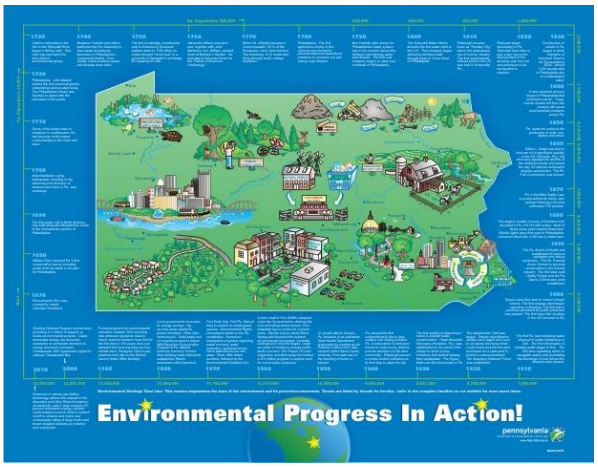
DEP's

2012 Earth Day—A Teacher's Guide to the Environmental Progress Poster

"Environmental Progress in Action!" Poster Timeline



DEP presents its Earth Day 2012, "Environmental Progress in Action!" timeline. This timeline displays the state's environmental heritage timeline and population along the margins of the poster.

The outline of the state is filled with individual drawings that convey best management practices (BMPs) and environmental indicators. BMPs are the current, best scientific and economic ways of doing business. Environmental indicators are signs of conditions that indicate environmental health. Both BMPs and environmental indicators are measures of the commonwealth's environmental progress.

Individual Drawings with Annotations

There are ten individual drawings within the central outline of Pennsylvania. Each drawing depicts multiple best management practices (BMPs), environmental indicators and how DEP staff work to protect and restore the environment. A list of the drawings with a brief description of each follows. Select and print the drawings of your choice.

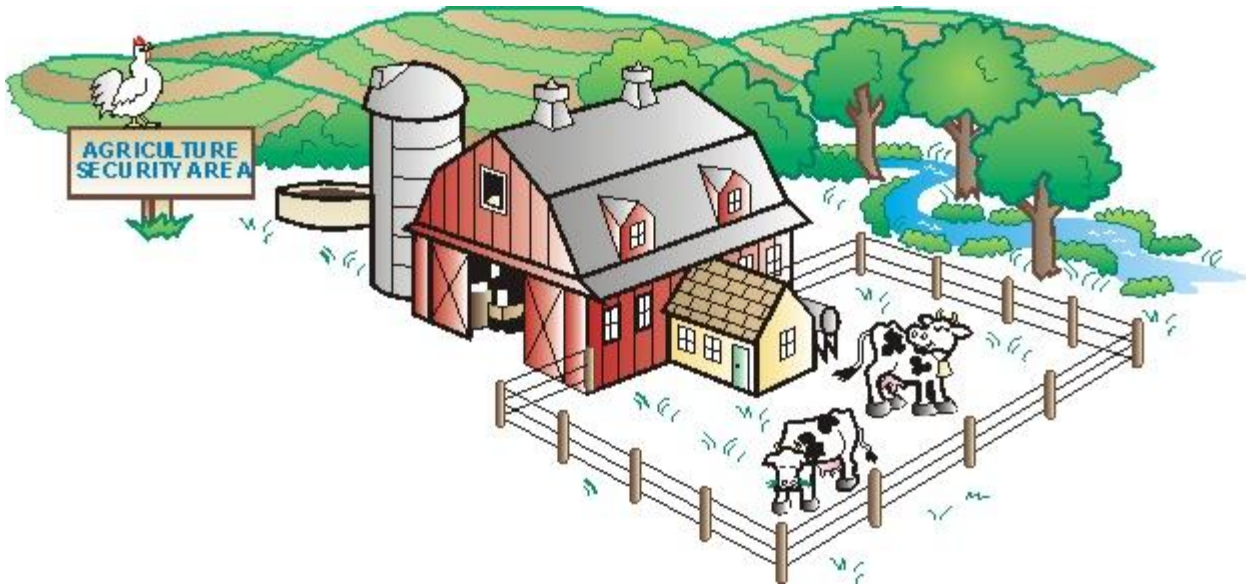
Brownfields Site -

Increasingly, industries in need of new facilities are turning to "brownfield" sites, a relatively recent term used to describe the reuse of a previously used site as opposed to building on undeveloped land, which would be a green site. Infrastructure (roads, sewage, water and electric) is already nearby as are workers. No additional land needs to be used to provide these services to the industry. The reuse of these sites also stimulates the local economy. DEP staff works with economic and industrial development associations, local governments and businesses to cleanup and redevelop brownfields and other industrial sites. Notice the filter fence- a knee high, black, plastic fencing material that keeps soil from eroding from the site. This is a BMP in the construction industry.

Greenbelt Area -

Greenbelt areas link pre-existing natural areas to provide continuous, low-impact walking and biking trails. These areas may also provide bits of linked, improved habitat for wildlife and, if along a waterway, protect the water from run off. DEP biologists, engineers and partners work to make sure that these greenbelts along streams, called riparian buffers, are in place to protect the streams, water and aquatic life from water pollution. These areas also provide recreation and community socialization. Greenbelts are an indicator of a quality environment.

Farm -

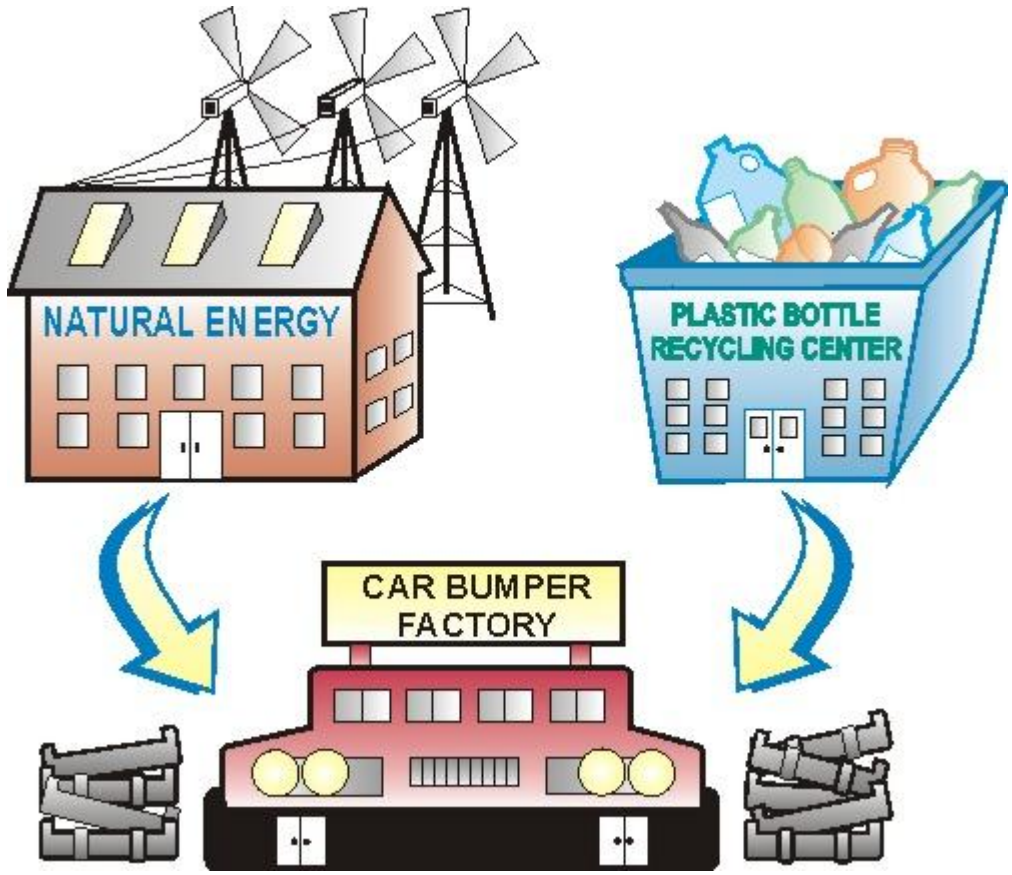


Notice that the cows are fenced away from the stream. This is a practice that reduces water pollution. The streamside plants protect the water from other forms of pollution. Notice the contour plowing and planting, a Best Management Practice that reduces soil erosion. The manure pit behind the silo keeps excess nutrients from washing away. This farm is part of an Agricultural Security Area, which reduces its chances of being developed in the future. DEP energy program staff are also involved in supporting anaerobic digesters on farms which convert manure into biogas for electricity.

Former Mining Site -

Former mining practices have left large mountains of waste rock, called culm. The surface of the culm can be spread with soil and biosolids (treated wastewater solids) and planted to provide habitat for wildlife. Reclaimed mining sites (recycled land) treated with recycled waste (biosolids) is a Best Management Practice. DEP staff works with partners and communities to reclaim and restore the abandoned mine sites.

Eco-industrial Park -

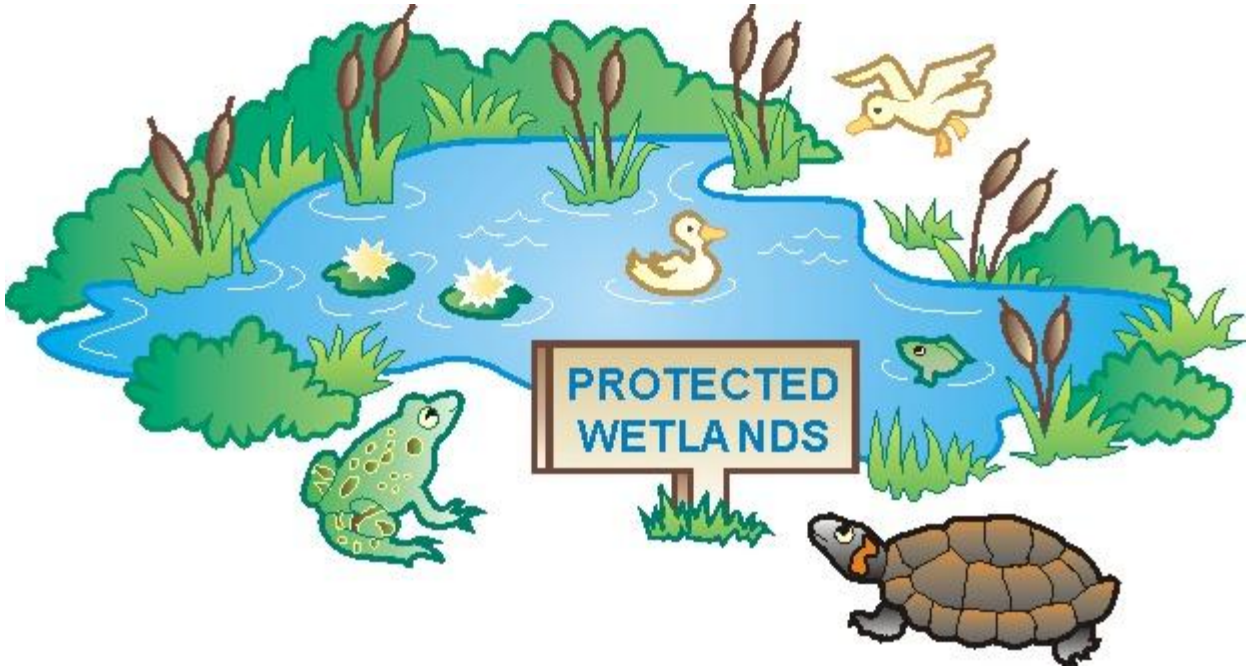


A relatively new business practice is to locate industries right next door to their suppliers. Recycled plastic bottles can be turned into car bumper parts, roof top luggage racks and other car parts. Time and transportation costs are greatly reduced, and there is less environmental impact from these savings. Such industrial parks are indicators of environmental progress. DEP staff inspects these facilities to make sure that they are following rules called regulations. If they are not in compliance, then staff works with the facility to help them improve or issues a violation, depending on the problem.

Conservation Subdivision -

Some newer housing subdivisions cluster the houses close together so that part of the subdivision can remain as open space. This open space can be used to provide for wildlife and/or recreation. If this is done on adjoining properties, the open spaces can be linked to provide even greater environmental value. Housing areas designed like this are indicators of environmental progress. DEP staff reviews development plans like these and if it follows environmental rules and regulations, then it may be approved with a permit.

Wetlands -

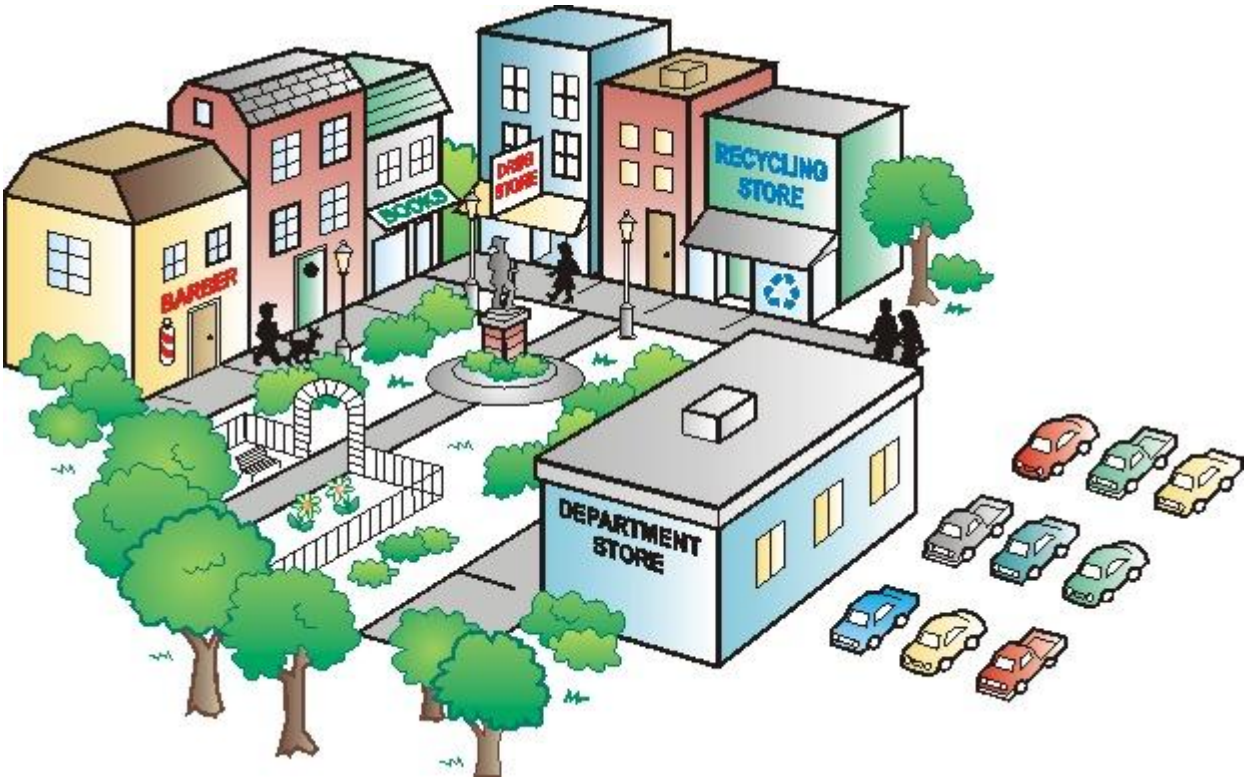


Wetland areas provide food and cover for wildlife, improve the quality of the water flowing through them and protect downstream areas from flooding. It is a Best Management Practice to protect wetlands when working nearby. Several Pennsylvania endangered and threatened species, such as the bog turtle, depend on wetlands. Wetlands are known for their high diversity of species- biodiversity. High biodiversity is an indicator of environmental quality. DEP's Wetlands Protection Program makes sure that wetlands are preserved or restored.

Forested Areas-

The practice of setting Pennsylvania land aside for the public and for habitat preservation was started by William Penn! These areas provide for species protection, protect groundwater, assist in cleaning the air and much more. Preserved, open land is an indicator of environmental progress. Lichens are tiny plants that grow on barren ground, rocks and tree trunks and are often an indicator of clean air. The very first Secretary of the Department of Environmental Resources (DEP's predessor) was Maurice Goddard, a forester, who placed a state park within 25 miles or a 30 minute drive from every Pennsylvanian.

Town Area -



Having towns and city areas on a pedestrian scale allows people to walk to shopping and social areas, saving energy and providing exercise. Areas such as these are not made for cars, which require much paved space and contribute to pollution. Having walkable, built areas is an indicator of environmental quality. DEP's staff supports environmental education programs to encourage individuals to walk or ride bicycles in safe areas.

Public Transportation -

Higher population densities allow for the economic feasibility of public transportation. Since using energy is how the average person produces the most pollution, using public transportation instead of driving in a car greatly reduces individual environmental impact. Using public transportation reduces air pollution, and DEP staff works diligently to make sure that the air is clean and healthy to breathe. DEP staff also support alternative transportation fuels like compressed natural gas, biodiesel and ethanol that are homegrown energy solutions. Well developed public transportation systems are indicators of environmental progress.

Environmental Progress in Action! Poster

Heritage Time Line Text

1670
Pennsylvania (PA) was covered by nearly unbroken forestland.

1680
William Penn decreed PA's first conservation law by including public land set-aside in his plan for Philadelphia.

1690
The first paper mill in North America was built along the Wissahickon Creek in the Germantown section of Philadelphia.

1700
Industrialization using waterpower, resulting in the damming and diversion of streams and rivers in PA, was underway.

1710
Some of the Indian trails in existence in southeastern PA had become crude wagon routes leading to the north and west.

1720
Philadelphia. John Bartram started the first botanical garden, undertaking serious plant study. The Philadelphia Library was founded to assist with the education of the public.

1730
Citizens interested in the fish in the Schuylkill River began a fishing club. This club may represent the first citizen's environmental group.

1740
Benjamin Franklin and others petitioned the PA Assembly to stop waste dumping by tanneries in Philadelphia's commercial district. Foul smells, lower property values and disease were cited.

1750
The first knowledge of anthracite coal in America by European settlers dates to 1750 when an Indian brought "stone coal" to a gunsmith in Nazareth to exchange for repairing his rifle.

1760
Alexander Wilson was born and, together with John Bartram's son, William, studied birds at Bartram's Garden. He was later to become known as the "Father of American Ornithology."

1770
When PA officially became a Commonwealth, 90percent of the Europeans, here, were farmers. The remaining 10percent made their living through small, cottage industries.

1780
Philadelphia. The first agriculture society in the colonies was formed to promote improved agricultural practices to conserve soil and reduce crop disease.

1790
Ben Franklin wills money for Philadelphia's water system due to his concern about links between bad drinking water and disease. The first coal company begins to mine coal northeast of Philadelphia.

1800
The Schuylkill Water Works became the first water plant in the U.S. This company began delivering drinking water through pipes in some areas of Philadelphia.

1810
Pittsburgh became known as "Smokey City," due to the widespread use of coal by industry. The first experimental railroad track in the U.S. was built in Somerville, PA.

1820
Railroads begin developing in PA. Railroads were later to play a key role in the development of PA, allowing coal, iron ore and petroleum to be transported to markets.

1830
Construction of canals in PA began to block migration of American Shad in the Susquehanna River. Almost 1,000 people died in Philadelphia due to contaminated water.
1840
A new industrial process began in Philadelphia that produced coal tar. Today, coal tar wastes left from this process still cause environmental problems across PA.

1850
PA leads the nation in the production of cloth, iron, leather and wood.

1860
Edwin L. Drake was first to discover oil in significant quantity in the US (Titusville, PA). His discovery signaled the decline of the whaling industry and paved the way for internal combustion engines and plastics. The PA Fish Commission was formed.

1870
PA.'s first Mine Safety Law, covering anthracite mines, was passed following a fire that suffocated 179 workers.

1880
The largest number of acres of farmland ever recorded in PA (19,791,000 acres). Most of those acres were cleared forest land. Electric lights were first used in Philadelphia. Johnstown flood kills 2,200 due to a failed dam.

1890
The PA. Board of Health was established to improve sanitation and reduce epidemics. The PA

Forestry Association formed to promote conservation in the forestry industry. The first state park (Valley Forge) and the PA Game Commission were established.

1900
Sprays were first used to control orchard insects. The first sewage plant began operating in Reading. The first law to purchase woodland for public preserves was passed. The first major fish stocking in the US occurred in PA.

1910
The first PA law forbidding water disposal of waste deleterious to fish. The first chlorination of drinking water began in Erie. The first laws regulating dams on navigable waters and prohibiting the discharge of coal refuse into streams were passed.

1920
The Appalachian Trail was begun. Stream classification studies were begun and used to set waste discharge limits. Cook Forest was the first land purchased as a state park to protect a natural landmark. The Allegheny National Forest was established.

1930
The first sealing of abandoned mines to prevent water contamination. Hawk Mountain Sanctuary (Kempton, PA) was established as the world's first refuge for birds of prey. Industries first started treating their wastewater. The Gypsy Moth was first discovered in PA.

1940
PA passed the first comprehensive law to stop surface coal mining pollution. PA Conservation Commission formed to help county districts provide education to the farm community. Pittsburgh passed a smoke control ordinance as its first step to clean the city.

1950
Twenty-one people died in Donora, PA because of air pollutants. State Health Department responded by creating an Air Pollution Control unit. A. Leopold writes *Sand County Almanac*. First state law on the handling of toxins in passed.

1960
A mine shaft in Port Griffith collapsed under the Susquehanna, draining the river and killing twelve miners. First statewide law to control air contaminants. Rachel Carson wrote *Silent Spring* and launched the modern environmental movement. Centralia underground mine fire began. Large set aside of monies to acquire public lands occurred.

1970
First Earth Day. First PA Natural Area to protect an endangered species. Environmental Rights amendment added to the PA constitution. Numerous laws/grants programs regarding waste recovery, water protection, reclaimed mines, storm water/floods put into place. Three Mile Island accident, followed by the Environmental Radiation Act.

1980

Local governments must plan for energy savings. Agriculture security areas started to protect farmland. River otter reintroduced. Solid waste and oil recycling programs began. Wild Resource Conservation Program and PA Natural Diversity Inventory formed. New drinking water standards established. Radon awareness effort launched.

1990

Formal programs for environmental education created; 25 percentpercent recycling rate achieved, peregrine falcons return; restored streams have fish for the first time in 100 years; land use declared the most pressing environmental issue. Peregrine Falcon pair establish nest site on the Rachel Carson State Office Building.

2000

Growing Greener Program reauthorized, providing $1.3 billion in support, to tackle environmental projects. Clean, renewable energy use becomes imperative as worldwide demand on energy resources increases. Chesapeake 2000 Agreement signed to cleanup Chesapeake Bay.

2010

Advances in natural gas drilling technology attract new interest in the Marcellus and Utica Shale formations; all electricity sold in state contains 18 percent renewable energy; nutrient credit trading occurs to reduce nutrient runoff to streams and rivers; and unnecessary idling of large trucks and buses stopped reducing air pollution and saving fuel.

2012

Use of alternative transportation fuels expand as investments increase in compressed natural gas vehicles, refueling stations and electric vehicle charging stations; use of biofuels in gasoline and diesel fuel increase; major flooding and recovery occurs; brownfields redevelopment revitalizes communities and environmental cleanup.