

## CASE STUDY 2

### GOOD DESIGN, GOOD SCIENCE, GOOD HISTORY: AMD&ART

#### Introduction

Appalachian communities have been affected by their environment physically, socially, and culturally. The environment, once rich with coal, supplied a livelihood for thousands of Appalachian residents. The extraction of coal and the subsequent abandonment of the mines left environmental blight, health problems, economic drought, and demoralized communities. Today, forty years after some mines have been closed, the communities are still afflicted by pollution, high poverty and unemployment, civic disengagement, and poor prospects in general.

#### AMD&ART

AMD&ART is a nonprofit organization that is transforming environmental liabilities into community assets in southwestern Pennsylvania. The AMD&ART process is one that combines public art, environmental improvement, and community engagement in treating abandoned mine drainage (AMD), the most widespread environmental, economic, and social problem of the Appalachian region. Using multidisciplinary intervention with widespread public participation, AMD&ART has created a holistic approach to re-creating place that incorporates recreational elements, artful spaces, educational opportunities, historic reminders, and restored wildlife habitat into designs for passive AMD treatment systems. The approach honors a past of hard work and community building, bringing the same civic engagement and hardwork to the design and construction of treatment systems that reach people, restore nature, and revitalize abandoned spaces. In short, AMD&ART seeks to fix the environmental issues while preserving the cultural significance of the sites.



#### What Is Acid Mine Drainage?

AMD is the acidic metals-laden water that coats stream beds with rusty orange sediment, desolating entire watersheds. When the mines shut down, coal companies did not always seal sites or secure mine entrances, and the mines filled with rainwater and groundwater. AMD results when groundwater dissolves minerals exposed during mining, creating an unstable aqueous solution loaded with metals such as iron, aluminum, and sulfates. When the pressure of acid mine drainage builds, the drainage breaks through a weak spot in the mine system and begins to pump to the surface, sometimes at the rate of 3,000 gallons a minute. The drainage flows across lands and usually finds its way to a water source, rendering it sterile. When these waters are discharged, they smother aquatic plant and animal life, rendering the waterway dead. Acid mine drainage can have PH levels of less than 3, roughly equivalent in acidity to vinegar. Acid mine drainage runs throughout the honey-combed tunnels of any abandoned mine area, freely recharging through natural aquifer processes, such as rain and snow. The AMD is not even industrial grade water, commonly used in manufacturing, leaving any potential industries searching elsewhere for a home.

Acid Mine drainage may be detected on the earth's surface through the tell-tale orange stains, dead plants, and contaminated waters along streams and rivers. The contamination is a physical reminder of a number of deadened opportunities from departed coal companies, including economic development, community life and available recreation opportunities.

AMD can be remediated in a number of ways, and passive treatment is the least expensive and most natural. In this process the discharge is diverted and held in a series of retention ponds that are lined with compost and limestone (a base to counteract the acidity). After processing through a series of retention ponds, AMD can be channeled into a wetland where the water continues to be cleaned through compost and other organic materials that separate the metals from the water. Active treatment involves the costly and labor-intensive process of adding chemical neutralizing agents and continuously maintaining a treatment facility.

The central tenets of AMD&ART are

- remediation of acid mine drainage,
- community action and participation in reclaiming sites and recreating community centers,
- education and outreach where all stakeholders can contribute to interdisciplinary problem solving,
- collaboration by individuals, community groups, and state and federal agencies to address AMD;
- sustainability whereby localities participate in creating and sustaining new land uses; and
- a national model in which the community-based approach serves as a prototype for other communities facing environmental problems.

Founded in 1994, AMD&ART grew out of a National Park Service program called the Southwestern Pennsylvania Heritage Preservation Commission. A historian with that program sought to develop approaches to environmental, economic, and social problems created by the departure of coal mining and other industries. The historian believed that an integrated approach to remediation and redevelopment would create lasting solutions to revive the environment and the community. From this idea, AMD&ART was founded combining art and culture with community participation and education to address the past, present and future of communities affected by acid mine drainage. The founder wrote a grant to the AmeriCorps regional office, the Pennsylvania Mountain Service Corps, to obtain an AmeriCorps volunteer for the first position.

Today AMD&ART is a nonprofit organization staffed by AmeriCorps and VISTA volunteers and run by grants. The volunteers work closely with a volunteer advisor, the board of directors, and a network of regional, state, and federal professionals who offer advice and technical assistance to their programs. Through informative brochures and a Web page ([www.amdandart.org](http://www.amdandart.org)), AMD&ART has disseminated a great deal of information about AMD remediation to communities and organizations across the Appalachian region. It works closely on two sites in western Pennsylvania, ranging from a small pilot to an entire watershed. The volunteers are working to create a national demonstration model of the AMD&ART approach.

### **AMD in Vintondale**

Vintondale, population 582, lies on the South Branch of Blacklick Creek and borders the Pennsylvania state game lands, a regional recreational and scenic attraction in southwestern Pennsylvania. The Ghost Town Rail Trail, a twelve-mile rail-to-trails hiking and biking path, also borders the site and attracts 75,000 visitors a year.

The Vintondale site, situated on thirty-five acres of reclaimed mine land, is a result of vast underground industrial activities, namely coal mining. The town had several coal mines and a central coal plant with several large structures. At its peak, the town had a residential community of 2,000 and a connection to the rest of the world through the Pennsylvania Railroad. On the site AMD discharge flows at 80 to 200 gallons a minute. There is also residual contamination from storage tanks, building debris, and other solid wastes.

The redevelopment process is staffed by four AmeriCorps volunteers. They work with the AMD&ART professional team and Board of Directors who advise about resources and redevelopment ideas. AMD&ART is working with citizens, community groups, landscape architects, and state and federal agencies to turn the site into greenspace, with recreation areas and an educational center. The site has been designed after collaboration process with community members, scientists, artists, landscape architects, historians, and AmeriCorps volunteers. It will contain historic features of the former mine site.

The site has three basic areas: the treatment system, new wetlands (not a part of the treatment system) and the active recreation area. The reclaimed area will also have recreational areas, including soccer and baseball fields, horseshoe pits, volleyball courts, playgrounds, picnic areas, and a BMX bike area. The site will also have artistic elements including a boney pile of refuse coal converted into a walking path and viewing platform, landscaping, and sculpture. The historic, recreational, and artistic features are designed around the AMD treatment ponds and wetlands.

### ***How has the project developed?***

Five years have passed between the original conception for the Vintondale project and the groundbreaking. In those five years a number of hurdles have been crossed. Developing such a project consists of three components: land acquisition and assessment, community outreach and planning, and the physical implementation of the

plan. Each of these stages includes many smaller steps to reach the final goal. Of course, underlying each of the stages is the ongoing effort to corral resources and funding to support the project.

#### ***Land Acquisition, Assessment, and Remediation***

The property is owned by the Vintondale Borough, which has donated thirty-five acres for the use of the project. The Borough will maintain ownership of fifteen acres of recreational space. The treatment system and wetlands will be maintained in perpetuity by the Southern Alleghenies Conservancy, a land trust.

The last phase of land preparation is the actual remediation procedures. With AMD there are two remediation options: active and passive. Active involves treating the discharged water with chemicals. This process is maintenance intensive and more expensive than passive treatment. Since the total amount of AMD is unknown, the total costs of treatment are also unknown. Passive treatment is accomplished through a series of ponds lined with limestone and compost. The limestone is a natural base that counteracts the acidity of the AMD. The AMD loses much of its acidity through this natural remediation process. After passing through the series of ponds with holding times between two and twelve hours, the AMD is discharged into a wetlands where the metals are naturally attenuated through wetland plants and processes. This form of remediation neutralizes water and removes metals, creating no lingering contamination. In Vintondale there are six settling ponds through which the acid mine drainage flows, eventually emptying into twelve acres of wetlands.

The design and construction of the site had many steps. The first step was to develop the conceptual design for the site with the community. Pre-construction activities enabled the digging of the retaining ponds and the creation of the wetlands. A small amount of logging cleared an entrance to the park. The settling ponds were then excavated and filled with compost and limestone and piping. This occurred before winter set in and the ground froze, making work impossible. In the spring, the piping was finished and plants, such as cattails, were planted in the ponds. The wetlands were

also excavated and planted in the spring. Actual construction started with the ponds, then the excavation of the boney over the wetlands, then the recreation area. Pond excavation was initiated in the winter of 2000 and the Litmus Garden around the ponds was planted in the spring of 2001. Boney removal started that spring, the wetlands were planted in the summer of 2001. The whole site was completed by fall 2001. The recreation area will be built in phases over the following few years.

***Community Outreach and Planning*** A central tenet of the Vintondale AMD&ART project is outreach to and involvement of community members. Indeed, the project depends on community volunteers and students who have worked together to build accessories for the park. Community members also participated in a series of workshops to design the entire site and exchange ideas about resources and funding opportunities. The Vintondale community outreach consisted of three parts: school programs, community planning meetings, and volunteer involvement.

The community planning meetings were perhaps the most challenging and rewarding aspects of the Vintondale project. Years and years of abandonment and neglect had taken their toll on the community. Individuals were pessimistic about what could be achieved and whether any real improvements could happen. However, over the course of several meetings, community members came to understand the potential of the site and the value that individual involvement can add to it. The meetings were held at the fire hall and borough building, two of the few large public spaces in the community. At the meeting, AMD&ART staff shared their ideas about redeveloping the site and remediating the AMD, and residents had the opportunity to work in groups and write down their ideas to provide input to the design team and staff. The process of developing com-

munity participation was a slow one. At first, community members openly voiced their skepticism and laughed at the idea of revitalization. However, after persistence by the staff, community members slowly began to engage in the process.

After the idea of AMD&ART took hold in Vintondale, volunteers began to act to make the park



and recreation area a reality. Residents of all walks began to see something in the park for themselves and wanted to contribute to it. A group of youths who were prone to mischief designed the bike park in the site. The local high school shop class built and painted a large sign for the site. Other volunteers built benches and flower boxes. In the spring of 2001, Vintondale called all able bodies forth to help plant the trees for the landscape-designed Litmus Garden that borders the treatment system.

**Park Design** The AMD&ART consulting design team (an historian, scientist, sculptor, and landscape designer) has been involved in the project since its inception. A community consultant showed early conceptual designs to community members, who then could make direct recommendations to the design team. This process was very interactive. Residents posted red and yellow sticky notes on the design where they thought there were good and not good ideas.

### **Dark Shade Sub-Basin**

The Dark Shade Sub-basin is the entire watershed of Dark Shade Creek in Central City, Pennsylvania. The sub-basin spans thirty-four square miles, with a total population of 3,500. The area is marked with honeycombs of both deep and strip-mined coal mines and refuse piles. Many mines are closed, but some are ongoing. The watershed contains more than twenty AMD discharges, with the worst ones pumping out 2,000 gallons of acid mine drainage a minute. The AMD severely impacts the Stonycreek River, which feeds Johnstown, Pennsylvania, impacting that city's ability to get industrial grade water, attract industries and recreational ventures, and improve its own economy. In this way, the AMD in one small watershed is impacting the economics of an entire region. The goal of the Dark Shade brownfields project is to bring jobs and economic activity to the area through the cleanup of brownfields and AMD remediation. The Dark Shade communities could also benefit from a revived recreation economy. Some of the streams in the Dark Shade watershed have the finest fishing stock in the country. Ironically, some of the most contaminated streams are just yards from the most fertile ones.

After World War II coal mining technology and the local economy changed. Many regional mines closed, abandoning mine sites, buildings, powerhouses, storage tanks, transformers, and other contaminated parcels. These remnants, along with

AMD, leave communities a legacy of pollution. Many communities are without significant local government structure, community planning processes, or inspiration to engage in the redevelopment of these sites. However, the Dark Shade Brownfields Project is working to reverse these currents. It is addressing the issues affecting the social and physical environment of the region. Although the mine sites are abandoned, some still have a well-developed infrastructure, including water, roads, working rail lines, and electricity.

The Dark Shade Brownfields Project is working to lessen the environmental blight and contamination along with the social malaise by engaging community members in the monitoring and cleanup of sites, and the redevelopment of properties to attract job-creating activities. The Dark Shade brownfields staff consists of three AmeriCorps and VISTA volunteers.

The Dark Shade Brownfields Project received an EPA brownfields pilot grant for \$200,000 in 1999. Since then it has surveyed brownfields sites, conducted Phase I and II assessments, and involved community constituents through outreach and education efforts. The staff is supported by a representative of the Office of Surface Mining in the US Department of the Interior. This person was the founder and director of AMD&ART until 1999, when he resigned that formal position, moved to OSM and became an advisor to volunteers. Like volunteers on the Vintondale project, these volunteers employ interdisciplinary approaches to remediation. They see the watershed's redevelopment as a means to address the social, cultural, and environmental issues in the community.

### **Dark Shade planning documents**

The Dark Shade Brownfields Project is soliciting ideas from the community on plans for reusing the brownfields sites. Several funding organizations, state and federal agencies, require both a community planning document and a watershed planning document. The AmeriCorps volunteers have drafted these documents with input from stakeholders around the region. The process has two components: a plan for the entire watershed, and a plan that focuses on the specific needs of the Dark Shade Community.

### **A Model Plan for Shade Creek Watershed Restoration**

The Pennsylvania Department of Environmental Protection (PADEP) requires that grant recipients

### An Excerpt from the Dark Shade Community plan

#### **Brownfields redevelopment of the Reitz No. 4 mine**

The Reitz No. 4 mining complex was the main center of industrial activity for Central City and Shade Township throughout the first half of the twentieth century. The fifty-acre site was occupied by a car repair barn, power house, motor barn, coal processing plant, and entrance to the Reitz 4 mine. At its height, the mine produced many tons of coal per year that were sent out by rail car.

During this time, Reitz Coal Company was the major employer for residents of Shade Township and Central City. In 1957, the Reitz No. 4 deep mine closed, and the site was turned over to the Berwind White Company, which used it as a coal processing plant throughout the 1960s and early 1970s. As of 2001, the Reitz 4 mine complex site has been partially reclaimed. It is now a mix of coniferous trees and open meadow. The sturdy industrial stone buildings and contact flow of acid mine drainage out of the Reitz 4 mine are the only reminders of the immense industrial complex that once was. Reitz No. 4 is a brownfields site that sits unproductive in the center of the active communities of Central City and Shade Township. While it may be viewed as an eyesore, it has all the necessary pieces to be made a productive, clean, safe, and economic asset to the community.

#### **Site assets**

- Historic stone buildings
- Scenic viewpoints of surrounding communities
- Water and sewage
- Rail yard
- Power
- Building space
- Acid Mine Treatment space

for watershed projects create a master watershed plan that addresses conservation concerns and water issues. The Model Plan for Shade Creek Watershed Restoration addresses many aspects of the watershed and its historic and future impacts on the community. The plan describes the entire geographic area in terms of its geology, archeology, biology (macro-invertebrate survey is included), and industrial background.

The plan gives a history of community involvement and community-driven initiatives to conserve water resources and maintain the livelihood of the creek. It also examines economic opportunities in the watershed including industrial grade water, fisheries, recreational uses, scenic attractions, and other community-empowering issues that can affect a region's economy.

In addition to describing the watershed and its history, the planning document carefully lays out expectations for remediating contamination. Recommendations for active versus passive treatment

systems are presented, as well as a restoration plan for specific sites. The planning document includes an implementation schedule and a strategy for assessing the impact of the restoration efforts.

#### **The Dark Shade Community Plan**

The Dark Shade brownfields office has created a planning document to spark a discussion between local residents about the future of their watershed. In the planning process, staff were interested in developing an integrated vision that encompasses cultural and historical assets, existing historic sites, as well as the environmental and recreational benefits of the area. The community-planning document describes the history of the area, demographics, economic indicators, and AMD remediation. The plan also discusses the short-term and long-term steps necessary to address the multifaceted aspects of brownfields redevelopment. The recommendations include community organization and revitalization, environmental monitoring and

remediation, and partnering with responsible parties. Brownfields redevelopment requires:

- Site identification;
- Site assessment and cleanup;
- Community planning;
- Site marketing and economic development;
- Funding and personnel support.

The planning process coincided with an ongoing USDA vision planning effort under way in Central City. The Dark Shade plan details infrastructure needs and options, housing and property development issues, and education needs (programs in schools as well as job and vocational training for adults). The planning document also mentions recreational opportunities as well as recreational needs identified through the community assessment process. Examples of community collaboration by members of the community are cited. They range from park events and festivals to the joint sewer authority. The document also identifies the long-term goals that the community has for itself, such as a library, small industries and job opportunities, and recreational spaces and events.

After exploring the ideas for the Dark Shade community, the planning document outlines the components to successful redevelopment, including the history of current sites and their potential for redevelopment. This documentation lays the groundwork for citizens by outlining the history, barriers and incentives for redevelopment. The planning document also includes photos of the communities and site designs for potential reuse.

The planning document discusses ways that local sites (such as historic churches, speedways, and old scenic overlooks) can be tied in with existing community assets and regional resources. In these ways, the planning document identifies areas to be remediated while also reinforcing existing assets and discussing ways they can be leveraged for the greater good of the community and its economy. The practical challenges in the community recognized in the document as well as successful community and regional programs that can be useful in redevelopment.

The conclusion of the planning document asks pertinent questions for readers and community members:

- What business opportunities will be made available?

- What job opportunities will be made available?
- What is the best development option for a brownfields site in the Dark Shade watershed?

Through outreach and research funded under the Rural Business Opportunity Grant of the U.S. Department of Agriculture, the brownfields staff is working to answer those questions. The planning document was widely distributed through area newspapers and at community locations, such as grocery stores and churches.

Planning documents, such as the Dark Shade Creek Community Brownfields Plan, not only lay out accessible points of entry for citizens to participate in the revitalization of the community. They also serve as economic development tools that demonstrate to potential investors the community's serious preparation for its own future.

### Outreach to Schools

The brownfields project has worked with local schools to document the environmental and historical impact of mining on the area. Science classes are conducting water monitoring, learning about AMD issues, and participating in the environmental planning and remediation of the site. At the same time, social studies students are learning about and documenting the important history of the region and creating travel and tourism brochures and maps of the area that illustrate its history and culture. One of the communities, Cairnbrook, is listed on the National Register of Historic Places. Cairnbrook is notable because it is a typical coal company town whose housing and town layout has remained unchanged since it was first established. The local community takes great pride in its status as a historic site.

One of the AmeriCorps volunteers working for AMD&ART has a background in environmental programs and has developed two projects with local schools. One project was done through a social studies class at a middle school. The students documented historic and cultural sites and artifacts in the community and created a map of the sites for residents and visitors. This map can be used to promote Dark Shade as a destination perhaps coupled with bicyclists using the Ghost Town Rail Trail (estimated to be 75,000 a year). The map also serves as a reminder of the area's rich history and culture. In the second school project, local high school students addressed the environmental aspects of redevelopment by building and checking

### From Park Committee to Municipal Authority

The lack of local government infrastructure made itself evident when citizens became engaged in the Vintondale park project. Citizens soon asked questions about funding and maintenance of the park. A committee was established to address the necessary issues about the park's future. Wanting to be effective, the park committee asked the Borough Council to be recognized as a municipal authority that manages all recreation and park facilities and activities in the town. All officials on the committee are elected and serve as volunteers.

weirs, taking water samples, participating in the macro-invertebrate survey, conducting streambank restoration, and researching bio-engineering techniques. Much of the information gathered through the school projects was made available in community venues.

### A Bright Outlook for Dark Shade

The Dark Shade watershed can become an environmental and economic asset. Creeks and rivers in the watershed abut highly prized fishing waters and trout streams as well as 3,000 acres of Pennsylvania game lands that attract hunters and others interested in outdoor recreational activities. Also, the slag heaps, also known as boney piles, can be turned into profits. Relatively new industries take once-rejected coal and extract the valuable coal, leaving fly ash. Communities can sell the boney piles to regeneration plants. However, at most only 40 percent of the boney is usable and the remains, called fly ash, is sometimes returned to the community for disposal.

### CHALLENGES, INCENTIVES, AND BEST PRACTICES IN AMD

Vintondale and Dark Shade developed interesting approaches to the problem of acid mine drainage, despite the environmental, social, and cultural challenges they faced. Comprehensive brownfields redevelopment, whether a single site like Vintondale or an entire watershed like Dark Shade, requires the coordination of a number of different resources to address the economic, social, and environmental issues at hand.

### Obstacles to Redevelopment

The Vintondale and Dark Shade communities are without significant local government structure, community planning processes, or inspiration to engage in the redevelopment of these sites. The tapping of resources is more acute for rural communities because they often have no local government professionals, and the jurisdictions and boroughs are not well assembled and do not approach resource management in a regional fashion. For example in the small towns of Central City and Shade Township in the Dark Shade watershed (population 3,500), there are six separate water districts across a thirty-eight square-mile area. None of the water districts is particularly efficient, but none will discuss consolidation. However, each water district supports the project. There is limited professional infrastructure and private sector interest in the sites. These factors not only compound the difficulty of coordinating resources. They also leave the project without an institutional center beyond the brownfields office. In the best of circumstances, this office will make itself obsolete through the remediation of the sites, even though the environmental needs of the area will continue.

### Staffing

The Pennsylvania Mountain Service Corp, southwestern Pennsylvania's regional AmeriCorps team, and AmeriCorps VISTA have contributed valuable volunteers to the Dark Shade Brownfields office and to AMD&ART to work on the Vintondale project. This regional AmeriCorps team serves ten counties east of Pittsburgh. In total, the Pennsylvania Mountain Service Corp has seventy-five volunteers, six of whom are assigned to AMD&ART to work on the Vintondale and Dark Shade projects. In the AmeriCorps program, adults (usually recent college graduates) work in a low-income or otherwise disadvantaged community on specific projects. In the 2000-2001 year, the volunteers were paid \$9,000 a year and can get \$4,750 toward advancing their education at the end of the stint. AmeriCorps VISTA volunteers receive slightly different compensations and perform different work. VISTA builds capacity, including funding sources; AmeriCorps is direct service to communities.

Between the two offices, there are six AmeriCorps and VISTA volunteers specializing in the following areas: land use planning, landscape

### Show Me the Artwork!

#### **What is art? How is AMD artistic, and what does the final artistry have to do with community values and culture?**

AMD&ART is not about classical music, operatic movements, Picasso, or Van Gogh. Rather, it is about the everyday sense of aesthetic that is expressed by what we do and how we move in space and use the resources around us. Working with the community, AMD&ART brings art to the local level in a number of ways. The AMD&ART projects are not about art per se. They are about using aesthetics, design, culture, history, and local resources to improve the community and celebrate its assets. Through these steps AMD&ART is turning the historic and natural elements that once embarrassed the community and reflected its demise, into the means of its revitalization. Any piece of art requires coordination of resources over space and time. In this way, AMD&ART is a choreographic piece that weaves together community outreach, design, history, and culture.

Community-based landscape design can transform public space to be attractive and functional. In Vintondale the design team has creatively interwoven a number of functions. The park serves as an AMD remediation site, a public gathering place, and a reference to the rich history of coal mining in the region. Instead of downplaying the acid mine drainage and the necessary remediation, the design team made it the focus of the site. A litmus garden of native trees, shrubs, and flowers mirrors the changing colors of the AMD as the health of the water increases between each settling pond.

The Vintondale project also is using the huge boney piles as an element of the site. Through the work of a sculptor, the boney pile may be turned into a footpath and viewing area. In this case, the artist is using what was once refuse from the site as an ingredient in its remediation and as a literal platform from which to view the redevelopment. The Vintondale site will include interpretive areas and commissioned artwork and signage to document the coal mining history of the area and its people.

In redeveloping the site, the community of Vintondale is not paving over or erasing its history. Rather it is unearthing lost history. By using the natural resources and culturally significant elements of the old site, the community has created something of lasting value.

architecture, environmental education, environmental sciences, and water issues. These volunteers draw upon each other's experiences and contacts. The staff person from the Office of Surface Mining who works with the AmeriCorps volunteers provides a great deal of professional support, access to resources and a sounding board for ideas. Because he formerly lived in the region and worked on heritage preservation projects, he is familiar with the ins and outs of life in rural Pennsylvania. The volunteers are young professionals, recently graduated from college. In many ways their "greenness" to the brownfields world may be their best asset. They willingly ask for help, and many agencies and community members willingly give it. Within these brownfields offices, there is no prevailing attitude about the "way it should be done" or what is possible or not possible. VISTA members are intrepid in their pursuit of funding, while the AmeriCorps members work hard at direct service to their respective communities.

One challenge that the volunteers face is the short duration of their service. They all understand that their stint is intentionally temporary. The need to institute their programs and gain funding for ongoing staff, preferably individuals from the brownfields communities, is imperative. To this end, the current staff is working with locals and volunteers to institutionalize the current knowledge base and to cultivate ongoing interest in the work. A local leader will need to take ownership of the project and build upon the networks that are being established.

#### **Community Outreach**

Excitement, curiosity, fear. These emotions brought local residents to early information-sharing sessions. Developing community participation and finding local leaders were challenging tasks initially for the young volunteers. AMD had an effect, not only on natural resources, but the morale of its citizens: continuous mining and the sub-

### Measuring the Results

The brownfields staff is interested in measuring the economic social and environmental benefits of their outreach efforts. They are working with an assistant professor at the University of Wisconsin, Madison, in landscape architecture. She is building on a study led through the George Mason University Institute for Public Policy. Several years ago it created the base data. In particular, she is investigating the benefits of the project's multidisciplinary and participatory approach to community decision-making.

The professor began her work on the project as a doctoral student at the State University of New York (SUNY) College of Environmental Science and Forestry. She is replicating a baseline survey of community attitudes that was originally conducted before the remediation efforts began. She will use the survey results and documents that have been generated through participatory community workshops to develop replicable indicators of community capacity and attempts to measure growth of the community's capacity to manage current issues and plan for the future. The work should contribute to a better understanding of grass-roots participation and the community decision-making process.

sequent abandonment of the mines have left the community blighted, without resources or incentive to work together to redevelop the community. The sight of the abandoned coal mines is a constant reminder of how little citizens were left with once mining ended. The numerous neighborhoods, which were once defined by various mine entrances, have no common source of unification to bring them together other than the dismal social and economic circumstances that the vacant mines have created. There is little that the communities celebrate about themselves.

AmeriCorps and VISTA members working on these AMD projects are reaching out to the community at all levels, through youth programs and efforts to involve the volunteer fire department and church groups. Like the project itself, the outreach is multifaceted discussing environmental impacts, history of the area, economic opportunities and aesthetic design of the site. Through the many

avenues, individuals of all walks have found ways to participate in the process.

Much of the project is dependent on community participation. The Vintondale project received grants to purchase materials for the park, such as wood to build benches and planters boxes. Ultimately, however, it depends on community resources and spaces to construct them. Also, the Shade Creek watershed project depends on volunteers to regularly take water samples and have them tested.

AMD&ART began outreach in Dark Shade and Vintondale in 1995 by holding public meetings and showing AMD educational displays at public gatherings. In 1998 AMD&ART was awarded a three-year Sustainable Development grant from Region III EPA. That award put construction money on the table and small but stable funding for outreach by AmeriCorps and VISTA members. In 1999, AMD&ART worked with the Borough of Central City to apply for an EPA brownfields pilot grant for the communities of Central City and Shade Township. This additional funding, specifically for the Dark Shade watershed, has enabled AMD&ART to establish a brownfields office and engage local residents in the brownfields redevelopment and watershed restoration process. Watershed interns and AmeriCorps volunteers live in the communities

### Job Skills for the Community

The Dark Shade brownfields project and Carnegie Mellon University's Center for Brownfields Study were co-recipients of an EPA job training grant. The grant gives fifteen area residents two to 4 weeks of course work in Pittsburgh, where they are instructed in math and environmental issues, brownfields basics, lead and asbestos abatement, as well as Hazardous Waste Operations (HAZWOPER) training. The students spend the last four weeks of the course in the field. They learn from local environmental consultants about issues specific to the watershed and skills such as water and soil sampling. One week of the training focused on innovative technologies. Trainees worked with the U.S. Army Corps of Engineers on development of the use of river dredge and other waste materials to create adequate planting media for all the planting in the boney piles along the sides of the Litmus Garden and in the wetlands.

of Central City and Shade Township, and they provide a consistent local presence in the community. Local residents are now taking part in outreach activities, learning water monitoring techniques, and assisting with design and planning for brownfields sites. They have also formed a watershed group, the Shade Creek Watershed Association (SCWA). SCWA is entirely composed of concerned local residents, and it is the local entity that will take over water monitoring, watershed restoration, and protection of the Shade Creek watershed.

The staff members at the projects have reached out beyond the local citizenry. They have worked with the borough councils and township supervisors, both elected positions of local government. They have also worked with existing coal companies in the area as well as the local landfill operators and the water districts.

### Land Ownership

Land ownership and assembly issues continue to challenge the brownfields projects. Many of the contaminated sites are owned by private firms that are reluctant to conduct any assessments on their properties. Some property owners are engaged with the brownfields staff in re-parceling parts of properties, selling outright, or donating sites to a nonprofit land conservancy, the Southern Alleghenies Conservancy. However, comprehensive reuse plans are difficult to develop without a clear understanding of the degree of contamination or of future ownership of the properties. The brownfields properties are held privately, and landowners do pay their taxes, which support local schools and infrastructure. With more than a year of successful work, private landholding corporations are now expressing their willingness to explore the donation of some lands contaminated long before their current ownership. These donations will open the possibility of full assessment and reuse of the donated properties.

### Environmental and Public Health Issues

The sheer size of the brownfields areas is an environmental challenge to a small staff. Each AMD site needs to be monitored for changes in flow and effects on plant and water life. The fact that the contamination is ongoing and cannot be readily contained creates an additional challenge. The AMD spigot cannot be closed or turned off, so any remediation strategies have to be ongoing, making it difficult to estimate costs for

remediation. Since AMD is continually pumping from a particular spot, redevelopment prospects are limited and generally will have to contain some sort of passive treatment system for the drainage. Given these environmental challenges, there are incentives for redeveloping AMD sites. Over the long term, passive remediation can be accomplished inexpensively. Secondly, although there is plenty of open space in these coal mining communities, there is virtually no recreation or planned



greenspace to give the community a center. As Vintondale shows, passive remediation systems can be aesthetically designed along with green and recreation spaces.

The AMD remediation process depends on the creation of wetlands. The remediation creates “legal water” that can be used in new wetlands that can then be sold in perpetuity as replacement wetlands. If developers destroy wetlands, they must pay to have an equal amount of wetlands recreated on behalf of the development. For that reason, the brownfields staff can essentially sell the wetland credits that they are creating. Wetlands are sold for anywhere between \$15,000 and \$30,000 an acre. In Vintondale, the Pennsylvania Department of Transportation (PENNDOT) purchased six acres of mitigation wetlands at \$15,000 per acre for a total of \$90,000. This funding allows AMD&ART to create a perpetual care fund for the treatment system and wetlands. Other grants will create those wetlands as a habitat rich zone. Nearly half of the sale proceeds went into the local Community Foundation to create the perpetual care fund. The Community Foundation will work with AMD&ART to enhance the area over time.

Staff members have been involved with macro-invertebrate sampling along the waterways of the

### Support for AMD&ART and the Dark Shade Brownfields Project (1997-2001)

\$250,000	The U.S. Environmental Protection Agency Sustainable Development Challenge Grant Program, 3 years
\$200,000	The U.S. Environmental Protection Agency Brownfields Assessment Pilot Program Grant for Dark Shade, 2 years
\$140,000	The Rockefeller Foundation, Partnerships Affirming Community Transformation, 3 years
\$92,100	Pennsylvania Department of Transportation, Wetlands Mitigation Program
\$80,000	U.S. Office of Surface Mining, Appalachian Clean Streams Cooperative Agreement
\$55,000	Pennsylvania Department of Environmental Protection, Growing Greener Grant Program and Watershed Restoration Assistance Program
\$50,000	The Vira I. Heinz Endowment
\$24,200	U.S. Forest Service
\$20,000	Pennsylvania Department of Conservation and Natural Resources, Small Community Grants Recreation Program
\$20,000	U.S. Department of Agriculture, Rural Business Opportunity Program
\$13,000	Pennsylvania Council on the Arts, Interdisciplinary Arts Program, 4 years
\$12,000	U.S. Environmental Protection Agency, Brownfields Job Training
\$10,000	The Western Pennsylvania Watershed Protection Program
\$7,500	GPU Foundation, Community Grants Program
\$6,000	The Potrero Nuevo Fund of the Tides Foundation
\$4,900	U.S. Environmental Protection Agency, Environmental Education
\$3,000	The Community Foundation for the Alleghenies
\$2,500	The Canaan Valley Institute
\$2,300	Western Pennsylvania Coalition for Abandoned Mine Reclamation
\$1,498	Pennsylvania Humanities Council, Quick and Small Grant Programs

#### In-kind donations

56 Professionals, 4,013 hours total

445 Volunteers, 2,402 hours total

#### Total

Funding        \$993,998

project. The sampling measures the quantity and diversity of invertebrates (bugs) that are living in a given length of creek. These numbers then indicate the health of the creek. More diverse populations signal a greater biodiversity and health of the creek. In the samples conducted on these projects, very few invertebrates were found along a creek

segment, indicating all but complete death to the waterway.

The brownfields staff members have utilized a low-technology and low-cost but effective way of measuring AMD flow from discharges. They have built weirs at the drainage sites. Weirs are small dams that force flow through an object. When

lifted, AMD flows directly and the amount of flow can be measured. A weir is a wall built across the width of a stream, and water flows over it. It is there to hold the water back (to reduce floods, allow boats to move through locks, etc.). A measuring weir is a special form of this. It allows depth to be the same all the way across the channel. The weir “characterizes” the river’s cross-section, and this cross-sectional information allows for calculate flow based on depth and width at the weir.

The brownfields communities face many environmental and health issues that are not directly related to AMD but are the result of neglected infrastructure, low socio-economic levels, and poor economics. Sewage dumping into the creek is simply a symbol of the potential health issues that could afflict the community. To date, there has been little attention paid to these issues and very limited social services exist to address them in any systematic way. The community empowerment that occurs through brownfields revitalization may spur other initiatives to revitalize the community.

#### **Partnerships and Funding Sources: Many Hands Make Light Work**

The excitement and youthful energy of the staffers working on the project have won them many friends. Both the Vintondale and Dark Shade projects have been the recipients of a great deal of goodwill and donated time and services.

The PBS Coal Company and the Pennsylvania Department of Environmental Protection (PADEP) are both donating laboratory time to assessment and analysis of water samples. Up to twenty samples a month are conducted, the cost of which would be \$70 each, for a savings of \$1,400 a month to the project. The staff at those organizations have also generously donated consultation time.

The projects have made good use of college interns and graduate students conducting projects. In Vintondale, the conceptual design envisioned by the professional design team and the community was brought to reality through the hard work of a landscape architecture graduate working as an AmeriCorps volunteer. In Dark Shade, conceptual designs were created by another recent landscape architecture graduate who worked with the community during a summer internship.

#### **Conclusions and Lessons Learned**

The AMD&ART program and its associated projects is a lesson in the power of vision. A good idea backed by personal commitment has produced impressive results: a series of environmental remediation projects, extensive community outreach and education, multi-stakeholder collaboration, establishment of a borough council, creation of recreation facilities, school curriculum programs, job training, improved design over space, coordination among communities in a watershed and much more. These results can be attributed to vision, hard work, good planning and good luck. In spite of this success, the projects continue to be run by volunteers. And this is part of their power. However, professional management is needed to ensure the longevity of these efforts. The person needed for the job is not a recent college graduate lacking the background or resources to ensure long-term stability. The ideal person would have years of experience in working with stakeholder groups, developing financial strategies, and managing projects.

Both the Vintondale and Dark Shade projects are the product of a single mind working with a very young staff that stays no more than two years. The constant challenge of creating some continuity is balanced by the reward of fresh minds and new energy. But so far the projects have failed to fund their own management, the last step to becoming national demonstration projects that can produce remarkable and truly transferable results to the rest of the Appalachian Coal Country. The short-term staff, necessarily absorbed in community outreach and massive construction, has not tapped the grant sources that may be available. Operational funds are needed to pay for basic overhead costs and skeletal programming as well as salary needs of core staff members. Such funds allow staff to focus their fundraising efforts on project-specific goals. The long-term of the projects well-being must be considered, otherwise they will exemplify a good idea that had to be abandoned when resources expired.

<sup>1</sup> Blake Velde of the United States Department of Agriculture, interview. February 24, 2000.

<sup>2</sup> Economic Research Service, United States Department of Agriculture.

<sup>3</sup> 1990 Census Bureau, Office of the Census, U.S. Department of Commerce.

- <sup>4</sup> Research Foundation, National Association of Development Organization, *Reclaiming Rural America's Brownfields: A National Report on Rural Brownfields Redevelopment*, December 1999.
- <sup>5</sup> USDA Rural Development—Office of Community Development. *Progress Report: Rural Empowerment Zones and Enterprise Communities Initiative*. April 8, 1998.
- <sup>6</sup> Statistics of the U.S. Department of Agriculture indicate that U.S. demographics may be loosely broken down into quarter sections among urban, suburban, and rural population designations. Urban and rural populations are composed of roughly equal quarters, while the remaining half of the American public resides in a suburban setting.
- <sup>7</sup> Thanks to Sean Tolliver, ICMA, for his contribution of this and the next sidebar.
- <sup>8</sup> Thanks to Thomas Groeneveld, ICMA, for his contribution on eco-industries.
- <sup>9</sup> In the most general terms, an ecosystem refers to the dynamic and interdependent relationships among living and nonliving entities, and the environment they inhabit. In addition, ecosystems may range from the Earth to a wetland to a single drop of water.
- <sup>10</sup> *About Ecological Parks*. <http://cfe.cornell.edu/wei/park.html>