

## Enhancing or creating wetlands, streams, wildlife habitats, and other ecological features on former mine lands can create large economic and environmental value

By developing environmentally productive ecosystems—through either reforestation or other reclamation options—landowners and mine operators can create a portfolio of ecological assets that may include “credits” for carbon sequestration, wetland and stream restoration, watershed pollution reduction, and endangered species habitat preservation.

Wetland and stream restoration projects are often compatible with reforestation. By controlling soil erosion, intact forest ecosystems prevent silt from entering fragile stream and wetland areas. In addition, tree root structures trap pollutants, keeping them from contaminating watershed areas. Forests also provide habitats for rare or endangered species.

### **What are wetland mitigation credits, and how do they work?**

Wetlands are vital ecosystems that are important to protecting and enhancing water quality, maintaining species biodiversity, mitigating floodwaters, providing bird and fish nursery grounds, and offering recreation opportunities.

In 1972, Congress passed the Clean Water Act, “to restore and maintain the chemical, physical, and biological integrity” of the nation’s waters. Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) was authorized to issue permits for the discharge of dredged or



*At this reclaimed Ohio mine site, the operator has created a permanent impoundment from a sedimentation pond. This provides rich wildlife habitat. Photo: Chuck Meyers, Office of Surface Mining.*

fill material into navigable waters and wetlands. To compensate for impacts to these waters, permittees must mitigate these impacts through the creation, restoration, enhancement, or preservation of wetlands.

State and federal agencies may issue wetlands mitigation credits for projects that meet USACE guidelines. Any organization can obtain wetland credits, either to sell or to “bank” for use in future development projects, that could adversely affect wetlands. Because wetlands can be created in the process of mine land reclamation, it is possible to develop these areas in such a way that wetland mitigation credits can be obtained.

### **What are stream mitigation credits, and how do they work?**

Over the years, human activities contributed to changes in the equilibrium of stream systems in the United States, often adversely affecting water quality, water storage potential, species habitats, and recreational and aesthetic values. Like wetlands, stream corridors are protected under Section 404 of the Clean Water Act.

As with wetlands, by restoring stream corridors to a “healthy” state, mine owners and operators may obtain stream mitigation credits, which they can sell or “bank” to mitigate future projects that affect streams.

### **What are Total Maximum Daily Load credits, and how do they work?**

American industry has made significant progress in improving surface water quality through the National Pollutant Discharge Elimination System (NPDES) program for point-source discharges. However, many water bodies, such as watersheds, still fail to meet water quality goals because of pollution from nonpoint sources, including agriculture, golf courses, and the “natural settling” of industrial pollutants from the atmosphere.

Total Maximum Daily Load (TMDL) refers to the maximum amount of a pollutant that is allowed by law to enter a waterbody. The federal TMDL program sets maximum allowable pollutant levels that can enter the waterbody from both point and nonpoint sources. Typically, a state agency following EPA guidelines will issue allowances or “credits” for pollutant discharge to the various sources

located within the watershed. Companies within a watershed can then trade these TMDL credits, either to mitigate excessive pollutant discharge or to obtain additional revenue for eliminating pollutants.

### **What are endangered species habitat credits, and how do they work?**

Conservation efforts to save plants and animals from extinction began in the early 1900s. Extinction is a naturally occurring event, but recent evidence shows that the rate of extinction worldwide has increased dramatically in the last century. In response, Congress passed the Endangered Species Act (ESA) in 1973 to conserve ecosystems upon which endangered and threatened (known as “listed”) species depend and to conserve and recover listed species. In 1982, Congress initiated the development of habitat conservation plans (HCPs) through Section 10 of the ESA to promote wildlife habitat conservation.

As part of this legislation, companies—including mining operations—doing business on lands occupied by threatened or endangered wildlife must develop plans to mitigate the effects of their activities on resident plants and animals. While these programs are not yet widespread, it may be possible in some circumstances to create HCPs using a “habitat bank” approach, wherein habitats are banked (through conservation easement or other means) before land is disturbed. A related variation is the “mitigation credit” system, in which “banked” habitats are established as “credits,” and the habitat banker may either use the credits as needed or sell them to another party requiring mitigation lands.