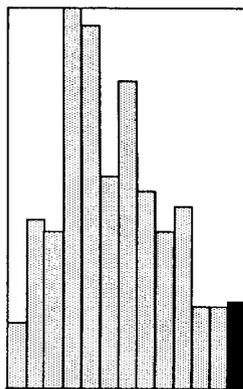


# 5. TECHNICAL ASSISTANCE

## RESEARCH



Number of Research Projects Funded 1978-90

OSM conducts research studies to find ways to help mine operators and State and federal regulators to do a better job of handling the everyday problems associated with implementing SMCRA. These short-term research studies are directly related to the implementation of Title V regulations affecting active mining operations and provide practical answers to specific problems. In 1990, OSM research funding totaled \$782,400, an 11 percent increase over 1989 funding. These research funds were

provided to universities for the following ongoing projects, which were initiated in previous years:

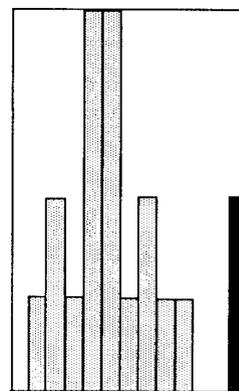
- Development of a procedure to determine the integrity of surface water quality in streams located in coal-producing regions.
- Evaluation of the relation of compaction and soil physical parameters to the productivity of reclaimed soils.
- Development of techniques to reduce soil compaction in reclaimed soils.
- Maintenance of compaction alleviation in mined land soil.
- Development of a surface mining data base and data base management system for storage, manipulation, and retrieval of surface mining data.
- Evaluation and quantification of risk assumed by the surety companies that underwrite reclamation bonds.
- Use of productivity indices to estimate the yield potential of disturbed lands.
- Evaluation of parameters affecting acid mine drainage production on a micro, field, and regional scale.
- Improvement of the characterization of sulfur in overburden and coal using state-of-the-art technology.
- Development of indices for indirect estimates of productivity of tree crops.

Three research projects were completed during 1990.

These projects were: "Environmental Factors Affecting Tree Growth on Three Wetlands Sites in Southern Illinois," "A Determination of Background Sediment Yield and Development of a Methodology for Assessing Alternative Sediment Control Technology at Surface Mines in the Semiarid West," and "Surface Coal Mining Effects on Ground Water Recharge."

OSM participates in the Technology Transfer Program sponsored by the National Technical Information Service (NTIS). During 1990, OSM transferred 210 technical reports to NTIS for dissemination to individuals concerned with mining and reclamation operations.

## EXPERIMENTAL PRACTICES



Experimental Practices Started 1978-90

Section 711 of SMCRA allows alternative mining and reclamation practices that do not comply with sections 515 and 516 performance standards as a way of encouraging advances in mining technology or to allow innovative industrial, commercial, residential, or public post-mining land uses. However, the experimental practices must meet all other standards established by SMCRA and must maintain protection of the environment and the public. Approval and monitoring of a permit containing an experimental practice results in a close working relationship between the operator, the State, and OSM.

Two new experimental practices were initiated in 1990. These are:

Two new experimental practices were initiated in 1990. These are:

- Bailey Mining Company, Floyd County, Kentucky. A small coal-cleaning refuse pile was revegetated by direct seeding of grasses and legumes and is being monitored under the experimental practice program. Local soils, which are thin, rocky, and of poor agricultural quality, do not provide a good growing medium. Instead of covering the refuse with the required four feet of this poor-quality soil, the operator amended the refuse with lime and fertilizer to a depth of four feet and seeded it directly. A dense stand of various grasses and herbaceous plants is currently growing on the refuse pile.
- Central Ohio Coal Company, Muskingum Mine, Noble and Muskingum Counties, Ohio. Two practices are combined at this site. The first involves the use of

calcareous shale as a substitute for topsoil. Additional research focuses on various practices to enhance tree survival and growth.

One experimental practice was completed during 1990:

- Coal Run Coal Company, Pike County, Kentucky. Level sites suitable for commercial development are at a premium in many mountainous areas. This successful experimental practice involved the construction of excess fill to enable the former mine site to be used for commercial purposes.

During 1990, OSM completed a report on all experimental practices initiated since 1977. The report, titled "Experimental Practices, Case Histories," is distributed by OSM support centers in Pittsburgh and Denver.

## INDIA PROJECT

In 1984, through the United States-India Fund, OSM received the equivalent of \$420,000 from the government of India for mining and reclamation technology transfer. Working directly with the Indian government, OSM planned three research projects and signed contracts to begin the work. The approved projects are:

- A conceptual environmental management plan for the Jharia Coal Field, including reclamation of existing unreclaimed lands which have been in operation for approximately 100 years.
- A conceptual environmental management plan for the Singrauli Coal Field. This project will result in the development of contemporaneous reclamation standards for a relatively new coal field.
- An environmental model for water quality resulting in treatment facilities for improved water quality in the Jharia Coal Field. The Environmental Protection Agency is assisting with this project.

OSM will continue assistance to the government of India on these projects during 1991.

During January and February 1990, OSM conducted two workshops in India to provide training in the development of environmental management plans for the Singrauli and Jharia Coal Fields. Each workshop team was composed of five technical staff from various OSM field locations. The workshops were well received by the government of India participants and management. In September 1990, in accordance with the provisions of the Singrauli Project contract, OSM hosted a visit by an Indian scientist. The purpose of the visit was to exchange information and view field operations of coal mines similar to those in India. Coal mining operations in Wyoming

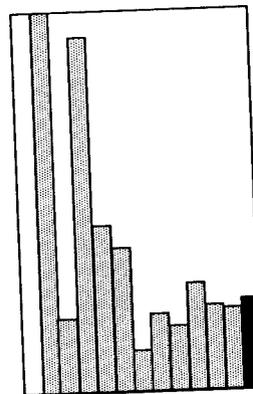
were visited and a demonstration of the Technical Information Processing System was presented.

## TECHNICAL TRAINING

In 1990 nationwide training continued for federal, State, and private surface coal mining regulatory and abandoned mine land personnel. Eleven existing courses were offered and two new courses, Administration of Reclamation Projects and Evidence Preparation and Testing, were piloted. Existing courses offered were: Applied Hydrology for Permit Review; Blasting and Inspection; Enforcement Procedures; Engineering Principles for Program Personnel; Instructor Training; Historic and Archeological Preservation; Soils and Revegetation; Spoil Handling and Disposal Water Hydrology; Technical Writing; and Underground Mining Technology and Effects.

There were 941 participants in attendance at the 47 training sessions during 1990. Participation by State and tribal personnel totaled 78 percent of program attendance, while federal and private attendance increased from 18 percent in 1989 to 22 percent in 1990.

## SMALL-MINE OPERATOR ASSISTANCE PROGRAM (SOAP)



SOAP Funds Expended 1978-90

Section 401(b)(1) of SMCRA authorizes up to 10 percent of the fees collected for the Abandoned Mine Reclamation Fund to be used for technical assistance to help qualified small mine operators obtain technical data needed for permit applications. Operators who produce less than 100,000 tons of coal per year are eligible for assistance. SOAP helps them meet requirements for determination of the probable hydrologic consequences of proposed mining operations and gives them a

statement of the results of test borings or coal samplings. The "determination" is an analysis of the effect of the proposed operation on the quantity and quality of surface and ground water. The "statement" is an analysis of the overburden, coal, and affected aquifers and clay zones below the coal, which provides information on their chemical and physical makeup, especially if acid- and toxic-producing materials are present.

The data are collected and analyzed by qualified laboratories and consulting firms. OSM originally approved 379 laboratories throughout the U.S. Qualification of laboratories is now the responsibility of the State regulatory authorities.

**TABLE 11  
SMALL OPERATOR ASSISTANCE PROGRAM  
1990 GRANT AWARDS**

State or Indian Tribe	Grants
Alabama	\$0
Alaska	0
Arkansas	0
California	0
Colorado	0
Georgia	0
Illinois	0
Indiana	0
Iowa	49,000
Kansas	0
Kentucky	0
Louisiana	0
Maryland	25,000
Missouri	0
Montana	0
New Mexico	0
North Dakota	0
Ohio	343,000
Oklahoma	0
Pennsylvania	1,104,000
Tennessee	0
Texas	0
Utah	0
Virginia	20,000
Washington	0
West Virginia	60,000
Wyoming	0
Crow Tribe	0
Hopi Tribe	0
Navajo Tribe	0
<b>Total</b>	<b>\$1,601,000</b>

Regulations for SOAP place responsibility with the States that have approved permanent programs. In States with federal programs, OSM operates SOAP. In 1990, 140 small operators received assistance. This represented an eight percent decrease in participation from 1989. Table 11 provides a breakdown of SOAP grant awards by State and Indian tribe during 1990.