

# PREPLANNING:

Surface Mining For Outdoor Recreation





**U.S. DEPARTMENT OF THE INTERIOR**  
**Rogers C. B. Morton, Secretary**

**Bureau of Outdoor Recreation**  
**James G. Watt, Director**

**Washington, D.C. 20240**

*As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.*

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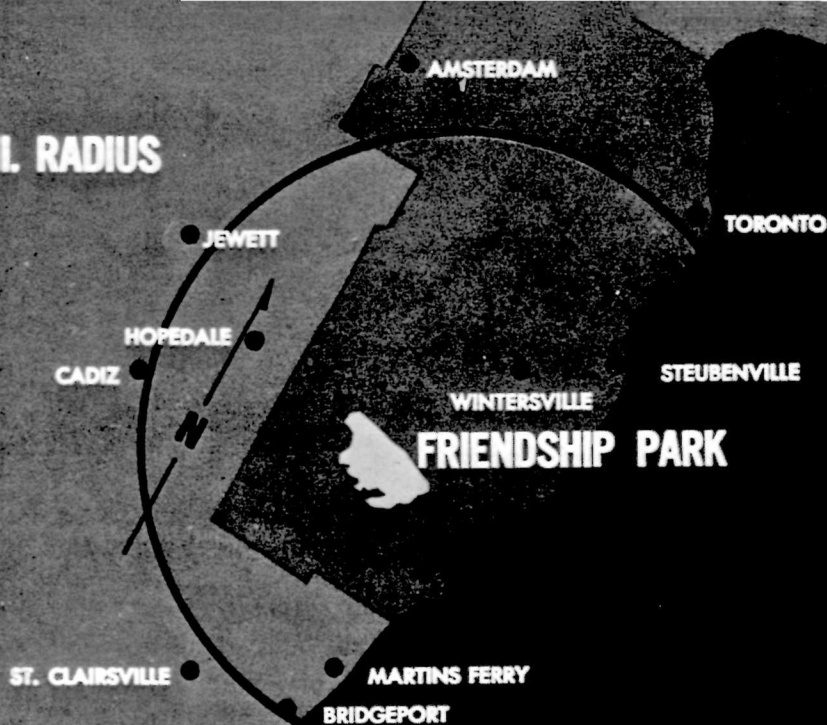
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**15 MI. RADIUS**



*Jefferson County, Ohio*

## **INTRODUCTION**

### **FRIENDSHIP PARK: A Case Study for Preplanning**

In Jefferson County, Ohio, some 40 miles west of Pittsburgh, Pennsylvania, and 150 miles east of Columbus, Ohio, lie the beginnings of a 1,100-acre, year-round recreational complex in one of Ohio's most densely populated Appalachian counties. The Friendship Park complex is planned to be a source of economic growth and civic pride to the community in which it is located, as well as a major tourist attraction for the entire State.

Today, the area only slightly resembles a recreation complex because many acres still remain in the condition left by a working strip mine. It is difficult to imagine the strip-mined land will eventually become a four-season recreational park, but it will. Plans call for an 85-acre lake for fishing and boating, ski slopes, picnic areas, hiking trails, camping areas, a wildlife refuge and a fairground. In addition, part of the area will be used for a county airport and sewage treatment plant.



*Initial Concept, Friendship Park*



*Preplanning stripping, grading, and reclaiming operations, Friendship Park*

Transformation of surface-mined areas for recreation and other uses is often desirable and has been accomplished numerous times. In most instances, however, the transformation was not begun until all mining operations had ceased, involving considerable effort and expense on the part of the mining operator. What is unusual and important in the case of Friendship Park is that the idea for transformation was conceived before any excavation took place, and planning was accomplished prior to and concurrent with mining operations.

In 1968, although densely populated and relatively affluent, Jefferson County, Ohio, offered little in the way of recreational facilities. Many communities in the area had no recreational facilities—not even a municipal park. The county's Park Advisory Committee—appointed to investigate recreation needs and find a new location for the fairground—noted that residents had to travel many miles into neighboring counties, or into West Virginia, to enjoy water sports and other leisure time activities.

Eleven hundred acres of a working strip mine offered a solution to the problem. The Jefferson County Commissioners, consulted by R. D. Zande and Associates, applied to the Appalachian Regional Commission and the Bureau of Mines, U.S. Department of the Interior, for funds and assistance to reclaim the land for recreational use. Their plans for development fell into four phases. Phase I includes the 85-acre fishing and boating lake which a fill dam will provide, building and installing a county airport for private and industrial use, two picnic areas, and hiking trails. Phase II construction plans call for ski slopes, a wildlife refuge, a firing range, boat docks, day camping areas and a sewage treatment facility that will serve the nearby town of Smithfield as well as the park. Phases III and IV will encompass additional year-round recreational facilities in the park plus a county fairgrounds complete with a half-mile racetrack. Other facilities will be an 18-hole golf course, a flying school and an agricultural experiment area.

Fortunately for Jefferson County, the Hanna Coal Company of Cadiz, Ohio, donors of the land, had long envisioned a project such as Friendship Park and had the foresight to preplan stripping, grading, and reclaiming



*Development for Friendship Park continues*

operations in such a way as to make the dam, airport, and other construction possible and allow for easy access to the area. Although the projected completion date for Friendship Park is 1980, numerous tasks were preplanned before all actual mining had ceased on the site. Constructing the dam and reservoir culminated many years of technical studies and surveys, consultation, applications, and approvals involving various State and Federal agencies. Biological and engineering reconnaissance reports on the site were prepared by the Bureau of Sport Fisheries and Wildlife of the U.S. Department of the Interior. Early hydrologic investigation of the creek determined its suitability for recreation.

Preplanning surveys outlined the best location for the airport; subsequent grading, stripping, and reclamation work consequently required a minimum of operations and earthmoving.

Before, during, and after excavations, surveying and planning have helped determine the best future use of the land with a minimum of environmental and economic complications. Examination of the topsoil, mineral, ground and water strata, air quality, and in some areas, the archeology, has aided selection of areas where rehabilitation can improve land value. The preplanning also has helped set aside areas that should not be mined.

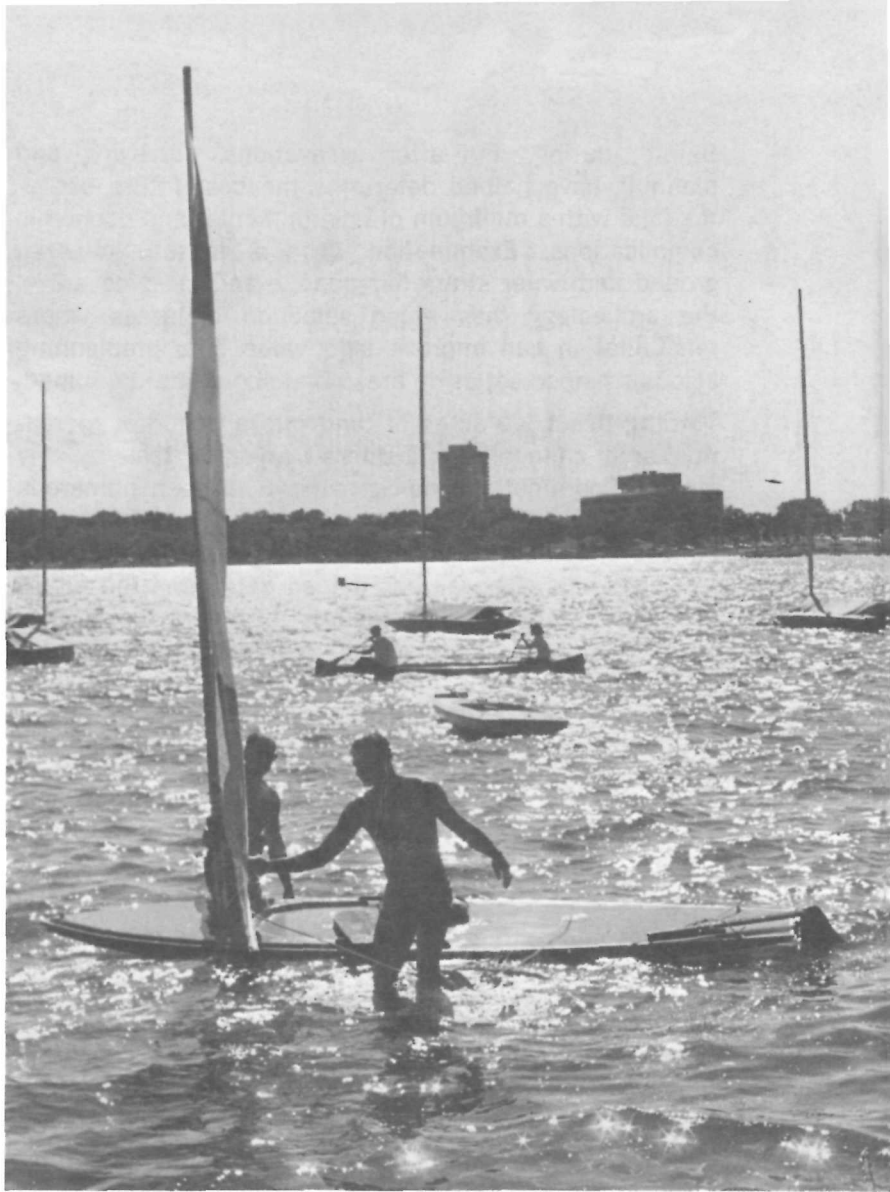
Turning this 1,100 acres of land into a beautiful recreation area cannot be considered an easy task by any means. Coordination and agreement between numerous diverse interests have been necessary. Yet Friendship Park is becoming a reality. Preplanning undertaken before strip-mining began has helped determine the future use of the land. Taking measures to protect the land in advance of any disruptive action insures protection of environmental quality and long-term usefulness of mined lands. The new park and airstrip will make Jefferson County a more attractive and accessible place for people to live and companies to do business.

*Grading for lake, Friendship Park*



*Stripping, grading and reclamation  
in anticipation of airport, Friendship Park*





## THE NEED FOR A DESIRABLE USE OF SURFACE MINED LANDS

### **SURFACE MINING RECLAMATION: Federal and State Roles**

Stated simply, surface mining consists of recovering mineral or fossil fuel deposits by removing topsoil, rocks, and other strata that lie above them. The words "strip mining" often evoke a violent reaction from people be-

cause the operation usually reshapes the land surface, alters normal surface and subsurface drainage patterns, and impacts on surrounding air, land, and water. Streams and other waters sometimes are polluted by acid and sediment; wildlife habitats are disturbed; and dust and vibrations resulting from blasting and movement of equipment can be annoying. In many cases, the strip mined land is left unreclaimed and wasted. According to a survey conducted by the Soil Conservation Service, as of January 1, 1974 land in the United States disturbed by surface mining for coal, sand and gravel and other commodities totaled over 4.4 million acres. Of this, at least 2.5 million acres are in need of reclamation.

Federal, State and local governments see the need for a concentrated, long-range effort to counteract these processes. In February 1972, the Department of the Interior, under Secretary Rogers C. B. Morton, instituted a program to restore surface mined lands for future industrial and commercial development, wildlife habitat, and recreational activities. The Interior Department has initiated a three part program to make surface mined land useful again. The Department is seeking to intensify research and demonstration work on mine area reclamation. It has encouraged States and localities, through use of the Bureau of Outdoor Recreation's Land and Water Conservation Fund, and other means, to acquire and develop land previously damaged by surface mining. It has submitted to Congress comprehensive mined land legislation under which land would be restored for useful purposes.

Many States have passed laws controlling surface mining of certain commodities. Although the controls are directed mainly at the surface mining of coal, their existence has prompted a closer look at the surface mining of other commodities and has induced other States and industries to give serious thought to the possible need for mining laws and reclamation standards.

Other forms of legislation, such as water-pollution control statutes, enable many States to exercise some control over surface mining. A number of States have used direct appropriations or money from forfeited bonds to restore abandoned mined tracts. In West Virginia, the State collects a fee from current operators based on



acreage under permit. The money is used for the specific purpose of reclaiming orphan or derelict lands. State funds also have been made available to universities and research foundations for research and demonstration activities designed to promote reclamation and to educate personnel in reclamation techniques. Some State funds also have been used to cooperate with the Federal Government, through the Appalachian Regional Commission and the Department of the Interior, for reclamation of publicly-owned lands under the Appalachian Regional Development Act of 1965 (Public Law 89-4). Soil and Water Conservation Districts, political subdivisions of States, have proven highly effective in getting conservation measures applied to surface-mined lands.

## **Pressures on the Industry**

Although repair and reclamation of areas damaged by surface mining have not always been considered an integral part of the mining cycle, today many mining companies are directing their attention to developing reclamation techniques that will return mined land to its optimum condition and appearance. In the past, reclamation frequently suffered because of a lack of knowledge and research on effective methods. New research and techniques are aiding the mining operator. Yet, along with new research and techniques have come many pressures on the mining industry to reclaim strip mined lands. Several factors account for these increasing pressures for wise land use:

### **Public Awareness**

Pressures have developed because of an increase in population density around mined areas. This means that more people are affected, and sometimes outraged against mining. In addition, major environmental management and resource conservation proposals have emerged as public priorities. National television and press have provided nearly everyone with high impact visualization of the immediate effects of surface mining.

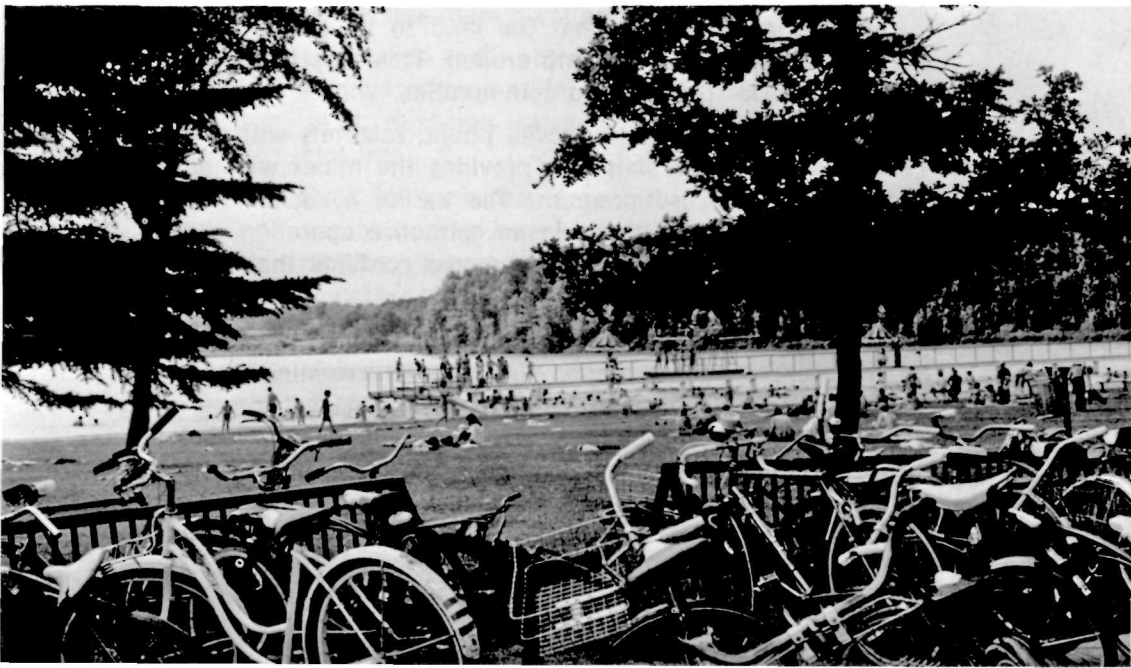


## **Land Use Concern**

States have become increasingly concerned with land use principles in both rural and urban areas. Some States have adopted land use regulations which seem to limit and hinder, as well as protect, mining operations. In some cases, local ordinances establish a wide range of rehabilitation standards. These are aimed at eliminating objectionable operations and undesirable land forms on surface mining sites. Many times, zoning regulations, on the county and municipal level, have been invoked with court actions where necessary, to prevent mining or require reclamation.

## **Economic Incentives**

As land values increase within or near urban areas, mining operators are finding mined land reclamation economically justifiable. Land reclamation measures which increase profits are an attractive incentive to the mining companies. In Grand Rapids, Michigan, a \$50 per acre sand and gravel pit area reclaimed as a recreational park was worth \$2,500 per acre.



## **PREPLANNING: Social, Environmental and Economic Benefits**

In the mining industry, any reclamation process traditionally has taken place after extractions were completed. The objective has been to repair and modify the scarred and wasted land. A more positive approach is to eliminate waste land as an end product by predetermining extraction operations before mining begins. Preplanning involves two major phases of surface mining operations. First, the discovery, delineation and proving of deposit and, second, the extraction and basic reclamation of the site from which the ore or mineral is being removed. In a broader sense, preplanning involves future uses of the property being mined. The National Sand and Gravel Association and American Aggregates Corporation tell operators to consider land rehabilitation as important as mining and processing operations. They stress preplanned land rehabilitation that integrates rehabilitation operations and the excavation plan; the two plans should be **executed concurrently**.

A miner who preplans and integrates reclamation with mining operations will reap social, environmental and economic benefits prior, during, and after excavation.

In a social sense, the fact that a miner has developed a preplan for the secondary use of his mined land may ease adverse public opinion towards the project. The preplan can help the public become aware of the miner's objectives and the fact that the land to be strip mined will not be left wasted and eroded. This may make the mining more palatable to communities.

At the same time it improves public relations with the community, a preplan also provides the miner with an effective land use program. The earlier a reclamation program can be initiated in an extractive operation, the greater the opportunity to overcome conflicts that may exist between industry and its neighbors.

In addition to creating a more favorable acceptance for mining operations, preplanning can help mining operators reduce adverse environmental impacts on surrounding land. Problems associated with disposition of overburden, control of toxic substances, and the effects of mining on soils, water, vegetation, and wildlife can all

be considered prior to excavation. Furthermore, an examination of the geology, hydrology, vegetation, soils, land forms, and subsurface configuration of the deposit together with a determination of costs for alternative extractive and reclamation processes provides the primary basic data required in deciding on future uses of the land to be mined. Thus, preplanning helps determine the optimum use of the land, present and future.

The American Aggregates Corporation suggests a seven step "guideline approach" to minimize adverse impacts and maximize the potential for positive end uses, including outdoor recreation. They are:

1. Plan location of main plant, stockpiles, loading facilities and access routes as remote from all adjacent property owners as possible.
2. Take advantage of natural "screens" such as hills, trees and waterways to isolate the main plant.
3. Plant multiflora hedge and/or construct safety fence around perimeter of excavation site.
4. Grade back overburden (top soil) around perimeter of excavation site to create sloping "planting berm" sight and sound barriers. Sow grass seed and start first stage of landscaping with trees and shrubs.
5. Remove overburden from main plant site and use it to create low-profile plant area; plant trees around immediate main plant area.
6. Landscape main entrance and build a modest, attractive office building/weighing station. Construct solid, dust-free entrance driveway with gate enclosures.
7. Back fill excavation face with overburden, creating gently sloping lake banks concurrently as the excavation progresses. Cover with top soil, grade smooth, and do final seeding and landscaping.

Absence of preplanning frequently results in a mined area whose topographic and vegetative characteristics are not suited for outdoor recreation and whose reclamation may involve excessive costs and manpower. Among undesirable land characteristics which may result from the lack of preplanning are:

### **Land totally denuded of vegetation**

Preplanning can identify areas where trees would be desirable and where vegetative cover would enhance recreational development and use. If a picnic area is needed, well-planned mining operations can preserve mature trees for shade and esthetics. Saving areas of vegetation helps prevent erosion and reduces subsequent costs of reconditioning soil after mining.

### **Land lacking valuable topsoil**

Preplanning can prevent unnecessary moving of valuable topsoil. Unplanned operations often result in topsoil being covered by additional materials and overburden. This inhibits vegetative growth in the later stages of reclamation, since few plants can successfully grow in subsoil. In addition, costs and time needed to bring subsoil to a point where it is capable of supporting vegetation are excessive; therefore, it is more profitable to preserve topsoil than to try to restore its equivalent.

### **Land with slopes too steep for recreational use**

Preplanning for future recreational use of a site to be mined may call for excavation operations which reduce steep slopes, making them more suitable for a variety of recreation activities. In no way need this compromise the miner's primary purpose, removing coal or minerals.

*Earth fill dam beginnings, Friendship Park*



Certain slopes terraced to meet recreation requirements reduce erosion and minimize safety hazards, such as slides and cave-ins. Steep slopes left surrounding bodies of water can be severe safety hazards. The remedy, of course, is to reduce the slope during mining operations, especially if beach or boat launching facilities are planned. Steeper slopes sometimes are desirable; this is true when ski runs and trails and areas for off-road motorbikes and all-terrain vehicles are planned.

### **Unsuitable bodies of water for recreational use**

Preplanning is essential if extraction operations are to result in water areas suitable for recreation. The shape, depth, and slope of both underwater and shoreline areas are of critical importance. For a swimming or fishing area, long narrow stretches of water may be suitable. Recreational sports, such as water skiing or speed boating, require larger and deeper water areas. Swimming and wading areas require gently sloping bottoms and relatively level beaches.

### **Land that is too oddly shaped for recreational use**

Preplanning can be of assistance when the area mined is too small or narrow for outdoor recreation development. Sometimes the answer is to buy additional recreation land adjacent to the planned mining areas. In some cases, it may even be desirable to purchase areas of recreation land situated so that a long narrow mining area can be reused as a connecting trail between the purchased land and other present or potential recreation sites.

Substantial savings can be realized by adhering to preplanning which results in configurations needed for desired future uses of the land. Once the areas to be mined are defined, the extraction program can be scheduled, and plans begun to use earth moving equipment and overburden in creating the most functional and attractive development. The longer an operator waits to initiate a future land development program, the more costly and less desirable the land extraction development. Why?

The National Sand and Gravel Association attributes the cost increase to several factors. First, materials may

have to be moved more than one time. Second, fill material used to shape land form will more than likely have been deposited in areas where it is not required. Third, permanent installations, while properly located in terms of the extractive operations, may be improperly located in terms of their impact on adjacent lands. Fourth, extracting operations may proceed into an area where, in the course of a few years, the entire operational area will be exposed to the adjacent land. If preplanned, the extractive operations could proceed in a manner that would preserve natural screens and buffers until near completion of the operations.

### **What Land Uses are Available?**

Recreation is only one of many end use potentials of mined land. Reclaimed surface mined land uses include residential, commercial and institutional, as well as recreational development. Whatever the future land use, preplanning will help insure that the excavation pattern is compatible with desired reclamation. Decision makers with preplans in hand are equipped to choose land use options which minimize environmental impacts while providing maximum economic and social returns.

The Nationwide Outdoor Recreation Plan, produced by the Bureau of Outdoor Recreation in 1973, states that the greatest potential for realizing the recreational opportunities afforded by mined land reclamation lies in the development and incorporation of recreation use proposals into the reclamation plan prior to commencement of mining.

Reclamation programs that plan outdoor recreation as an end use become highly inviting to mining operators who are concerned with meeting public objections, conforming to local zoning regulations and operating at a profit.

In addition, recreation planners as well as mining operators find that strip mined land may offer unique recreation assets at minimal cost. In urbanized localities where most available land is already committed to a variety of uses by zoning or actual development, strip mining sites may be the only available potential recreation or open space sites.

## **Types of Reuse of Surface Mined Lands**

Surface mined lands can be converted to a variety of public and private recreation uses:

swimming beach	regional park
yacht club	local park
fishing resort	zoo
tourist resort	botanical park
recreational lakes	playground
speed boating club	fishing lake
game preserve	boating lake
country club	campground
golf course	hunting preserve
golf driving range	auto race track
archery range	green belt
rifle-pistol range	trails
skeet shooting range	picnic ground
amusement park	tourist-trailer park
fishing preserve	recreational vehicle park

## **OUTDOOR RECREATION VALUES OF SURFACE MINED LANDS**

### **What are the Conservation Considerations?**

The 1973 National Conference on Surface Mined Lands for Outdoor Recreation held in Washington, D. C., outlined a number of social, economic, and physical considerations for determining when and if surface mined land could be converted for recreational use:

#### **Social/Public Considerations**

##### **1. The Demand for Outdoor Recreation**

America's increased population and mobility, leisure time, and affluence promise growing demands for outdoor recreation, and thus greater need for recreational space. Between 1960 and 1970, the U.S. population increased by 24 million people. Projections of the Nationwide Outdoor Recreation Plan, "Outdoor Recreation—A Legacy for America," indicate an in-

crease of between 57 and 96 million people by the year 2000. Almost 70 percent of the population is now concentrated in metropolitan areas which occupy less than 2 percent of the land area. This urbanizing trend is expected to continue. More and more people will be living in areas where open space and recreation lands are at a premium. At the same time, the number of families with high discretionary income levels of \$15,000 or more in 1970 values increased from 3.7 percent of the total families in 1960 to almost 25 percent in 1971.

The Bureau of the Census predicts that the average family income may reach \$15,000 by 1990. Other factors, such as shorter workweeks, more flexible employment schedules, more 3-day weekends, and year round school also have contributed to increased leisure time.

Between 1950 and 1970 acreage in the State park systems increased by over 80 percent, but attendance increased by more than 300 percent. In the National Park System, acreage increased by more than 20 percent, the number of visits by more than 400 percent. More recently, fuel shortages have developed which may cause a shift in recreation patterns. Increases in total recreation participation can be expected to continue, but more demands may be satisfied near urban areas than in the past. This may call for even greater emphasis on reclamation of urban oriented surface mined land than previously.

## **2. Urban Recreation Needs**

Major studies conducted during the past 20 years have identified the need for outdoor recreation areas near high density population centers. Where surface-mined lands exist near urban areas, their recreation potential should be evaluated carefully and thoroughly.

## **3. Commercial Recreation Needs**

It is neither possible nor desirable for public agencies to acquire and maintain all surface mined land areas reclaimed for recreation. Many areas which are



not suitable for public parks can serve commercial recreation needs. The commercial recreation industry is a logical user of reclaimed surface-mined areas. Youth groups and many other profit and nonprofit organizations also are a market for reclaimed lands.

### **Economic Considerations**

#### **1. The Market Potential for Outdoor Recreation**

The outdoor recreation market potential emphasizes its value as an end use of surface mined land areas. The profit potential in this expanding dollar market is clearly worth the quest. **U. S. News and World Report** has estimated that Americans spent \$105 billion on outdoor recreation and related leisure activities in 1972. Over 86 percent of the total was explicitly related to outdoor recreation; \$50 billion on recreation-sports equipment and activities; and \$40 billion on vacation trips in the United States. The remaining \$15 billion was expended on travel abroad, vacation land purchases, and second homes. All these relate to outdoor recreation activities. The magazine also forecast a 100 percent increase in the dollar volume of leisure time expenditures in the 1970's.

#### **2. Project Costs**

Not to be overlooked are project costs. Inexpensive land may carry with it high development costs; conversely, expensive land may be offset by relatively low development expenses. Planned extraction and development will enable the mining operator to save time and money by:

- (A) Using earth moving equipment and personnel more efficiently.  
With minimum effort, equipment and personnel can strip, transport and redeposit the overburden to create predetermined land forms.
- (B) Minimizing movement of material.  
By determining the location of fill material before extraction begins, both overburden and waste material can be handled at one time.
- (C) Using available fill material to the maximum advantage.

Through preplanning, available fill material can be fully utilized. Preplans can determine how and where the fill material can be used most efficiently. Planned earth moving and land shaping will result in a more useful, attractive, and valuable piece of land than a mined landscape shaped by chance.

### **Physical Considerations**

#### **1. Site Capability, Availability, and Size**

In some cases, the availability of surface mined land may hasten its conversion to a recreational area. It may become available through donation or be worth buying for public use because of low price, or because of other factors. As the subdivision of land throughout the Nation increases, large tracts become rare. When large tracts of surface mined lands are available, outdoor recreation agencies should consider acquiring them, even at costs which might otherwise seem prohibitive.

Topography and geologic features of a mining site may dictate both suitability for and type of outdoor recreation use. The suitability of an area for special recreation activities must be carefully examined. For example, reclaimed surface-mined lands may meet needs for special use areas such as motorbike trails (which require a rugged topography). Ski areas, sled-ding slopes, golf courses, and shooting ranges all can be accommodated on lands reclaimed during or following surface mining. Trees and vegetation may serve simultaneously as wildlife habitat, provide erosion control, and enhance the beauty of a potential recreation site.

Size and configuration may directly affect the classification and manner in which a recreation area should be utilized. Certain recreation activities pose specific space requirements. Numbers of potential users and the demand for the site should be considered in determining sites for such purposes.

#### **2. Location and Access**

The ultimate value of a potential recreation site will

be influenced by its location and the public's access to it. Major transportation routes surrounding the site, together with other potential means of access, should be examined carefully. In the case of a sand and gravel pit located near an urban center, will children be able to reach the site safely? Is the potential site linked with major city transportation routes? Is the operation located near a major highway? Will access ways have to be constructed, thus increasing manpower and other costs? May roads installed to transport extracted ore provide access to a recreational site?

In some cases, the location and access to a mining site may invite recreational tourism. Recreational tourism frequently emerges as one of the best and certainly one of the most critically needed commercial end uses of surface mined land. The market dynamics of outdoor recreation and the outdoor recreation potential of reclaimed surface mined land warrant thorough investigation by economists and planners seeking end product land uses that are environmentally and economically sound.

## **EMERGING RECLAMATION REQUIREMENTS**

Realizing the ultimate potential from any surface mining project requires that a reclamation plan be developed before mining excavations begin. The reuse potential of mined areas for recreation is increasing for a number of reasons. These include: Greater demand for recreation; possible economic gain; public relations potential; awareness among planners of reclamation for recreation potentials; accessibility of areas that are mined; proximity of many mined areas to people who are short of automobile fuel; and increasing sophistication of reclamation for recreation techniques. Perhaps the most urgent incentives to the mining operator, however, are the emerging stringent reclamation requirements.

Several State mined land laws impose strict reclamation requirements upon mining operators. In addition, pro-

posed Federal legislation is tending toward requiring States to regulate surface mining and reclamation operations. Under proposed legislation, mining permit applicants must submit a full preplanning statement discussing the proposed and alternative uses for reclaimed lands. Such plans would have to comply with applicable air and land use plans and programs. A model law, "Surface Mining Conservation and Reclamation Act," proposed by the Council of State Governments, proposes alternatives such as water-oriented real estate development and recreational area developments which the mining industry and a broad spectrum of other interest groups would approve.

"Reclamation," according to the model State Law, is the process of restoring the mined area to its original or other beneficial condition, considering past and possible future uses of the site and the surrounding area. The terms "beneficial" and "possible future uses" obviously are crucial both to mining operators and the general public.

## SOURCES OF ASSISTANCE

Preplanned reclamation requires imagination, expertise, and positive commitment. Many sources of assistance are available to the operator engaged in comprehensive preplanning. Federal, State, local, and private sources provide financial and technical assistance and information. In some instances, agencies such as the Youth Conservation Corps, Job Corps Centers and the National Guard have equipment and operators useful in reclamation projects. Volunteer organizations such as the Boy Scouts, Girl Scouts, civic, and conservation groups may welcome the opportunity to assist conservation/recreation projects.

College and university research programs, State regulatory agencies, reclamation associations, and industry groups also have information useful to reclaimers. In States where mining has been widespread in the past, colleges and universities have amassed data and technical expertise which are invaluable and readily available.

Seekers of mined land reclamation information should take advantage of past and future efforts to draw together and index useful materials. Some of these efforts include a Reclamation Information and Assistance Center File established by the Bureau of Outdoor Recreation; an industry-wide library of information recently started by Bituminous Coal Research, Inc., the research affiliate of the National Coal Association; and a bibliography entitled "Surface-Mined Areas: Control and Reclamation of Environmental Damage," Bibliography Series No. 27, available from the Department of the Interior, Office of Library Services, Washington, D. C. 20240. "Sources of Assistance in Reclaiming Surface Mined Lands for Outdoor Recreation," published by the Bureau of Outdoor Recreation in cooperation with the Bureau of Mines, lists and describes many of the Federal, State, and private sources of financial and technical assistance in reclaiming surface-mined lands for outdoor recreation.

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