recreation at others. . . [8, p.6].*
>
> **Outdoor recreation** *is simply recreation that is carried on outdoors [8, p.7].*

Based on this definition, the following 15 outdoor recreation benefits have been identified and divided into two parts; those which benefit first the participant, the second, the general public. We have assumed that the general public can benefit from a recreational opportunity even if it never physically participates. Vicarious enjoyment and economic gain are two examples. There is not always a sharp line of distinction between the major categories of participation and non-participation benefits, nor between many of the individual benefits. None of the following definitions are intended to be mutually exclusive.

It should also be mentioned that all any project can provide is the opportunity for recreation benefits. The existence of the project can in no way insure that benefits will be maximized. That relies on the motivation and ingenuity of the facility managers and participants.

PARTICIPATION BENEFITS We have organized the sociological, psychological, physiological, and economic reasons why people participate in outdoor recreation under nine areas of benefits. No indication of relative importance is intended by their order.

Situational Relief

Some people seek recreation in order to "get away from it all"; as an alternative to their everyday physical environment. This suggests that a particular situation may not necessarily evoke the same response from everyone.

A scenic hiking trail, easily accessible to the urban dweller, could provide the same high degree of situational relief as a paved multipurpose court to a remote undeveloped village. It would be myopic to expect equal appreciation for either facility in both places.

Relaxation

Relaxation means setting aside thought of everyday problems while not incurring additional problems considered unpleasant. This does not imply inactivity but rather includes any activity which the participant believes to be relaxing. Spaulding [20] reports that the recreational benefit most often sought by the majority of fishermen was the achievement of a degree of relaxation.

Design of parks and facilities can promote relaxation, but in the final analysis it is the attitude of the user that is important. The contribution of design is discussed by Beazley [1], McHarg [14], and Rutledge [19].

Integrative Thinking

Integrative thinking refers to self directed contemplative thinking. "The chance to get by myself and put my thoughts together." This benefit relies first on a need of the individual and second on a physical setting and activity conducive to that purpose. In Spaulding's research he found that his sample referred to this benefit least frequently [20, p.54].

Physical Health and Safety

Authors often disagree as to the relative physical conditioning merits of specific activities, but currently most experts believe that any activity exercising the cardio-vascular system contributes to physical health [9]. This provides a basis for evaluating the contribution of an activity to the physical health of a participant. However, it is important to mention again that it is the actual use that participants make of a facility and not just its potential for use that determines the realized benefit value.

Physical safety is closely related to physical health. The primary way to improve physical safety is through improved design. "Improved design" may mean providing a neighborhood tot lot for children who have been playing on and around busy streets. But, in a more refined sense it may mean the detailed study of terrain contour to determine the best placement of a trail. The mere provision of the basic property for a tot lot may provide the greatest contribution to safety. In the second case, it is the trail layout which will most effect safety. Each situation must be evaluated separately.

Socialization

Many outdoor recreational activities tend to bring people together. They provide an opportunity to develop personal relationships while at the

same time give the participant a sense of group identification. Team activities generally provide greater socialization benefits, but any recreational activity has the potential of bringing people together.

However, participating in an activity with others may have detracting results if a solitary experience is desired. Whether socialization is a positive or negative benefit depends on the desires of the participant.

Learning Opportunities

Learning here means gaining knowledge of the natural environment or developing recreational skills. The potential for learning depends on the diversity and/or uniqueness of the natural phenomenon found in an area and the extent to which it will be disturbed by anticipated development. Developing skills and experience allows an individual to more fully participate in outdoor recreational activities.

Personal Relationship to the Environment

An individual can appreciate a particular natural environment and feel that it is of personal value to him. Generally, this feeling develops because he has participated in some activities in the area. Spaulding found that approximately 30 percent of his sample enjoyed sport fishing because of personal "involvement with some aspect of the environment" [20, p.54].

The active support shown for wilderness areas in the United States suggests that it is not necessary for a person to have been to an area to identify with it. Some individuals seem to benefit vicariously from the wilderness experiences of others and from the simple knowledge that such an area exists. Therefore both participants and non-participants may benefit from wilderness areas.

Personal Involvement in an Activity

An individual can relate to an outdoor activity as well as a location. A person may ski for several of the reasons already mentioned, but he may also simply enjoy the skiing itself. People skilled in a sport begin to identify themselves with that sport.

Provide Food

The ability to provide a meal of sport fish or game is an obvious benefit of fishing and hunting. Consider also the ability to collect edible leafy greens, berries, nuts, mushrooms, roots, etc. It may not be economically efficient, but it provides personal esthetic benefits.

NON-PARTICIPATION BENEFITS The development of outdoor recreational opportunities often benefits others than just those who use the

facilities. For example, the economic activity generated by a recreational facility is usually shared in varying degrees and forms by all the local residents. In the following section we identify six non-participation benefits.

Increase Dollar Flow in the Service Area

Any recreational facility which attracts visitors from outside the service area has the potential of increasing the dollar flow within the service area. This potential will not be realized unless the local area provides the visitor with the services he demands. Often these services already exist in the form of grocery stores, gas stations, restaurants, etc. However, additional facilities such as motels and camper parks may be needed.

There is, of course, another side to the matter of tourism. The addition of temporary residents may require additional utilities, create a waste disposal problem and upset the lifestyle of the permanent residents. Then secondary costs are incurred which reduce the net value of benefits received.

Increase Property Values

It is commonly observed that park development increases the value of surrounding property. The President's Report on Outdoor Recreation for America [17] gives several examples of this. Essex County, New Jersey, found that land adjacent to parks increased in value three times as fast as other property. In Minneapolis, park development raised property values by several times the cost of the entire system. Urban managers have often discovered that by converting low tax base property to recreational uses, the resulting tax base increase in surrounding areas may relieve the city of acute financial shortages [17, p.75].

Improve an Area's General Image

Good recreational facilities, especially in or near an urban area, improve that area's chances for both industrial and residential growth. Outdoor recreation is considered an important part of community living and can be a major factor in the decision of a company or family to move to an area.

Preserve Land

Many recreational uses of land require only minimal disturbance to the natural setting of the land. This means that it is relatively easy to further develop the area's recreational potential at a later time. Development of the property for non-recreational purposes could be destructive enough to preclude future optimal recreation development. Early dedication of land to recreational uses improves the opportunity of satisfying future recreational demands.

Preserve Cultural Heritage

Recreation often provides a means of preserving areas of historic interest. In Alaska, the development of a trail system can easily incorporate trails of historical importance such as a Chilkoot Trail. Such a trail would not only offer the hiker a meaningful experience, but would preserve an aspect of Alaskan history for future generations.

Another benefit of recreation is promoting activities and skills of cultural interest. Development and promotion of dog-sledding trails is an example of an activity which might completely disappear if it were not for its recreational popularity.

Economic Efficiency

Recreation will exist in our country in an unorganized form if an organized alternative is not provided. There can be major environmental damage in an area with many tourists and/or hunters where there are no organized camping locations. Over a period of time the expense of repairing such damage and maintaining minimum health standards may well exceed the costs associated with a planned facility.

Chapter III

APPROACHES TO EVALUATION

INTRODUCTION The majority of attempts to evaluate recreational projects have been made since 1945. The early work centered around attempts to measure the monetary value of the benefits associated with a recreation site. A few more recent studies have attempted to circumvent problems inherent with the monetary value approach and have sought other meaningful methods of analysis. This chapter is a brief review of methods used for evaluation of outdoor recreation projects. Also, we will discuss some of the operational problems involved with trying to apply the various methods to practical situations.

DEMAND-ORIENTED STUDIES The previous chapter defined the benefits of recreation. Another way of looking at these benefits is as the components of recreational demand. In their desire to incur these benefits, the public establishes a demand schedule for a recreational experience which is comparable to the demand schedule for other consumer items. Many attempts at evaluation have been related to the demand for a particular recreational site and experience. By estimating this demand an economic value can be associated with the site and experience. Such a value could theoretically aid in establishing a project priority ranking system using benefit-cost analysis or some other approach.

Limited consideration was given to the problem of recreation demand analysis until 1949, when Hotelling [12] first suggested using concentric zones around a site so that travel costs to the site would be approximately consistent for all people living within each zone. This led to the recognition of a "consumer surplus" [3,16,31]. This is the amount saved by those individuals living in the nearer zones who do not have to pay the full travel costs of users from the most distant zones. Consumer surplus was then equated with the value of the recreation.

Applications of the Hotelling model have been made by Trice and Wood [25], Clawson [7], Brown [2], Castle [5], Knetsch [13] and several others [3,11,16,23,24]. These related value of recreation site and experience to increases in property values, variations in personal incomes, substitute sites, transfer costs, site characteristics and development, density of use and separation of time and monetary costs. Each proposal has been greeted with a flurry of criticism, praise and further refinement.

It is difficult to evaluate in any absolute sense the effectiveness with which these models identify the demand schedule of a particular site. More

important, they are not easy to apply to a recreation site still in the proposal stage. Thus the rather intricate theories developed to estimate demand quantitatively tend to lack the operationality needed for project selection when considering a relatively large number of projects with limited time and staff.[2]

BENEFIT/COST ANALYSIS Since the early years of this century, various Federal agencies, particularly the U.S. Army Corps of Engineers, have developed methods of assessing project desirability. Water-resource development projects have been a favorite subject, and benefit/cost analysis has been one of the major methods.

In benefit/cost analysis, the costs of a project are compared with the dollar value of the benefits which occur as a result of the expenditures. The Flood Control Act of 1936 requires that before a project can be authorized, its benefits must be shown to exceed its costs, "to whomsoever they may accrue". Benefit/cost ratios have been used to show which projects are justified according to this guideline and for establishing priorities for future authorizations.

Given several projects, all with benefit/cost ratios greater than one, a fairly constant flow of benefits over the project life and similar capital intensities, the project with the largest ratio will have greater impact in increasing society's welfare and therefore should have the highest priority.

It is essential that all appropriate costs are realistically valued and properly included in the analysis. Cicchetti, et al., make the following statement in reference to the determination of costs:

> *The essence of economic evaluation is a double-entry system in which costs incurred in the pursuit of objectives having associated benefits are also entered* — **indeed must be entered** — *in a one-to-one correspondence with benefits [6, p.15].*

There is usually little theoretical difficulty in assigning values to those end-product benefits which are traded in the open market. The major marketable benefits of a dam and reservoir can be valued. But valuing recreation, a major extra market benefit, poses considerable problems.

Clawson and Knetsch [8] urge the application of benefit/cost analysis in the selection of outdoor recreation investments. The major obstacle is the selection of monetary values for intangible recreation benefits. They feel that a possible solution is through the use of imputed values — dollar amounts which fall within a range considered acceptable by people knowledgeable in the matter. Many studies have been conducted in order to derive these imputed values [2,7,31,13].

The Green Book [27] provided Federal agencies with the following guideline for selecting the appropriate benefit value.

---

[2]Demand analysis using the "willingness-to-pay" approach is another method which has been proposed. It is generally subject to the same operational limitations as the method discussed in this section and has limited application to the problem addressed by this study.

In the general absence of market prices, values for specific recreational activities may be derived or estimated on the basis of a simulated market giving weight to all pertinent considerations including charges that recreationists should be willing to pay and to any actual charges being paid by users for comparable opportunities at other installations or on the basis of justifiable alternative costs. Benefits also include the intangible values of preserving areas of unique natural beauty and scenic, historical and scientific interest [27, p.10].

While a theoretical defense may be made for this method, there still remain major problems with its application. Clawson and Knetsch felt that the development of sophisticated simulated markets would lead to acceptable estimates of recreation values. We feel that this approach is of little value for the SLO's. It is very difficult to accurately interpret the many factors which combine to make a recreation site unique and incorporate them in a simulated market. While in theory it is possible to identify and include most factors relative to a single project, in practice it is impossible considering the large number of projects handled by the SLO's staff.

There is also a theoretical limitation to benefit/cost analysis. It is considered an acceptable method of evaluating and ranking a group of proposals when they are all of relatively similar capital intensity. Eckstein [10] defines capital intensity as $\frac{O}{K}$ where O is operating, maintenance and routine replacement costs incurred annually, and K is fixed investment. Eckstein states that use of the benefit/cost ratio is suitable for investment decisions, but the "economic nature of the costs must be reasonably uniform" and "there must be no extreme variation of capital intensity" [10, p.55]. He further states, "projects of a similar type such as different hydro-electric projects, different irrigation projects or different watershed projects, will have very similar values for $\frac{O}{K}$" [10, p.57]. In other words, the analysis of projects with essential differences such as a mass transit system and a hydro-electric project may result in benefit/cost ratios which cannot be compared because of widely divergent capital intensity ratios. On the other hand, it would appear safe to conclude that the capital intensity ratios of the majority of outdoor recreation projects of comparable design standards and cost structures will be within an acceptable range of similarity to allow benefit/cost analysis (see Appendix A).

ALTERNATE APPROACH In a study published by the U.S. Coast Guard [26], a unique method based on benefit/cost analysis was developed to evaluate several alternate transportation systems for arctic Alaska.

Benefit/cost analysis was used to show that each system had a ratio greater than one. However, since many of the system's intangible benefits were not included, the conclusion was that the data were too incomplete to determine relative priorities.

As a possible solution to this shortcoming, the study suggests an effectiveness/cost comparison. The effectiveness rating is established by considering (a) how well the proposed system will accomplish the objective for which it is designed, (b) how well the accomplishment of the objective

contributes to the attainment of a major goal, and (c) the relative importance of attaining the goal.

The relative importance of each objective to the goal is first determined. The effectiveness with which the proposed transportation system achieves various predetermined goals is then evaluated. The resulting numerical score is considered a measure of the "relative effectiveness" of the proposed transportation system.

The cost figure used in the effectiveness/cost ratio is the same as that used in the benefit/cost ratio. It is the sum of the annual capital charge of the initial fixed investment and the annual operating expenses.

It is important to note several things here. There is no attempt to express both elements of the ratio in like terms. The final ratio expresses the division of an index number by a present value dollar figure. Secondly, the majority of the values used in the derivation of the effectiveness index were not determined quantitatively. In the large part they were determined by the subjective evaluation of the examiner based on his judgement and knowledge. Finally, the values of the effectiveness/cost ratio when calculated for each system have no meaning in an absolute sense, but are comparable only among each other. They are an appropriate way to establish relative priorities among the systems according to the parameters of the evaluation.

Chapter IV

A PROPOSED METHOD: SERVICE-POTENTIAL/COST ANALYSIS

INTRODUCTION The authors of this paper believe that benefit/cost analysis can be satisfactorily modified and used to establish a priority ranking of proposed outdoor recreation projects. The modification which we propose is to measure and express recreation benefits using an index scale rather than monetary values. The index value is then used in a service-potential/cost ratio. The method of analysis appears to be unique to the field of recreation. While it has limitations, we believe it has fewer operational problems than traditional methods. Of necessity, certain conceptual elements of economic analysis will be modified or disregarded due to operational restrictions. The major advantages of the method are that it includes intangible benefits and relates the cost of a project to the potential ability of the project to service the recreational needs of the public.

Since our proposed method does not express the benefit/cost ratio in dollars, it is impossible to collate the priorities established by this method with priorities from other sectors of the economy. While it does not aid in the allocation of resources between sectors of the economy, it does provide an operational means for allocating resources between projects in the recreation sector.

ITEMS COMPOSING SERVICE-POTENTIAL The numerator of the service-potential/cost ratio consists of five benefit categories. These are designed to analyze the various aspects of an outdoor recreation project which provide benefits to the public.

Separate forms were developed for evaluation of proposed acquisition or development projects [3] (Appendix B). Both forms use the same five basic benefit categories but they differ in some of the specific points of analysis. Not all items will necessarily apply to any project but the examiner should review them all to insure that each item applicable to the project will be used.

The first category, "Project Demand", presents an indication of the need for this particular project within the population zone it is designed to serve. It includes two different measures of resident demand, one based on regional demand data and the other on anticipated use of the facility. Other

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[3] **Acquisition projects** are those which will transfer property by sale, exchange, gift, or dedication to the management control of the sponsoring recreation agency.

Development projects are those which involve some form of capital investment for facilities on property managed by the sponsoring agency.

considerations, including non-resident demand, which either add to or detract from local demand are also included.

The second category, "Irretrievable Loss Potential", evaluates conditions which may preclude future development. Projects which require timely action are given priority above similar non-urgent projects [22, p.2].

The third category, "Quality of Site", includes many of the subjective benefits which are so difficult to quantify for economic analysis. Within this category the examiner is required to evaluate the potential quality of the experience at the site and consider the environmental impact.

The fourth category, "Contribution to Non-Recreational Community Needs", evaluates what positive and negative effects the project will have on certain non-recreational aspects of community life such as health and education.

The last category, "Administrative Factors", is unique when compared to the others in that it is composed entirely of secondary aspects which are related to the administrative capabilities of the sponsor. For a complete discussion of these five categories see Appendix C.

Any secondary benefits or costs which we feel are of major importance have been included. Attempts to identify and evaluate all such benefits and costs would be futile and yet their blanket exclusion would result in significant limitations to the study.

An attempt has been made to include quantifiable items of analysis whenever possible, though they may not necessarily be measurable in dollars. Water quality, for example, can be evaluated using established standards (see Appendix D). In the majority of cases, however, measurement by strictly quantifiable standards is not possible due to the necessity of including important esthetic and qualitative factors. Various rating scales are presented as a guide whenever it is necessary to rate qualitative factors.

DISCUSSION OF THE RATING SCALES The rating scales that appear with each evaluative factor require some clarification. Whenever quantitative standards exist, an effort was made to adapt them to the system. Where no such basis for scoring exists, the examiner must evaluate the item and score to the best of his ability. To simplify this, various point ranges are used.

CASE 1 — In many cases, the examiner is given a three point possible range, usually -1 to +1. He must then decide whether the item being analyzed has a negative effect on the project (-1); has no influence (0); or enhances the project (+1). The majority of scales are designed so that zero corresponds with a neutral influence upon the project. The negative and positive scores represent detracting or enhancing factors.

CASE 2 — Any aspect of the completed project which has a detrimental effect on the public welfare is to be scored as a negative benefit. For example, the development of a playground next to a busy street without adequate safety devices would be considered a negative safety benefit.

CASE 3 — Where a yes or no response is called for, a 0 indicates "no" and a 1 indicates a "yes".

CASE 4 — In some cases the examiner will be able to more closely determine the relative value of a certain aspect of a project. To allow for this, the range of possible scores can be expanded.

The following is an example:

Points:	-2	-1	0	+1	+2
Scenic Beauty:	ugly	unattractive	common	attractive	spectacular

The examiner should mentally compare the range of possibilities of the item being analyzed to the point scale and choose the point value most closely corresponding to his evaluation. Cases which require more unique scale structures are explained as they occur in Appendix C.

Chapter V

IMPLEMENTATION OF THE SYSTEM

EXAMINER CONSISTENCY Using this system, two different examiners may not score a project identically because of subjective aspects of the analysis. However, it is unlikely that they will vary a great deal in the overall rating of a project. Where one examiner scores one element of the index higher than another examiner, the reverse is likely for another element. Overall, the average ratings for a single project should be relatively consistent. When the SLO has examiners assigned to separate territories so that there is no more than a single evaluation of each project, he should be aware of the rating tendencies of his examiners and if necessary interpret the results of their evaluations so that they may be collated. Evaluation of each project by several examiners would, whenever possible, enhance the effectiveness of the method.

PRELIMINARY PROJECT EVALUATION Several items can be completed as soon as the application is received from the sponsor since the type of facility to be developed is given along with the estimated costs of development, operation and maintenance.

Each project must be evaluated separately. A combined acquisition and development project should be evaluated as two separate proposals. Similarily, each major activity area of a multi-use project should be evaluated separately by isolating each area's benefits and costs. This will show how the separate activity areas of a multi-use project rank with all other proposals and provide the SLO with more detailed information upon which to base his decisions.

After estimating cost data, the second step is to gather data for the demand deficiency score for each of the proposed activities. All items can be scored before visiting the site except the intensity factor.

Third, the recreational water quality (when applicable) should be determined before submitting the proposal for action. Drinking-water sources, purification methods and anticipated quality should also be known as early as possible. The examiner may score these items as soon as data are available.

Finally, the scoring of "Administrative Factors" does not require on-site examination. The amount of scoring possible depends largely on the extent of previous contact with the sponsor. Since an average score is zero, a sponsor about whom little is known will be given equal weight with an average sponsor.

SITE INSPECTION The examiner should gather specific information about the project from the sponsors and should also attempt to sound out general public feelings as to the need for the proposed facilities.

If an item does not apply to the project (eg., "recreational water quality" for a hiking trail project), the examiner will so indicate on his evaluation form by marking N.A. (Not Applicable) in column III and cross out the appropriate number in column VI.

Certain items on the forms are marked by an asterisk (*). The project must meet at least minimal requirements on these items for further consideration. For example, if drinking water quality does not meet minimum standards, the project will be returned to the sponsor with no further action taken until a water treatment system is proposed to comply with the standards.

These items are identified on the examiner's forms to insure that no major items are overlooked. They are also highlighted during the inspection so that the sponsor may be notified of major deficiencies at an early point in the review procedure.

CALCULATIONS After returning from a site inspection, the examiner should have sufficient cost data and scores to determine the service-potential/cost ratio. Reference to the next section, Examples of Sample Project Evaluations, page 22 and the associated Examiner Project Rating Form (Appendix B), page 47, will aid the reader in understanding the following two subsections.

Determining a Project's Service-Potential Index

Multiply the score by the designated weighting factor where appropriate. Items to be weighted and the weighting value are indicated by numbers in the fourth column ("weight") of the Examiner's Forms. Record the weighted scores in the fifth column. Next, for each benefit category, total the scores in column V and all numbers not lined out of column VI. The score in column VI is the hypothetical score which a perfect project would receive.

Divide each total for column V by the corresponding total for column VI to find the percentage of possible points received. Multiply the results by 100 so that they are expressed on the basis of 100 points. This simplifies the expression of the final ratio. Multiply each resulting figure by the appropriate benefit category weighting factor.[4] The sum of these final weighted figures is the service-potential index for the project being evaluated. The next step involves the preparation of cost data for use in the ratio.

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[4]The purpose of the first weighting procedure is to better represent the relative importance of the items within each of the five benefit categories. The second weighting system then establishes the relative importance of the five benefit categories. These weights are only tentative and should be reevaluated following a trial testing period of the method.

Calculating Annual Project Costs

The cost factor used in the service-potential/cost ratio is determined from two basic figures. One is the annual capital charge[5] of funds used for the initial fixed investment.[6] The second is the average annual operation and maintenance expense, including routine replacement costs.

BOR funded projects are intended to exist for future generations. This means that the sponsor should be willing to operate and maintain the facility indefinitely in such a manner that the net benefit flow from the project is constant over time.

Since facilities will have to be replaced as they come to the end of their useful life, a true picture of costs comes into view when both the investment in a facility and its projected life are considered. This is done by calculating the annual capital charge per dollar of investment [10, p.56].

We suggest applying the interest rate appropriate for government investment. The interest rate currently suggested for Federal water resource projects is 7% [28, p.24167].[7] The accepted Federal rate should be used by the various states until a more appropriate rate is accepted by each separate state. The rate of 7% will be used in the examples in this study.

As an example, let us assume two situations. The first is a tennis court which costs $18,500 to construct and has a life expectancy of 15 years. The second is a wayside rest area with supporting sanitation facilities. The rest area costs $13,000 with an expected life of 30 years, and the support facilities cost $13,000 with an expected life of 20 years.

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[5]The capital charge concept provides that given an initial fixed investment, expected project life and appropriate interest rate, the cost of the investment may be allocated into uniform yearly amounts over the life of the project. This recognizes that all of the capital investment is made at the beginning of the project life and that equal annual costs can be calculated which consider capital opportunity costs. It assumes that the opportunity cost of capital for a governmental agency is equal to the realizable rate of return on investments. The actual annual cost calculations are easily made through the use of a table, "Annunity Whose Present Value is 1". One of many sources of this table is *Mathmatical Tables from Handbook of Physics and Chemistry*, Chemical Rubber Publishing Co., Cleveland, Ohio, 1948, pp. 306-313.

[6]For the purposes of project evaluation, there is a difference between land acquired by purchase and land acquired by dedication. The latter occurs when publicly owned property is appraised and dedicated to recreation. The L&WCF will match the appraised value of the property with funds for development under certain circumstances. If property is correctly appraised at full value, that value can be considered an acceptable approximation of the opportunity cost of dedicating the property. In other words, it is the most profitable alternative (eg., sale of the property on the open market) foregone in order to use the property in the proposed way. Therefore the appraised value is used as if it were the cost of purchase.

[7]Cicchetti, et al., propose that a higher rate of approximately 10% corresponds more closely with the Federal opprotunity cost of capital and therefore would be an appropriate rate to apply to economic evaluative methods.

Project	Investment	Period	Capital Charge Factor [8]	Annual Investment Costs
A. Tennis Court	$18,500	15	.110	$2035
B. Rest Area	13,000	30	.081	1053
Support Facilities	13,000	20	.094	1222
				$ 2275

The annual operation and maintenance cost for each facility is also estimated by the sponsor as a part of the project proposal. The sum of the annual investment costs and annual operation and maintenance costs is the total annual project cost. Assume the following annual operation and maintenance cost estimates:

Project	Annual Operation and Maintenance Costs
A. Tennis Court	$ 800
B. Rest Area	350
Support Facilities	900
	$1250

Total annual costs would be:	Project A	Project B.
Total annual operating expenses	$ 800	$1250
Total annual investment costs	2035	2275
Total annual project costs	$2835	$3525

The total annual project cost is the figure which becomes the denominator in the service-potential/cost ratio.

EXAMPLES OF SAMPLE PROJECT EVALUATIONS The following examples are presented as being representative of both acquisition and development projects. They have been taken from past files of the Alaska Division of Parks. Current proposals would be scored on the basis of an on-site visit and would be ranked with more accuracy.

Acquisition Projects

A. Anchor River Acquisition Project, sponsored by the Alaska Division of Parks in 1971 (Figure 2). It was proposed that private land be acquired in order that a public wayside park with sanitation facilities be established. The immediate area receives heavy annual use from nearby residents of Anchorage and the Kenai Peninsula because of the early King Salmon run. Throughout the remainder of the season there are runs of three other

[8]The Capital Charge Factor is the value taken from the table "Annuity Whose Present Value is 1".

varieties of fish. There existed only one State operated site (the Ninilchik River Wayside) to service all the salmon streams. There were no readily available public sanitation facilities near the Anchor River.

Estimated Cost of Acquisition	$93,600
Estimated Operation and Maintenance Costs	350/yr

Except for the addition of the basic sanitation facilities there was virtually no proposed development of the area. The project was evaluated as acquisition only.

B. Baranof Park Acquisition Project, sponsored by the City of Kodiak in 1972 (Figure 3). The City of Kodiak owned a large tract of land which had previously been operated as a sanitary land fill. It had been built up with rock fill and therefore was not able to support trees or shrubbery. The city planned to use the area as open play lots and proposed to purchase seventeen adjacent tree covered lots to be developed later as a public picnic area.

Estimated Cost of Acquisition	$65,000
Estimated Operation and Maintenance Costs	200/yr

The proposal requested funds only for the acquisition state of the project and it was evaluated on that basis.

Combined Acquisition and Development Project

Cordova Municipal Park, sponsored by the City of Cordova in 1970, (Figures 4-8). The City of Cordova proposed to purchase some acreage close to the center of town and develop it in four ways. The parcel was to be developed into a family picnic site, a baseball field, a tot lot and a multi-purpose court.

	Estimated Cost of Acquisition, Development	Estimated Allocation of Operation and Maintenance Costs/yr
Acquisition	$46,800	$ 200
Picnic Area	13,000	200
Baseball Field	8,000	1000
Tot Lot	8,000	100
Multi-purpose Court	28,000	400

We recommend that the cost of the land acquisition be based on a 40 year period.[9] Such a length of time results in meaningful cost data from

[9]Choosing a period of 40 years is a compromise between two points of view. According to one point of view, land has an infinite life expectency and therefore the only annual cost accrued is the value of the land times the appropriate interest rate. In this example, the annual chargable cost would be 7% times $46,800 or $3,276. This, however, does not amortize any of the initial investment. Since this land is permanently committed to recreation, the sponsor views the capital investment as a sunk cost which should be amortized in some way. The capital cost factor for a 40 year period at 7% is .075. This amortizes a small protion of the acquisition cost on an annual basis in addition to interest charges.

both an accounting and planning point of view. An estimate of $200 per year operation and maintenance cost is made for the acquisition portion of the project. This is an estimate of the yearly costs associated with the undeveloped property and applies throughout the 40 year period over which costs are determined. Operation and maintenance costs estimated for each of the developed facility areas are those additional costs which are a direct result of the facility development. Each of the four facilities is evaluated separately and stands by itself in the priority ranking.

Determining the Priority Ranking of the Sample Projects

Project priorities may be determined following the individual calculations of the service-potential/cost ratios. We should emphasize that the preceding methods for analysis allow both acquisition and development projects to be compared in a single priority ranking. The following table lists the sample projects in order of their ratios.

Table 4
Sample Projects in Priority Order

Project	Service-Potential/Cost Ratio
1. Cordova — Tot Lot	5.361
2. Cordova — Picnic Area	2.674
3. Cordova — Baseball Field	2.466
4. Cordova — Acquisition	1.765
5. Cordova — Multi-purpose Court	1.276
6. Baranof — Acquisition	0.508
7. Anchor River — Acquisition	0.414

The number of proposals which will be recommended for approval by the SLO depends on the amount of funds available. Following analysis, they are ranked according to their service-potential/cost ratios. Starting with the highest priority project, the funds requested by each project are summed until available funds are consumed. The last fundable project determines the cutoff point.

If all separately evaluated facilities of a single project are ranked above the cutoff point there is no problem with approving the entire project. If one or more elements of a multi-use project are below the cutoff a different problem exists. To approve the entire project on the basis of certain high priority facilities means that money will also be spent on the low priority aspects of the project which would be better spent on other projects. Sometimes the sponsor can be persuaded to delete, change or upgrade the low priority facilities so that the entire revised project can be approved. Since the SLO must take action on the proposal as a whole, it is

economically desirable that all separate elements be ranked above the minimum. If a below-minimum facility is approved, the action should be supported by reasons other than economic.

THE ADJUSTMENT OF THE WEIGHTING SYSTEM[10] The various point scales in the service-potential index may not emphasize the relative importance among the items of analysis. Therefore we have weighted those items which we felt needed to be emphasized. Changes in the relative weights of the items may be made at the discretion of the SLO but any change made must apply to all projects being evaluated for a particular priority ranking period.

Each of the five benefit categories comprising the service-potential index is also weighted, expressing the average concensus of recreation administrators interviewed as to the relative importance of each. The weights are not static and can be changed upon evidence of sufficient need, but any change must apply to all projects being evaluated.

[10]We must emphasize the tentative nature of the scoring and weighting scales as presented here. The system has not, at the time of this writing, received any actual in-use testing. Any or all of the numerical values presented here are subject to revision following adequate testing and adjusting of the system.

PROJECT RATING FORM
ACQUISITION PROPOSALS

Project: Anchor River
Date: 1-30-73
Examiner: G.K. White

I Item Title	II Point Range	III Score	IV Weight	V Weighted Score	VI Potential Score
A. Demand Factors					
1. Demand-Deficiency	-5 to + 10	(5) + (2) = 7	2	14	20
2. Use Per 1000 Population	0 to + 5	1		1	5
3. Non-Resident Demand	0 to + 3	2		2	3
4. Convenience	-4 to 0	-2		-2	0
Totals Part A				15	28
B. Irretrivable Loss Potential					
1. Threat of Incompatable Use					
a. How soon	1 to + 5	NA			~~5~~
b. Of what value	1 to + 5	NA			~~5~~
Totals Part B				0	0
C. Quality of Site					
1. Scenic Beauty	-2 to + 2	0		0	2
2. Vegetation					
a. Amount	0 to + 2	0		0	2
b. Uniqueness	0 to + 2	0		0	2
c. Durability	0 to + 2	0		0	2
3. Suitability for Development					
a. Physical characteristics	-2 to + 2	1	4	4	8
b. Zoning	-1 to + 1	NA			~~1~~
4. Impact of Environment on Land	-2 to + 2	0	2	0	4
Totals Part C				4	20
D. Contribution to Non-Recreational Community Needs					
1. Health					
a. Situational relief	0 to + 2	2		2	2
b. Physical conditioning	0 to + 2	1		1	2
2. Educational Value of Unique Environment	0 to + 2	NA			~~2~~
3. Preservation of Cultural Heritage	-1 to + 1	NA			~~1~~
Totals Part D				3	4

E. Administrative Factors				
*1. Financing Capabilities				
a. Initial purchase	-1 to + 1	1	1	1
b. Maintenance & operation	-1 to + 1	0	0	1
2. Fiscal Administration	-1 to + 1	0	0	1
3. Responsibility				
a. Compliance	-1 to + 1	1	1	1
b. Logical sponsor	0, 1	1	1	1
c. Completion w/in time frame	-2 to 0	0	0	0
4. Past Performance	-2 to + 2	-1	-1	2
Totals Part E			2	7

* Minimum requirement essential

Service Potential Index Calculations

Totals Part A: $\frac{15}{28}$ = .536 (a)

Totals Part B: $\frac{0}{0}$ = .000 (b)

Totals Part C: $\frac{4}{20}$ = .200 (c)

Totals Part D: $\frac{3}{4}$ = .750 (d)

Totals Part E: $\frac{2}{7}$ = .286 (e)

	Results	X 100	X Weight	Weighted Index
(a)	.536	100	25	1339
(b)	.000	100	35	0
(c)	.200	100	15	300
(d)	.750	100	15	1125
(e)	.286	100	10	286
Total Index Value				3050 (f)

Cost Calculations

Acquisition Cost	Period	Capital Cost Factor	Annual Investment Cost	
93,600	40	.075	$7020	A
			Annual O&M Costs	
			350	B
		Total Annual Project Cost (A+B)	$7370	C

Service Potential/Cost Ratio [(f)/C]: $\frac{3050}{7370}$ = 0.414

Figure 2
Sample Project Rating Form: Anchor River Acquisition

PROJECT RATING FORM
ACQUISITION PROPOSALS

Project: Baranof
Date: 1-30-73
Examiner: G.K. White

I Item Title	II Point Range	III Score	IV Weight	V Weighted Score	VI Potential Score
A. Demand Factors					
1. Demand-Deficiency	-5 to + 10	(0) + (1) = 1	2	2	20
2. Use Per 1000 Population	0 to + 5	4		4	5
3. Non-Resident Demand	0 to + 3	0		0	3
4. Convenience	-4 to 0	0		0	0
Totals Part A				6	28
B. Irretrivable Loss Potential					
1. Threat of Incompatable Use					
a. How soon	1 to + 5	3		3	5
b. Of what value	1 to + 5	2		2	5
Totals Part B				5	10
C. Quality of Site					
1. Scenic Beauty	-2 to + 2	-2		-2	2
2. Vegetation					
a. Amount	0 to + 2	1		1	2
b. Uniqueness	0 to + 2	0			2
c. Durability	0 to + 2	0			2
3. Suitability for Development					
a. Physical characteristics	-2 to + 2	0	4		8
b. Zoning	-1 to + 1	NA		- -	~~1~~
4. Impact of Environment on Land	-2 to + 2	-1	2	-2	4
Totals Part C				-3	20
D. Contribution to Non-Recreational Community Needs					
1. Health					
a. Situational relief	0 to + 2	1		1	2
b. Physical conditioning	0 to + 2	0		0	2
2. Educational Value of Unique Environment	0 to + 2	NA		- -	~~2~~
3. Preservation of Cultural Heritage	-1 to + 1	NA		- -	~~1~~
Totals Part D				1	4

E. Administrative Factors				
*1. Financing Capabilities				
a. Initial purchase	-1 to + 1	0	0	1
b. Maintenance & operation	-1 to + 1	0	0	1
2. Fiscal Administration	-1 to + 1	0	0	1
3. Responsibility				
a. Compliance	-1 to + 1	0	0	1
b. Logical sponsor	0, 1	1	1	1
c. Completion w/in time frame	-2 to 0	0	0	0
4. Past Performance	-2 to + 2	0	0	2
Totals Part E			1	7

* Minimum requirement essential

Service Potential Index Calculations

Totals Part A: $\frac{6}{28}$ = .214 (a)

Totals Part B: $\frac{5}{10}$ = .500 (b)

Totals Part C: $\frac{-3}{20}$ = -.150 (c)

Totals Part D: $\frac{1}{4}$ = .250 (d)

Totals Part E: $\frac{1}{7}$ = .143 (e)

	Results	X 100	X Weight	Weighted Index
(a)	.214	100	25	535
(b)	.500	100	35	1750
(c)	-.150	100	15	-225
(d)	.250	100	15	375
(e)	.143	100	10	143
		Total Index Value		2578 (f)

Cost Calculations

Acquisition Cost	Period	Capital Cost Factor	Annual Investment Cost	
65,000	40	.075	$4875	A
			Annual O&M Costs 200	B
	Total Annual Project Cost (A+B)		$5075	C

Service Potential/Cost Ratio [(f)/C]: $\frac{2578}{5075}$ = 0.508

Figure 3
Sample Project Rating Form: Baranof Acquisition

PROJECT RATING FORM
ACQUISITION PROPOSALS

Project: Cordova
Date: 1-30-73
Examiner: G.K. White

I Item Title	II Point Range	III Score	IV Weight	V Weighted Score	VI Potential Score
A. Demand Factors					
1. Demand-Deficiency	-5 to + 10	(4) + (2) = 6	2	12	20
2. Use Per 1000 Population	0 to + 5	5		5	5
3. Non-Resident Demand	0 to + 3	0		0	3
4. Convenience	-4 to 0	0		0	0
Totals Part A				17	28
B. Irretrivable Loss Potential					
1. Threat of Incompatable Use					
a. How soon	1 to + 5	2		2	5
b. Of what value	1 to + 5	4		4	5
Totals Part B				6	10
C. Quality of Site					
1. Scenic Beauty	-2 to + 2	0		0	2
2. Vegetation					
a. Amount	0 to + 2	0		0	2
b. Uniqueness	0 to + 2	0		0	2
C. Durability	0 to + 2	0		0	2
3. Suitability for Development					
a. Physical characteristics	-2 to + 2	2	4	8	8
b. Zoning	-1 to + 1	0		0	1
4. Impact of Environment on Land	-2 to + 2	-1	2	-2	4
Totals Part C				6	21
D. Contribution to Non-Recreational Community Needs					
1. Health					
a. Situational relief	0 to + 2	2		2	2
b. Physical conditioning	0 to + 2	2		2	2
2. Educational Value of Unique Environment	0 to + 2	2		2	2
3. Preservation of Cultural Heritage	-1 to + 1	1		1	1
Totals Part D				7	7

E. Administrative Factors				
*1. Financing Capabilities				
a. Initial purchase	-1 to + 1	1	1	1
b. Maintenance & operation	-1 to + 1	1	1	1
2. Fiscal Administration	-1 to + 1	1	1	1
3. Responsibility				
a. Compliance	-1 to + 1	1	1	1
b. Logical sponsor	0, 1	1	1	1
c. Completion w/in time frame	-2 to 0	0	0	0
4. Past Performance	-2 to + 2	2	2	2
Totals Part E			7	7

* Minimum requirement essential

Service Potential Index Calculations

Totals Part A: $\frac{17}{28} = .607$ (a)

Totals Part B: $\frac{6}{10} = .600$ (b)

Totals Part C: $\frac{6}{21} = .286$ (c)

Totals Part D: $\frac{7}{7} = 1.000$ (d)

Totals Part E: $\frac{7}{7} = 1.000$ (e)

	Results	X 100	X Weight	Weighted Index
(a)	.607	100	25	1518
(b)	.600	100	35	2100
(c)	.286	100	15	429
(d)	1.000	100	15	1500
(e)	1.000	100	10	1000
		Total Index Value		6547 (f)

Cost Calculations

Acquisition Cost	Period	Capital Cost Factor	Annual Investment Cost	
46,800	40	.075	$3510	A
			Annual O&M Costs 200	B
		Total Annual Project Cost (A+B)	$3710	C

Service Potential/Cost Ratio [(f)/C]: $\frac{6547}{3710} = 1.765$

Figure 4
Sample Project Rating Form: Cordova Acquisition

PROJECT RATING FORM
DEVELOPMENT PROPOSALS

Project: Cordova - Baseball Field
Date: 1-30-73
Examiner: G.K. White

I Item Title	II Point Range	III Score	IV Weight	V Weighted Score	VI Potential Score
A. Demand Factors					
1. Demand-Deficiency	-5 to + 10	(4) + (2) = 6	2	12	20
2. Use Per 1000 Population	0 to + 5	5		5	5
3. Non-Resident Demand	0 to + 3	0		0	3
4. Convenience	-4 to 0	0		0	0
Totals Part A				17	28
B. Irretrivable Loss Potential					
1. Financial Constraints to Future Development	0 to + 3	0		0	3
Totals Part B				0	3
C. Quality of Site					
1. Scenic Beauty	-2 to + 2	-1		-1	2
2. Safety	-2 to + 2	0		0	2
*3. Recreation Water Quality					
a. Degree of Pollution	-1 to + 1	NA	2	--	~~2~~
b. Suitability for recreational use	-1 to + 1	NA	2	--	~~2~~
*4. Drinking Water Quality	-1 to + 1	0	2	0	2
5. Vegetation					
a. Amount	0 to + 2	0		0	2
b. Uniqueness	0 to + 2	0		0	2
c. Suitability & durability	-2 to + 2	0		0	2
6. Suitability of Land for Development					
a. Related physical characteristics	-2 to + 2	2	4	8	8
b. Zoning	-1 to + 1	1		1	1
7. Design Quality					
a. Access	-1 to + 3	2		2	3
b. Interior roads	-1 to + 3	NA		--	~~3~~
c. Activity areas	-1 to + 3	1		1	3
d. Sanitation					
1) Adequacy	-1 to + 1	NA		--	~~1~~
2) Convenience	-1 to + 2	NA		--	~~2~~
e. Buildings					
1) Harmony	-1 to + 1	NA		--	~~1~~
2) Location	-1 to + 1	NA		--	~~1~~
3) Adequate parking & buffer zones	-1 to + 1	NA		--	~~1~~
4) User safety	-1 to + 1	NA		--	~~1~~
5) Provision for the handicapped	-1 to + 1	NA		--	~~1~~
8. Impact of Project on Environment	-2 to + 1	0	3	0	3
9. Impact of Environment on Project	-2 to + 2	-1	2	-2	4
Totals Part C				9	34

D. Contribution to Non-Recreational Community Needs				
1. Health				
a. Situation relief	0 to + 2	0	0	2
b. Physical conditioning	0 to + 2	2	2	2
c. Sanitation	-2 to + 2	0	0	2
d. Public safety	-1 to + 2	0	0	2
2. Education				
a. Nature study	-1 to + 1	0	0	1
b. Unique environment	-2 to + 2	0	0	2
3. Economic Development	+1 to + 4	1	1	4
4. Preservation of Cultural Heritage	-1 to + 1	NA	--	~~1~~
Totals Part D			3	15
E. Administrative Factors				
*1. Financing Capabilities				
a. Initial purchase	-1 to + 1	1	1	1
b. Operation & maintenance	-1 to + 1	1	1	1
2. Fiscal Administration	-1 to + 1	1	1	1
3. Responsibility				
a. Compliance	-1 to + 1	1	1	1
b. Project planning	0, 1	1	1	1
c. Timely completion	-2 to 0	0	0	0
4. Past Performance	-2 to + 2	2	2	2
Totals Part E			7	7

* Minimum requirement essential

Service Potential Index Calculations

Totals Part A: $\frac{17}{28}$ = .607 (a)

Totals Part B: $\frac{0}{3}$ = .00 (b)

Totals Part C: $\frac{9}{34}$ = .265 (c)

Totals Part D: $\frac{3}{15}$ = .200 (d)

Totals Part E. $\frac{7}{7}$ = 1.000 (e)

	Results	X 100	X Weight	Weighted Index
(a)	.607	100	35	2125
(b)	.000	100	5	0
(c)	.265	100	30	795
(d)	.200	100	20	400
(e)	1.000	100	10	1000
Total Index Value				4320 (f)

Cost Calculations

Development Cost	Period	Capital Cost Factor	Annual Investment Cost	
8000	20	.094	$ 752	A
			Annual O&M Costs 1000	B
		Total Annual Project Cost (A+B)	$1752	C

Service Potential/Cost Ratio [(f)/C]: $\frac{4320}{1752}$ = 2.466

Figure 5
Sample Project Rating Form: Cordova Baseball Field

PROJECT RATING FORM
DEVELOPMENT PROPOSALS

Project: Cordova - Multi-purpose Ct.
Date: 1-30-73
Examiner: G.K. White

I Item Title	II Point Range	III Score	IV Weight	V Weighted Score	VI Potential Score
A. Demand Factors					
1. Demand-Deficiency	-5 to + 10	(5) + (2) = 7	2	14	20
2. Use Per 1000 Population	0 to + 5	4		4	5
3. Non-Resident Demand	0 to + 3	0		0	3
4. Convenience	-4 to 0	0		0	0
Totals Part A				18	28
B. Irretrivable Loss Potential					
1. Financial Constraints to Future Development	0 to + 3	0		0	3
Totals Part B				0	3
C. Quality of Site					
1. Scenic Beauty	-2 to + 2	-1		-1	2
2. Safety	-2 to + 2	0		0	2
*3. Recreation Water Quality					
a. Degree of Pollution	-1 to + 1	NA	2	--	~~2~~
b. Suitability for recreational use	-1 to + 1	NA	2	--	~~2~~
*4. Drinking Water Quality	-1 to + 1	0	2	0	2
5. Vegetation					
a. Amount	0 to + 2	0		0	2
b. Uniqueness	0 to + 2	0		0	2
c. Suitability & durability	-2 to + 2	0		0	2
6. Suitability of Land for Development					
a. Related physical characteristics	-2 to + 2	2	4	8	8
b. Zoning	-1 to + 1	1		1	1
7. Design Quality					
a. Access	-1 to + 3	2		2	3
b. Interior roads	-1 to + 3	NA		--	3
c. Activity areas	-1 to + 3	1		1	3
d. Sanitation					
1) Adequacy	-1 to + 1	NA		--	~~1~~
2) Convenience	-1 to + 2	NA		--	~~2~~
e. Buildings					
1) Harmony	-1 to + 1	NA		--	~~1~~
2) Location	-1 to + 1	NA		--	~~2~~
3) Adequate parking & buffer zones	-1 to + 1	NA		--	~~1~~
4) User safety	-1 to + 1	NA		--	~~1~~
5) Provision for the handicapped	-1 to + 1	NA		--	~~1~~
8. Impact of Project on Environment	-2 to + 1	0	3	0	3
9. Impact of Environment on Project	-2 to + 2	-1	2	-2	4
Totals Part C				9	34

D. Contribution to Non-Recreational Community Needs				
1. Health				
a. Situation relief	0 to + 2	0	0	2
b. Physical conditioning	0 to + 2	2	2	2
c. Sanitation	-2 to + 2	0	0	2
d. Public safety	-1 to + 2	0	0	2
2. Education				
a. Nature study	-1 to + 1	0	0	1
b. Unique environment	-2 to + 2	0	0	2
3. Economic Development	+1 to + 4	1	1	4
4. Preservation of Cultural Heritage	-1 to + 1	NA	--	1
Totals Part D			3	15
E. Administrative Factors				
*1. Financing Capabilities				
a. Initial purchase	-1 to + 1	1	1	1
b. Operation & maintenance	-1 to + 1	1	1	1
2. Fiscal Administration	-1 to + 1	1	1	1
3. Responsibility				
a. Compliance	-1 to + 1	1	1	1
b. Project planning	0, 1	1	1	1
c. Timely completion	-2 to 0	0	0	0
4. Past Performance	-2 to + 2	2	2	2
Totals Part E			7	7

* Minimum requirement essential

Service Potential Index Calculations

Totals Part A:	18/28 = .642 (a)	(a)	.642	100	35	2247
Totals Part B:	.000/3 = .000 (b)	(b)	.0	100	5	0
Totals Part C:	9/34 = .265 (c)	(c)	.265	100	30	795
Totals Part D:	3/15 = .200 (d)	(d)	.200	100	20	400
Totals Part E:	7/7 = 1.000 (e)	(e)	1.000	100	10	1000
					Total Index Value	4442 (f)

Cost Calculations

Development Cost	Period	Capital Cost Factor	Annual Investment Cost	
28,000	15	.110	$3080	A
			Annual O&M Costs 400	B
		Total Annual Project Cost (A+B)	$3480	C

Service Potential/Cost Ratio [(f)/C]: 4442/3480 = 1.276

Figure 6
Sample Project Rating Form: Cordova Multi-Purpose Court

PROJECT RATING FORM
DEVELOPMENT PROPOSALS

Project: Cordova - Picnic Area
Date: 1-30-73
Examiner: G.K. White

I Item Title	II Point Range	III Score	IV Weight	V Weighted Score	VI Potential Score
A. Demand Factors					
1. Demand-Deficiency	-5 to + 10	(5) + (1) = 6	2	12	20
2. Use Per 1000 Population	0 to + 5	5		5	5
3. Non-Resident Demand	0 to + 3	0		0	3
4. Convenience	-4 to 0	0		0	0
Totals Part A				17	28
B. Irretrivable Loss Potential					
1. Financial Constraints to Future Development	0 to + 3	0		0	3
Totals Part B				0	3
C. Quality of Site					
1. Scenic Beauty	-2 to + 2	1		1	2
2. Safety	-2 to + 2	0		0	2
*3. Recreation Water Quality					
a. Degree of pollution	-1 to + 1	NA	2	--	~~2~~
b. Suitability for recreational use	-1 to + 1	NA	2	--	~~2~~
*4. Drinking Water Quality	-1 to + 1	0	2	0	2
5. Vegetation					
a. Amount	0 to + 2	0		0	2
b. Uniqueness	0 to + 2	0		0	2
c. Suitability & durability	-2 to + 2	0		0	2
6. Suitability of Land for Development					
a. Related physical characteristics	-2 to + 2	2	4	8	8
b. Zoning	-1 to + 1	1		1	1
7. Design Quality					
a. Access	-1 to + 3	2		2	3
b. Interior roads	-1 to + 3	NA		--	~~3~~
c. Activity areas	-1 to + 3	1		1	3
d. Sanitation					
1) Adequacy	-1 to + 1	NA		--	~~1~~
2) Convenience	-1 to + 2	NA		--	~~2~~
e. Buildings					
1) Harmony	-1 to + 1	NA		--	~~1~~
2) Location	-1 to + 1	NA		--	~~1~~
3) Adequate parking & buffer zones	-1 to + 1	NA		--	~~1~~
4) User safety	-1 to + 1	NA		--	~~1~~
5) Provision for the handicapped	-1 to + 1	NA		--	~~1~~
8. Impact of Project on Environment	-2 to + 1	0	3	0	3
9. Impact of Environment on Project	-2 to + 2	-1	2	-2	4
Totals Part C				11	34

D. Contribution to Non-Recreational Community Needs				
1. Health				
a. Situation relief	0 to + 2	1	1	2
b. Physical conditioning	0 to + 2	0	0	2
c. Sanitation	-2 to + 2	0	0	2
d. Public safety	-1 to + 2	0	0	2
2. Education				
a. Nature study	-1 to + 1	0	0	1
b. Unique environment	-2 to + 2	0	0	2
3. Economic Development	+1 to + 4	1	1	4
4. Preservation of Cultural Heritage	-1 to + 1	NA	--	~~1~~
Totals Part D			2	15
E. Administrative Factors				
*1. Financing Capabilities				
a. Initial purchase	-1 to + 1	1	1	1
b. Operation & maintenance	-1 to + 1	1	1	1
2. Fiscal Administration	-1 to + 1	1	1	1
3. Responsibility				
a. Compliance	-1 to + 1	1	1	1
b. Project planning	0, 1	1	1	1
c. Timely completion	-2 to 0	0	0	0
4. Past Performance	-2 to + 2	2	2	2
Totals Part E			7	7

* Minimum requirement essential

Service Potential Index Calculations

				Results	X 100	X Weight	Weighted Index	
Totals Part A:	17/28 =	.607	(a)	(a) .607	100	35	2124	
Totals Part B:	0/3 =	.000	(b)	(b) .000	100	5	0	
Totals Part C:	11/34 =	.323	(c)	(c) .323	100	30	969	
Totals Part D:	2/15 =	.133	(d)	(d) .133	100	20	266	
Totals Part E:	7/7 =	1.000	(e)	(e) 1.000	100	10	1000	
					Total Index Value		4359	(f)

Cost Calculations

Development Cost	Period	Capital Cost Factor	Annual Investment Cost	
13,000	15	0.110	$1430	A
			Annual O&M Costs 200	B
		Total Annual Project Cost (A+B)	$1630	C

Service Potential/Cost Ratio [(f)/C]: 4359/1630 = 2.674

Figure 7
Sample Project Rating Form: Cordova Picnic Area

PROJECT RATING FORM
DEVELOPMENT PROPOSALS

Project: Cordova - Tot Lot
Date: 1-30-73
Examiner: G.K. White

I Item Title	II Point Range	III Score	IV Weight	V Weighted Score	VI Potential Score
A. Demand Factors					
1. Demand-Deficiency	-5 to + 10	(5) + (2) = 7	2	14	20
2. Use Per 1000 Population	0 to + 5	5		5	5
3. Non-Resident Demand	0 to + 3	0		0	3
4. Convenience	-4 to 0	0		0	0
Totals Part A				19	28
B. Irretrivable Loss Potential					
1. Financial Constraints to Future Development	0 to + 3	0		0	3
Totals Part B				0	3
C. Quality of Site					
1. Scenic Beauty	-2 to + 2	-1		-1	2
2. Safety	-2 to + 2	0		0	2
*3. Recreation Water Quality					
a. Degree of pollution	-1 to + 1	NA	2	- -	~~2~~
b. Suitability for recreational use	-1 to + 1	NA	2	- -	~~2~~
*4. Drinking Water Quality	-1 to + 1	0	2	0	2
5. Vegetation					
a. Amount	0 to + 2	0		0	2
b. Uniqueness	0 to + 2	0		0	2
c. Suitability & durability	-2 to + 2	0		0	2
6. Suitability of Land for Development					
a. Related physical characteristics	-2 to + 2	2	4	8	8
b. Zoning	-1 to + 1	1		1	1
7. Design Quality					
a. Access	-1 to + 3	2		2	3
b. Interior roads	-1 to + 3	NA		- -	~~3~~
c. Activity areas	-1 to + 3	1		1	3
d. Sanitation					
1) Adequacy	-1 to + 1	NA		- -	~~1~~
2) Convenience	-1 to + 2	NA		- -	~~2~~
e. Buildings					
1) Harmony	-1 to + 1	NA		- -	~~1~~
2) Location	-1 to + 1	NA		- -	~~1~~
3) Adequate parking & buffer zones	-1 to + 1	NA		- -	~~1~~
4) User safety	-1 to + 1	NA		- -	~~1~~
5) Provision for the handicapped	-1 to + 1	NA		- -	~~1~~
8. Impact of Project on Environment	-2 to + 1	0	3	0	3
9. Impact of Environment on Project	-2 to + 2	-1	2	-2	4
Totals Part C				9	34

D. Contribution to Non-Recreational Community Needs				
1. Health				
a. Situation relief	0 to + 2	0	0	2
b. Physical conditioning	0 to + 2	2	2	2
c. Sanitation	-2 to + 2	0	0	2
d. Public safety	-1 to + 2	0	0	2
2. Education				
a. Nature study	-1 to + 1	0	0	1
b. Unique environment	-2 to + 2	0	0	2
3. Economic Development	+1 to + 4	1	1	4
4. Preservation of Cultural Heritage	-1 to + 1	NA	--	~~1~~
Totals Part D			3	15
E. Administrative Factors				
*1. Financing Capabilities				
a. Initial purchase	-1 to + 1	1	1	1
b. Operation & maintenance	-1 to + 1	1	1	1
2. Fiscal Administration	-1 to + 1	1	1	1
3. Responsibility				
a. Compliance	-1 to + 1	1	1	1
b. Project planning	0, 1	1	1	1
c. Timely completion	-2 to 0	0	0	0
4. Past Performance	-2 to + 2	2	2	2
Totals Part E			7	7

* Minimum requirement essential

Service Potential Index Calculations

Totals Part A: 19/28 = .678 (a)

Totals Part B: 0/3 = .00 (b)

Totals Part C: 9/34 = .265 (c)

Totals Part D: 3/15 = .200 (d)

Totals Part E: 7/7 = 1.000 (e)

	Results	X 100	X Weight	Weighted Index
(a)	.678	100	35	2373
(b)	.00	100	5	0
(c)	.265	100	30	795
(d)	.200	100	20	400
(e)	1.000	100	10	1000
Total Index Value				4568 (f)

Cost Calculations

Development or Acquisition Cost	Period	Capital Cost Factor	Annual Investment Cost	
8000	20	.094	$752	A
			Annual O&M Costs 100	B
		Total Annual Project Cost (A+B)	$852	C

Service Potential/Cost Ratio [(f)/C]: 4568/852 = 5.361

Figure 8
Sample Project Rating Form: Cordova Tot Lot

Chapter VI

RECOMMENDATIONS

The approach used to derive the service-potential/cost ratio is new and unique in the field of outdoor recreation. It parallels benefit-cost analysis and in some ways it is similar to the evaluative approach recommended in the Coast Guard Study [26].

In order to improve the effectiveness of this method the following recommendations are proposed.

1. To determine the demand deficiency, it is necessary to have complete and current inventory data including all major facility types of importance to recreational planning. The Alaska Division of Parks should expand their data collection system to include both public and private facilities. A computer data storage and retrieval system may be useful and should be investigated.
2. Since the sponsor's estimate of annual visitation and operation and maintenance costs are used in determining priority, the following statements in forms BOR 8-164 (July 1970) and BOR 8-165 (July 1970) should be deleted: "FOR STATISTICAL PURPOSES ONLY — The answers to the following questions will not affect consideration of the project for funding."
3. There are three "red flag" items in this method — essential points where the proposed project must meet basic standards. These items are recreational water quality (degree of pollution), drinking water quality, and financing capabilities. The final item is the only one which applies to an acquisition project. These items were selected for two reasons; (1) they are essential if the project is to be completed and operated in a satisfactory manner and (2) the SLO has virtually no control over these areas. Other state agencies can force closure of the facility if water quality is below acceptable levels. To facilitate timely consideration of the application, the SLO should require water quality data with the initial project request whenever applicable. It is also of no benefit to continue processing an application from a sponsor who has highly questionable financing capabilities. By recommending a sponsor's project to the BOR, the SLO is in effect endorsing that sponsor, and could become responsible for the project's maintenance should the sponsor fail to acceptably maintain the facility. The SLO should be free to use this approach with other items as he thinks necessary.
4. If a multi-facility project is proposed, it would be desirable for the sponsor to further detail his analysis of costs by allocating operating

and maintenance costs to the appropriate facility type. Such a breakdown is essential for this method of priority ranking, and would be best done at the sponsor's level. Such a breakdown may also force the sponsor to give more detailed consideration to this very important area.

5. This method should be used only as a management tool to aid in the establishment of a priority ranking. Automatic acceptance of the results without further analysis and review can lead to invalid conclusions in some cases, for example in those projects with extreme values of capital intensity.
6. The system as presented here is relatively complete and operational. Several important adjustments, however, will need to be made before the system is keyed to a particular state's situation. Following field testing of the system, it may be decided to add or delete certain items, alter the various weighted scales, etc. We recommend that the Alaska Division of Parks have a review following a trial period, in order to best coordinate their observations with adjustments to the system.
7. At many points throughout the study subjective evaluative techniques were recommended because of the limited operational resources of most state SLO's. More quantitative approaches might provide sounder results, for example, the scoring of the examiner's evaluation of local demand and potential economic development. Wherever quantitative data is operationally available, the system should be modified to incorporate it.

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APPENDIX A

The Relation of the Capital Intensity Ratio to the Priority Ranking

The Relation of the Capital Intensity Ratio to the Priority Ranking

The assumption of similar capital intensity ratios among projects being evaluated has been stressed at several points throughout this study. Ranking by use of the service-potential/cost ratio is based on this assumption. Recreation projects with extreme capital intensity ratios tend to reduce the validity of this method for ranking purposes. It has also been emphasized that the SLO should be aware of the effect of an extreme capital intensity ratio and take this into consideration in his interpretation of the priority ranking.

Further analysis of the sample project proposals discussed in Chapter V may clarify this situation. The following are their capital intensity ratios.

Project	Capital Intensity Ratio
Cordova — Baseball Field	.1250
Cordova — Picnic Area	.0154
Cordova — Multi-purpose Court	.0143
Cordova — Tot Lot	.0125
Cordova — Acquisition	.0043
Anchor River — Acquisition	.0037
Baranof — Acquisition	.0031

It is readily apparent that all acquisition projects have relatively similar capital intensity ratios. Also, the ratios for the multi-purpose court, picnic area, and tot lot are very similar but are approximately three to five times larger than the acquisition ratios. Finally, the ratio for the baseball field is approximately ten times greater than the other development project ratios and thirty-five times greater than the ratios relating to the acquisition projects.

In order to evaluate the effect which this range of ratios has upon our proposed method, the following tests were made. Two arbitrary capital intensity ratios of .004 and .015 were selected. The first corresponds to the average acquisition ratio while the second corresponds to the average of the three similar development ratios. In addition to these two averages, the high value of 0.125 was also used. In three separate tests, the value for operation and maintenance costs for each project was recalculated so that all had capital intensity ratios of .004, .015 and .125, respectively (Table 5). This resulted in different annual operation and maintenance costs, which correspondingly altered the service-potential/cost ratios.

The purpose for this was to evaluate the extent to which the range of capital intensity values might alter the relative priority ranking. By forcing all capital intensity ratios to the test values, we could observe shifts from the original ranking determined by the projects' original ratios.

Table 5 indicates that different values for the capital intensity ratio within the range of .004 to .125 do not alter the project priority ranking

except in the case of the Cordova baseball field. This project was identified earlier as having an extreme capital intensity ratio. Closer analysis indicates that in the original priority ranking this project scored low because of its high operation and maintenance costs relative to the level of capital investment.

Results of the calculations support our hypothesis that for the majority of outdoor recreation projects, differences in capital intensity ratios will be insignificant to the extent that the resulting priority rankings can be considered valid. However, a project with an extreme capital intensity ratio may be misrepresented in the rankings and should be analyzed further.

In this particular case, if the SLO believed the sponsor would have difficulty in annually financing the necessary operation and maintenance costs he might keep the baseball field project in the third priority slot. If he feels that the annual costs are of little significance he could advance the project to the second priority. This emphasizes the method's role as an aid to establishing working priorities, but not the final word.

Table 5

Priority Rankings as Affected by Various Capital Intensity Ratios*

Project	Original Ranking	Original Service-Potential/Cost Ratio	Ranking when Capital Intensity = .004 Original Ranking Order	Ranking when Capital Intensity = .004 Service-Potential/Cost Ratio	Ranking when Capital Intensity = .015 Original Ranking Order	Ranking when Capital Intensity = .015 Service-Potential/Cost Ratio	Ranking when Capital Intensity = .125 Original Ranking Order	Ranking when Capital Intensity = .125 Service-Potential/Cost Ratio
Cordova — Tot Lot	1	5.361	1	5.827	1	5.238	1	2.607
Cordova — Picnic Area	2	2.674	3	5.510	3	4.954	3	2.466
Cordova — Baseball Field	3	2.466	2	2.941	2	2.682	2	1.427
Cordova — Acquisition	4	1.765	4	1.771	4	1.554	4	.699
Cordova — Multi-purpose Court	5	1.276	5	1.392	5	1.270	5	.675
Baranof — Acquisition	6	.508	6	.502	6	.441	6	.198
Anchor River — Acquisition	7	.414	7	.412	7	.362	7	.163

* Example using Cordova — Tot Lot (cost figures from page 23):

1. Original capital intensity ratio = $\frac{\text{Ø}}{K}$ = 8000 = .0125 (where Ø = operation and maintenance cost)
2. Finding new annual Ø cost so that capital intensity = .004; $\frac{\text{Ø}}{K}$ = .004 = $\frac{\text{Ø}}{8000}$; New annual Ø cost = 32
3. New total annual project cost: Original annual investment cost $752
   New annual Ø cost + 32
   New total annual project cost $784
4. New service-potential/cost ratio = $\frac{4568}{784}$ = 5.827

APPENDIX B

Project Rating Forms

PROJECT RATING FORM
ACQUISITION PROPOSALS

Project:_____
Date:_____
Examiner:_____

I Item Title	II Point Range	III Score	IV Weight	V Weighted Score	VI Potential Score
A. Demand Factors					
1. Demand-Deficiency	-5 to + 10	( ) + ( ) =	2		20
2. Use Per 1000 Population	0 to + 5				5
3. Non-Resident Demand	0 to + 3				3
4. Convenience	-4 to 0				0
Totals Part A					
B. Irretrivable Loss Potential					
1. Threat of Incompatable Use					
a. How soon	1 to + 5				5
b. Of what value	1 to + 5				5
Totals Part B					
C. Quality of Site					
1. Scenic Beauty	-2 to + 2				2
2. Vegetation					
a. Amount	0 to + 2				2
b. Uniqueness	0 to + 2				2
c. Durability	0 to + 2				2
3. Suitability for Development					
a. Physical characteristics	-2 to + 2				8
b. Zoning	-1 to + 1				1
4. Impact of Environment on Land	-2 to + 2		2		4
Totals Part C					
D. Contribution to Non-Recreational Community Needs					
1. Health					
a. Situational relief	0 to + 2				2
b. Physical conditioning	0 to + 2				2
2. Educational Value of Unique Environment	0 to + 2				2
3. Preservation of Cultural Heritage	-1 to + 1				1
Totals Part D					

E. Administrative Factors		
*1. Financing Capabilities		
a. Initial purchase	-1 to + 1	1
b. Maintenance & operation	-1 to + 1	1
2. Fiscal Administration	-1 to + 1	1
3. Responsibility		
a. Compliance	-1 to + 1	1
b. Logical sponsor	0, 1	1
c. Completion w/in time frame	-2 to 0	0
4. Past Performance	-2 to + 2	2
Totals Part E		

* Minimum requirement essential

Service Potential Index Calculations

Totals Part A: ____ = ____ (a)

Totals Part B: ____ = ____ (b)

Totals Part C: ____ = ____ (c)

Totals Part D: ____ = ____ (d)

Totals Part E: ____ = ____ (e)

	Results	X 100	X Weight	Weighted Index
(a)		100	35	
(b)		100	5	
(c)		100	30	
(d)		100	20	
(e)		100	10	
		Total Index Value		(f)

Cost Calculations

Acquisition Cost	Period	Capital Cost Factor	Annual Investment Cost	
				A
			Annual O&M Costs	B
		Total Annual Project Cost (A+B)		C

Service Potential/Cost Ratio [(f)/C]: _____ = _____

Figure 9
Sample Project Rating Form:
Acquisition Proposals

PROJECT RATING FORM
DEVELOPMENT PROPOSALS

Project: _____
Date: _____
Examiner: _____

I Item Title	II Point Range	III Score	IV Weight	V Weighted Score	VI Potential Score
A. Demand Factors					
1. Demand-Deficiency	-5 to + 10	( )+ ( ) =	2		20
2. Use Per 1000 Population	0 to + 5				5
3. Non-Resident Demand	0 to + 3				3
4. Convenience	-4 to 0				0
Totals Part A					
B. Irretrivable Loss Potential					
1. Financial Constraints to Future Development	0 to + 3				3
Totals Part B					
C. Quality of Site					
1. Scenic Beauty	-2 to + 2				2
2. Safety	-2 to + 2				2
*3. Recreation Water Quality					
a. Degree of pollution	-1 to + 1		2		2
b. Suitability for recreational use	-1 to + 1		2		2
*4. Drinking Water Quality	-1 to + 1		2		2
5. Vegetation					
a. Amount	0 to + 2				2
b. Uniqueness	0 to + 2				2
c. Suitability & durability	-2 to + 2				2
6. Suitability of Land for Development					
a. Related physical characteristics	-2 to + 2		4		8
b. Zoning	-1 to + 1				1
7. Design Quality					
a. Access	-1 to + 3				3
b. Interior roads	-1 to + 3				3
c. Activity areas	-1 to + 3				3
d. Sanitation					
1) Adequacy	-1 to + 1				1
2) Convenience	-1 to + 2				2
e. Buildings					
1) Harmony	-1 to + 1				1
2) Location	-1 to + 1				1
3) Adequate parking & buffer zones	-1 to + 1				1
4) User safety	-1 to + 1				1
5) Provision for the handicapped	-1 to + 1				1
8. Impact of Project on Environment	-2 to + 1		3		3
9. Impact of Environment on Project	-2 to + 2		2		4
Totals Part C					

D. Contribution to Non-Recreational Community Needs		
1. Health		
a. Situation relief	0 to + 2	2
b. Physical conditioning	0 to + 2	2
c. Sanitation	-2 to + 2	2
d. Public safety	-1 to + 2	2
2. Education		
a. Nature study	-1 to + 1	1
b. Unique environment	-2 to + 2	2
3. Economic Development	+1 to + 4	4
4. Preservation of Cultural Heritage	-1 to + 1	1
Totals Part D		
E. Administrative Factors		
*1. Financing Capabilities		
a. Initial purchase	-1 to + 1	1
b. Operation & maintenance	-1 to + 1	1
2. Fiscal Administration	-1 to + 1	1
3. Responsibility		
a. Compliance	-1 to + 1	1
b. Project planning	0, 1	1
c. Timely completion	-2 to 0	0
4. Past Performance	-2 to + 2	2
Totals Part E		

* Minimum requirement essential

Service Potential Index Calculations

Totals Part A: ____ = ____ (a)
Totals Part B: ____ = ____ (b)
Totals Part C: ____ = ____ (c)
Totals Part D: ____ = ____ (d)
Totals Part E: ____ = ____ (e)

	Results	X 100	X Weight	Weighted Index
(a)		100	35	
(b)		100	5	
(c)		100	30	
(d)		100	20	
(e)		100	10	
Total Index Value				(f)

Cost Calculations

Development Cost	Period	Capital Cost Factor	Annual Investment Cost	
				A
			Annual O&M Costs	B
Total Annual Project Cost (A+B)				C

Service Potential/Cost Ratio [(f)/C]: _____ = _____

Figure 10
Sample Project Rating Form
Development Proposals

APPENDIX C

Discussion of Elements of the
Service-Potential/Cost Computation

DEVELOPMENT PROPOSALS

Demand Factors

The "Demand Factor" category is designed to evaluate how much the recreation offered by the proposed project is desired by people in its area of influence. It is recognized that projects will service areas of varying size.

Areas of influence can be associated with time-distance classifications. The classifications presently being used on project proposal forms (form BOR 8-163) are neighborhood, community/town, metropolitan/regional, overnight or weekend/vacation.

1. Demand-Deficiency

Demand-deficiency calculations are used to arrive at an estimate of how effectively the project will satisfy estimated recreational demand in the project's area of influence. Most of the data necessary here are also required for the SCORP. The BOR requires the state to estimate future demand by region. For example, the 1970 Alaska SCORP identifies projected demand in the years 1975, 1980, and 2000. This demand projection is identified both here and in the SCORP as "additional needs to 19__." The projection to the nearest date, when several are given, will have the least amount of error and should be used here. Once a particular year is selected for demand projection purposes, it should be used for all projects to be compared.

Publicly owned recreation supply inventories are annually calculated by the Division of Parks. An inventory is presented in the 1970 updated SCORP, but more recent summaries may be found in the published annual updates.

For the purposes of this analysis it is necessary to include the private sector in the estimate of the total recreational inventory for a region. This may require modification of published data to include facilities under private ownership and control of other agencies. The supply and projected demand figures must be based on identical land boundaries. The inventory figure is referred to in the calculation below as the "latest figure of supply available."

There are two other elements of the calculation, the number of years until the project is allowed for in the five year plan[11] and an intensity factor to be determined by the examiner. The five year plan reflects each

[11]The State Division of Parks requires each project sponsor to annually submit a "Five Year Plan of Acquisition and Development." This outlines all outdoor recreation projects proposed by the sponsor for the following five years. The order of proposed projects may be changed by the sponsor when the new annual plan is submitted, or at anytime by submitting a revised plan.

community's own priorities. This information is included in the computation to emphasize local planning and priorities. Sponsors who are not conforming to their plan will find their projects are rated down on this point. A project being developed in the year it is projected, according to the plan, rates a "1". If the project is to be undertaken a year in advance of that set out in the plan it rates a "2". This continues to the rating of "5" for a project which is listed in the final year of the plan. The larger the number, the more a sponsor's score on this item is reduced. A sponsor should be required to update his five year plan to the extent that any project which is submitted to the SLO is also included in that sponsor's five year plan. This insures that the sponsor will consider development continuity.

The intensity factor mentioned above in effect adjusts the demand analysis based on regional data to the local level based on the judgement of the examiner. If he feels the project incorrectly interprets the needs of the community, he may assign a value from 0 to -5. Points of 0 to +5 may be assigned if he feels the project correctly interprets local demand.

Two calculations are made. One for the activity as proposed by the sponsor and one for the activity which the state feels is most deficient in that region based on demand projection for the selected year. A percentage deficiency to the year of projected demand may be calculated in the following manner.

a — Additional needs to 19___
b — Latest figure of supply available
c — Number of years until project is allowed for in five year plan
d — Intensity factor (-5 to +5)
% deficiency to year 19 ____
for proposed activity $\frac{a}{a+b} = A$
% deficiency to year 19 ____
for activity recognized by the state $\frac{a'}{a'+b'} = B$

$$\frac{A}{B} \times 5.0 = C$$

This determines the relative deficiency of the proposed activity to the activity determined to be most deficient by the state and expands the results by a factor of 5.

$$C \times \frac{1}{c} = D$$

The above equation weights the results in favor of sponsors whose proposals are current according to their five year plan.

$$D + d = E$$

This final equation adjusts the results according to evaluator's determination of the local situation.[12]

2. Use per 1000 Population

Estimate the total annual visitation by residents of the area of influence. Divide this by the population of the service area and multiply by 1000 to get the estimated use per 1000 population. Assign points in the following way.

Points:	0	1	2	3	4	5
Use/1000 pop.:	0-200	201-400	401-600	601-800	801-1000	1001+

In the case of a combined acquisition and multi-purpose project, the total anticipated visitation should be used for the aquisition priority calculation. However, since the developed activity areas are separately evaluated, an effort should be made to use only the portion of the total visitation number applicable to the activity area being evaluated.

The additional benefits of serving non-residential demand are considered with the next item.

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[12]Example: A project proposal is for hiking trails which will also serve as cross country ski trails. Data indicates that camping in developed areas will comprise the greatest recreational demand for the region in the year 1975.

Activity	a Additional Needs to 1975	b Most Recent Inventory
Camping	200 units	50 units
Hiking	18 miles	6 miles
Cross-country	20 miles	8 miles

% deficiency to 1975 for activity recognized by the state

$$\text{(camping)}\frac{200}{200 + 50} = .80$$

Since the proposal is for a multi-use facility, use the figure for the activity with the greatest deficiency i.e., hiking.

% deficiency to 1975 for proposed activity (hiking)$\frac{18}{18 + 6} = .75$

$$\frac{A}{B} \times 5.0 = \frac{.75}{.80} \times 5.0 = 4.70$$

Assume the project is proposed for the next fiscal year on the five year schedule.

$$\frac{1}{C} \times 1 = 4.70 \times \frac{1}{2} = 2.35$$

Assume the examiner feels the community is in favor of the project and assigns a value of 3.0.

$$2.35 + 3.0 = 5.35$$

Therefore, 5.35 is the value applied to the index which rates the demand factor.

3. Non-resident

For the purpose intended here, "non-resident" refers to use by visitors from outside the normal area of influence. For a city level project this would mean the use by non-residents of the city. A large additional usage by this group scores high on the scale of 0 to 3.

4. Convenience

Convenience is being analyzed because it serves as an indicator of how easy it will be for the majority of users to reach the site and thereby satisfy their demand for recreational activity. Because of its close affiliation to user costs, it is handled as a reduction of the other benefits. This accounts for its potentially large negative score.

Convenience	Score
Convenient	0
Slightly inconvenient	-1
Moderately inconvenient	-2
Remote but accessible to most	-3
Inaccessible to most	-4

Irretrievable Loss Potential
Financial Constraints to Future Development

In a limited number of instances development of a recreation facility may be prevented unless prompt action is taken. An example of such a situation might be if not all the funds approved for a bond issue have been allocated. If the bond referendum took place several years prior it is possible that the right to the unallocated funds for the development project might be withdrawn. We believe that this would seldom be a factor of major concern. The evaluation should be based upon how soon it might occur and the importance of the threat of loss. If such a problem exists, a high score would be warranted. The score under normal circumstances should be zero (0).

Quality of Site

In a comprehensive analysis of a recreation area, it is essential to consider the quality of property being acquired or improved. It is impossible at this point to measure recreational quality without using a certain amount of subjective evaluation. Standards are available against which to measure certain factors such as water quality and optimum use capacities for standard facilities. There are, however, many more elements of site quality than there are acceptable standards.

Because there are no commonly accepted standards for qualitative evaluation there is usually a problem with comparing evaluations of different

projects. This can largely be overcome through consistency on the part of an examiner responsible for rating all proposals to be considered at a given time. The issue of examiner consistency was discussed in Chapter V.

1. Scenic Beauty

Evaluate the scenic beauty of the proposed developed property, including the view of surrounding terrain, relative to other comparable facilities. Score to -2 if the scenery detracts from the recreational experience or to +2 if it enhances the experience.

2. Safety

Estimate how safe the user will be from hazards of terrain, vegetation, animals, etc. Are pre-existing natural hazards eliminated or controlled through development design? Does the development design constitute a hazard in itself? Score to -2 for the existence of user hazards or to +2 for the removal of such hazards and a development designed for safety.

3. Recreation Water Quality

a. Degree of Pollution

Water quality standards, pertaining to drinking and recreational water, as established by the Alaska Department of Environmental Conservation, are presented in Appendix D. These are not to be considered inflexible, absolute limits, but rather should serve as well-defined guides by which unique situations may be evaluated. The results of laboratory analysis of water samples should be made available to the examiner. Using the recreation water-use category of Appendix D, score +1 for very pure, 0 for adequate according to the standards, and -1 for not meeting the standards.

b. Suitability of the Water for Recreational Use

Examine the physical characteristics of recreational water at the site in relation to the proposed activities. For example, a boat ramp by a river's edge should be located at a point where the current will not interfere with launching and loading operations.

A canoe trail should not be established along a stream which periodically drys to the extent that it is not navigable. Rate the contribution of the physical characteristics of the water on a -1, 0, +1 scale.

4. Drinking Water Quality

If an on-site water source is to be used for drinking water, laboratory testing will determine what type of purification system will be necessary. Rate the drinking water according to what the results should be after installing the proposed system. If municipally treated water is to be used, score according to the existing quality. Using the appropriate drinking water category of Appendix B, score +1 for very pure, 0 for adequate according to the standards and -1 for not meeting the standards.

5. Vegetation

a. Amount

Evaluate whether the amount of vegetation on the site contributes to the esthetic or functional quality of the project. Esthetic quality is largely a matter of evaluator's judgement. The functional contribution could be through improved buffers between activity areas or large variety of plant species along a nature trail. Score to +2 for a specific contribution to the project.

b. Uniqueness

If the vegetation is to be one of the drawing features of the proposal, score to +2 for its importance relative to other aspects of the site.

c. Suitability and Durability

Evaluate the suitability and durability of the vegetation with respect to the proposed use of the project site. Score to -2 if the ground cover or other flora could be adversely affected through normal use to the future detriment of the project. Score to +2 if it is expected that it will continue to enhance the project.

6. Suitability of the Land for Development

a. Related Physical Characteristics

Determine if development will require a great deal of surface alteration because of the physical characteristics of the site. Analyze soil conditions, availability of water, and any other factors which may be relevant to the proposal. Score to +2 or -2 according to the prexisting physical characteristics.

b. Zoning

Evaluate whether the zoning status of adjacent land detracts from, has no effect upon, or contributes to the proposed project.

7. Design Quality

In the following items, the point system is scaled so that weight is generally given to the positive contributions of design. After reviewing several sources on design [2, 26], our opinion was that poor or average design quality does not detract from a project as much as high quality adds.

a. Access

Access can refer either to the turn-off area and access roads, or to a parking area and pedestrian entrance. Score -1 if the general planning in this area is inadequate, 0 if it is adequate and up to +3 for quality in such areas as beauty, safety and convenience.

b. Interior Roads

If the facility is designed with pedestrian paths, consider them the same as interior roads. As in the previous case, score -1 if the general planning in this area is inadequate, 0 if it is adequate and up to +3 for high quality in areas such as beauty, safety, and convenience.

c. Activity Areas

Evaluate the functional design of the activity areas for convenience and adequacy. If there are multiple activity areas, are there sufficient separation and adequate buffer zones? This analysis should be applied to individual camping sites as well as major activity areas. As in the previous item, score from -1 to +3 considering areas such as adequacy, separation, and convenience.

d. Sanitation

(1) Evaluate the adequacy of the system during peak use.
(2) Evaluate the convenience of the sanitation system relative to the needs of the users. Are the rest rooms and garbage collection points usually unobtrusive and yet easily accessible?

e. Buildings and Structures

(1) Evaluate the harmony of the building design with the natural setting.
(2) Consider their location for maximum service to the user.
(3) Evaluate whether adequate parking and buffer spaces have been provided at areas where they are needed.
(4) Determine if user safety has been considered in the construction design.
(5) Determine if provisions have been made for use by handicapped individuals.

8. Impact of the Project on the Environment

Evaluate what the overall impact of the project will be upon the environment of the site. Consider destruction of vegetation, changes in soil stability and disruption to animal life. Positive points will generally only be awarded for the repair of an existing man-made scar. Examples of the latter would be the cleaning up and coverning of an open dump or the reseeding of an old road bed.

9. Impact of the Environment on the Project

Evaluate the impact of the local environment upon the project. Include any aspect of the environment which might contribute to or detract from maximum enjoyment for the users. Examples of circumstances to be scored negatively would be prevailing strong winds at the site of a proposed tennis court or an open dump in the vicinity of a picnic area. Positive points would be scored for a wilderness canoe trail surrounded by a completely natural landscape.

Contribution to Non-Recreational Community Needs

1. Health

a. Situational Relief

Refer to the discussion of situational relief that appears on page 7. Score to +2 considering the proportion of the population served and an estimate of the degree of situational relief offered.

b. Physical Conditioning Value of the Proposed Activities

Score to +2 for facilities which are designed to accommodate those activities which exercise the cardiovascular system.

c. Sanitation

On-site sanitation has previously been considered. Here, we examine the sanitation situation relative to the local community. In other words, will the method of disposal from the proposed development create new sanitation problems for the sponsor, such as a large increase in solid waste? Or will it solve existing problems by providing improved facilities or operational methods?

d. Public Safety

Evaluate the extent to which a proposed facility alleviates an existing unsafe condition. This would be the case with a developed play area for children who had previously played around hazardous areas. Score -1 if the project creates a potential hazard.

2. Education

a. Nature Study

Evaluate the effort to accommodate the study of nature through the use of self-guided nature trails, special signing, or other instructional devices. Score -1 if it is felt the opportunity was present but no efforts were made in this area. Score 0 for minimal effort and +1 for an above average attempt to promote the study of nature.

b. Unique Environment

Estimate the effect of development on any areas of unique environmental interest. Score -2 if it will reduce the area's interest or to +2 if it will preserve and promote the area.

3. Economic Development

The project's visitor-drawing power is an indication of the potential economic effect of the project upon the local area. This is based on the premise that the larger the number of visitors to the area, the greater the resulting demand for services and the greater the economic impact on the area.

Area of Influence	Score
Neighborhood	1
Community/town	2
Metropolitan/regional	3
Overnight	4
Weekend/vacation	5

4. Preservation of Cultural Heritage

Refer to the discussion of this point on page 11. Score the project -1, 0 or +1 according to its effect on any aspect of cultural heritage.

Administrative Factors

The "Administrative Factors" benefit section is unique from those previously discussed in that it does not measure benefits which directly accrue to the public. The SLO and his staff are the direct beneficiaries of a sponsor who scores high here. The public receives the secondary benefits resulting from the operation of an administratively capable sponsor.

1. Financing Capabilities

Consider if the sponsor appears to be able to apply the necessary financial resources to the project. The sponsor should be looking beyond the construction phase and be prepared to supply funds for annual operation and maintenance. Score -1 for no, 0 for uncertain, and +1 for yes for both the initial purchase phase and the maintenance and operation phase.

2. Fiscal Administration

Evaluate if the sponsor can properly administer and account for the funds as required by the BOR.

3. Responsibility

a. Compliance

Evaluate if the sponsor can be relied on to construct the facility according to approved specifications.

b. Project Planning

Evaluate whether the sponsor will adequately assume the responsibility of project planning. Score 0 if the SLO will most likely be required to give some form of planning assistance. Score 1 if the sponsor will be likely to complete all planning.

c. Timely Completion

Determine if it is likely that the sponsor will proceed with the approved project in a timely manner. If he may tie up approved funds with only minimal progress, score to -2 for tendency to procrastinate.

4. Past Performance

Score any other known characteristics of the sponsor which the examiner feels to be of importance. Consider not only information from previous construction projects, but also examine the sponsor's record for project maintenance and operation.

ACQUISITION PROPOSALS

Demand Factors

1. Demand Deficiency

All acquisition proposals must indicate the anticipated use that will be made of the property. Since the SLO requires that the sponsor abide by this preliminary decision to some degree, the SLO is justified in examining the demand-deficiency of the proposed activities for the area. Calculate the demand-deficiency in the same manner as described for developments.

2. Use per 1000 Population

Calculate and score the estimated use per 1000 residents within the area of influence as described for developments.

3. Non-resident Demand

Score to +3 for estimated additional usage by visitors from outside the normal area of influence.

4. Convenience

Evaluate the location of the proposed acquisition relative to the general location of the population served by the sponsor. If, for example, the sponsor is a local agency, the land should be convenient to that specific group of people if it hopes to effectively serve their desires when it is developed at a latter date.

Convenience	Score
Convenient	0
Slightly inconvenient	-1
Moderately inconvenient	-2
Remote but accessible to most	-3
Inaccessible to most	-4

Irretrievable Loss Potential

1. Threat of Incompatible Use

Estimate the possibility that the property may be precluded from recreational use in the foreseeable future. Primarily the threat would be from proposed development of the area for uses considered incompatible with recreation. This situation is measured by two criteria.

a. How imminent is the threat of incompatible use of the land? Score 0 for no threat to 5 for immediate.
b. Evaluate what effect loss of the property would have upon the overall recreation plan for the area. Score 0 for no effect to 5 for irreplaceable.

Quality of Site

1. Scenic Beauty

Evaluate the scenic beauty of the land to be acquired, including the view of surrounding terrain. Score to -2 if the scenery detracts from the property's recreational potential or to +2 if it enhances the potential.

2. Vegetation

Vegetation is considered important because a healthy and varied surface cover provides greater potential for future development. Unique vegetation will be a positive factor in any future recreational use. Score to +2 for each of the following factors according to their potential contribution to a general recreational development. Score zero if average or below average.

a. Amount
b. Uniqueness
c. Durability and suitability

3. The Suitability for Recreational Development

Several site characteristics are applicable to the majority of developments even if the precise form of future development is uncertain. These items may therefore be used to evaluate acquisition projects.

a. Related Physical Characteristics

Evaluate the accessability of the property, the quality of surface water, if any is present, the availability of subsurface or treated and piped water, etc.

b. Zoning

Rate the possibility that present zoning of adjacent land will promote or hinder future recreational development.

4. Impact of the Environment on the Recreational Value of the Land

If the environment of the general area detracts from or enhances the recreation value of the property score to -2 or +2.

Contribution to Non-Recreational Community Needs

1. Health

Scoring is identical to that described in the development section, based on the proposed use of the land.

2. Education

If the property contains an area of unique environmental interest it may be of special educational value. The term unique need only be applied to the situation within the area of influence. Score to +2 based on the importance of the area to education.

3. Preservation of Cultural Heritage

Evaluate the importance of the property in terms of cultural heritage as described on page 11.

Administrative Factors

Acquisition proposals are handled exactly the same as described in the preceding "Development Proposal" section with one difference. Instead of considering "project planning" (3.b), which is not a vital part of the acquisition process, evaluate the following.

(3.b) Logical Sponsor

Evaluate if this agency is the logical one to acquire and control the property. This question must be answered relative to the current local situation. Score +1 for yes or 0 for no or questionable.

PROJECT COSTS

Total acquisition or development costs form the basis of the cost aspect of the service-potential/cost ratio. This includes costs associated with capital expenditure, operation and maintenance.

Capital expenditure costs should include all direct material and labor expenses required to complete the project according to specifications established in the contract between BOR and the sponsor. When expenditures will be spread over a period of several years, estimates must be made for each year. Discount the amounts at the appropriate interest rate to the present year.

Estimate operation and maintenance costs, including routine replacement costs, for each year of the project life. An estimated life is required from the sponsor for each major facility within a project. The actual computation of the cost figure for use in the ratio as well as the computation of the index values are discussed in Chapter V.

APPENDIX D

Water Quality Standards

Water Quality Parameters / Water Uses	A	B	C
(1) Organisms of the Coliform Group by MPN or equivalent MF, using a representative number of samples (where associated with fecal sources).	Average less than 50 per 100 m l in any month.	Average less than 2,000 per 100 m l over any consecutive 30 days. Not more than 20% of samples examined during this period should exceed 2,000 per 100 m l.	Average Less than 1,000 per 100 m l with 20% of samples not to exceed this number. No sample shall exceed 2,400 per 100 m l.
(2) Dissolved Oxygen mg/ l or % saturation	Greater than 75% saturation.	Greater than 60% saturation	Greater than 5 mg/ l
(3) pH - Natural pH conditions outside this range shall be maintained without change. Induced variation less than 0.5 pH unit.	Between 6.5 and 8.5	Between 6.5 and 8.5	Between 6.5 and 8.5
(4) Turbidity - Jackson Turbidity Units = JTU	Less than 5	Less than 5 above natural conditions.	Below 25 except when natural conditions lie above this figure, then effluents shall not increase the turbidity.
(5) Temperature °F	Below 60°F - waste flows above 60 °F adjusted to ambient receiving water temperature.	Below 60 °F - waste flows above 60 °F adjusted to ambient receiving water temperature.	Numerical value is not applicable.
(6) Dissolved Inorganic substances	Total dissolved solids under 500 mg/ l. None in addition to natural background if this value exceeds 500 mg/ l.	Numerical value is not applicable.	Numerical value is not applicable.
(7) Residues: Oils and floating solids, sludge deposits	Below normally detectable amounts.	Below normally detectable amounts.	No visible concentrations of wood fiber, oil sludge, sewage, scum, foam, or other wastes that may adversely affect the use indicated.
(8) Sediment	Below normally measureable amounts in the water diverted.	No imposed loads that will interfere with established levels of treatment.	Numerical values not applicable. No visible concentrations of silt.
(9) Toxic or other deleterious substances, pesticides, and related organic and inorganic materials.	Chemical constituents should conform to current USPHS Drinking Water Standards. CCE (carbon chloroform extract) 0.1 mg/ l.	Chemical constituents should conform to current USPHS Drinking Water Standards.	None or below concentrations found to be of public health significance.
(10) Color	True color less than 15 color units.	True color less than 15 color units.	True color less than 15 color units.
(11) Radioactivity	Conform with current USPHS Drinking Water Standards.	Conform with current USPHS Drinking Water Standards.	Conform with current USPHS Drinking Water Standards.
(12) Aesthetic Considerations	Shall not be unreasonably impaired by the presence of materials or their effects (excluding those of natural origin) which are offensive to the sense of sight, smell, taste or touch.	Same as A-12	Same as A-12

Table 6
Water Quality Standards for the State of Alaska

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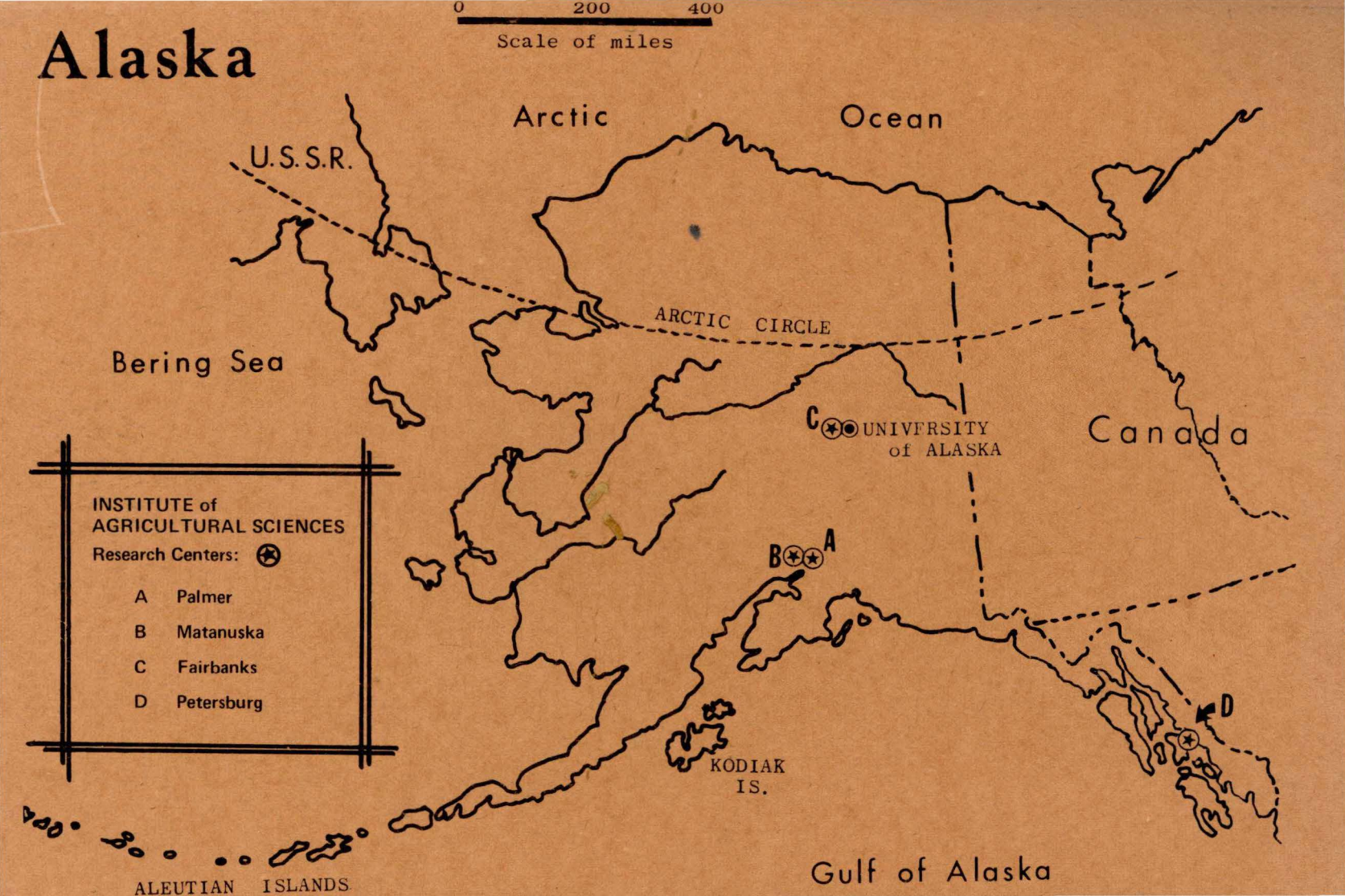
Alaska
0 200 400
Scale of miles
Arctic Ocean
U.S.S.R.
ARCTIC CIRCLE
Bering Sea
C UNIVERSITY of ALASKA
Canada
INSTITUTE of AGRICULTURAL SCIENCES
Research Centers:
A Palmer
B Matanuska
C Fairbanks
D Petersburg
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KODIAK IS.
ALEUTIAN ISLANDS
Gulf of Alaska