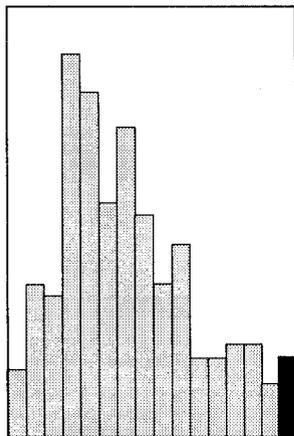


# 5. TECHNICAL ASSISTANCE

## RESEARCH



Number of Research Projects Funded 1978-93

OSM conducts research studies to find ways to help mine operators and state and federal regulators 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 1993, OSM research funding totaled

\$505,612. Research funds were provided to universities to support existing projects and in amounts sufficient to complete the projects. OSM will be relying on the National Biological Survey and other federal agencies for research results in the future. 1993 research funds were provided in support of the following projects:

- Evaluation of the Biotic Potential of Microorganisms and Higher Plants to Enhance the Quality of Constructed Wetlands;
- Investigation and Assessment of Aquifer Response to Longwall Mining, Illinois;
- Constructed Vertical Flow Aerated Wetlands;
- Optimizing Wetlands Creation on Coal Mined Lands;
- Evaluating the Potential for Created Wetlands Establishment on Restored Surface Mine Sites; and
- Assessment of the Effects of Mining on Geohydrologic and Geotechnical Parameters to Support the U.S./India Initiative.

## TECHNOLOGY TRANSFER

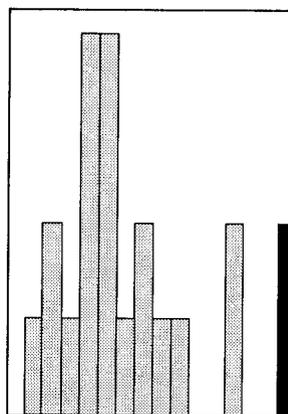
OSM published five issues of its reclamation technology newsletter *RecTec* during 1993. *RecTec* provided current information on meetings, papers, and publications covering roads and dust abatement; the impacts of longwall mining on ground water; the use of sewage sludge in mine reclamation; mine reclamation from a global perspective; and the use of fly ash in reclamation.

OSM participates in the Technology Transfer Program sponsored by the National Technical Information Service

(NTIS). To date OSM has transferred 257 technical reports and related abstracts to NTIS for dissemination to the public. One report was transferred to NTIS during 1993 as a result of research completed under Title VII of SMCRA.

Other forms of technology transfer include OSM's sponsorship of the Billings Symposium on mining and reclamation, which is conducted every three years, and direct assistance to state regulatory authorities on an ad hoc basis by OSM's Eastern Support Center in Pittsburgh and Western Support Center in Denver.

## EXPERIMENTAL PRACTICES



Experimental Practices Started 1978-93

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 mine operator, the state, and OSM.

In addition to eight ongoing projects in 1993, two new projects were approved, one was completed, and three new experimental practices are under review.

During 1993 the longest ongoing experimental practice was completed. The permit was issued in 1980 to Arch of Illinois, Captain Mine, in Perry County, Illinois. This practice successfully demonstrated that mixing the A, B, and C soil horizons with a bucket wheel excavator can eliminate sodium concentrations which are toxic to plants.

## 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 ongoing 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; and
- An environmental model for water quality resulting in treatment facilities for improved water quality in the Jharia Coal Field. The U.S. Environmental Protection Agency (EPA) is assisting with this project.

In 1993, data-gathering efforts by Indian scientists continued under these three projects.

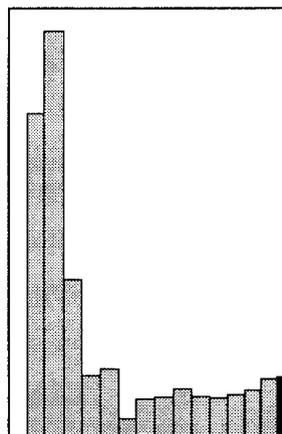
In addition, in 1992 a new project "Reclamation, Revegetation, Land Use Planning and Environmental Protection of Large Scale Continuous Surface Mining in a Complex Ground Water Hydrologic Regime" was approved by the government of India. This project is a collaborative effort between OSM, Pennsylvania State University, Neyveli Lignite Corporation, Ltd., and the Indian government. The three tasks included in the project are mine planning and design; reclamation, revegetation, and environmental protection; and the development of techniques for ground water management. This project will be conducted in two phases. Phase I was underway at the end of 1993.

## TECHNICAL TRAINING

During 1993 nationwide training continued for federal, state, and private surface coal mining regulatory and reclamation personnel. The 18 courses offered in 1993 included Acid-Forming Materials Workshop; Administration of Reclamation Projects; Applied Hydrology; Basic Inspection Workbook; Bonding Workshop: Administrative and Legal; Bonding Workshop: Cost-estimating; Enforcement Procedures; Engineering Principles for Program Personnel; Evidence Preparation and Testimony; Historical and Archeological Resources; Instructor Training Course; NEPA Procedures; Principles of Inspection; Soils and Revegetation; Spoil Handling and Disposal Practices; Surface and Ground Water Hydrology; Technical Writing; and Underground Mining Technology.

There were 876 participants in attendance at the 43 training sessions offered during 1993. Participation by state and tribal personnel totaled 71 percent of program attendance, while federal and private attendance decreased to 29 percent in 1993.

## SMALL-MINE OPERATOR ASSISTANCE PROGRAM (SOAP)



SOAP Grants 1978-93

Section 401(b)(1) of SMCR A authorizes up to 10 percent of the fees collected for the Abandoned Mine Reclamation Fund for use in technical assistance to help qualified small mine operators obtain technical data needed for permit applications. Operators who produced fewer than 100,000 tons of coal per year were eligible for assistance in 1991. Effective October 1, 1991, the Abandoned Mine Reclamation Act of 1990 increased from 100,000 to

300,000 the tonnage limit that defined whether operators qualify for assistance.

The Energy Policy Act of 1992 (Public Law 102-486) added a number of enhancements to the technical permitting services provided under SOAP. These include: engineering analyses and designs necessary for the "determination"; cross-section maps and plans; geologic drilling; archaeological and historical information and plans; information and plans required for protection of fish and wildlife habitat and other environmental values; and pre-blast surveys.

Regulations for SOAP place responsibility with the states that have approved permanent programs. In states with federal programs, OSM operates SOAP. In 1993, 119 small mine operators received assistance. This is a slight increase from 115 operators in 1992. Table 11 provides a breakdown of SOAP grant awards by state during 1993.

**TABLE 11  
SMALL-MINE OPERATOR ASSISTANCE  
1993 GRANT AWARDS\***

State	Grant Amount
Kentucky	\$500,000
Maryland	50,000
Ohio	264,000
Oklahoma	10,000
Pennsylvania	1,400,000
Virginia	10,000
West Virginia	140,000
<b>Total</b>	<b>\$2,374,000</b>

\*Does not include downward adjustments of prior-year awards.