

# MYSTIC MOUNTAIN:

an educational alternative futures  
wildland planning game

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Alternative futures planning is a generic name for a number of planning approaches which recognize that the future is uncertain. There is not one future, preordained and universally known, but rather a variety of possible futures, any one of which may occur. *Mystic Mountain* is an educational game which teaches wildland planners and managers important concepts in alternative futures planning while they attempt to manage a hypothetical national forest for 75 years. It combines education and fun in a few hours of playing time.

*Retrieval Terms:* Forest management; resource management; futures planning; alternatives management games.

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*Note:* Duplicate pages for copying, perforated for easy removal, are provided following page 8.

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# MYSTIC MOUNTAIN

## NATIONAL FOREST



Team \_\_\_\_\_

Period \_\_\_\_\_

### COLOR CODE

### OUTPUT

- yellow  -- Camping
- red  -- Primitive recreation
- blue  -- Skiing
- green  -- Timber harvesting
- brown  -- Spiritual value
- (with diagonal lines) -- Existing use  
To indicate old or existing uses at beginning of period, use diagonal lines of appropriate color.
- New use  
To indicate uses added during period, use solid color.

Required

Produced

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

Note: Each square = 1000 acres.

“This game is serious!” “No, this game is fun!” These comments by players are both right. Mystic Mountain is an educational tool, a game, which teaches wildland planners and managers important concepts of alternative futures planning. The game is patterned after the management of a hypothetical mountainous national forest. During the play of the game, in which 75 years are condensed into approximately 4 hours, the players work together in small teams to manage an area of land, attempting to meet the demands imposed on them by a changing world. The land being managed has potential for a wide variety of uses, from preservation to intensive summer recreation, ski area development, and timber harvesting.<sup>1</sup> The game is designed so that every team can win, but only if they apply several basic concepts of alternative futures planning.

Games can be valuable educational tools, especially for communicating concepts. If they are enjoyable, games capture interest and involve the student in learning in a way that a lecture or a book cannot. The challenge and competition are an immediate motivation for learning, reinforcing the long-term motivation supplied by the knowledge that the concepts to be learned may be useful in the future. People are more receptive to ideas which they associate with pleasurable experiences. Through involvement in a game players can discover concepts for themselves, and thus acquire a deeper understanding and acceptance than can be achieved in a lecture. A realistic game, especially one with which the players personally identify, gives substance to abstract concepts. It lets the players taste in just a few hours the rewards of learning and applying these concepts, as well as the consequences of failing to apply them. In the real world these rewards and consequences may take decades to unfold. To condense these decades into a few hours, however, requires that the planning situation be simplified. The players, who may recognize these simplifications for what they are, accept the necessary rules and restrictions as part of the game and do not demand a precise simulation of the real world.

The game described here introduces alternative futures planning—a generic name for a number of

planning approaches<sup>2</sup> which recognize that the future is uncertain, and that there is not one future, preordained and universally known, but rather a variety of possible futures, any of which may occur. To some degree, we can control the future by working toward the future that we desire. However, to a large degree the future is beyond our control and we discover it as it occurs. Many planning processes ignore this, and prepare to respond only to the most probable future or to the planning organization’s “official” future. Alternative futures planning, on the other hand, explicitly recognizes the variety of possible futures, strives to identify decisions that destroy future options, and dictates management which meets the demands of today while preserving or enhancing ability to meet the demands of a number of possible tomorrows.

The Mystic Mountain game teaches several important concepts from alternative futures planning, concepts that could be adapted to a wide variety of planning processes.

1. There are alternative futures, which place different demands on land managers. In the Mystic Mountain game, a set of believable scenarios—short word pictures of the future—describe alternative conditions under which the players may have to manage the land. A different set of demands has been developed for each scenario. Because the players do not know which of the futures will occur, yet must be prepared to meet the demands of any future, the players are forced into planning for a range of alternative futures.

2. The preservation of options is important. The goal of the players is to manage the land, meeting the demands of the scenarios that occur. Because it is impossible to meet all the demands of all the scenarios simultaneously, the players soon discover that

- (a) The management activities they choose foreclose future options and their ability to meet the demands of the scenarios.

- (b) Some activities in some locations foreclose more options than others.

- (c) A careful choice of activities will preserve enough options to meet the demands.

- (d) It is sometimes important to delay a decision about the use of a prime site, because the demands of the different possible futures would dictate different uses.

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<sup>1</sup> Another version of the game, in which coal development becomes a key issue, is available. Although it differs in details, it is played in the same way and teaches the same concepts. Using the version which most closely reflects the players’ involvement in planning often increases learning.

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<sup>2</sup> For one such approach see Creighton, James L., 1976, *Alternative Futures Planning*, Div. of Planning Coordination, Bur. Reclam., U.S. Dep. of Inter., Denver, Colo. 141 p.

3. Some activities actually create future options. Through proper sequencing, the same piece of land can provide many seemingly conflicting outputs over time. For example, no one wants to camp in the middle of a recently logged, slash-filled area, yet that same area can be the site of a beautiful campground 30 years after logging. Therefore the game requires a delay between seriously conflicting uses of the same land. Players who put off decisions too long find themselves unable to schedule a second use of a site. Where conflicting uses must be spread out over time, the failure to act may eliminate the choice of providing both uses.

4. Meeting the demands faced by wildland management organizations requires careful, long-range planning. At the beginning of a game the players find themselves responsible for meeting these demands for

a period of 75 years. They must meet the demands of today, but they also must be prepared to meet the demands of tomorrow. By following the same piece of land through 75 years, they experience at first-hand the rewards of careful planning and the punishments of inadequate planning.

Although the game is complete by itself, it is most educational when used as part of a one day workshop or training session. A suitable training session format includes a presentation of the concept of alternative futures and scenarios, and a discussion of the types of scenarios that may influence future wildland management. The discussion is followed by the game, which teaches planning and management concepts, and then by a discussion of the game. This format leaves a couple of hours in the afternoon for additional training or discussion of related subjects.

## PLAYING THE GAME

The instructor or workshop leader should act as the game leader. After introducing the game, the leader divides the players into teams of two or three people.

Each team is given a copy of the game description, five copies of the Mystic Mountain map, and colored pencils for filling in the maps. Any number of teams can play at one time, but if there are more than five teams the leader should probably have help. One assistant for every five additional teams is needed to answer questions, assure that the rules are being followed, check the maps, and lead group discussions.

The game is conducted during five periods, each one representing 15 years of elapsed time. The first period should last one hour, and all subsequent periods 30 minutes.

At the beginning of each time period, the leader reads the current situation description for that period (see p. 8). This tells the players what has occurred in the world during the last 15 years, what scenario they can expect for the next 15 years, and thus what are the minimum output levels they must provide. The current situation description provided has been chosen to emphasize the teaching points discussed earlier, but alternative current situation descriptions could be easily prepared.

Next, each team examines the productivity information and rules included in the game description. The team members decide where to build campgrounds, harvest trees, preserve in a natural state, and so on, during that time period, in order to meet the

demands of the current situation. The locations chosen are entered on a copy of the Mystic Mountain map, using the appropriate color codes.

For all periods except the last, once the decisions are recorded, someone in the team should copy the information onto another copy of the map as existing uses, to be used during the next period. The earlier map is then given to the leader to be checked. For consistency, when coloring the maps, all teams should use the same color codes (as shown on map, or as decided by the leader), should indicate old or existing uses at the beginning of a period with appropriately colored diagonal lines on the map for that period, and should use solid colors for uses added during that period. The leader should check the completed maps for errors during the next time period, and then return them to the teams. Any errors should be immediately reported to the team for correction before that team prepares its map for the next period.

After all five time periods have been played, one member of each team is asked to present an account of what the team did and why they were or were not able to win. The leader should steer the discussion to the teaching points presented earlier, if these do not arise naturally, and should encourage the players to discuss how their strategies and game experiences related to these points. This is also an ideal time to discuss the implications of the game for the players' roles in wildland planning and management.

The following section describes the game. A copy of these pages is given to every team. Duplicate pages for copying are provided following page 8.

# MYSTIC MOUNTAIN: AN ALTERNATIVE FUTURES PLANNING GAME

This game is designed to simulate the management of the Mystic Mountain National Forest for a period of 75 years. You are a member of the management team.

The Mystic Mountain National Forest consists of Mystic Mountain peak itself, and the surrounding land. Mystic Mountain is world renowned for the beauty of its snowcapped peak. The mountain rises abruptly out of the surrounding valley floor, and is unquestionably the dominant geographic feature of the area for about 100 miles around.

The problem of managing the Mystic Mountain National Forest is uncertainty about what it should be managed *for*. A number of competing uses of the land are possible, and it is presently very difficult to predict which demands upon the land will be of greatest importance in future years.

## ***Competing Uses of the Land***

1. *Timber Harvesting*—There is a considerable amount of prime timberland within the forest. All timber is harvested by clear-cutting, the most suitable method for the species present.

2. *Primitive Recreation Activities*—Because the Mystic Mountain area is quite famous, there is strong demand for dispersed recreation activities (such as hiking, backcountry camping, and fishing) in a primitive setting. The demand for this type of recreation has grown dramatically during the last 10 years, and may continue to do so.

3. *Camping*—There is also a great demand for campgrounds, often by persons using campers and trailers. Mystic Mountain is just a few miles off the main north-south highway in the State, so there has been a steady increase in demand for developed camping sites.

4. *Skiing*—A small ski area currently exists on Mystic Mountain. This area can be expanded to provide additional skier capacity. The major question is whether or not the demand for skiing in this area will continue to grow. This ski area has to compete with major regional ski areas closer to the metropolitan area which are currently more developed. There is a certain amount of condominium and second-home development related to skiing, on private land which adjoins the forest.

5. *Spiritual Values*—Portions of Mystic Mountain are considered to be sacred by local Indian tribes. In

addition, several unorthodox religious groups believe that Mystic Mountain has special spiritual significance, and there are now several religious retreats on private land in the area.

## ***Physical Characteristics***

The Forest is divided into five main areas, each of which has different use characteristics.

### *Area 1*

16,000 acres. Relatively modest potential for camping, primitive recreation activities and timber. No skiing. No spiritual value.

### *Area 2*

36,000 acres. Relatively good camping and primitive recreation potential. Moderate timber potential. No skiing. No spiritual value.

### *Area 3*

16,000 acres. This is the area of greatest conflict. It has excellent timber and summer recreational potential. It is the site of all ski development. It also has spiritual value.

### *Area 4*

12,000 acres. This is the peak of the mountain and can be used only for primitive recreation and to provide spiritual value.

### *Area 5*

20,000 acres. This area has relatively good camping, primitive recreation, and timber potential. There is no skiing or spiritual value.

Quantitative descriptions of the productivity of each of these units are given in *table 1*.

## ***Alternative Future Scenarios***

A team of Forest personnel, researchers, and consultants have identified a set of four scenarios—short word pictures of the future—which portray the most likely conditions under which the land will be managed over the next 75 years. These scenarios are summarized below.

1. *A Gas Shortage*—A major fuel shortage severely restricts use of the private automobile. Fuel is available for public transportation on a priority basis. At

Mystic Mountain, restrictions on use of private automobiles would greatly reduce the amount of summer recreation (both primitive and developed camping) and skiing. Since Mystic Mountain is a few miles from the railroad, possibly weekend and summer rail transportation could be arranged for recreationists, but certainly recreation use would not continue to grow at its present rate. With recreation use significantly reduced, the land could be managed for timber, but the repercussions of the energy shortage on building would reduce the need for intensive timber management. The effects of a fuel shortage are estimated to last for approximately 15 years, at which time it is assumed other energy sources will have been developed.

2. *Continued Growth in Mass Recreation*—The current trends of expansion in demand for recreation opportunities are assumed to continue. In particular there are demands for large increases in skiing and camp sites, with some increased demand for primitive recreation activities. There is considerable development of second homes and condominiums on adjoining land. Recreation and tourism become more important than timber in the local economy.

3. *Primitive Recreation Activities and Spiritual Values*—A major values shift has occurred, so that Americans are now placing greater emphasis on environmental values, with a down-playing of material values. The result is a great increase in demand for primitive recreation activities, and a modest increase in camping and skiing. A part of the values shift is a change in religious beliefs, with mystic and Eastern religions assuming greater importance. Many religious groups consider Mystic Mountain to be sacred, and fight for preservation of its spiritual values. Spiritual

experiences are now considered an essential part of adulthood for a number of these groups, and individuals often spend a week in such places as Mystic Mountain on a spiritual quest. However, as there has been no decline in population, demand for timber from the mountain at a level equal to the present rate of production continues.

4. *A Timber Shortage*—A major timber shortage is assumed, with an increased 15-year demand of 90 million board feet over the present from the Mystic Mountain National Forest. This increase in timber production is in response to political pressure from lower and middle socio-economic groups who are not able to afford a home. In addition, because most nonrenewable resources are very scarce, a number of processes have been developed for use of wood fiber for various products instead of nonrenewable materials such as petroleum. Since these major increases in timber production must be accomplished by clear-cutting on this National Forest, the land becomes less attractive for dispersed recreation activities. There is a continuing demand for camp sites, however. Because of the unique character of Mystic Mountain, the demand that the peak (which has almost no timber value) be preserved for spiritual values continues.

*NOTE: Any of the scenarios may occur initially. The likelihood of a major fuel shortage occurring decreases sharply after the first 30 years. Because the future is uncertain, it is highly desirable to manage the land in such a way that options are preserved, so that in the future the land can be managed in response to any of the scenarios.*

Minimum output requirements for each scenario are shown for each 15-year period in *table 2*. Requirements vary according to scenario, by period.

Table 1 *Productivity of areas of Forest, according to use*

Area (acres)	Camping	Primitive recreation activities	Skiing	Timber	Spiritual value
	—— <i>Visitor days/1000 acres/year</i> ——			<i>Million bd.ft./1000 acres</i>	
1. 16,000	2000	1000	—	5	Low
2. 36,000	4000	2000	—	10	Low
3. 16,000	8000	3000	20,000	40	High
4. 12,000	—	500	—	—	High
5. 20,000	4000	2000	—	20	Low

Table 2- *Minimum output requirements by scenario and time period of play*

Scenario and period	Camping	Primitive recreation activities	Skiing	Timber harvest	Spiritual value
	—— <i>Thousand visitor days/year</i> ——			<i>Million bd. ft. (total for period)</i>	<i>Acres of high value<sup>1</sup></i>
All:					
Period 1	10	20	20	180	15,000
1. Gas shortage:					
Period 2	8	15	16	120	15,000
Period 3	18	16	17	120	15,000
Period 4	10	18	18	120	15,000
Period 5	11	20	20	120	15,000
2. Continued growth in mass recreation:					
Period 2	22	25	40	180	15,000
Period 3	34	30	60	180	15,000
Period 4	46	35	80	180	15,000
Period 5	58	40	100	180	15,000
3. Primitive recreation activities, spiritual values:					
Period 2	18	27	25	180	22,000
Period 3	26	33	30	180	22,000
Period 4	34	41	35	180	22,000
Period 5	42	49	40	180	22,000
4. Timber shortage:					
Period 2	16	22	25	270	15,000
Period 3	22	24	30	270	15,000
Period 4	28	20	35	270	15,000
Period 5	34	15	40	270	15,000

<sup>1</sup> 2 acres of medium spiritual value equal 1 acre of high value.

## Rules

**Object**—The object of the game is to manage the Mystic Mountain National Forest for a total of 75 years, meeting the minimum output requirements for each 15-year period, regardless of which scenario occurs. The game is played against these standards, so that none, a few, or all of the teams could win.

**Materials**—Each team is given five maps of the Forest, productivity information for the Forest, a table of minimum outputs required for each period under several possible future scenarios, and colored pencils to mark the location of management activities on the map.

**Play**—There are five time periods of play each representing 15 years. At the beginning of each time period, the leader of the game will indicate what scenario and minimum output levels are in force for the next 15 years. Each team then examines the options and indicates the location of management activities needed to meet the output requirements. If the team cannot meet all of the output targets, it should attempt to identify what previous actions or situations prevented it from reaching the targets for later discussion. Even if a team is unable to meet all the targets in one time period, it should continue to play the game in future time periods, taking advantage of options that open up over time and hoping for a change in scenarios.

*NOTE: The minimum output levels for each separate scenario can be reached, although some require a careful sequencing of activities. The ability to respond to changing scenarios during the play of the game depends on a combination of foresight and luck. Teams which take the time to develop long-range management plans should have an advantage.*

At the end of each time period the game leader collects the maps containing that period's activities and checks them for errors. Thus, toward the end of each period except the last, someone on each team must prepare the map to be used during the next period by copying all existing uses—including those begun in this period—onto a fresh copy of the map. The first time period will be 1 hour long, and the others will last 30 minutes.

**Restrictions**—In an effort to reflect reality and keep the problem simple enough to be solved in a limited time, certain basic rules for each kind of management activity have been formulated.

### *Campgrounds*

1. No campground can be built on a site that has been logged in the immediately preceding time period.
2. To justify the initial expense, once a campground is built it must be operated as a campground for two periods before it can be used for another purpose.

### *Primitive Recreation Activities*

1. Land which has been managed for primitive recreation activities can be diverted to other uses at any time.
2. No land may be used for primitive recreation activities if it has been previously logged at any time during the game.
3. A campground must have been closed and left idle for one time period before that land becomes suitable for primitive recreation activities.

### *Ski Area Construction*

1. The only ski area sites on Mystic Mountain are in area 3.
2. All expansion must be contiguous to the existing site and occur in 1000-acre blocks.
3. Ski area construction can follow any other activity. Logging and ski area development can occur in consecutive periods, but not in the same period, as time must be allowed to assure trees of sufficient height along the ski runs.
4. Ski area construction is permanent. No other management activity can occur on this land during the game once it has been developed for skiing.

### *Timber Harvesting*

1. All logging is by clearcutting.
2. The rotation age is 75 years; each acre in the forest can be cut only once during the game.

### *Spiritual Values*

1. Only areas 3 and 4 have high spiritual value.
2. Land which has previously been logged can provide only low spiritual value.
3. Land previously a campground must have been left idle for at least one time period before it provides high spiritual value.
4. Primitive recreation lands can provide spiritual value, but if an area of high spiritual value is also used for primitive recreation, it is reduced to a medium level of spiritual value.
5. In meeting the demands for spiritual value, two acres having medium spiritual value are equivalent to one acre having high spiritual value.

The effects of one use on the ability of the land to sustain other uses are summarized in *table 3*.

Table 3– Use restrictions during the game

Use	Effect on other uses of the same land during later periods of the game				
	Camping	Primitive recreation activities	Skiing	Timber harvest	Spiritual value
Camping	–	Wait 3 periods, last one with land idle.	Wait 2 periods	Wait 2 periods	Wait 3 periods, last one with land idle.
Primitive recreation activities	No effect	–	No effect	No effect	Reduces high value to medium if at the same time.
Skiing	Option foreclosed	Option foreclosed	–	Option foreclosed	Option foreclosed
Timber harvest	Wait 2 periods	Option foreclosed	Wait 1 period	–	Option foreclosed
Spiritual value	No effect	No effect	No effect	No effect	–

## Current Situation Instructions

*Leader*—At the beginning of each time period during the play of the game, read the current situation for that period. For your use in checking the completed maps after each period, a summary of required minimum outputs is given in *table 4*.

### Period 1

You are the managers of the Mystic Mountain National Forest. The only existing facility at this time is a small ski area in unit 3 as shown on your map. You may place all other activities and facilities anywhere you wish on the Forest, consistent with the rules. For minimum output levels you must provide, refer to *table 2*. In 1 hour I will collect the maps you have prepared showing the location of activities and facilities. At that time I will tell you which of the scenarios is occurring and, therefore, what your required minimum output levels for the next period will be. Don't forget to copy the locations from your period 1 map onto your period 2 map as existing facilities before you give me your first map.

### Period 2

Fifteen years have now passed. The mass recreation trends of 15 years ago continued, with their resulting high-level mass recreation demands on Mystic Mountain. For the next 15 years you should provide the minimum output levels listed in *table 2* under the mass recreation scenario, Period 2. You have one half hour to prepare your maps for this and all future time periods.

### Period 3

You are now 30 years into managing the Mystic Mountain National Forest. The feared gas shortage never did occur, and the danger is now past. For the next 15 years the mass recreation scenario will con-

tinue. At the same time, the conditions of the primitive recreation and spiritual value scenario have occurred recently. Thus, for the next 15 years you must manage the Mystic Mountain National Forest in order to meet the demands of both scenarios 2 and 3. That is, for each output you should compare the minimum requirements for the third period in each scenario and produce whichever amount is higher. You have 30 minutes to complete your maps.

*NOTE:* At this point we have played a small trick on the players by giving them the demands of two scenarios to satisfy when they were only warned to expect one. This should help the players realize that the scenarios need not be mutually exclusive in real life, and that even the uncertainties are uncertain.

### Period 4

During the last 15 years there has been a significant shift in the living conditions in the U.S., so that the timber shortage scenario, 4, is now in effect. For the next time period you should meet the minimum output levels given under Scenario 4, Period 4.

### Period 5

The timber shortage continues. Finish the game by meeting the required output levels for period 5 of this scenario.

*NOTE:* New "current situation instructions" can be developed by varying the scenarios chosen in periods 2 through 5 when a number of the players are playing the game for the second time. To do this, choose a sequence of scenarios other than those contained in these instructions and prepare a short explanation for each time period of why one scenario is replaced by another. The players continue to use tables 1, 2, and 3 to determine productivity levels and minimum outputs.

Table 4—Current situation minimum output requirements

Period	Scenario	Camping	Primitive recreation activities	Skiing	Timber harvest	Spiritual value
		— Thousand visitor days/year —			Million bd. ft. (total for period)	Acres of high value <sup>1</sup>
1	All	10	20	20	180	15,000
2	2	22	25	40	180	15,000
3	2 or 3	34	33	60	180	22,000
4	4	28	20	35	270	15,000
5	4	34	15	40	270	15,000

<sup>1</sup> 2 acres of medium spiritual value equal 1 acre of high value.

## FOR LEADER ONLY

### **Current Situation Instructions**

*Leader:* At the beginning of each time period during the play of the game, read the current situation for that period. For your use in checking the completed maps after each period, a summary of required minimum outputs is given in *table 4*.

#### *Period 1*

You are the managers of the Mystic Mountain National Forest. The only existing facility at this time is a small ski area in unit 3 as shown on your map. You may place all other activities and facilities anywhere you wish on the Forest, consistent with the rules. For minimum output levels you must provide, refer to *table 2*. In 1 hour I will collect the maps you have prepared showing the location of activities and facilities. At that time I will tell you which of the scenarios is occurring and, therefore, what your required minimum output levels for the next period will be. Don't forget to copy the locations from your period 1 map onto your period 2 map as existing facilities before you give me your first map.

#### *Period 2*

Fifteen years have now passed. The mass recreation trends of 15 years ago continued, with their resulting high-level mass recreation demands on Mystic Mountain. For the next 15 years you should provide the minimum output levels listed in *table 2* under the mass recreation scenario, Period 2. You have one half hour to prepare your maps for this and all future time periods.

#### *Period 3*

You are now 30 years into managing the Mystic Mountain National Forest. The feared gas shortage never did occur, and the danger is now past. For the next 15 years the mass recreation scenario will con-

tinue. At the same time, the conditions of the primitive recreation and spiritual value scenario have occurred recently. Thus, for the next 15 years you must manage the Mystic Mountain National Forest in order to meet the demands of both scenarios 2 and 3. That is, for each output you should compare the minimum requirements for the third period in each scenario and produce whichever amount is higher. You have 30 minutes to complete your maps.

*NOTE:* At this point we have played a small trick on the players by giving them the demands of two scenarios to satisfy when they were only warned to expect one. This should help the players realize that the scenarios need not be mutually exclusive in real life, and that even the uncertainties are uncertain.

#### *Period 4*

During the last 15 years there has been a significant shift in the living conditions in the U.S., so that the timber shortage scenario, 4, is now in effect. For the next time period you should meet the minimum output levels given under Scenario 4, Period 4.

#### *Period 5*

The timber shortage continues. Finish the game by meeting the required output levels for period 5 of this scenario.

*NOTE:* New "current situation instructions" can be developed by varying the scenarios chosen in periods 2 through 5 when a number of the players are playing the game for the second time. To do this, choose a sequence of scenarios other than those contained in these instructions and prepare a short explanation for each time period of why one scenario is replaced by another. The players continue to use *tables 1, 2, and 3* to determine productivity levels and minimum outputs.

Table 4. Current situation minimum output requirements

Period	Scenario	Camping	Primitive recreation activities	Skiing	Timber harvest	Spiritual value
		— Thousand visitor days/year —			Million bd. ft. (total for period)	Acres of high value <sup>1</sup>
1	All	10	20	20	180	15,000
2	2	22	25	40	180	15,000
3	2 or 3	34	33	60	180	22,000
4	4	28	20	35	270	15,000
5	4	34	15	40	270	15,000

<sup>1</sup> 2 acres of medium spiritual value equal 1 acre of high value.



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