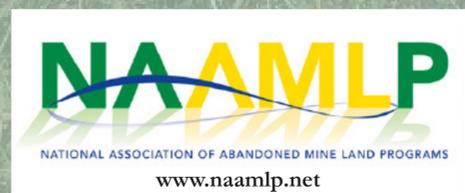




WHAT DO ALL THESE PLACES HAVE IN COMMON?

They are all reclaimed abandoned mine sites!





Subsidence, Midlothian, Virginia: Imagine waking up to see you backyard has subsided into a 1800s underground mine that you were never aware of. The Virginia Department of Mines, Minerals and Energy accomplished an emergency reclamation project to backfill the subsidence area, pour a reinforced concrete slab, topsoil and revegetate. (On the form)



What is the Abandoned Mine Land Reclamation Program?

The Surface Mining Control and Reclamation Act of 1977 (SMCRA) passed by the U. S. Congress established the national Abandoned Mine Land (AML) Reclamation Program. The law gave states and tribes the authority to operate their own Abandoned Mine Land Reclamation programs. The programs are paid for through grants they receive from the Office of Surface Mining Reclamation and Enforcement (OSMRE) in the U.S. Department of Interior. Money for the grants comes from fees paid by active coal mining companies. The amount of money companies pay is based on how much coal they mine. The grant money makes it possible for the states and tribes to do the work to clean up mine sites that were abandoned in the early days of mining before the laws required mining companies to reclaim the land. The pictures on this poster are only a small sample of some of the abandoned mine sites the states and tribes have cleaned up through their AML programs over the years. These important programs still have a lot of work left to do.

What is Abandoned Mine Reclamation and How is it Done?

In the early days, miners didn't think much about how the land would be used after the minerals were taken out of the ground. In the 1970's, laws were passed to protect the land and to require it to be returned to some useful purpose after mining. This is called reclamation. If reclamation is done right, people are protected from hazards like dangerous cliffs and deep ponds, the land is protected by requiring the soil to be returned and grass and trees to be planted, and the environment (air and water) is protected by stopping pollution.

Old mines often have steep cliff-like highwalls that are ugly and dangerous. Miners often left areas with no grass or trees which would often then allow dirt and sand to mix with rain water and run into nearby streams (called erosion), causing fish and plants in the water to die.

Reclamation can turn damaged land into valuable land including: ponds or small lakes that can be used by farmers or for fishing; fields for farming; pastures for grazing; recreational areas such as golf courses, parks, ball fields, and playgrounds; forests; wildlife areas or wetlands for birds and animals; large open areas for building houses, shopping malls, hospitals, airports, schools, or other types of businesses.

There are many things at abandoned mines that can cause environmental problems and that could be unsafe for people. Some of these things are dust, noise, dirty water, and erosion (where dirt mixes with water and then clogs up nearby streams), dangerous mine openings, highwalls that cause landslides, sink holes, underground mine fires and polluted water for people and animals. Reclaiming abandoned mines fixes these problems. Abandoned Mine Reclamation Programs fix:

- Holes that were dug to search for minerals must be filled in. This will stop water from filling up the holes.
- Entrances to underground mines (called shafts or adits) must be closed so that people will not fall into the mines or go exploring in the mines. Abandoned mines are dangerous and it is bad idea to go inside a mine and explore. "Stay Out! Stay Alive!"

The walls and roofs (ceilings) may be unsafe and could fall in, tunnels can be easy to get lost in, and sometimes there are dangerous gases in mines that can kill. Sometimes grates (metal nets) are put over the mine openings to keep people out but to let bats and other animals get inside the mine and use it as a place to live.

- Polluted orange water from acid mine drainage must be treated to clean up rivers and streams.

- Underground mine fires, must be dug up and extinguished to protect people living nearby.

- Roads that were built to haul the minerals out of the mine must be removed and fixed.

- Equipment used for mining must be removed. Old buildings, would have to be torn down and removed too.

- Any pits that were left after taking the minerals out of the ground must be filled in for safety or, if water is going to be left in them reclamation should be sure the ponds or lakes are safe. This sometimes means that fences should be built around the pond or lake. It is also important to make sure the water is clean, especially if people are going to swim or fish in it.

At mines, where lots of dirt was removed to get down to where the minerals are, this dirt (called overburden) must be placed back to refill the pit. Then the dirt must be graded or smoothed out and covered with topsoil so that grass and trees can grow. In abandoned mine reclamation, they push dirt and topsoil up against any cliffs (called highwalls) made during mining. This should be done a little at a time so that the material stays in place and so that the cliff is eventually covered.

After the land is put back into the right shape, the next step is to plant either grass or trees. This depends on how the land will be used. If it is going to be a pasture, hay or special grasses will be planted. If it is a farm, some type of crop like corn, soybeans, or wheat will usually be planted. If the land will be used as a forest or wildlife area, trees and shrubs will be planted. If the land will be developed for other uses, grasses are usually planted to keep the topsoil in place until it is time to build.

After the grass and trees are planted, fertilizer is added to help the grass and trees grow quickly. It is important to keep the grass and trees growing so that the topsoil is not washed away (erosion).. In a short time, the grass and trees will start to grow.

**Abandoned mine reclamation is important for all Americans.
Good reclamation makes abandoned mines a good memory.**

On the front:

(The following projects were all completed through one of the nationwide abandoned mine land reclamation programs)



This project focused on the stabilization and abatement of a serious, attacking landslide impacting the school grounds of the Bell Central Middle School in Bell County, Kentucky. Jackson and Jackson of Fall Rock, KY initiated construction work on August 20, 2014 and completed the project on August 10, 2015.



The Bear Hill Abandoned Mine Reclamation Project is located along the banks of the Casselman River in far Western Maryland. The project sealed two open mine entries, removed dangerous mining equipment and stabilized an eroding coal refuse pile. The coal refuse pile was being undercut by the river causing unstable stream banks and increased sedimentation. The photo shows the restored stream banks and newly graded site.



The reclamation of the McLaren Tailings was a long sought-after objective by Yellowstone National Park, the State of Montana, and local environmental groups. Combined with work done upstream at the New World Mining District under the supervision of the Gallatin National Forest, the removal of the McLaren Mill tailings was conducted to clean up the most heavily damaged mining area in tributaries of Yellowstone National Park.



The Pharris Lane II project, located in Kimberly, Alabama, consisted of clearing the site of all the trees and debris. Removal of all the Industrial/Residential Waste (IRW) to an approve land fill. Elimination of five Impoundments (IMP) associated with the 4,350 feet Dangerous Highwall (DH). The DH averaged 50 feet in height and was backfilled with onsite material to a 3:1 sloped or flatter. A sediment basin on the site was repaired with a new overflow pipe and spill way. The dam of another basin was removed and replaced. We chose to replace this dam because of the unknown integrity of the dam and its close proximity to the Warrior River. All areas disturbed were revegetated.



The Sicard Hollow Road III project, located in Vestavia Hills, Alabama, consisted of clearing the site of trees and debris. Installing sediment control structures. Backfilling the 4,250 feet of dangerous highwalls, which averaged 35 feet in height, with onsite spoil materials. The backfilling also eliminated the pit and Dangerous Pile and Embankment (DPE) located on the project site. Installing terraces and riprap drainage ditches along with other permanent sediment control structures. Revegetating 56 acres that were disturbed.

“The problem with abandoned mines is that they are everyone’s problem but nobody’s responsibility.”

-Rob Rice

Chief of the West Virginia Office of Abandoned Mine Lands and Reclamation.

Activity Instructions: Abandoned Cookie Mine Reclamation Activity (An adaptation of “Chocolate Chip Cookie Mining” to teach about Abandoned Mine Land Reclamation)

Purpose: This fun classroom activity will teach about the challenges faced by Abandoned Mine Land (AML) Programs in reclaiming AML sites, including the necessity of making a reclamation plan and carefully managing their budget for the cleanup of the “AML project site” (broken cookie). It will also develop skills in math, science, problem-solving, decision-making, and language arts. Each player must make a “reclamation plan”, manage their “AML project” budget, and pay the costs associated with the AML “cleanup” at their assigned “project mine site.” The objective is to reclaim the “mine” (broken cookie) as efficiently and cost-effectively as possible without overspending their “AML project” budget.

Basic Instructions:

- Begin by preparing an “abandoned cookie mine” site for each player. To prepare each site: place a whole cookie on a sheet of grid paper (use a variety of cookie types to represent the differences in each “AML site”, but avoid cookies that are overly crumbly) and draw a circle around the whole cookie; next, break the cookie and allow pieces to fall inside and around the circle (note: you want to be careful to leave some portions of the cookie big enough to allow “reclamation” to occur).
- Give each player a “budget” of \$19, an “Abandoned Cookie Mine Spreadsheet”, and an “abandoned cookie mine” as their “AML project site” that they will be responsible for “reclaiming.”
- Next, each player must design a “reclamation plan” as to how they are going to “reclaim” the cookie to fit back within the circle drawn on the grid paper (representing the area in the “pre-mined” cookie condition), and to look as close as possible as a whole cookie in shape and size using only the tools they purchase with their budgeted money. They must also plan for use of some money to pay “contractor” and other costs, and to purchase grass (frosting), plants and trees (sprinkles) for their “abandoned cookie mine reclamation project.”
- Next, each player purchases his or her “reclamation equipment” and “vegetation.” They may purchase more than one piece of “equipment”, but “equipment” may not be shared by players. The “reclamation equipment” for sale includes: Flat toothpick – costs \$4.00 each
Paper Clip – costs \$5.00 each
The “vegetation” for sale includes:
Frosting (“grass”) – costs \$.40
Green Sprinkles (“trees”) – costs \$.50
Multi-colored Sprinkles (“flowers, plants, and shrubs”) – costs \$.10 each
- Since “contractors” (equipment operators) and other expenses must be paid, there is also a contractor cost charged to each player of \$1.00 per minute.
- Once all “equipment” and “vegetation” is purchased the clock starts and reclamation can begin, but no fingers or hands allowed!
- Once the time is up, any squares off the grid sheet outside the circle that have cookie on them must be counted and will cost \$.05 each when totally scores.

Rules of the Game:

1. No player may use their fingers or hands to touch the cookie pieces. The “equipment” and “vegetation” are the only things that may touch the cookie.
2. Players should be allowed a maximum of five minutes to actually “reclaim” their “abandoned cookie mine.” Players who finish “reclamation” before the five minutes are up will only have to pay for the time spent “reclaiming” their cookie.
3. A player may purchase as many pieces of “reclamation equipment” as desired and that their budget will pay for and the tools may be of different types.
4. If the “equipment” breaks, they are no longer useable and new “equipment” must be purchased.
5. The players that are able to most fully and neatly reclaim their cookie within the circle and within their budget by the end of the game win.
6. All players win at the end of the game because they get to eat their reclaimed cookie!

Abandoned Cookie Mine Reclamation Spreadsheet

1. Name of cookie (“abandoned mine reclamation project”):	_____		
2. Equipment purchased	Flat Toothpick # _____	x \$4.00 = _____	
	Paper Clip # _____	x \$5.00 = _____	
			Total Equipment Cost: \$ _____
3. Vegetation purchased	Grass = \$.40		
	Trees = \$.50		
	Flowers, plants and shrubs # _____	x \$.10 each = _____	
			Total Vegetation Cost: \$ _____
4. Reclamation contractor costs	_____ minutes	x \$1.00	
			Total Reclamation Contractor Cost: \$ _____
5. Total cost of abandoned cookie mine reclamation:			\$ _____
6. Grid squares outside circle with cookie remaining on them:	# _____	x \$.05 penalty for each = _____	
			Total Amount of Penalty: \$ _____
7. Final cost after penalties subtracted	Line 5 total above minus line 6 total above =		
			Final Cost: \$ _____

**How did you do?
Did you spend more than your budget? Less than your budget?
What did you learn?**