

Meeting Community Needs, Protecting Human Health and the Environment: Active and Passive Recreational Opportunities at Abandoned Mine Lands

Introduction

According to the General Accounting Office (GAO), there are between 80,000 and 250,000 abandoned mine lands (AMLs) across the United States. AMLs include abandoned mines and the areas adjacent to or affected by the mines. Because of safety or environmental concerns, the vast majority of these sites have never been considered for any type of reuse and have lain idle, often for decades.

However, some communities are pursuing new opportunities for these empty properties, developing innovative recreational reuses like sports fields, hiking trails, bike paths, and natural areas that support activities like fishing and bird watching. For example, Independence Mine State Historical Park in Alaska, a former gold mine, offers snowboarding and sledding facilities. Vintondale AMD & ART Park, a former coal mine in Pennsylvania, is now a community park. The Central City-Clear Creek NPL site offers rafting, fishing, kayaking, and other recreational opportunities.

According to the Maryland Department of the Environment, “the benefits gained from reclamation of abandoned mine lands include protection of life, health, and safety; improved environmental and social conditions; and better use of natural resources.” In addition, parks, natural areas, and recreational facilities provide a multitude of tangible and intangible benefits to communities. Besides providing recreational opportunities to local and out-of-town visitors, recreational facilities may attract investment, revitalize cities, boost tourism, and promote healthier communities.

Through the Superfund Redevelopment Initiative (SRI), EPA supports the reuse of AMLs for recreational purposes. EPA has indicated that sites like former mining areas with cleanups involving on-site waste containment are often well-suited for recreational reuses, as on-site waste containment requires vegetated cover systems that correspond to a wide variety of recreational uses. Because EPA’s primary responsibility is to ensure that a site’s remedy is protective of human health and the environment, EPA may require access to sites in reuse to monitor the site’s remedy over time.

This fact sheet provides information about recreational reuse for all stakeholders and community members interested in creating recreational opportunities at nearby AMLs. Below, the fact sheet describes the benefits of active and passive recreational reuses in greater detail, explains the advantages of partnerships, and provides case studies and next steps to get you started.

What is an AML?

Abandoned Mine Lands (AMLs) are those lands, waters, and surrounding watersheds where extraction, beneficiation, or processing of ores and minerals has occurred. These also include sites where mining and mineral-processing waste were disposed of or deposited.

The recreational opportunities described above fall into two broad categories: active recreation and passive recreation.

Active recreation refers to a structured individual or team activity that requires the use of special facilities, courses, fields, or equipment.

What are Examples of Active Recreational Activities?

- Baseball
- Football
- Soccer
- Golf
- Hockey
- Tennis
- Skiing
- Skateboarding

Passive recreation refers to recreational activities that do not require prepared facilities like sports fields or pavilions. Passive recreational activities place minimal stress on a site's resources; as a result, they can provide ecosystem service benefits and are highly compatible with natural resource protection.

What are Examples of Passive Recreational Activities?

- Hunting
- Camping
- Hiking
- Wildlife viewing
- Observing and photographing nature
- Picnicking
- Walking
- Bird watching
- Historic and archaeological exploration
- Swimming
- Cross-country skiing
- Bicycling
- Running/jogging
- Climbing
- Horseback riding
- Fishing

While active recreation and passive recreation refer to different types of activities, both types of activities can be located together effectively. Soccer fields, for example, may share parking facilities with an adjacent natural area that provides biking, camping, and rock climbing opportunities. A golf course may be located next to bike paths and cross-country skiing trails. At the Old Works / Anaconda Smelter site in Anaconda, Montana, recreational reuses include a golf course designed by Jack Nicklaus, a hiking trail, and fishing and bird watching opportunities along adjacent Warm Springs Creek.

While active and passive recreational activities can be located together and provide a number of shared benefits, the fact sheet describes the economic and social benefits provided by active and passive recreation separately. This distinction is intended to highlight the unique benefits provided by each type of recreational reuse and the site characteristics typically required for each type of recreational reuse.

Active Recreation

Active recreation – recreational activities that require the use of special facilities, courses, fields, or equipment – can provide communities with opportunities to participate in individual sports like golf and skiing and team sports like soccer and baseball. Active recreational opportunities offer economic and social benefits that include local economic development and improved physical, mental, and social health. Many AMLs, while potentially too contaminated to be considered for residential reuses, can safely support active recreational activities.

Case Study: Silver Valley, Idaho

“Silver Mountain truly excels by offering astonishing affordability,” raves Online Ski Magazine, one of many sources praising Silver Valley, Idaho’s impressive ski slopes. Less than two decades ago, however, the region was facing a very different future. The local economy nearly collapsed when the Bunker Hill lead smelter and several nearby mines closed. Thousands of people were unemployed and toxins poisoned the surrounding countryside.

Working toward economic redevelopment, partners and stakeholders undertook the cleanup and redevelopment of Silver Valley. They established institutional controls for the former smelting site to provide safe and clear procedures for the property’s redevelopment. As a result of their efforts, new businesses have created an estimated 225 jobs and more than 800 acres have been recovered for redevelopment. The popular Silver Mountain Resort now draws tourists to the area from across the United States, benefitting the local and regional economy.

Benefits of Active Recreational Activities

- Increased investment
- Improved community health
- Higher quality of life
- Urban revitalization
- Local economic growth
- Increased property values
- Tourism opportunities

Economic Benefits

Active recreational facilities like soccer fields benefit local economies in several ways. First, recreational facilities attract investment. A study in the *Journal of Park and Recreation Administration*, for example, cites recreation as one of the most important factors for small businesses relocating to Colorado. Locations with recreational facilities are perceived as preferred living locations for employees.



Silver Valley, Idaho

Recreational facilities also enhance urban revitalization efforts. For example, locating active recreational facilities in economically depressed areas can help attract home buyers and

businesses and spur economic growth. Finally, recreational facilities strengthen tourism by attracting local and regional visitors. These visitors boost the local economy by spending money on food, hotels, and consumer goods.

Social Benefits

Participation in recreational activities has been correlated with improved physical, mental, and social health. The reuse of sites as recreational facilities and the remediation of environmental contamination may reduce psychological stress, feelings of perceived threat, and depression.

Recreational activities and sports also promote physical fitness and healthy lifestyles, challenge participants to excel, and provide a supportive environment in which to develop social skills like teamwork and cooperation. Social benefits of recreational activity have also been linked to increased community health and reduced crime.

Typical Requirements and Characteristics for Active Recreational Reuse of AMLs

Several conditions can help to facilitate active recreational reuses at former mining sites. Site remedies must account for likely future uses. The willingness of a site's current owner to either sell the property for reuse or allow EPA to access the site can be critically important. In fact, support from the site owner can facilitate redevelopment and funding opportunities. In return, EPA can offer liability protection to new site owners and developers. Finally, the state should be able to provide for the long-term operation and maintenance of the remedy.

Common Site Characteristics for Active Recreational Reuse of AMLs

- Demographic dispersion of region compatible with type of active recreation planned
- Area has high demand for recreational and sports facilities
- Remedy allows for recreational reuse
- Availability of flat topography, if considering sports fields
- Adequate access to site from roads and public transportation

Lessons Learned: Active Recreation

- Community planning for an active recreational reuse helps EPA determine appropriate remedies and institutional controls at the site.
- Local champions, those individuals and organizations committed to successful reuse, can make a real difference. Champions can address challenges from a local perspective and raise public awareness.
- The development of partnerships and community involvement from the early planning stages through a site's cleanup and redevelopment can lead to reuse plans that meet all stakeholder needs.
- Active recreational reuses can preserve local history, commemorating the region's heritage and providing local and regional economic benefits.

The active recreational reuse of AML sites can be particularly relevant in areas that lack sufficient recreational opportunities. Geography and topography also play critically important roles in determining whether a site represents a strong candidate for active recreational reuse. Sites located near populated areas with adequate road and public transit access, for example, can provide recreational opportunities that meet a wide range of community needs. Finally, the availability of flat or mildly sloping land on a site can be particularly relevant if sports fields are under consideration.

For additional information about active recreational reuse opportunities at Superfund sites, please refer to the 2001 EPA report *Reusing Superfund Sites: Recreational Use of Land above Hazardous Waste Containment Areas*. The report is available online at: <http://www.epa.gov/superfund/programs/recycle/recreuse.pdf>.

Passive Recreation

Passive recreation – recreational activities that do not require prepared facilities like sports fields or pavilions – can provide communities with opportunities like camping, trail running, and cross-country skiing. While passive and active recreation provide some shared benefits, like local economic development and improved community health, passive recreational opportunities may also offer some unique benefits, like the protection of natural resources and the restoration of ecosystem services.

Benefits of Passive Recreational Activities

- Natural resource protection
- Restored ecosystem services
- Restored animal and plant habitat
- Local economic development
- Tourism opportunities

Many formerly contaminated mining sites, while potentially too contaminated to be considered for residential reuses, can safely support passive recreational activities. The rural locations and rugged terrain of many AMLs can inhibit commercial or industrial reuses, but these characteristics also make AMLs well-suited to provide passive recreational opportunities. AMLs are often large sites in remote and beautiful natural areas that may provide quarry lakes for fishing and boating, open areas for hiking or nature trails, and wildlife habitat for viewing and hunting. Because of potential contamination concerns, these sites may be less expensive to purchase, lease, or otherwise conserve for passive recreational development and natural resource protection.

Economic Benefits

Sites restored to support passive recreation often provide ecosystem services, since ecosystem functioning is not impaired by passive recreational activities. These unique services, which include climate regulation, water filtration, and erosion control, are of substantial economic value. Indeed, the services provided by healthy ecosystems – forests, grasslands, wetlands, lakes, ponds, rivers, and estuaries – are essential to life on Earth. They support diverse plant and animal species and provide vital resources for individuals and communities. EPA is currently developing a report on ecological reuse at Superfund sites. The report will be available on the SRI website at www.epa.gov/superfund/programs/recycle in 2003.



Kickapoo State Recreation Area, Illinois

Besides providing recreational opportunities to local residents and visitors, the passive recreational reuse of AMLs can also serve as a catalyst to revitalize cities, boost tourism, and safeguard the environment. Site maintenance and services create employment opportunities, while increases in tourist traffic can help to sustain the local economy. Local property values may increase because of properties' proximity to an attractive park. Finally, the passive recreational reuse of sites is compatible with local initiatives to retain open space resources.

Case Study: Kickapoo State Recreation Area, Illinois

The passive recreational reuse of abandoned mining lands is not a new idea. The Kickapoo State Recreation Area, located outside Danville, Illinois, on a former United Electric Coal Company strip-mining site, has been providing ecosystem benefits for more than 50 years.

Today, the 2,840-acre park contains several different types of ecosystems, including ponds, wetlands, and temperate forest. The park's 22 deep-water ponds and wetlands encompass approximately 221 acres. These ponds and wetlands filter stormwater, control erosion, and provide habitat for wildlife. The park's forested uplands and bottomlands provide riparian buffers and wildlife movement corridors. The park's wetlands and forest also provide phytoremediation services, helping to break down organic pollutants and contain and stabilize metal contaminants, acting as filters or traps.

The park's ponds, wetlands, and forests also provide a wide variety of passive recreational opportunities for visitors, including hiking, canoeing, fishing, bird watching, camping, hunting, horseback riding, wildflower touring, and scuba diving. The park, which is open all year, attracts 750,000-800,000 visitors annually.

Social Benefits

As described above, participation in recreational activities has been correlated with improved physical, mental, and social health. The passive recreational reuse of contaminated sites also provides opportunities for shared community gatherings and activities. By incorporating local mining history and wildlife education, passive recreational reuses can also provide educational benefits that celebrate the region's heritage.

Typical Requirements and Characteristics for Passive Recreational Reuse of AMLs

Virtually all AMLs offer opportunities for passive recreational reuse – imagination and flexibility are the only prerequisites. However, several factors can facilitate these outcomes. Scenic views and unique natural environments can spur strong visitor interest. Sites with a variety of ecosystems and recreational opportunities can appeal to multiple audiences, creating sustained visitor demand throughout the year. Mines can provide unique opportunities for historical interpretation and education. In addition, a site that is located near a community and that has adequate transportation access benefits from a stable local visitor base, the labor supply needed to operate the recreation area, and infrastructure like hotels, restaurants, and supply hubs to cater to visitors. Finally, EPA should be able to access and work at the site and the state should be able provide for the remedy's long-term operation and maintenance.

The following case study describes how partnerships can help EPA, states, and communities work together to pursue the successful recreational reuse of abandoned mine lands.

Common Site Characteristics for Passive Recreational Reuse of AMLs

- Links to other parklands, trails, or wilderness areas
- Existing or developing tourist economy
- Healthy ecosystems and wildlife
- Cooperation between community and site owner or potentially responsible party

Lessons Learned: *Passive Recreation*

- Abandoned mine lands and passive recreational uses are uniquely suited to one another. Activities like camping, fishing, hiking, and other low-impact, natural resource-dependent activities can be provided at AMLs and directly benefit visitors, the local community, and the natural environment.
- Planning for passive recreational uses can help communities move beyond the stigma associated with a contaminated site and plan for its successful reuse.
- Committed individuals who can facilitate successful partnerships and help move projects from early ideas to completion are very important. These individuals can discover flexible solutions that meet a community's social, economic, and environmental needs.
- Continuous community involvement is critical to the success of reuse projects.

Partnerships: Active and Passive Recreation

Partnership Benefits

Partnerships can play an important role in turning reuse dreams into reality. Many federal agencies regularly work with AMLs, but local groups may also have the experience and resources to help get an active or passive recreational reuse off the ground. Partnerships occur between EPA and states, tribes, other federal agencies, local governments, communities, land owners, lenders, developers, and potentially responsible parties (PRPs). A site PRP is any current or past owner of a contaminated property or any person responsible for the disposal, treatment, or transport of hazardous substances at the property.



California Gulch, Colorado

Bringing together interested parties to pursue recreational reuse opportunities offers benefits to everyone involved. Combining resources allows cleanups to be completed more quickly and enables outcomes that may not otherwise occur. EPA's commitment to consider reasonably anticipated future land uses when making remedy decisions means that partner involvement is critically important from the outset of remediation. Working with its partners, EPA can clarify a site's anticipated future land uses and protect human health and the environment.

Partnership Case Study: California Gulch, Colorado

The mountains of Leadville, Colorado were mined extensively for over 100 years, leaving a legacy of heavy metal contamination in soil and surface water. Now the California Gulch site is home to the Mineral Belt Trail, a 12.5-mile paved bike path that loops around historic mine tailings piles and mining artifacts within the site. Recently, Colorado's State Trails Committee nominated the Mineral Belt Trail for National Recreational Trail status.

The Mineral Belt trail at the California Gulch site was established with the help of many partners:

- the PRP provided funding and on-the-ground support;
- EPA provided \$50,000 worth of trail clearing, fill material, and assistance;
- the Lake County government provided \$550,000 in road and bridge crews and construction equipment, plus \$116,000 in cash for grants and planning;
- the Friends of the Trail group provided media coverage;
- the Colorado Department of Local Affairs sent interns to determine trail specifications;
- the Mineral Belt Trail Committee organized events;
- the U.S. Forest Service loaned GPS survey equipment and provided training; and
- individual landowners and public entities donated all of the land for the trail.

Potential Partners

Potential partners for the passive recreational reuse of AMLs include local parks and recreation departments, recreational or natural resource preservation groups, recreational equipment suppliers, and other local, state, and national governmental and private organizations.

Potential partners for the active recreational reuse of AMLs also include local parks and recreation departments. In addition, youth sports leagues, national sports organizations like the U.S. Soccer Foundation (USSF) and the U.S. Golf Association (USGA), and professional sports leagues like Major League Baseball (MLB) and the National Football League (NFL) also represent dynamic partnership possibilities.

EPA's Superfund Redevelopment Initiative is currently working on establishing partnerships with federal agencies and private organizations for the active and passive recreational reuses of sites. For additional information about partnerships, contact [Melissa Friedland](#), the SRI Pilot Coordinator, at 703-603-8864.

Abandoned Mine Lands in Active and Passive Recreational Reuse



Restored wetlands (*above*) and little league fields (*below*) at the Silver Bow Creek / Clark Tailings site in Butte, Montana



Getting Started

There are four key components that have proven to be effective in facilitating the reuse of contaminated lands such as AMLs. The four components are integrally related to each other and should be developed together as part of a coordinated reuse strategy.

Key #1: Sustained Community Involvement

Active community involvement from the outset of any reuse process is critically important. An effective community involvement process includes at least two elements: a **site champion** and an **inclusive stakeholder process**.

A **site champion** can be an elected official, local government staff member, a citizen, or even a group or an organization that is willing to take on the challenge of getting a site back into reuse. The champion generates stakeholder interest in the site's reuse and preserves the momentum of the project.

An **inclusive stakeholder process** means that all individuals and organizations that might either be affected by a site's reuse or have important resources to share are invited to be involved throughout the reuse process.

Stakeholders include local government officials and staff, citizens, local groups and organizations, PRPs, landowners, potential developers, landowners, EPA officials working on the site, and state agencies with an interest in the site, to name a few. Additional stakeholders for active recreational reuses include representatives from youth sports leagues and local parks and recreation departments. Additional stakeholders for passive recreational reuses also include representatives from local parks and recreation departments, as well as natural resource preservation groups and local educational and historic preservation groups.

Key #2: Creation of Site Reuse Vision

Plans for a site's successful recreational reuse can be developed through local meetings, visioning sessions, or design workshops. **Visioning sessions** bring stakeholders together as part of a facilitated process that can include presentations, information exchange, and participant input. Based on available information about a site and its surroundings, participants evaluate possible reuse options, highlighting the opportunities and challenges posed by the site. EPA can provide information about the site's contamination and potential site remediation strategies to make sure that the visioning sessions evaluate realistic site reuse options. These sessions can also help to identify potential site champions and individuals and organizations that can serve as resources throughout the process.

Key #3: Reuse Process Oversight

Once a vision for a site's recreational reuse has been developed, most communities will need to create a **sponsor group** like an Advisory Committee to oversee the reuse process. The sponsor group makes sure that appropriate stakeholders are involved in and understand the process and coordinates cleanup and reuse efforts at a site. Sponsor group members may include town zoning or planning officials, local residents or community groups, EPA officials, hired consultants, or other individuals

Abandoned Mine Lands in Active Recreational Reuse



Jack Nicklaus-designed golf course at the Old Works / Anaconda Smelter site in Anaconda, Montana

responsible for the completion of the site's remediation and reuse. EPA's primary role in a sponsor group is to clarify site contamination issues and broad remedial options for the community to make sure that the site's anticipated future use will be compatible with the site remedy.

Key #4: Coordination with EPA

Effective reuse efforts at contaminated sites require direct and sustained contact between local communities and EPA. It is critically important to discuss a site's reuse options with the **remedial project manager (RPM)** and **community involvement coordinator (CIC)** as soon as possible. Both people will play a major role in the reuse process and work with the community towards developing a site remedy that protects human health and the environment and allows for a site's successful reuse.

Conclusions

Abandoned mine lands offer unique opportunities for active and passive recreational reuses. Local communities can work with the state and EPA to address site safety and environmental concerns and help ensure that the site's remedy is compatible with identified reuse options. Passive and active recreational reuses are also sufficiently flexible and adaptable to address the unique characteristics of individual AMLs. Large sites, for example, may be able to support both passive and active recreational reuses. Remote sites with diverse ecosystems may be particularly suited to passive recreational reuses. Sites with flat topography that are adjacent to existing communities may be particularly suited to active recreational reuses. At *all* sites, partnerships, sustained community involvement, an effective site reuse process, and ongoing coordination with EPA are among the key components that will help communities develop new recreational opportunities. Today, abandoned mine lands can be reclaimed and placed into reuse. The opportunities await.

Contact Information

Interested in pursuing an active or passive recreational reuse for a local AML site? For additional information, local, regional, and national EPA resources are available. First, please contact the site's Remedial Project Manager (RPM). If the site RPM is unavailable, please contact the appropriate EPA Regional Reuse Coordinator. There is a Coordinator designated for each of the ten EPA regions. Contact information for the Coordinators is provided below. Finally, if neither the site's RPM nor Regional Reuse Coordinator is available, please contact John Harris, the SRI National Coordinator, at EPA headquarters at 703-603-9075.

The SRI website, at www.epa.gov/superfund/programs/recycle, also provides tools, case studies, and resource information addressing the active and passive recreational reuse of abandoned mine lands.

Contact Information: EPA Regional Reuse Coordinators

Region	Name	Phone Number & Email	Address
1	John Podgurski	617.918.1296 podgurski.john@epa.gov	USEPA REGION 1 1 Congress Street Suite 1100 Boston, MA 02114-2023
2	Dan Forger	212.637.4402 forger.dan@epa.gov	USEPA REGION 2 290 Broadway New York, NY 10007-1866
3	Peter Schaul	215.814.3182 schaul.peter@epa.gov	USEPA REGION 3 1650 Arch Street Philadelphia, PA 19103-2029
4	Mark Fite	404.562.8927 fite.mark@epa.gov	USEPA REGION 4 61 Forsyth Street, S.W. Atlanta, GA 30303-8960
5	Tom Bloom	312.886.1967 bloom.tom@epa.gov	USEPA REGION 5 77 West Jackson Boulevard Chicago, IL 60604-3507
6	Barbara Greenfield Diana Hinds	214.665.3111 greenfield.barbara@epa.gov 214.665.7561 hinds.diana@epa.gov	USEPA REGION 6 1445 Ross Avenue Suite 1200 Dallas, TX 75202-2733
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10	Susan Morales	206.553.7299 morales.susan@epa.gov	USEPA REGION 10 1200 Sixth Avenue Seattle, WA 98101

Acknowledgments

Information for this fact sheet was gathered from various reports, papers, and online sources, categorized below:

Benefits associated with active recreational reuses:

- the Maryland Department of the Environment's Abandoned Mine Land reclamation website, at www.mde.state.md.us/wma/minebur/aml1.html
- the 1997 National Association of State Park Directors report *Values and Benefits of State Parks*
- the 1997 article "An Economic Study of Recreation, Parks, and Open Space in Companies' (Re)Location Decisions" published in the *Journal of Park and Recreation Administration*
- the 1999 Trust for Public Land report *Economic Benefits of Parks and Open Space*
- the 2000 ATSDR report *Scientific Research Continues on the Psychological Responses to Toxic Contamination, Hazardous Substances and Public Health*
- the 2001 EPA report *Reusing Superfund Sites: Recreational Use of Land Above Hazardous Waste Containment Areas*

Benefits associated with passive recreational reuses:

- the 1997 *Nature* article "The Value of the World's Ecosystems and Natural Capital"
- the 1997 National Association of State Park Directors report *Values and Benefits of State Parks*
- the 2001 EPA report *Reusing Superfund Sites: Recreational Use of Land Above Hazardous Waste Containment Areas*

Active and passive recreational reuse case study examples:

- Information for the fact sheet case studies was obtained from the Superfund Redevelopment Initiative (SRI) website, at www.epa.gov/superfund/programs/recycle
- Information for the Kickapoo State Recreation area was obtained from the Illinois Department of Natural Resources website, at dnr.state.il.us/lands/landmgt/parks/r3/kickapoo.htm