PENNSYLVANIA

ABANDONED MINE RECLAMATION PLAN

UNDER PROVISIONS OF

THE FEDERAL SURFACE MINING CONTROL AND RECLAMATION

ACT OF 1977

(TITLE IV, PL 95-87)

1983

PREPARED BY THE OFFICE OF RESOURCES MANAGEMENT

Dick Thornburgh	Governor of Pennsylvania
Nicholas DeBenedictis	Secretary, Department of Environmental Resources
Patrick J. Solano	Deputy Secretary for Resources Management, Department of Environmental Resources

INDEX

PART A

BACKGROUND & STATUS OF ABANDONED MINE PROBLEMS IN PENNSYLVANIA

Pennsylvania's mining history dates back to the mid-1700s. By the mid-1800s, canals and railroads were providing considerable anthracite coal to east coast markets for heating purposes. Peak annual production of anthracite of 100 million tons occurred in 1917. In the bituminous region, the mid-1800s witnessed a burgeoning coke industry. Peak annual production of bituminous of 177 million tons took place in 1918.

Mining laws in Pennsylvania go back to the mid-1800s. However, until 1965, the vast majority of the laws dealt with mine safety and mine operations. Thus, reclamation, treatment of drainage, surface support, and control of fires were only recently made a responsibility of the coal mining company. Consequently, Pennsylvania has approximately one-third of all of the abandoned coal mine problems in the nation.

Pennsylvania's Land and Water Conservation and Reclamation Act of 1968 (Act 443) was landmark legislation in the nation. This legislation began addressing the problems created by over a hundred years of coal mining. This Act is not an all-inclusive reclamation act but is an environmentally oriented abatement and control act. Four specific categories of work were originally authorized: abatement of mine drainage, extinguishment of burning refuse banks that are in public ownership, extinguishment/control of deep mine fires, and control of surface subsidence. Abandoned mines for the purposes of Act 443 are defined as those no longer operating in January 1968.

The nature of Act 443 did not mandate a complete inventory of all abandoned mine problems. Since 60% of the funds were authorized for acid mine drainage (AMD) abatement, a series of watershed studies have been completed which pointed only toward abatement of mine drainage pollution. The burning refuse banks in public ownership were rather easily determined. Of course, deep mine fires and subsidence potential are most difficult to inventory specifically.

Prior to 1982, Pennsylvania has spent some $176 million in combatting these degradations. Of this total, $135 million have been State funds, and $41 million have been

Federal funds. Most of the Federal funding has been contributed by the Appalachian Regional Commission (ARC) and directed towards subsidence control - an expensive but critical aspect of the program, relative particularly to urban areas. The balance of the Federal involvement has been primarily by the Environmental Protection Agency (EPA) which conducted research and by the United States Bureau of Mines (USBM), which provided some project funding.

While a current inventory of our abandoned mine problems is an immediate need based on PL 95-87, and is presently being compiled, our gross estimate of the extent of degradation is based on a combination of USBM, Soil Conservation Service (SCS), and Department of Environmental Resources' current information:

	EXTENT	COST TO RECLAIM
Strip mine land	175,000 acres	$ 900,000,000
Subsidence potential in urban areas	150,000 acres	7,500,000,000
Shafts, Drifts, Highwalls & other Public Health & Safety problems		100,000,000
Refuse banks:		
Burning	100 million yd^3	250,000,000
Non-burning	2.6 billion yd^3	1,300,000,000
Deep mine fires	Approx. 45	75,000,000
Mine drainage pollution	2,200 miles	3,300,000,000

It must be noted that until amended on October 10, 1980, Act 443 did not authorize expenditure of those funds for all abandoned mine problems. Various other state laws do provide the authority to correct the remaining problems such as backfilling abandoned shafts, correcting mine drainage conditions (without actual abatement), and backfilling hazardous strip pits. However, this latter group of functions had no funds allocated as part of the authorizing acts.

The amendment of October 10, 1980 to Pennsylvania's Act 443 accomplishes a number of objectives:

1. Authorizes the full range of abandoned mine reclamation work that is now known and is projected for the future.

2. Provides the necessary implementing legislation to comply with Title IV of PL 95-87, the Federal Surface Mine Control and Reclamation Act of 1977 to include establishment of the Pennsylvania Abandoned Mine Reclamation Account.

3. Reallocates funds within the Act 443 allocation for abandoned mine reclamation, including providing funds for all types of abandond mine land (AML) problems.

4. Extends the time limit from June 30, 1981 to June 30, 1983 for the commitment of Act 443 bond funds to carry out the mandated program.

5. Reappropriates lapsed authorizations.

Thus, this amendment to Act 443 of 1968 changes the existing law by having the full range of abandoned mine reclamation activities covered under one act and provides the required account for receiving and disbursing Federal funds.

A subsequent amendment to Act 443 on December 12, 1982 extended the termination date of the Act until all of the authorized funds are expended. (The Authority under the Act to expend Federal funds for the full realm of AML problems will continue beyond the expiration of all bond funds available under Act 443.)

The results of our efforts prior to 1982 can be summarized:

Mine drainage pollution: 235 projects resulting in 300 miles of streams and waters cleaned to Clean Stream Standards or improved. The work involved 10 treatment plants, 32 deep mine complexes, 3,500 acres of strip mine land and 38 refuse banks.

Burning Refuse Banks: 22 projects to extinguish burning banks. The work involved 10 million cubic yards of material.

Deep Mine Fires: 76 projects affecting 25 deep mine fires.

Subsidence Control: 42 flushing projects wherein 2,100 acres were protected. The projects involved a real estate value of $1,500,000,000.

Pennsylvania developed an Environmental Master Plan as required by Act 275 of 1970. "Environmnetal Goals" were approved by the Environmental Quality Board in February 1974. "Policies for Critical Environmental Areas" were approved in November 1976. Both of these documents were subjected to extensive public participation.

Of note to this prologue are two major policy statements which are cited:

1. General

"Because of the geographic extent of the state's coal reserves, increasing demands and the potential for environmental degradation, areas with coal reserves are of statewide importance. While recognizing recent Commonwealth proposals to encourage the production of coal, the overriding environmental concern is the need both to protect environmental values and reclaim degraded areas. Therefore -

IT SHALL BE THE ENVIRONMENTAL POLICY OF THE COMMONWEALTH TO ENCOURAGE THE PROTECTION OF ECOLOGIC, SCENIC, AESTHETIC, RECREATIONAL AND OTHER NATURAL RESOURCE VALUES IN AREAS WITH EXTRACTABLE COAL RESERVES WHILE SUPPORTING THE PREESTABLISHED STATE POLICY OF PROMOTING COAL PRODUCTION AND TO RESTORE AND RECLAIM THOSE AREAS DEGRADED BY PREVIOUS MINING ACTIVITIES.

The protection of environmental values will become more difficult as coal mining increases throughout the state. To protect the environment throughout the coal mining process, the Commonwealth must develop policies for the wise management of the state's coal resources. . .

2. Historic Degradation

The historic legacy of previous coal mining activities in Pennsylvania is one of destruction and devastation. The cost to reclaim the total damage to the environment is not known. Estimates to eliminate the major problems indicate over several billion dollars will be necessary. Although this burden will also be carried by future generations, the renewed interest in coal may provide new opportunities to undertake a larger reclamation program. Therefore -

IT SHALL BE THE ENVIRONMENTAL POLICY OF THE COMMONWEALTH TO STRONGLY ENCOURAGE ADDITIONAL FEDERAL, STATE, AND PRIVATE ACTIVITIES DIRECTED TO THE ABATEMENT OF ENVIRONMENTAL POLLUTION AND THE RESTORATION OF THE ENVIRONMENT IN ANY AREAS DEGRADED BY PREVIOUS COAL MINING ACTIVITIES.

Possible related activities include:

- inventory and monitoring of degraded lands including unreclaimed lands, acid mine streams, mine subsidence areas, refuse banks, and mine fires;
- identification of existing or potential statewide environmental values in degraded areas;
- assignment of reclamation priorities to degraded areas having existing or potential statewide environmental values;
- provision of additional restoration funds through new state bond monies and reclamation taxes on each ton of Pennsylvania coal;
- tax incentives for remining and restoring previously degraded areas; and
- research and development of new reclamation techniques to correct degradation from historic mining activities."

In furtherance of the previously cited provisions of Pennsylvania's Environmental Master Plan, this AML reclamation program will seek to pursue new methods and techniques of correcting problems associated with past coal mining practices. Evaluation of new techniques will consider incentives, economics, technical feasibility, legal constraints and environmental factors.

While our State program has begun a systematic approach to solving some of the problems, we have truly just scratched the surface. Projects have been done to remedy some of the most serious and critical problems, and some of the problems with relatively simple solutions. We are now at the point of looking at problems that are just as serious as past ones but for which the solution is complex, and in many instances for which the state-of-the-art is still being developed. Many lessons have been learned from past field experience, and we know that each problem must be addressed individually as there is no standard solution to any one category of problems.

PART B

THE BASIC OSM PROGRAM UNDER PL 95-87

I. PROGRAM ELEMENTS & TIMING:

From the foregoing dissertation on Pennsylvania's program, it can be seen that until very recently, the major categories of work, and emphasis therefore, have been quite different from the OSM program. While Pennsylvania's major efforts in the past have been on the four (4) categories of work described in Part A, the authority and capability is present to perform all functions covered by Title IV of PL 95-87. See Exhibit 2 for the Attorney General's opinion with respect to authority and Exhibit 3 for a comparison of Federal requirements versus State authorization.

Pennsylvania's abandoned mine land problems run the entire spectrum from stream pollution to refuse bank fires to mine fires to subsidence to open shafts and drifts to seepage that floods yards and buildings to sediment clogged streams to open pits. Unfortunately, the inventory effort to catalog these problems, and subsequently to prioritize them, was inordinately delayed by the mandated "national" inventory. However, as noted in Part A, Pennsylvania has approximately one-third of the nation's AML problems.

Section 403 of the Surface Mining Control and Reclamation Act of 1977 and the regulations promulgated by OSM establish priorities for work on abandoned mine lands:

Priority 1 - protection of public health, safety, general welfare and property from extreme danger resulting from the adverse effects of past coal mining practices.

Priority 2 - protection of public health, safety, and general welfare from adverse effects of past coal mining practices which do not constitute an extreme danger.

Priority 3 - restoration of eligible land and water and the environment previously degraded by adverse effects of past coal mining practices, including measures for the conservation and development of soil, water (excluding channelization), woodland, fish and wildlife, recreation resources, and agricultural productivity.

Priority 4 - research and demonstration projects relating to the development of surface coal mining reclamation and water quality control program methods and techniques.

Priority 5 - protection, repair, replacement, construction, or enhancement of public facilities such as utilities, roads, recreation, and conservation facilities adversely affected by past coal mining practices.

Priority 6 - development of publicly owned land adversely affected by past coal mining practices, including land acquired under 30 CFR Part 879, for recreation and historic purposes, conservation, and reclamation purposes and open space benefits.

Priority 7 - protection of the public from hazards endangering life and property resulting from the adverse effects of past noncoal mining practices. However, upon the request of the Governor of a State or the head of an Indian tribe, such work may be undertaken before the priorities related to past coal mining have been fulfilled. (I-noncoal)

Priority 8 - protection of the public from hazards to health and safety from the adverse effects of past noncoal mining practices. (II-noncoal)

Priority 9 - restoration of the environment degraded by the adverse effects of past noncoal mining. (III-noncoal)

Priority 10 - construction of public facilities in communities impacted by coal development if the Governor of a State or head of an Indian tribe certifies that all other objectives of the fund have been met, the available impact funds are inadequate for such construction and the Director concurs.

In addition to meeting one of the above established priorities, proposed abandoned mine land reclamation projects under this Plan must meet the eligibility criteria established by PL 95-87 and the Regulations promulgated by the Office of Surface Mining.

30 CFR Sections 874.12 and 875.12 define eligible lands and waters as follows:

1. They were mined or affected by mining processes.

2. They were mined prior to August 3, 1977, and left or abandoned in either an unreclaimed or inadequately reclaimed condition.

3. There is no continuing responsibility for reclamation by the operator, permittee, or agent of the permittee under statutes of the State or Federal Government, or the State as a result of bond forfeiture. Bond forfeiture will render lands or water ineligible only if the amount forfeited is sufficient to pay the total cost of the necessary reclamation. In cases where the forfeited bond is insufficient to pay the total cost of reclamation, additional monies from the Fund may be sought under 30 CFR Parts 886 and 888.

It will be the Commonwealth of Pennsylvania's policy to give preference in the project ranking and selection process to those projects which meet the higher priority among competing projects. The Department will utilize the U.S. Department of the Interior, Office of Surface Mining Programmatic Environment Impact Statement and the AML Reclamation Program Guidelines included therein during the execution of the AML Program and during development of reclamation projects in accordance with this Plan.

While the priorities of types of work as specified in Sec. 403 of PL 95-87 must be reflected in project requests, Pennsylvania's status in AML reclamation work dictates a mix

of at least the first three priorities over a number of years. This will be accomplished by initiating Priority 1 projects with OSM funds and continuing our ongoing AMD abatement program (generally Priority 2 and 3 projects) with Act 443 funds. Upon the expenditure of all remaining Act 443 funds, we hope to have eliminated enough of the known Priority 1 projects, so that the Priority 2 and 3 work can be continued with OSM funds. Priority 1 problems will, however, continue to develop for years to come in Pennsylvania and will have to be addressed.

Thus, the implementation of Title IV in Pennsylvania is an extension of many years of effort in the field of abandoned mine reclamation.

II. ADMINISTRATION & MANAGEMENT:

The following section describes the proposed administration and management of Pennsylvania's OSM funded AML program by the Department of Environmental Resources. This section fulfills the requirements of 30 CFR Sections 884.13(a), (b), (d), and 886.23.

A. Designation by the Governor: Submitted to OSM on November 1, 1978. A copy is also attached (Exhibit 1). (30 CFR Sec. 884.13(a))

B. Attorney General Opinion for Authority: Submitted to OSM on November 15, 1978. A copy is also attached (Exhibit 2). (30 CFR Sec. 884.13(b)) A comparison of Title IV, PL 95-87, requirements vs Pennsylvania's legal authority is contained in Exhibit 3.

C. Organization: (30 CFR Sec. 884.13(d)(1))

1. Organization of the Executive Branch of the Commonwealth of Pennsylvania is shown on Exhibit 4.
2. The Department of Environmental Resources is organized as shown on Exhibit 5.
3. The organization of the Office of Resources Management is shown on Exhibit 6. Elements involved in the OSM AML program are shaded and crosshatched.
4. Implementation of Title IV, PL 95-87, will continue on the same organizational lines as for our past State program. Proposed projects are generated from two basic sources: inquiries from residents or local governments concerning a problem; and from studies and investigations by staff personnel. Additional input will be available upon completion of the National Inventory of Abandoned Mine

Lands. Project design is assigned to the Division or District Office which is most capable of solving the specific problem at hand. Project design may also be done using the services of a consulting engineer. Selection of a consulting engineer will be in accordance with existing Department guidelines. Review of the design is performed by the appropriate Division. The design is also reviewed by construction personnel and by contract specialists. The Bureau of Abandoned Mine Reclamation is responsible for the entire abandoned mine reclamation program. Project selection and prioritization is performed jointly by our District Offices in Ebensburg and Wilkes-Barre and the Division of Mine Hazards. The final project list is approved by the Chief Engineer and the Deputy Secretary for Resources Management. The plans and specifications complete for public bidding are sent to Engineering and Contracts for advertising, letting and awarding the contract to the lowest bidder who has complied with all the requirements of Pennsylvania's public bidding and contracting laws. Administrative support functions are performed by elements such as the Bureau of Personnel, Bureau of Legal Services, and the Comptroller's Office.

D. Personnel Staffing Policies: (30 CFR Sec. 884.13(d)(2))

All personnel concerned with this program under the level of Bureau Director (Exhibit 6) are selected under the provisions of the State Civil Service laws and regulations. The Bureau Director, Chief Engineer, and Associate Deputy Secretary positions within the Office of Resources Management are covered by the Senior Management Service. A mix of disciplines is maintained in order to implement the program in an efficient manner.

Assignment of personnel will comply with the following Federal non-discrimination laws and regulations:

Title VI, Civil Rights Act of 1964 and 43 CFR Part 17

Executive Order 11246, Executive Order 11375, and 41 CFR Part 40

Section 504, Rehabilitation Act of 1973 and Executive Order 11914

Age Discrimination Act of 1975 (PL 94-135)

All personnel covered by Conflict of Interest Regulations under PL 95-87 have signed Conflict of Interest Statements. Appropriate new personnel will be required to sign such statements.

Staffing in the Harrisburg Headquarters Office includes an optimum mix of technical, scientific, and administrative personnel. The disciplines included are: civil engineer, hydraulic engineer, mining engineer, sanitary engineer, mine drainage engineer, geologist, hydrogeologist, engineering geologist, engineering technician, draftsman, administrative, and clerical. Degrees earned are at the masters and baccalaureate levels. Engineering personnel have Engineer-In-Training Certificates and/or are Registered Professional Engineers.

The District/Field Offices also have a mix of engineering and geology disciplines along with mine restoration foremen, construction inspectors, draftsmen, and clerical personnel. Engineering personnel in the Districts also have engineer-in-training certificates and/or professional registration.

In addition to our AML staff, any additional specific expertise is obtained as necessary from other parts of the Department of Environmental Resources as well as the Pennsylvania Fish Commision and Pennsylvania Game Commission.

Experience has dictated that a mix of disciplines is essential in carrying out an abandoned mine reclamation program.

E. Purchasing, Procurement and Contracting: (30 CFR Sec. 884.13(d)(3))

The purchasing and procurement system utilized by this agency will conform to the requirements of OMB Circular No. A-102, Attachment O. Key elements of Attachment O are summarized in the following paragraphs:

Employees of this agency will neither solicit nor accept gratuities, favors, or anything of monetary value from contractors or potential contractors.

All procurement transactions regardless of whether negotiated or advertised and without regard to dollar value will be conducted in a manner so as to provide maximum open and free competition.

Proposed procurement actions will be reviewed by the appropriate agency staff to avoid purchasing unnecessary or duplicative items.

Invitations for bids or requests for proposals will be based upon a clear and accurate description of technical requirements; such descriptions will not, in competitive procurements, contain features which unduly restrict competition.

Positive efforts will be made by this agency to utilize small business and minority-owned business sources of supplies and services.

The type of procuring instruments used will be appropriate for each particular procurement. The "cost-plus-a-percentage-of-cost" method of contracting shall not be used.

Formal advertising, with adequate purchase description, sealed bids, and public openings will be the method of procurement unless competitively negotiated. Awards will be made to the lowest bidder whose bid is responsive to the invitation and is most advantageous to this agency.

Procurements may be by noncompetitive negotiation if: 1) public exigency will not permit delay, 2) the procurement is available from only one source, 3) the Federal Grantor Agency authorizes noncompetitive negotiation, or 4) after solicitation of a number of sources, competition is determined inadequate.

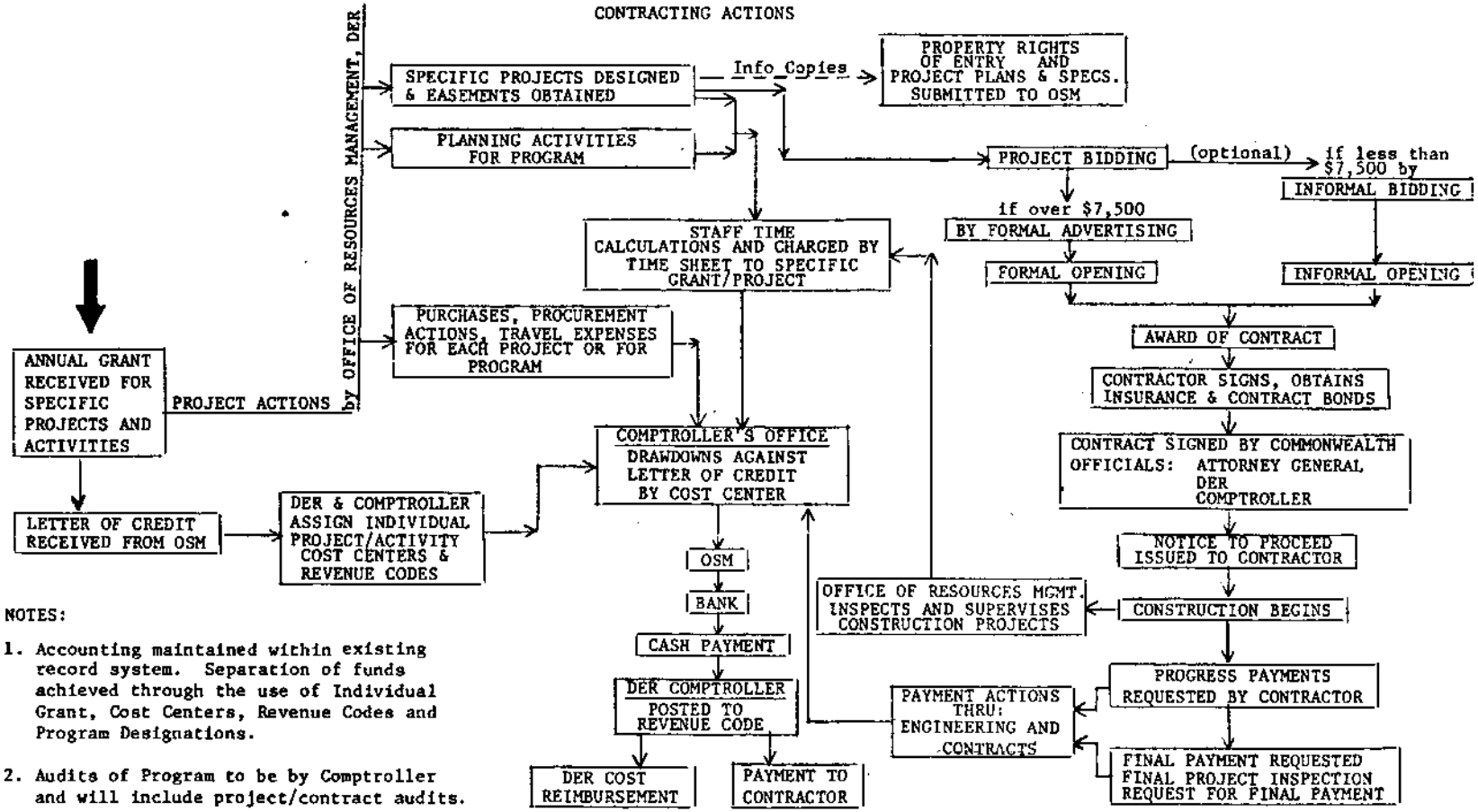
Contracts will be made only with responsible contractors who have the ability to perform the contract. Consideration will be given to integrity, past record of performance, financial and technical resources, and accessibility to other necessary resources.

Procurements in excess of $10,000 will be recorded with the following information: 1) if negotiated - justification for this procedure, 2) justification for contractor selection, and 3) the basis for the cost or price negotiated.

Contracts will be administered by assigned employees of this agency to assure contractor conformance with terms, conditions, and specifications of the contract, and to assure adequate and timely follow-up of all purchases.

See Page 12 for a flow chart of typical procurement actions.

FLOW CHART FOR
TYPICAL DEPARTMENT OF ENVIRONMENTAL RESOURCES
CONTRACTING ACTIONS



NOTES:

1. Accounting maintained within existing record system. Separation of funds achieved through the use of Individual Grant, Cost Centers, Revenue Codes and Program Designations.

2. Audits of Program to be by Comptroller and will include project/contract audits.

3. Staff time charges to be based upon time and expense records.

4. Purchase and procurement actions to be in accordance with existing DER procedures and will comply with OMB Circular A-102.

5. Equipment and non-expendable supplies are tagged with a Department serial number and are carried on the Department inventory of such items.

F. Accounting: (30 CFR Sec. 884.13(d)(4))

A separate account code has already been established to receive and disburse OSM generated funds.

This agency will utilize a financial management system in accordance with OMB Circular No. A-102. Key elements of this circular are summarized in the following paragraphs.

This agency will safeguard all funds, property, and assets in the reclamation program and assure that they will be used solely for authorized purposes.

An accounting of actual money spent compared to budgeted amounts will be prepared for each grant.

When advances are made by a letter-of-credit method, this agency will make drawdowns from the U.S. Treasury through its commercial bank as closely as possible to the time of making the disbursements.

This agency and the OSM Title IV program are covered by the Attachment P audit provisions in OMB Circular No. A-102. Audits will be performed in accordance with Attachment P.

Findings of audits will be resolved in a timely fashion through a review conducted by the Deputy Secretary for Resources Management of this agency. The Deputy Secretary will send, in writing, any recommendations which the Deputy Secretary may deem necessary to the Harrisburg Field Office of OSM. These recommendations will be sent 30 days after receipt of the findings of the audit. Upon approval of the Harrisburg Field Office of OSM, the Deputy Secretary of this agency will implement the recommendations.

The accounting system to be utilized by this agency for the State Abandoned Mine Reclamation Fund will provide for a separate accounting for each source of funding identified in 30 CFR Section 872.12: 1) grants from OSM under 30 CFR Part 886, 2) user charges collected by the state under 30 CFR Part 879, 3) moneys recovered by the state through satisfaction of liens under 30 CFR Part 882, 4) moneys recovered by the state from the sale of land under 30 CFR Part 879, and

5) such moneys as the state decides to deposit in the State Abandoned Mine Reclamation Fund.

See Page 12 for a flow chart describing accounting actions.

G. Reporting:

This agency will render to OSM the reports covered in 30 CFR Chapter VII, Subchapter R, Section 886.23.

The financial and performance report will be in accordance with OMB Circular A-102, Attachments H and I. Reports will include project status of those under construction, and reclamation achievements of those completed in that year. Land acquisition and disposal actions will also be covered. The financial status of the State Abandoned Mine Reclamation Fund will be stated.

H. Grant Applications and Plan Amendments:

Annual program grant applications will be submitted to OSM by August 1 each year for the following fiscal year. An initial budget estimate for each fiscal year will be submitted as requested by OSM in advance of that fiscal year. Grant amendments will be submitted in accordance with 30 CFR Section 886.17.

When Plan amendments are deemed necessary and/or desirable to carry out the provisions of Title IV, they will be submitted in accordance with 30 CFR Section 884.15.

III. POLICIES AND PROCEDURES:

This section outlines the policies and procedures that will be followed by the Department of Environmental Resources in implementing the OSM funded AML program. This is in compliance with 30 CFR Section 884.13(c).

A. Goals and Objectives: (30 CFR Sec. 884.13(c)(1))

The goal of this program is to continue, through the life of the program, the correction of degradation from past mining practices.

The major objectives to achieve this goal are:

1. Reduce subsidence potential in built-up areas by subsidence control projects.

2. Control or extinguish deep mine fires that threaten surface structures, hence threaten the population.

3. Control drainage, from abandoned mines, that is detrimental to public health, safety, and well being.

4. Abate mine drainage pollution from abandoned mines that is now entering streams and lakes. (Preference will be given to source correction techniques over treatment).

5. Eliminate public health and safety hazards from burning refuse banks.

6. Eliminate other public health and safety problems such as open shafts and drifts.

7. Restore land and water resources degraded by past mining practices.

8. Reduce sedimentation problems from abandoned mines.

Priorities mandated by Title IV, PL 95-87, will be followed. The overall magnitude of Pennsylvania's problems from past mining practices was cited in Part A. Many of our known Priority 1 problems have been submitted to OSM and several were funded by cooperative agreements prior to primacy under the Federal Reclamation Program.

As noted on page 2, a national inventory is being conducted by the Office of Surface Mining. The inventory will be a phased effort with Phase 1, a literature search of AML information having been completed. Phase 2 of the Inventory which is underway is intended to define critical problem areas which are expected to fall into the priority 1 and 2 categories. Phases 3 and 4 of the Inventory, which are not firmly scheduled, will provide additional information which should give a good perspective of the total range of abandoned mine problems. During phases 2, 3 and 4, DER will have significant input opportunities to this National Inventory effort. This will be critical to the development of further AML activities in conjunction with this Plan. As new problem areas are made known through the Inventory, modifications can be made to the Commonwealth's approach to the abandoned mine reclamation efforts by amendments to this Plan.

Obviously, both emergency and Priority 1 type projects will become known on a case-by-case basis for many decades due to the inherent nature of these types of projects. The annual fund requests will reflect those high priority projects that do develop.

File data contains information on previously studied, site-specific problems. Part of the inventory effort is to sort, and collate by types of problems, the data contained in existing files. Considerable updating and additional data collection is required. This is particularly the case with our watershed AMD abatement studies. These studies indicate only those factors which cause pollution to a stream, including specific items such as deep mine entries or strip mines that have a discharge, discharging oil and gas wells, and refuse banks that are generating AMD. They do not necessarily indicate the public health and safety nature of mine drainage discharges.

Since AMD abatement has been the primary effort under our State program, we are, and will be continuously, in the midst of various projects in various stages of development. Thus, with the complete expenditure of funds in our State program under Act 443, it is essential to Pennsylvania to continue the abatement of AMD using OSM funds. By the time our state program funds are exhausted, we hope to have eliminated enough of the known Priority 1 problems so that we can continue to solve AMD problems, most of which can be categorized in Priority 2 or 3. In developing mine drainage abatement projects, source correction techniques will be given preference over treatment.

It is noted that the priorities contained in Sec. 403 of PL 95-87 will be followed as previously described. The magnitude of Pennsylvania's abandoned coal mine problems will effectively preclude addressing noncoal problems. The exception to the noncoal exclusion is public health and safety problems as covered by Sec. 409(c) of PL 95-87, which will be addressed when necessary.

B. Policy for Project Ranking and Selection: (30 CFR Sec. 884.13(c)(2))

1. Ranking will be determined by a point system described on pages 17 and 18.

2. Selection will be based on the numerical scores plus any other germane considerations that may be involved. Judgement must be exercised in conjunction with the numerical ranking.

3. All selected projects must aid in achieving one or more of the objectives of the program, as stated on pages 14 and 15 of this Plan.

4. Selection will also be based on the priorities contained in Section 403 of PL 95-87.

5. Selected projects, except research and development projects, will be technically feasible to accomplish.

6. The effect on any remaining coal reserves will be considered and stated.

7. Normally, post-construction evaluation will be conducted to measure the success of the project.

8. Coordination with appropriate Federal agencies will be conducted.

RANKING POINT SYSTEM

1. Go/No Go (A "No" eliminates the proposed project — Yes — No

   a. Compliance with PL 95-87

   b. Feasibility

   c. Covered by specific reclamation "Objectives"

2. Purpose: (Project Priority to be designated for each project)

   a. Priority 1

   b. Priority 2

   c. Priority 3

   d. Priority 4

   e. Priority 5

   f. Priority 6

   g. Priority 7 (I-Noncoal)

   h. Priority 8 (II-Noncoal)

   i. Priority 9 (III-Noncoal)

   j. Priority 10

			Points
3.	Real Estate Considerations:		
	a.	On public lands	5 to 20
	b.	Acquisition required	-5 to -20
	c.	Probability of lien required for any property within the project site. If "yes"	-10
4.	Reclamation Benefits:		
	a.	Protect human life, health, safety	20 to 40
	b.	Protect environment	10 to 25
	c.	Protect public or private property	10 to 25
	d.	Abate adverse social/economic impacts	0 to 7
	e.	Improve environmental conditions re quality of life	0 to 7
	f.	Improve use of natural resources including fish and wildlife enhancement	0 to 7
	g.	Demonstrate methods and technologies	0 to 3
	h.	Acceptability of continuing adverse conditions (less acceptability equals more points)	1 to 5
	i.	Costs re benefits	0 to 5
	j.	Future Mining (0 = active permit, 10 = no probable mining)	0 to 10
	k.	Post-reclamation land use consistent with local plans	0 to 3
	l.	Post-reclamation maintenance of area (0 = high maintenance, 5 = low maintenance)	0 to 5
	m.	Site proximity to population:	
		0-500'	15 to 25
		500-2000'	5 to 15
		Over 2000'.	0 to 5

			Yes	No	Not Required
5.	Coordination:				
	a.	SCS (Soil Conservation Service)			
	b.	CE (Corps of Engineers)			
	c.	ARC (Appalachian Regional Commission)			
	d.	EPA (Environmental Protection Agency)			
	e.	USBM (U. S. Bureau of Mines)			
	f.	Local Interest			

C. Coordination With Other Agencies: (30 CFR Part 884.13(c)(3))

As has been stated throughout this Plan, the reclamation program under Title IV of PL 95-87 is now, and will continue to be meshed with Pennsylvania's ongoing State program. This has been an inherent part of our planning since the law was enacted.

This agency has been a member of the SCS Coordinating Committee for the Rural Abandoned Mines Program (RAMP) portion of the program from the inception of that program. This system has worked exceptionally well in preventing overlaps and gaps in project consideration. Our Department and SCS have also "traded" several types of projects where expertise predominated in one agency. For example, DER will handle deep mine fires and SCS will generally take care of problems that are mainly erosion and sedimentation in nature. This coordination will continue. Additionally, our inventory requirements have been coordinated through the SCS Office in Pennsylvania.

DER has worked with the Corps of Engineers, the Bureau of Mines, the Appalachian Regional Commission, and the Environmental Protection Agency on abandoned mine reclamation problems for many years. The functions have covered the spectrum from research to demonstration to construction including the planning, design, and field work of such endeavors. These agencies will continue to be involved.

Other agencies with which routine coordination is effected include:

1. Department of Environmental Resources

   A. Office of Environmental Protection

      (1) Bureau of Mining and Reclamation (active strip mining)
      (2) Bureau of Solid Waste Management
      (3) Bureau of Air Quality Control
      (4) Bureau of Water Quality Management

   B. Office of Deep Mine Safety

   C. Office of Resources Management

      (1) Bureau of Topographic and Geologic Survey
      (2) Bureau of Soil and Water Conservation
      (3) Bureau of Dams and Waterway Management
      (4) Bureau of Forestry
      (5) Bureau of State Parks

2. Pennsylvania Fish Commission

3. Pennsylvania Game Commission

4. Pennsylvania Historical and Museum Commission

5. Various Watershed Associations

6. Various Sportsmen's Groups

7. Eight Regional Planning Commissions or Local Development Districts

The routine program and project coordination which is made is dictated by a number of directives and agreements which can be explained as follows:

1. Secretary's Directive 79-1 promulgated by the Secretary of Environmental Resources on March 27, 1979 requires an internal department review of project or program grant applications prior to initiation of formal A-95 clearance actions. This internal review insures that concerned parties within the Department of Environmental Resources are made aware of proposed projects and are given an opportunity during an initial phase to provide input.

2. Executive Order 1978-18 promulgated by the Governor of Pennyslvania on November 21, 1978 dictates the use of the Pennsylvania Uniform Planning Regions (UPR) in all substate planning activities (see map on page 37). These regions provide an established and accessible initial point of contact for local citizen input and public participation. The region concept was established in the Commonwealth in 1972 to:

"a. Provide a common geographic base for the substate planning and development activities;

b. Encourage intercounty coordination and unify and strengthen planning programs carried out at the regional level;

c. Strengthen regional planning efforts by facilitating coordination between existing regional efforts and state and federal plans and programs; and

d. Correspond to existing federal substate districting designations, most notably the Local Development Districts identified under the Appalachian Program, the Economic Development Administration's Economic Development Districts, and Department of Housing and Urban

Development's Regional Agency designation." (Governor's Executive Order 1978-18).

3. Executive Order 1973-9 promulgated by the Governor of Pennsylvania on July 13, 1973 dictates that the State agencies take certain steps to comply with environmental laws and regulations during their activities.

4. Executive Order 1981-4 promulgated by the Governor of Pennsylvania on February 9, 1981 establishes a system to coordinate and expedite the state's efforts to plan, procure and expend Federal grants-in-aid to the state.

5. Management Directive 255.5 as amended on January 10, 1979 requires State agencies which apply for Federal assistance to comply with OMB Circular A-95 and submit applications to the State Clearinghouse for review. The State Clearinghouse closed on June 30, 1981 and applications are now submitted directly to the areawide UPR Clearinghouses and through the internal Department review.

6. Executive Order 1975-6 promulgated by the Governor of Pennsylvania on May 6, 1975 directs coordiantion with the State Office of Historic Preservation of the Historical and Museum Commission to preserve buildings, structures, districts, sites and objects of historic, architectural or archeological significance.

Coordination with the State Historic Preservation Officer resulted in the September 9, 1980 letter shown on page 9-A-15 in Exhibit 9 to this Plan.

7. Memorandum of Understanding (MOU), dated April 20, 1982, between the Department and the Pennsylvania Fish Commission provides for certain cooperation and coordination between the two agencies for areas of mutual concern in the Abandoned Mine Lands Program as follows:

a. Requests for assistance or cooperation in the areas of inventory techniques, research, environmental assessment plans, site proposals, or reclamation priorities will be directed to the Fish Commissions, Fisheries Environmental Services Section (FES).

b. FES will provide an analysis of fisheries protection and enhancement measures incorporated in site specific plans when intermittent or perennial streams are located within the AML project.

c. The Bureau of Abandoned Mine Reclamation of DER and FES will explore the possible development of jointly sponsored projects to demonstrate state-of-the-art AML reclamation for fishery habitat.

The routine coordination which has been directed is supplemented by project specific informal contacts between project engineers and appropriate agencies to verify information, obtain new or additional information, determine area or project needs and many other related functions. This has been and will continue to be an integral feature of Pennsylvania's Abandoned Mine Lands Program.

The National Environmental Policy Act (NEPA) mandates that a thorough environmental assessment be done for each reclamation project to be carried out under the provisions of this Plan. The provisions of NEPA will be met by utilizing the environmental assessment process that has been developed by the Office of Surface Mining.

It is planned to utilize the prescribed format and effect necessary coordination with appropriate State and/or Federal agencies to obtain the required input for each project. Compilation of the data necessary to conduct and complete the environmental assessment required by NEPA will require the Department to make project specific contacts with agencies previously mentioned as well as others such as the United States Fish and Wildlife Service and the United States Forest Service. If during project development it becomes known that any other entities have an interest that may be affected by a project or a feature of a specific project, appropriate coordination will be affected to alleviate concerns.

The chart shown on page 24 and the narrative which follows describe the general process that is envisioned to be utilized.

An AML problem is normally made known from generally three basic sources: (1) an inquiry from a citizen, legislator, municipal official; (2) the OSM inventory; or

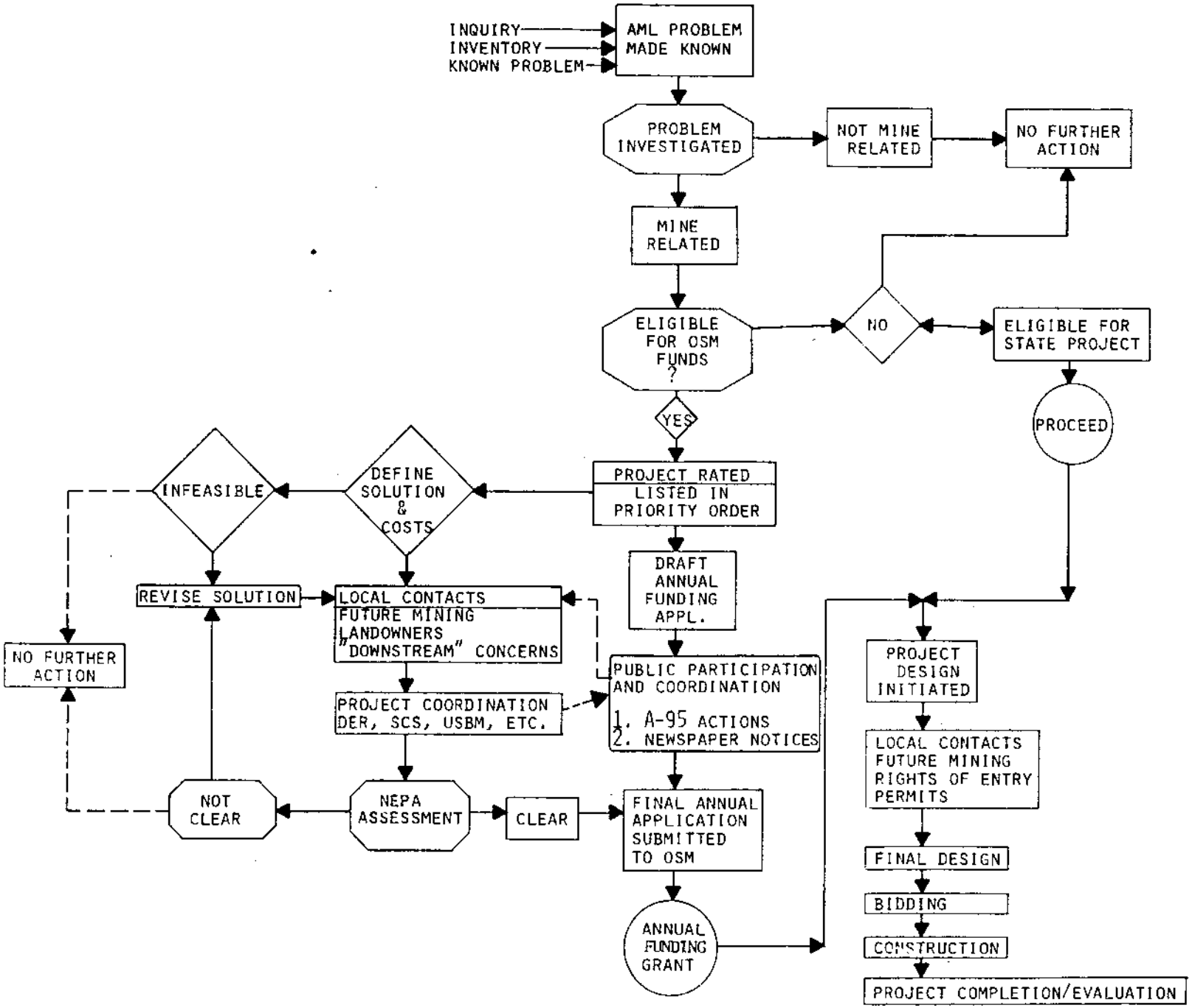
(3) a known problem where DER has made previous investigations. The problem is normally invesitgated and a determination made as to whether or not it is mine related. A further determination is made as to whether or not the project would be eligible for OSM funds. At this point, we would move into two channels of project development actions.

The first channel is for project funding actions, which are necessary if OSM funding and not State funding is to be obtained. These can be defined as those actions necessary to prepare the annual or special funding application for submission to the Office of Surface Mining and would include the A-95 activities. During these A-95 activities, we would submit pertinent information from the application through an internal Department review to the affected area clearinghouses and in some cases to the county planning commission or other bodies. These are specified in DER procedural publications. In addition, concurrent with or prior to initiation of the A-95 process, a notice(s) will be placed in a newspaper(s) in the affected region(s) advising of our intent to submit a grant application for AML reclamation work. This notice will include the project name(s) as well as the township and county names. When all comments are received, any relevant concerns are resolved through meetings and/or telephone conversations with the concerned parties. The project will be cleared through the A-95 process before the grant is approved.

As a result of Presidential Executive Order 12372, which was signed by the President on July 14, 1982, the A-95 system has been terminated. Pennsylvania is instituting a new state review process through the Pennsylvania Intergovernmental Council (PIC). •All Title IV construction grant applications will be submitted to PIC for distribution and comments.

The other channel is project development for which the project engineers would define solutions and costs for problems, make initial local contacts to determine whether or not there is going to be future mining, determine if the landowners involved would be willing to allow a project, determine what their future uses of the land may be, and determine if there are any downstream concerns such as downstream

COORDINATION - PUBLIC PARTICIPATION



flooding. During this phase we would also perform a significant amount of project coordination with other DER agencies, the Soil Conservation Service, the U.S. Bureau of Mines, as well as local county planning commissions and the landowner, as necessary. All of these would be undertaken (1) to develop the project in such detail as necessary to submit to the Office of Surface Mining, and (2) to undertake and complete the National Environmetnal Policy Act assessment which will be required by the Office of Surface Mining. These would ensure that all environmental concerns are considered during project development and ensure that there are no outstanding unresolved controversies.

The NEPA evaluation will be submitted to OSM as soon as it is available to allow OSM sufficient time for review prior to the grant application. The remainder of the application would then be submitted to the Office of Surface Mining either on an annual basis or on a separate project basis. Once we obtain a funding grant, we would initiate project design. Again, there would be local contacts with the landowner to see if he had changed his mind and at this time we would probably be negotiating with the landowner to obtain a right-of-entry. The project enigneer would also have to check for possible future mining in more detail. During this phase we would obtain permits necessary to do the work, such as Corps Section 404 permits, Transportation Department permits to utilize highway right-of-ways and so forth. Then we would proceed through the final design, and by the time we have final design completed, obtain a formal right-of-entry to do the project.

D. Land Acquisition, Management and Disposal: (30 CFR Sec. 884.13(c)(4))

Provisions of 30 CFR Part 879 will be followed. These provisions are published in the Federal Register in such detail that further detailing or repetition is counter-productive.

Since 1965, Pennsylvania has had the authority to acquire and dispose of abandoned mine lands. As stated in the Attorney General's Opinion (Enclosure 2), our Act 117, as amended, complies with the appropriate provisions of PL 95-87.

It has been, and will continue to be, Pennsylvania's policy not to acquire abandoned mine land unless it is absolutely essential to do so in order to accomplish a major and highly important project.

E. Reclamation on Private Lands and Rights of Entry: (30 CFR Sec. 884.13(c)(5&6))

A consent to enter privately owned lands, and also publicly owned lands, will be obtained in writing prior to initiation of work thereon. On projects that affect mineral reserves, e.g., subsidence control, mine fires, mine sealing, etc., a release will also be obtained from the mineral owner. Forced right-of-entry will be used only as a last resort and will be in accordance with 30 CFR Part 877 as appropriate. Pennsylvania has authority for such rights-of-entry under its Administrative Code and Act 443 of 1968. It is to be noted that future mining is not precluded.

All privately-owned land to be reclaimed utilizing Title IV grants will be evaluated for potential liening in accordance with the provisions of 30 C.F.R. 882.13 and 882.14. Liens will be waived prior to construction and without the preparation of an Opinion of Value in the following situations:

1. When the owner of the property acquired title prior to May 2, 1977, and did not consent to, participate in, or exercise control over the mining operation which caused or contributed to the unreclaimed conditions; or

2. When the reclamation project to be conducted on privately-owned land primarily benefits the health, safety or environmental values of the greater community or area in which the land is located.

In all other cases, which may be subject to a lien, the Department's staff real estate personnel will prepare an Opinion of Estimated Value of privately-owned lands to quantify the estimated value of the land, both before and after reclamation. These estimates will be prepared using comparable purchase prices and assessed values of real estate in the local area. Based upon the Opinion of Estimated Value, liens will be waived prior to construction in the following situations:

1. The amount that can be liened is less than the cost of the lien procedures (surveying, appraisals, filing fees, etc.) plus $500.00 for administrative costs;

2. The anticipated increase in value of the property (the amount that can be liened) is less than 25% of the original estimated value; or

3. The amount that can be liened is less than $5,000.

If the Department determines that the land is potentially lienable, an independent appraisor will be hired to prepare a formal, notarized appraisal of the fair market value of the land before reclamation and an estimate of fair market value of the land after reclamation. Appraisals will be prepared in accordance with the "Uniform Appraisal Standards for Federal Land Acquisitions." Pre-project appraisals will be based on fair market value of the land as adversely affected by past mining. The landowner will be notified before reclamation work is conducted of the potential lien and the estimated amount of lien that will be filed upon completion of the work. Upon completion of reclamation, a final post-project appraisal will be done. If the lien amount exceeds the criteria for waiver of liens noted above, liens will be prepared and filed in the appropriate County Prothonotary's Office. Liens will be renewed, as required, in order to keep them in force.

F. Public Participation: (30 CFR Sec. 884.13(c)(7))

1. Public input to this Plan has been accomplished by the procedure of having the draft State Reclamation Plan distributed to counties and to those Pennsylvania Uniform Planning Regions (UPR) which have known abandoned mine problems or potential for problems due to the presence of coal. The map on page 30 shows the composition of the Uniform Planning Regions of Pennsylvania by counties. There are 10 UPRs and the abandoned coal mine problems of Pennsylvania are found in eight of them - Regions 3 through 10. The counties and the UPRs were furnished copies of the Plan as explained in Exhibit 11 to this Plan.

Additionally, other interested agencies were provided with a copy of the draft Plan for their review and comment as noted in Exhibit 11. Such agencies included are the Soil Conservation Service, Pennsylvania Fish Commission, Pennsylvania Game Commission, Watershed Associations, and the Bureaus of State Parks and Forestry within the Department of Environmental Resources.

Four public meetings on the draft State Reclamation Plan were held to obtain public comments. Notification of the meetings was published in a local

(county) newspaper at least one week prior to the meeting. The timetable for the public meetings was:

Southern Alleghenies and Southwestern
Districts: October 14, 1980

North Central and Northwestern
Districts: October 15, 1980

Northern Tier and SEDA-COG
Districts: October 16, 1980

Northeastern and Capital
Districts: October 17, 1980

A discussion of key issues raised, concerning the draft State Reclamation Plan during the public review period, along with their resolution, is contained in Exhibit 11.

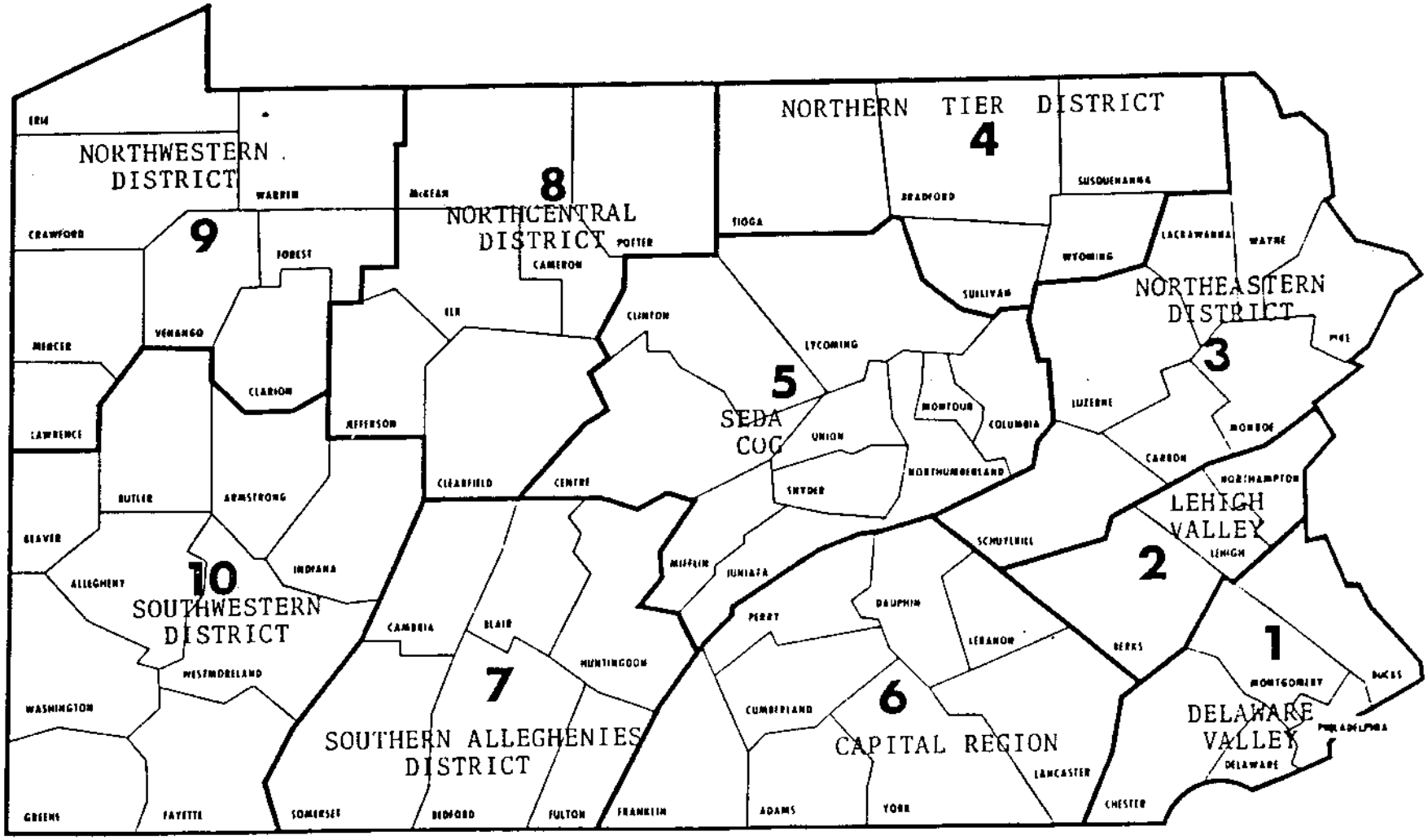
2. Public participation during the execution of the AML program to be carried out under this Plan will be essentially a feature of the project/program coordination discussed in Part III-C of the Plan.

Counties having coal lands, along with the Uniform Planning Region offices were contacted in August 1978 with the request that they provide initial information to the Department for planning purposes and for development of early extreme danger reclamation projects to be undertaken by the Commonwealth working in cooperation with the Office of Surface Mining. These responses have led to initial activity concerned with the development of some previously funded Cooperative Agreements with OSM for Priority 1 projects.

The annual funding grant application will be referred to affected Uniform Planning Regions in accordance with the provisions of Circular A-95. The A-95 process is a continuing media for informing local interests and other agencies of all actions proposed under PL 95-87. A notice(s) will also be placed in a newspaper(s) in the affected region(s) advising of our intention to submit a grant application for AML reclamation work. This notice will include the project name(s) as well as the township and county names. Individual environmental assessments for each specific annual project will be prepared to meet the

mandates of the National Environmental Policy Act (NEPA). The public participation to be derived from the A-95 and NEPA actions and the newspaper notices will ensure that projects will be completed for which there is no significant unresolved environmental controversy or local concerns. Relevant local concerns regarding a project will be resolved through the use of any appropriate means necessary, including telephone conversations and/or meetings with the concerned parties.

UNIFORM REGIONS



PART C

THE ABANDONED MINE RECLAMATION PROGRAM

I. **GENERAL DESCRIPTION:** (30 CFR Sections 884.13(e)(1) and (2))

Exhibit 12 is a 1:250,000 map which depicts the areal extent of abandoned mine problems in Pennsylvania showing the coal field limits, streams polluted by AMD, county boundaries, highways, cities and towns. The coal fields contain the full spectrum of abandoned mine problems. On completion of the National AML Inventory, a much more meaningful compilation of specific problems at specific locations can be presented. On this scale map, it is virtually impossible to plot all of the abandoned surface mines, mine drainage discharges, refuse banks, both burning and nonburning, shafts, drifts, and subsidence areas.

Generally, major subsidence problems are encountered in the Anthracite Area where the towns were built over the deep mined coal seams. These towns developed in the 1800s and expanded into the early 1900s as deep mining progressed. In the Bituminous Area, there are also subsidence problems, but the magnitude is not as great relative to large sections of towns due to the nature of the development of those towns and the mining methods employed. Large scale subsidence in urban areas is most prevalent in Lackawanna, Luzerne, Westmoreland and Fayette Counties.

Deep mine fires show no proclivity to any specific areas of the state - they can occur wherever mining has been done. However, they often appear near populated areas where people have deposited trash in strip pits which ignite, and the fire is carried into the exposed coal seam. We thus see deep mine fires most commonly in the anthracite area (densely populated) and in the urban areas in Southwest Pennsylvania.

Refuse bank fires generally follow the occurrence pattern of deep mine fires due to the same reasons. There are a few banks that become ignited due to spontaneous combustion.

Acid mine drainage problems are more widespread and intense in the Bituminous Area because of the composition of the rock strata, the areal extent of mining and the type of past mining.

Abandoned open mine shafts and drifts are greater public health and safety hazards in the urban northeast (Anthracite) than in the Bituminous Area.

Open strip pits cover far more acreage in the Bituminous Area than in the Anthracite Area because the Bituminous Area is far more extensive than the Anthracite. However, the depth of open pits is usually much greater in the Anthracite Area because of the steeply pitching multiple seams. Anthracite seams frequently lie at over 45°, and at any given point can number up to 17 seams.

II. **PROBLEMS AND PROPOSED SOLUTIONS:** (30 CFR Section 884.13(e)(3))

As indicated under "Goals and Objectives" (Part B, Section III-A) and Exhibit 7, reclamation activities to be conducted will cover the full spectrum of AML problems. All areas degraded by past mining contain several, if not all, of the types of problems cited. Following is a listing of some of the more common techniques to be used in solving each type of problem:

	Problem	Techniques
1.	Subsidence	Pressure Flushing Controlled Flushing Grouting
2.	Deep Mine Fires	Containment Trench or Trenches Barriers and/or Flushing Complete Excavation
3.	Mine Draiange (Public Health and Safety)	Mine Sealing (Air Seal) Piping, Drains, Flumes
4.	Mine Drainage (Abatement)	Source Correction (Strip mine and refuse pile reclamation; mine seals including inundation and diversion; lining of pervious channels) Treatment Facilities (Large Plants, Limers, Limestone facilities) Note: Use of source correction is preferable to and will be given higher priority than use of treatment facilities.

5.	Air Pollution (Burning Refuse Banks)	Excavation and Extinguishing (Various Methods)
6.	Other Public Health and Safety Problems (Shafts, Drifts, Highwalls)	Backfilling, capping
7.	Erosion and Sedimentation	Grading and Planting

III. **LAND USE INFORMATION:** (30 CFR Section 884.13(f))

The USGS existing Land Use Maps (1:250,000) that are available for Pennsylvania present the best currently available portrayal of types of land: urban, agricultural, forests, water bodies, swamps, quarries, pits and strip mines. However, the scale precludes any practical use of these maps. The county data in the Appendix indicates the actual land use in each county.

Obviously, A-95 procedures will present an opportunity for local input to land use considerations for each project.

It should be realized that most Priority 1 and Priority 2 projects have little relevance to land use planning in a practical sense. Many Priority 3 projects will also have little direct impact on land use.

Habitually, we consult with the landowner relative to his prospective use of the reclaimed land regarding the type of grading and planting to be used on surface mine reclamation jobs. If engineering and economic considerations permit, we adhere to the desires of the landowner. It must be remembered that about 90% of the surface mined acreage in Pennsylvania is in private ownership and government cannot, and should not, dictate land use to the owner. The owner must comply with any local zoning or restrictions. In the case of such land owned by local governing bodies, coordination of the project will be accomplished through that body.

Land use on State owned lands after reclamation is generally governed by the very type of holding involved - - State Forest Land, State Park Land, State Game Land, etc. There are no known abandoned coal mines on Federally owned land in Pennsylvania. This fact will be verified during the inventory effort.

IV. PROBLEM QUANTIFICATION AND THREE YEAR PROPOSAL: (30 CFR Sec. 884.13(e))

As noted in Part A, Pennsylvania has many billions of dollars in abandoned mine reclamation funding requirements. Following Phase 2 of the State/National Inventory, revised data on the overall problem can be obtained. The following depicts Pennsylvania's known categorical project requirements as of July 1, 1983.

A. Mine Fires $25,000,000

B. Subsidence Control $41,000,000

C. Mine Drainage Abatement:

River Basin	Amount
Ohio River Basin	$ 31,000,000
Susquehanna and Delaware River Basins	42,000,000
	$ 73,000,000

D. Hazardous Mine Openings 3,000,000

E. Centralia Mine Fire 100,000,000

Total $ 242,000,000

As of March 31, 1983, fee collections from Pennsylvania operators totalled $115,202,041. Thus, the 50% State share for Title IV work is $57,601,020.50. Since this represents funds generated over 5.5 years, the average annual fund inflow is $10,472,913. While the actual annual inflow will vary depending on the level of mining, the figure of 10 million annual inflow will be used for planning purposes. Approximately $32.7 million in State share grants have been received through Fiscal Year 1983, and the remaining $24.9 million balance now in the fund will be used during the next few years of the program.

In planning the expenditure of funds, an inflation factor of 10% per year will be used for construction cost estimating from the present time.

It is assumed that Emergency and a significant number of Priority 1 projects will continue to be funded by OSM from the Federal discretionary portion of the fund.

Exhibit 7 depicts our proposed general plan for the first three years of the State program.

V. SOCIAL, ECONOMIC, AND ENVIRONMENTAL CONDITIONS: (30 CFR Section 884.13(f))

This section of the Commonwealth of Pennsylvania's Abandoned Mine Reclamation Plan is intended to present a general description of the existing social, economic and environmental conditions existing in the areas affected by past coal mining. It is intended to address the following major considerations.

A. Economic base

B. Sociological and demographic characteristics

C. Significant Aesthetic, Historical, Cultural and Recreational Sites

D. Hydrology

E. Flora and fauna

F. Mineable coal reserves

G. Benefits from reclamation

The following presents a brief narrative description of each of these items of concern and makes reference to Exhibits to the main body of the Plan, figures in the Plan, or to the Appendix, Volume 2, to this State Reclamation Plan. These references have been gathered from many sources of information to provide raw data which is to be utilized in planning and executing the construction measures specified in the State Reclamation Plan and during further activities associated with Pennsylvania's Abandoned Mine Reclamation Program.

A. Economic Base

To discuss the economic base of the Commonwealth of Pennsylvania and more particularly the counties which have mining or past mining activities, we have elected to utilize a series of reports entitled "The Pennsylvania Industrial Census" which were prepared in 1979 and 1980 by the Pennsylvania Department of Commerce. These reports, presented in their entirety for the coal counties of Pennsylvania, are included as an Appendix, Volume 2, to the State Reclamation Plan. The information provided in them is such that the economic statistics of the county can be derived. These reports provide details on:

1. the per capita income
2. the county area

3. the population

4. the available education facilities

5. industrial development

6. tourist promotion agencies

7. a listing of major products of the county

8. a description of the personal income by place of residence as well as by source of income

9. a summary of the economic indicators for that county

10. the land use of that county

11. the recreational and forested lands of the county

12. a brief description of the physical features and other points of interest that are in the county

13. an economic analysis for each county

B. Sociological and Demographic Characteristics

Key sociological and demographic variables are also contained in the Pennsylvania Industrial Census reports. These items have been listed in the Economic Base discussion, and will not be discussed separately. We are providing, as Exhibit 8 to the main body, a population estimate for the various counties in Pennsylvania as well as the official Department of Environmental Resources population projections. A comparison shows the trend of gains and losses and projected gains or losses in each of the counties of Pennsylvania.

C. Significant Aesthetic, Historical, Cultural and Recreational Sites

Exhibit 9 to the main body of the plan provides listings of the following items.

a. Sites listed in the official National Register of Historic Places

b. Pennsylvania recreational areas

c. State forest natural areas and wild areas

d. State recreational areas on forest lands

e. State wild, scenic and recreation rivers

It should be noted that the Bureaus of Forestry and State Parks are part of the Office of Resources Management of DER and that the Game Commission and the Fish Commission

are separate entities within the organizational structure of the Commonwealth of Pennsylvania.

D. Hydrology

The Commonwealth of Pennsylvania has for many years recognized the fact that water is a critical resource within the Commonwealth. There are two major comprehensive coordinated programs underway within the Department to address this resource and to ensure that the citizens of the Commonwealth have an adequate water resource program. The State Water Plan being developed is addressing the water supply needs of the Commonwealth from the quantity aspect. The Comprehensive Water Quality Management Plan (COWAMP) is addressing the water quality needs. These plans, which are in various stages of completion for different geographical and political regions of the Commonwealth, will provide additional background and information sources for review and coordination during the execution of the State Abandoned Mine Reclamation Plan. Some of these documents resulting from these efforts are in final printed format while others are in the draft and draft review stages. The Office of Resources Management is primarily responsible for the development of the State Water Plan. The Office of Environmental Protection of DER is responsible for the COWAMP planning actions.

The Commonwealth of Pennsylvania has a total area of 46,044 square miles. Pennsylvania is drained by five major river basins or portions thereof. These are depicted as follows:

THE MAJOR RIVER BASINS AND AREAS OF PENNSYLVANIA

Major River Basins in Pennsylvania	Total Drainage Area of the Basin (in square miles)	Total Drainage Area in Penna. (in square miles)	Pennsylvania Portion of the Total Area	Percent of Pennsylvania
Susquehanna	27,580	21,038	76%	46%
Ohio	203,910	15,614	8%	35%
Delaware	12,809	6,465	51%	14%

Potomac	14,671	1,584	11%	4%
St. Lawrence Drainage	175,000	608	Less than 1%	1%
Totals	--	45,309	--	100%

(Source: Department of Environmental Resources, Programs and Planning for the Management of the Water Resources of Pennsylvania 1971)

Climate

Pennsylvania has an average annual precipitation of approximately 40 inches. The growing season between killing frost is about 200 days in the southern portion of the State and 120 days in the northern portion.

CURRENT CLIMATOLOGICAL DATA FOR THE MAJOR URBAN CENTERS OF PENNSYLVANIA

	Allentown	Erie	Hbg.	Phila.	Pbgh.	Reading	Scranton	Wmsport.
Mean Daily Temp.								
High	60.7	56.1	63.6	62.7	59.9	62.6	58.7	59.1
Low	39.9	40.5	43.5	43.2	40.3	45.0	40.1	38.2
Precipitation (inches)	38.3	37.7	31.6	40.0	34.1	35.1	28.2	38.1
Annual Snow & Sleet (inches)	68.1	99.7	62.7	46.2	58.7	62.1	61.0	50.3

(Source: Department of Environmental Resources, Programs and Planning for the Management of the Water Resources of Pennsylvania 1971)

WATER AVAILABILITY

The most significant factor affecting water quantity is the amount of precipitation. Lack of precipitation can result in drought conditions and water supply shortages, while excessive precipitation can result in loss of life and property by flood damage. The Commonwealth has an historic average annual precipitation rate of 40 inches per year. It varies from place to place and from year to year. In some areas highs of 50 inches of rainfall per year and lows of 26 inches per year have been recorded. The figure on page 40 shows the average annual precipitation rate for Pennsylvania.

Streamflow or runoff is influenced by land use, physiography, geology, vegetation and intensity and amount of precipitation. Generally, forest lands have high utilization or evapo-transportation rates and yield less surface runoff, while urbanized and industrial areas

produce high surface runoff. The amount of surface runoff from cropland and pasture areas is dependent upon the type of vegetation. The Commonwealth has an historic average annual runoff rate of 18 inches per year. The figure on page 41 shows the average runoff rate.

The quantity and quality of surface water are also affected by groundwater. About 30% of the precipitation percolates through the surface of the earth and enters the rocks below, developing a zone of saturation which is topped by the water table. It has been estimated that approximately 2/3 of this water provides additional stream flow, particularly during drought conditions, since streams intercept the water table. The remaining 1/3 is considered to percolate to the deep groundwater resource. The amount of groundwater available at any given point is dependent on the aquifer containing the water. It has been estimated that under Pennsylvania lie approximately 47 trillion gallons of water which is available to a depth of 500 feet. The figure on Page 42 shows the variation in yields of the groundwater in the State.

ACID MINE DRAINAGE

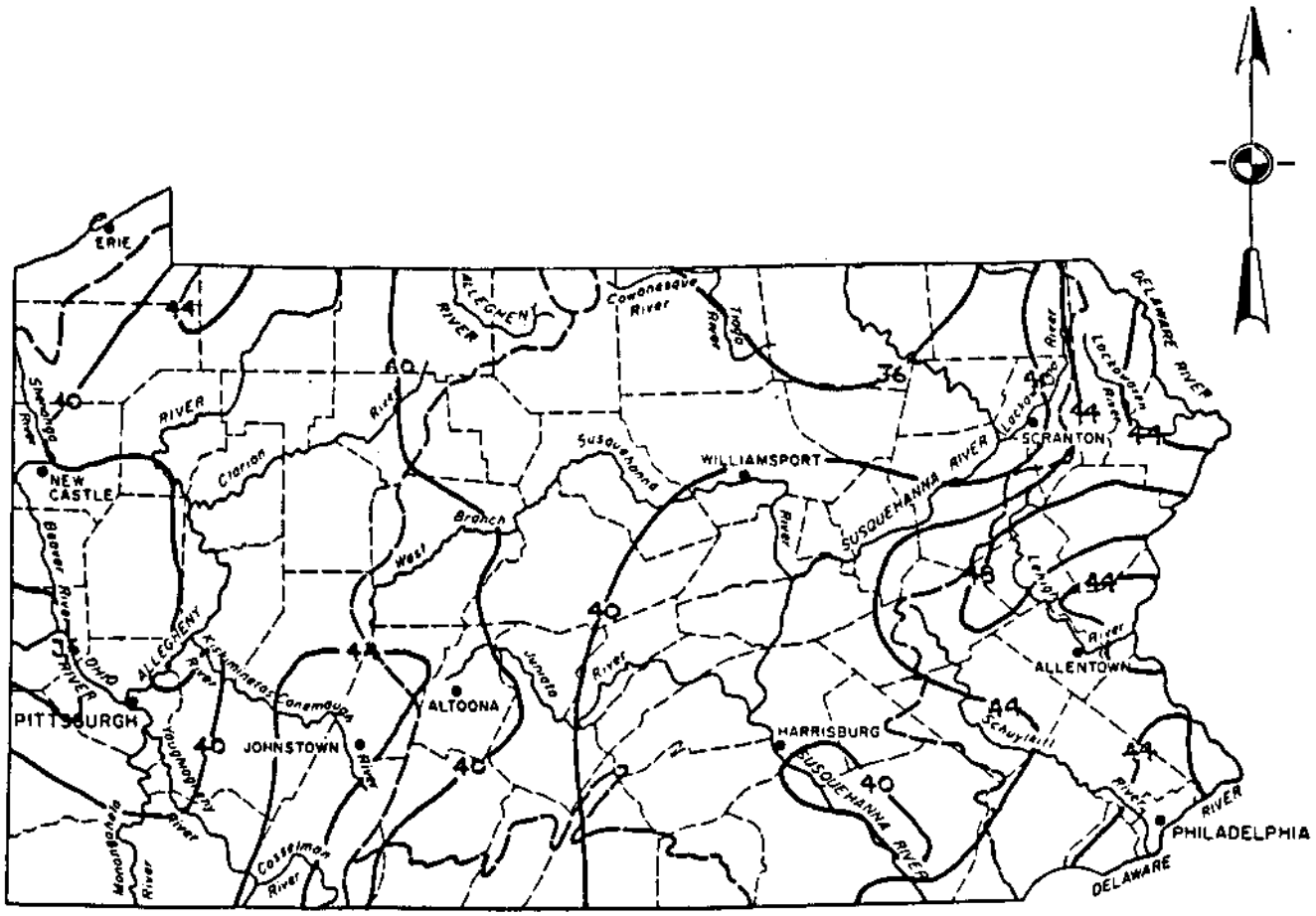
Stream pollution caused by acid mine drainage (AMD) from abandoned mines is a significant pollution problem facing Pennsylvania. Some 2,200 miles of stream are seriously degraded or rendered unfit for any use by discharges from mines or mine sites. The source of this pollution can be surface mines, deep mines and coal processing areas.

Existing Pennsylvania programs have concentrated on abatement and control of the acid mine drainage problem. Additional efforts are required and, as described in this Plan, proposed to be undertaken by the Commonwealth. Exhibit 12 is a 1:250,000 scale map showing the streams known to be polluted by AMD. Page 33 of this Plan defines the known project requirements to continue a viable AMD program.

E. Flora and Fauna

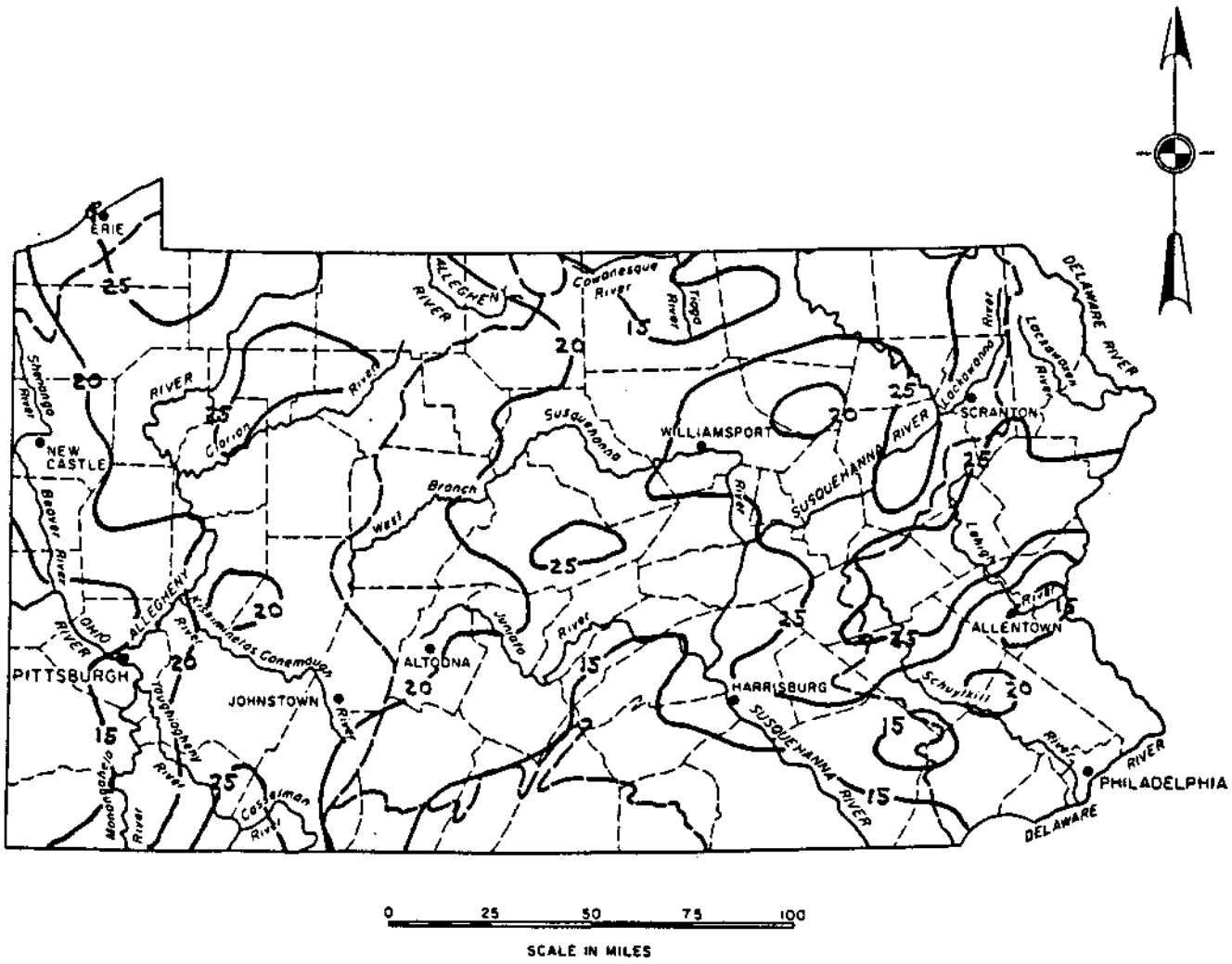
Exhibit 10 to the main body of this plan provides listings and narrative descriptions of:

1. The Federally listed endangered and threatened species in Pennsylvania
2. Pennsylvania's endangered fishes, reptiles and amphibians
3. Animals in Pennsylvania
4. Fishes in Pennsylvania
5. Amphibians and reptiles in Pennsylvania



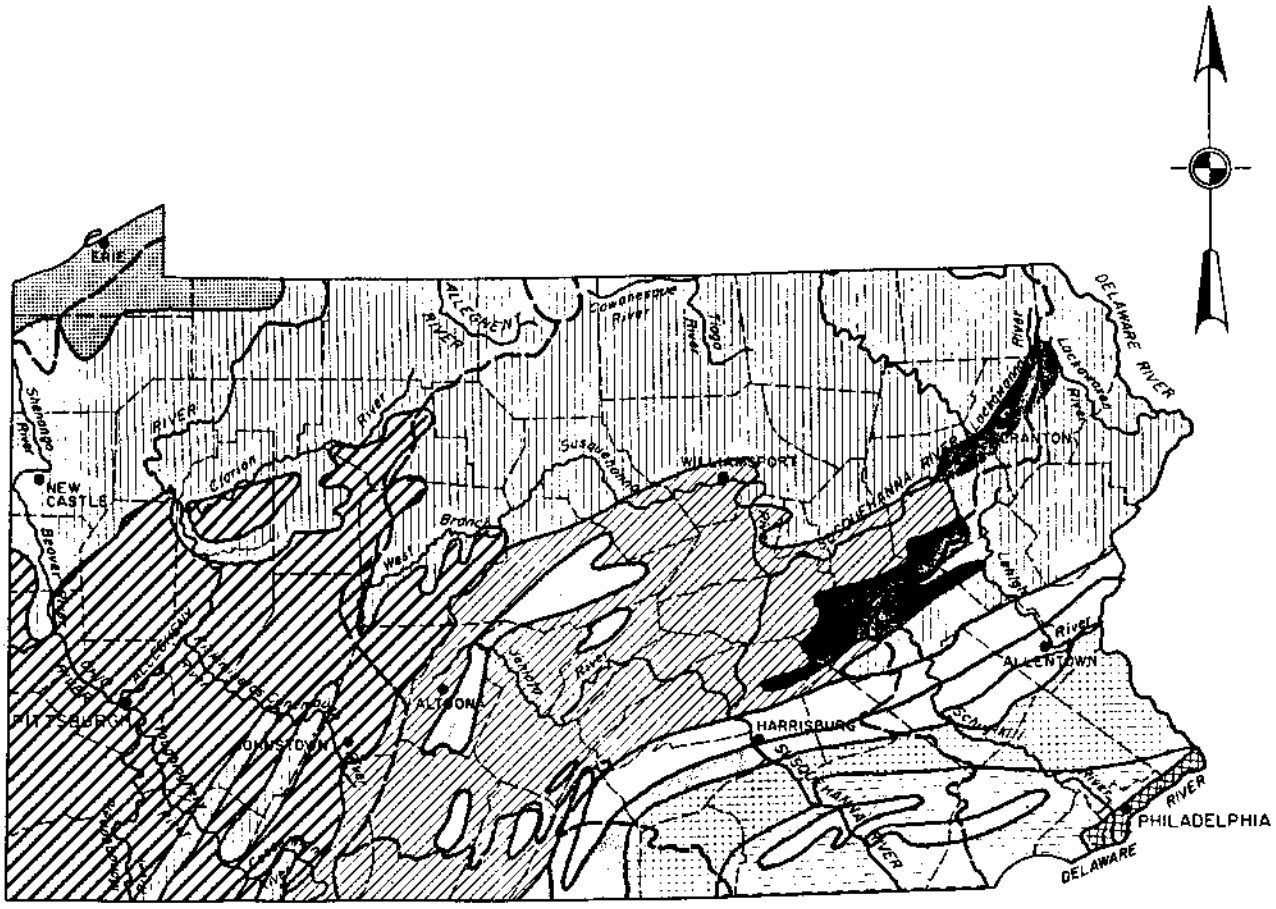
AVERAGE ANNUAL
PRECIPITATION
IN PENNSYLVANIA
(IN INCHES)

Information Source: U S Department of
Commerce, Weather Bureau
Developed by: Department of Environmental Resources



AVERAGE ANNUAL RUNOFF IN PENNSYLVANIA
(IN INCHES)

Source : Department of Environmental Resources



0 25 50 75 100

SCALE IN MILES

AVERAGE YIELD IN GALLONS PER MINUTE

10	45
15	50
20	60
25	75
40	500

GENERAL LOCATION AND YIELDS OF GROUND WATER IN PENNSYLVANIA

Source: Department of environmental Resources

Exhibit No. 14

6. Flora of Pennsylvania
7. Endangered plants

F. Mineable Coal Reserves

On January 23 and 24, 1980, the Governor of Pennsylvania held a Coal Conference in Hershey, Pennsylvania, to discuss coal industry problems and solutions. One publication prepared for this conference was entitled "Coal Resources of Pennsylvania". It was compiled by the Bureau of Topographic and Geologic Survey of the Department of Environmental Resources. The following quotation, tables and illustrations in this section are provided from this report to address the mineable coal reserves in Pennsylvania.

> "Development of coal reserves involves many factors, but first and foremost there must be an adequate quantity of coal reserves to make any effort towards increased coal development worthwhile.

PENNSYLVANIA HAS A LARGE AND ADEQUATE SUPPLY OF AVAILABLE COAL RESERVES!

> Pennsylvania was blessed with a total of 103 billion tons of coal in the ground. Even though coal mining has been going on here since at least 1759, only 23 billion tons have been mined out (or lost due to mining).
>
> Eighty billion tons of coal still remain in the ground under Pennsylvania today! Some of this coal, however, is too thin to mine; some is too deep to mine; some has to be left in the ground (for pillars, etc.) when mining does take place. Taking these factors into account with today's technology, Pennsylvania still has 30 billion tons of recoverable coal.
>
> Pennsylvania's remaining 30 billion tons of recoverable coal is more than has been mined out and lost in the past 220 years!
>
> Pennsylvania's remaining 30 billion tons of recoverable coal would last us for 350 years at the present annual rate of coal production (85 million tons a year)!
>
> Pennsylvania's remaining 30 billion tons of recoverabe coal would last us for over 150 years, even if we double the present annual rate of production!"

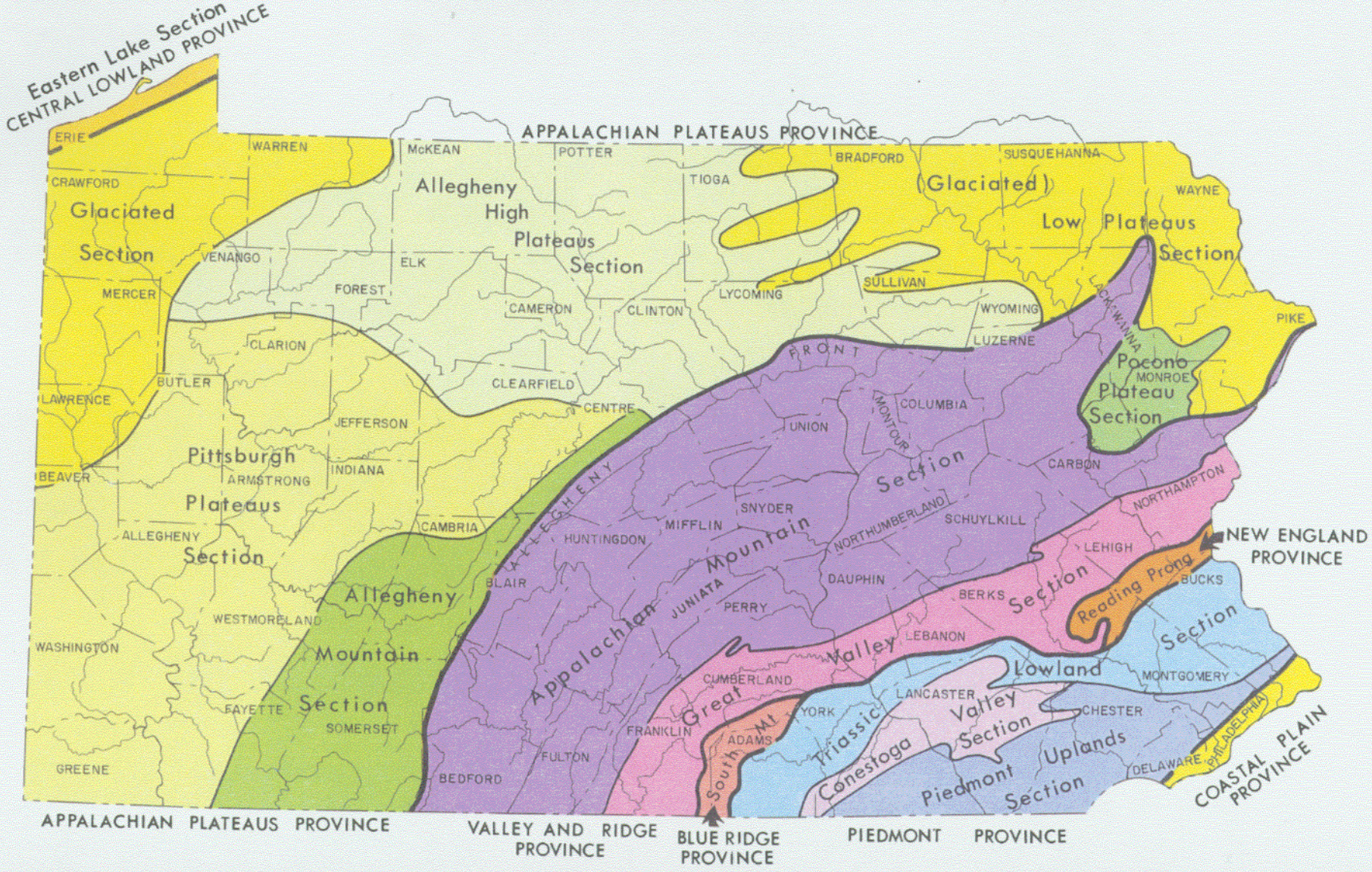
The reader's attention is directed to the maps of Pennsylvania's Physiographic Provinces, Geology and coal fields on pages 44, 45 and 46 and to the drawing on page 47 which provides a stratigraphic column showing the position of the major bituminous coal seams.

The published report provided the following information concerning the reserves.

MAP 13

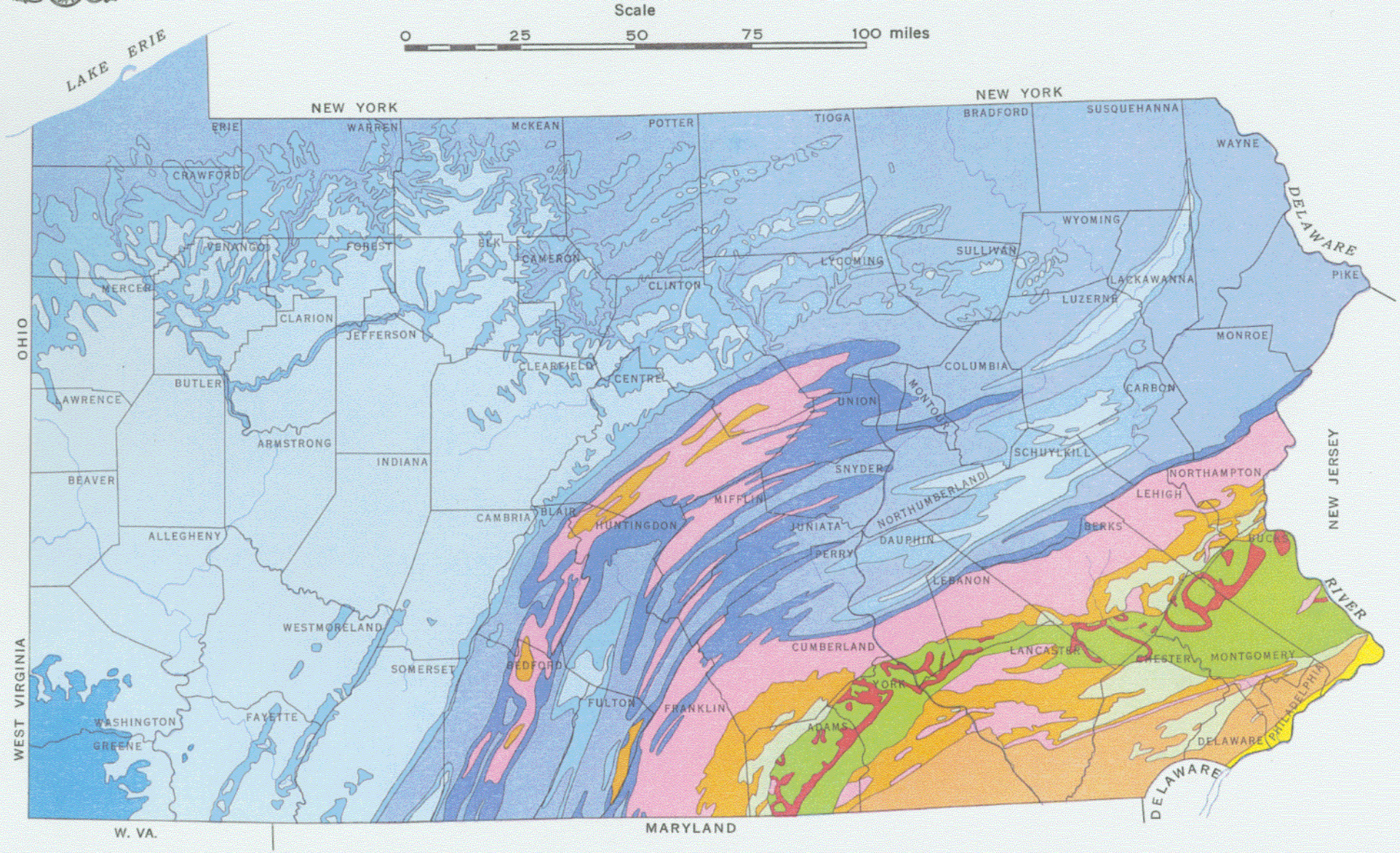
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
TOPOGRAPHIC AND GEOLOGIC SURVEY
Arthur A. Socolow, *State Geologist*

PHYSIOGRAPHIC PROVINCES OF PENNSYLVANIA



GEOLOGIC MAP OF PENNSYLVANIA

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCE
TOPOGRAPHIC & GEOLOGIC SURVEY
Arthur A. Socolow, State Geologist



QUATERNARY
(0-1 million yrs.) Sand and gravel. *sand and gravel.*

TRIASSIC
(180-230 mil. yrs.) Shales and sandstones intruded by diabase. (red) *iron, building stone.*

PERMIAN
(230-280 mil. yrs.) Cyclic sequences of sandstone, red beds, shale, limestone, and coal.

PENNSYLVANIAN
(280-310 mil. yrs.) Cyclic sequences of sandstone, limestone, shale, clay, and coal. *coal, clay, lime.*

MISSISSIPPIAN
(310-350 mil. yrs.) Red beds, shale, and sandstone.

DEVONIAN
(350-400 mil. yrs.) Red beds, shale, sandstone, limestone and chert. *silica sand.*

SILURIAN
(400-425 mil. yrs.) Sandstone, red beds, shale, and limestone. *gannister, lime.*

ORDOVICIAN
(425-500 mil. yrs.) Shale, limestone, dolomite, sandstone. *slate, limestone, zinc.*

ORDOVICIAN and/or CAMBRIAN
(425-600 mil. yrs.) Metamorphic rocks-schist, serpentine, gneiss and quartzite. *Building stone.*

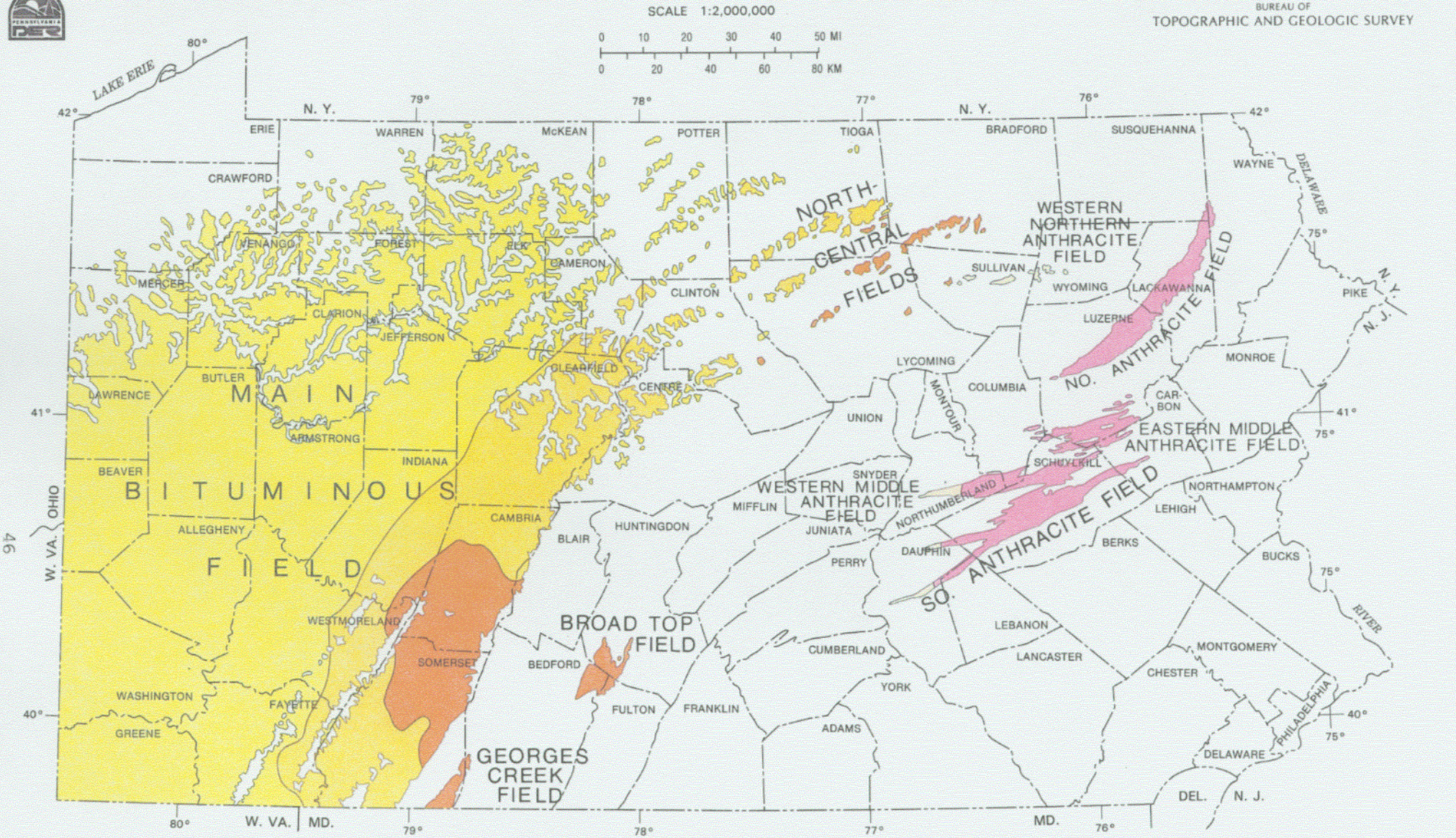
CAMBRIAN
(500-600 mil. yrs.) Limestone and dolomite; some sandstone and shale. *lime and gannister.*

PRECAMBRIAN
(Older than 600 mil. yrs.) Gneiss, greenstone, serpentine and anorthosite. *zinc, building stone, graphite, sericite.*

MAP 11

DISTRIBUTION OF PENNSYLVANIA COALS

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
OFFICE OF PARKS AND FORESTRY
BUREAU OF
TOPOGRAPHIC AND GEOLOGIC SURVEY



46

EXPLANATION

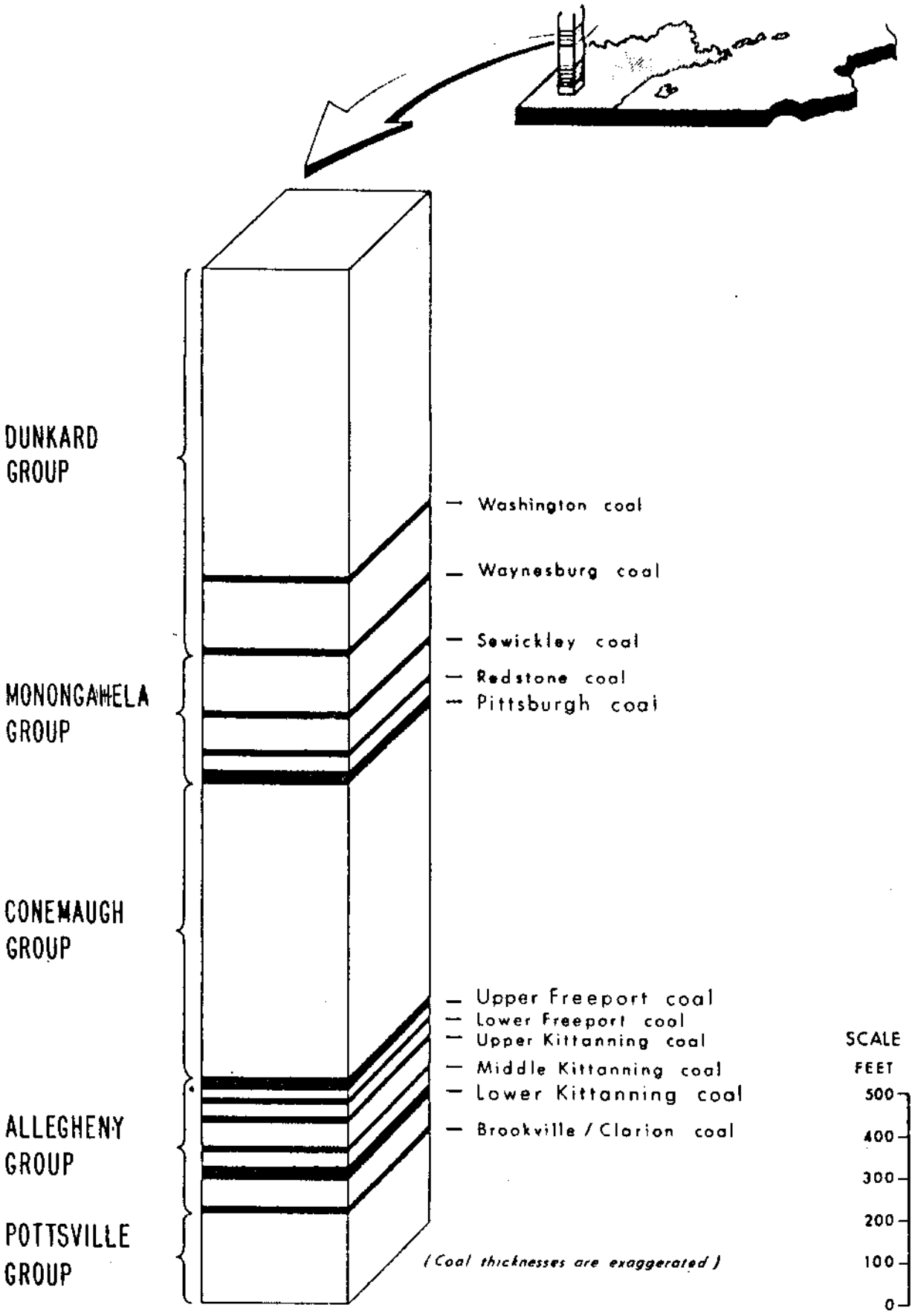
BITUMINOUS FIELDS

- High-volatile bituminous coal
- Medium-volatile bituminous coal
- Low-volatile bituminous coal

ANTHRACITE FIELDS

- Anthracite
- Semi-anthracite

DER #855-3/92



STRATIGRAPHIC POSITION OF PENNSYLVANIA'S MAJOR BITUMINOUS COAL SEAMS

SUMMARY OF COAL RESERVES OF PENNSYLVANIA

Remaining Coal in the Ground:

Bituminous	64 billion tons
Anthracite	16 billion tons
Total Remaining Coal	80 billion tons

Recoverable Coal:

Bituminous (over 28" thick)	22 billion tons
Anthracite (over 26" thick)	8 billion tons
TOTAL RECOVERABLE COAL	30 BILLION TONS

PENNSYLVANIA RECOVERABLE COAL RESERVES

(MILLION TONS BY COUNTY)

MAIN BITUMINOUS AND GEORGES CREEK FIELDS

Allegheny	680	Clarion	450	Lawrence	150
Armstrong	1,100	Clearfield	710	McKean	96
Beaver	350	Clinton	9	Mercer	82
Blair	9	Elk	110	Somerset	1,600
Butler	860	Fayette	2,100	Venango	81
Cambria	1,000	Greene	4,000	Washington	3,800
Cameron	13	Indiana	1,700	Westmoreland	1,900
Centre	83	Jefferson	880		

Subtotal 21,763 million tons

BROAD TOP FIELD

Bedford	66
Fulton	8
Huntingdon	18

Subtotal 92 million tons

NORTH-CENTRAL FIELDS

Bradford	4
Lycoming	17
Sullivan	3
Tioga	13

Subtotal 37 million tons

ANTHRACITE FIELDS

Carbon	135	Luzerne	738
Columbia	216	Northumberland	846
Dauphin	330	Schuylkill	4,410
Lackawanna	153	Susquehanna	2
Lebanon	450	Wayne	3

Subtotal 7,283 million tons

PENNSYLVANIA TOTAL 29,175 million tons

NOTE: CRAWFORD, FOREST, POTTER, WARREN AND WYOMING COUNTIES ALSO HAVE COAL DEPOSITS. HOWEVER, THE DEPOSITS IN THESE COUNTIES ARE NOT GENERALLY CONSIDERED TO BE OF COMMERCIAL VALUE DUE TO QUALITY AND/OR QUANTITY LIMITATIONS.

G. Benefits from Reclamation

The Abandoned Mine Reclamation Program to be executed by the Commonwealth of Pennsylvania in accordance with the provisions of this Plan will provide many far reaching benefits. The reclamation activities specified in the Three-Year Reclamation Program (Exhibit 7) are directed at the alleviation of extremely hazardous conditions which are the result of past coal mining practices. Accomplishment of the proposed projects will in broad terms protect the public health, safety and general welfare from the extreme danger situations which presently exist.

Completion of specific construction measures will result in some or all of the following major benefits for each project:

1. A safer environment will be provided to the property owners and surrounding communities since extreme danger conditions which are presently causing serious hazards to the residents will be reduced or eliminated.
2. Hazardous mine openings, shafts, and pits will be backfilled to prevent entry of persons and to prevent individuals from accidentally falling into shafts or pits.
3. The threat of damage to public and private surface property in and adjacent to the project areas will be eliminated.
4. The threat to contiguous coal reserves in the vicinity of mine fires will be eliminated.
5. Facilities will be constructed to prevent the entry or seepage of mine drainage into homes to prevent health hazards.
6. Facilities will be constructed to reduce mine pool levels which will reduce the potential for blowouts and alleviate potentially extremely hazardous conditions which could harm life and property.

Secondary benefits are expected to accrue with consideration given to those benefits during individual project selection. It should be noted that these are incorporated into the State Reclamation Plan in Part B (The Basic OSM Program under PL 95-87, Section III, Policies and Procedures) through the Project Ranking and Selection Section. This method will ensure compliance with Rules and Regulations for the Abandoned Mine Reclamation Program which OSM has promulgated. The Program Environmental Impact Statement prepared by OSM will also be utilized during project selection and for evaluating benefits expected.

OSM has prepared Guidelines for the program which have been incorporated into the Program Environmental Impact Statement as well as being published as a separate entry in the Federal Register. These Guidelines give general information on reclamation techniques and benefits anticipated from reclamation activities. The Guidelines will be utilized in executing provisions of this Plan.