WETLANDS AND LONGWALL MINING

REGULATORY FAILURE IN SOUTHWESTERN PENNSYLVANIA

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EXECUTIVE SUMMARY:

What This Report Is About

Pennsylvania wetlands are being destroyed by the high-extraction (longwall) mining of bituminous coal underground. Quietly. Inexorably. Without regulation.

Pennsylvania protects wetlands from other types of construction activities. Its laws do not exempt longwall mining from wetland regulation. But wetland law enforcement is absent when mining permits are approved.

Damage to wetlands occurs in at least three ways as a result of longwall mining. First, surface activities (such as the construction of roads, waste piles, portals, and other facilities) may require fill or regrading in wetlands, thereby eliminating them. Second, when coal is removed from underground, gravity collapses the unsupported layers of rock into the mine void. The cracks typically extend all the way up to the land surface, which then subsides. This manmade disruption of the earth's surface by subsidence traps water in valley wetlands, thereby altering the composition of the plant community or drowning the plants to create open water. Third, the same cracks and fissures can intercept or divert springs or seeps that provide water to wetlands, thereby drying them up, along with the headwater streams they feed, or changing the quality of the water reaching them. In each case the result is impairment or termination of the functions of the natural wetlands. Fills in wetlands sometimes get at least lip-service attention from mine regulators; subsidence damages get none at all.

In its widespread surface effects, current longwall mining is dramatically different from traditional room-and-pillar coal mining. In room-and-pillar mining, pillars of coal are left behind to support the mine roof. The subsidence of localized areas may occur from time to time as a failure of mine design or where pillars are subsequently robbed. The location of such subsidence is not predictable, and the Commonwealth subsidizes the cost of insurance for subsidence damage to the homes and buildings of surface property owners.

In contrast, longwall mining removes all the coal from broad panels thousands of feet long. Tunneling by coal miners directly causes most or all of the surface land above longwall mines to subside, to an extent that varies locally. The change in surface elevation is greatest over the centers of panels, where it can reach 4 feet at the currently active mines in the Pittsburgh seam of Washington and Greene Counties. Longwall subsidence is less above the entries supported by pillars of coal left in place. The surface movement above longwall mine panels is comparable to a slow-moving but major earthquake, and its effects on wetlands, buildings, and roads are devastating to a far greater degree than those of traditional room-and-pillar mining.

Wetlands are small and scarce in the rolling, dissected plateaus of southwestern Pennsylvania, where they occupy only 0.2% of the landscape. Yet they are critical components of the natural ecosystem in this section of Appalachia, significant far in excess of their geographical extent both to wildlife and fish populations and to humans. Wetlands are a special class of bodies of surface water that have unique plant and soil characteristics. They protect the water quality of streams and provide space for the harmless, temporary storage of floodwaters. They provide habitats for many kinds of creatures, including waterfowl, amphibians, and many rare and declining species. Three quarters of the kinds of plants considered rare in Pennsylvania grow in wetlands.

Although swamps, bogs, and similarly muddy places often were regarded as waste lands in

centuries past, explicit wetland protection has been required by law in Pennsylvania and in the United States for more than twenty years. Through our legislators this generation has recognized the exceptional benefits that our remaining wetlands provide automatically to their owners and to the public. Landowners are allowed to destroy wetlands only with good reason, after regulatory approval, and with compensatory mitigation.

Like floodplains, steep slopes, and prime agricultural soils, wetlands today are a natural constraint that must be addressed during the planning for any type of land development. Sponsors of new construction are obliged to examine their land carefully to find any wetlands at risk and then to apply for and secure permit approvals before undertaking work that would destroy the wetlands. They must identify the functions and values present in their wetlands. They must demonstrate that there is no practical way that the wetlands they propose to affect can be avoided, and that they have minimized the unavoidable damage. Finally, nearby replacement of the lost wetlands and functions is generally required.

The wetland regulatory process can be time-consuming and expensive. It usually entails the work of environmental professionals, because regulated wetlands sometimes can be difficult to recognize and improperly planned replacement wetlands often fail. Regulators routinely question whether proposed damage can be reduced through construction plan revision. Wetland protection by law applies to construction of all kinds in Pennsylvania---highways, housing, factories, shopping centers, industries, reservoirs, schools, quarries, utility lines, *and* coal mines.

The Department of Environmental Protection (PADEP) is responsible for administering wetland permits throughout the Commonwealth. It has adopted regulations that set forth the steps applicants and reviewers must take in order for permits to be approved in a formal process subject to public review and comment. Administration of the wetland regulations for coal mines has been assigned to the PADEP Bureau of Mining and Reclamation (BMR), the Bureau that reviews construction plans for mining activities.

This report shows that BMR regulation of wetlands when permitting longwall mines is seriously flawed. The BMR staff at the McMurray District Office includes no biologists or other wetland professionals. If wetlands are acknowledged at all by applicants, they are identified only within the areas of surface mining activities (such as haul roads, buildings, portals, and waste piles). But these surface activity sites represent only a small fraction of the land affected by the surface subsidence resulting from high-extraction mining. Even when wetland impacts are acknowledged in permit applications, they rarely are regulated by BMR, and never in compliance with the regulations universally applied by PADEP to other kinds of construction activities.

The scarce wetlands found on many tens of thousands of surface acres are being damaged or eliminated by longwall mines without any review at all. Farms, homes, businesses, and recreational uses also are being disrupted, with hundreds and hundreds of surface owners inconvenienced or permanently damaged by the huge longwall complexes that undermine dozens of square miles. Techniques available to minimize or eliminate subsidence are not being used, and wetland replacement is unheard of in BMR permit conditions.

For decades BMR has refused to discharge its regulatory obligations to protect wetlands from longwall mining, in flagrant violation of the Dam Safety and Encroachments Act, the Clean Streams Law, and those laws of the Commonwealth pertaining specifically to bituminous coal mining. BMR apparently sees its duty as issuing mining permits, whether or

not any wetland information is provided in the permit applications.

The BMR application forms for underground coal mining do not clearly direct applicants to identify all the wetlands at risk from mining activities, although wetlands are mentioned here and there. The application forms are fraught with inconsistencies that prevent the clear presentation of essential information on wetlands and potential impacts. BMR does not reject incomplete applications, or insist that partial submissions be completed, or require that wetland delineation and assessment methods used throughout the Commonwealth be utilized on mine permit areas. The consent of the surface owners of the wetlands to their alteration is never requested, secured, or deemed relevant by coal mine applicants or regulators.

The basic information necessary to make possible any meaningful review of applications by resource agencies and by the public is not developed when new longwall mines are planned or existing underground mines are expanded into previously unmined areas. As a result, wetlands are not recognized. PADEP permit fees are not collected. Impact avoidance, minimization, and mitigation are not attempted. Wetland replacement is not required and is not included in performance bonds. The often-expressed concerns of the public, of surface owners, and of resource agencies regarding wetlands and other resources in application after application are ignored when permits are rushed to approval. BMR never prepares the written findings concerning wetlands required by law prior to permit issuance, and it consistently fails to address the substantive mandates of those findings.

BMR clearly is either unwilling to comply or incapable of complying with its own regulations and those of PADEP requiring wetland protection. Consequently, wetlands are destroyed blindly or created accidentally in the coalfields, without plan or forethought, and no statistics are kept regarding the quantities lost or gained.

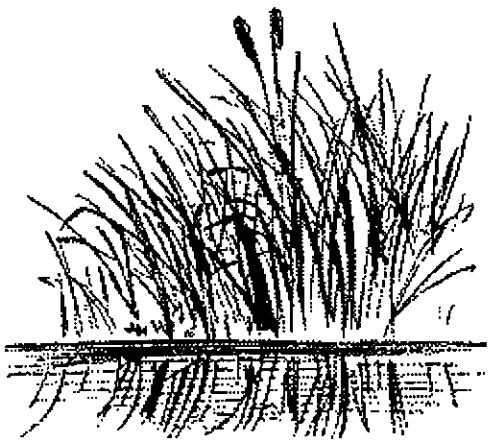
Wetland regulation has broken down at every step of the BMR regulatory process for longwall mines. Changes in the application forms recently proposed by BMR will make the situation even worse in the future. The new application for underground mining activities will provide even less information regarding wetlands than the current applications, if adopted as proposed by BMR in 1999.

This report shows that wetland regulation in Pennsylvania longwall mining has collapsed like the roof in the center of a coal mine panel. It identifies the legislative and regulatory bases for wetland protection in the context of underground mining. It highlights the significance of longwall coal production. It reviews the complex BMR underground mining application form in detail, module by module. It points out deficiencies relating to wetland protection, illustrates those problems using actual examples from recent permits, and identifies specific opportunities for positive regulatory changes. The report concludes by making many specific recommendations aimed at establishing a functioning regulatory process that could actually protect wetlands in southwestern Pennsylvania some day.

The production of coal by longwall methods has drastic effects on the natural and human environment of areas undermined, much more widespread than the localized impacts of traditional room-and-pillar mines. This report focuses on wetlands, but in so doing recognizes that the predicament of wetlands is but the tip of the iceberg of problems in the natural and social environment that result from the current BMR regulation of longwall mining in southwestern Pennsylvania. Environmental damage by longwall mining is far subtler than damage by surface coal mining. It has received far less public attention over the few decades that it has been in use, but it is comparably severe. The damage from longwall mining may not be obvious to

travelers passing through the scenic landscape of Washington and Greene Counties, unless they happen to be caught in a traffic jam on a subsidence-damaged highway. But it is devastating to wetlands, to streams, and to residents' homes, their livelihoods, and their peace of mind, as well as costly to the public treasury.

Caged canaries once warned miners of the buildup of invisible, odorless gases in underground mines before it was too late for the miners to escape. Wetlands today can serve a similar function to alert the public whose environment, health, safety, and welfare are threatened by longwall mining.



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Frontispiece. Impounded streams and dried-up springs are the legacy of longwall mining for bituminous coal in Washington County (above) and Greene County (below), Pennsylvania.

PREFACE: Who Should Read This Report

This report is directed at several audiences, at minimum including:

- **Anyone concerned with wetlands in Pennsylvania**. This report documents the inadequacy of regulatory protection for a class of resources that are especially scarce in the southwestern counties.

- **Those concerned with the environmental impacts of the high-extraction (longwall and retreat) methods for the underground mining of bituminous coal.** Longwall mining currently is the dominant method of coal production in Pennsylvania. This report focuses on one set of resources --- wetlands --- whose unmitigated destruction by this particular industry is routinely allowed by State regulators in contravention to State and Federal laws.

- **Residents of Pennsylvania coalfields**, especially in Washington and Greene Counties, who are directly affected whenever the regulatory process fails to uphold the environmental protections which every Pennsylvanian has the right to expect. Residents who seek to understand and comment on mining permit applications that portend widespread environmental and social destruction in their landscape find the State permit paperwork arcane and defective and their comments routinely ignored. This report provides a guide through the longwall mining permit review process, focused on wetland resources.

- **Regulators of the underground coal mining industry** at all levels who are charged with implementing Pennsylvania environmental laws. This report exposes State regulators' longstanding failure to protect wetlands and suggests ways to comply with existing law, including opportunities to rectify existing permit application forms.

- **Staffers in government agencies and private-sector organizations concerned with resource management and protection** in Pennsylvania. This report shows the need for redoubled efforts to inventory and protect the wetland resources critical to the maintenance of fish, wildlife, and waterways in southwestern Pennsylvania.

- **Operators of underground bituminous mines and their consultants** who are obligated to comply with Pennsylvania laws. This report highlights the existing laws and regulations that require wetland protection in the context of underground mining, identifies the current systematic failure to comply with those requirements, and points out what *should* be done.

- **Elected officials and office-seekers** wanting to understand how environmental laws are being administered in Pennsylvania and who can provide legislative oversight. This report raises issues of serious administrative failure that need public debate and legislative scrutiny.

- **Environmental groups** seeking opportunities to achieve environmental protection through improved compliance with existing laws, as a result of litigation if necessary. This report shows how much work needs to be done to gain compliance with existing requirements, focusing on wetlands as the tip of the iceberg with respect to longwall mining impacts.

- **Charitable foundations** concerned with environmental protection and improving the quality of life in Appalachian coalfields. This report shows for one class of

resources the kind of analysis desperately needed across the board regarding the devastating impacts of currently ongoing longwall mining.

- **Publicists in the news media** who want to inform the public regarding environmental issues and to foster public discussion of covert environmental destruction. This report provides specific examples of serious regulatory failures and administrative unwillingness to protect wetlands that are hidden from the public, and calls for similar investigation of other impacts from longwall mining.

- **Academics** studying environmental science, environmental impact assessment, and especially mine engineering. This report points out real-world problems that need the attention of academia, especially the engineers whose challenge is to make wetland impacts unnecessary through use of appropriate technology for mining bituminous coal.

- **Financial analysts and investors** in the vast conglomerates that operate longwall mines. This report hints at the sizable investment needed to comply with existing laws that protect wetlands and the financial penalties to which coal mine operators would be liable if existing laws were ever enforced regarding present or past wetland destruction. To date investors have had strong marketplace incentives to provide funds for research and implementation of longwall technology that increases coal production per man hour and per acre; State regulators have not yet provided equal incentives for operators to assume the true costs of impacts heretofore imposed on the environment, on surface owners in the coalfields, and on Pennsylvania taxpayers.

In short, this report aims at a broad and diverse audience.

This report provides insight into the longstanding inability and deliberate refusal of the Bureau of Mining and Reclamation in the Pennsylvania Department of Environmental Protection to protect scarce wetlands from high-extraction coal mines. It shows which regulations are routinely ignored and where critical gaps appear in the mass of regulatory paperwork that constitutes an underground mining permit application. It shows actual examples of recent mining applications that expose the hollow pretense of State wetland protection. It points out opportunities for improvement in the regulatory process and makes recommendations for achieving genuine environmental protection through wetland inventory and disclosure followed by impact minimization and mitigation. It suggests ways to compensate for past, unregulated wetland loss as well as to guard against continuing losses in the future.

This report views wetlands as a microcosm of environmental damage as caused by high-extraction mining, and it calls for similar analysis of the myriad other impacts of this mining on the natural and human environment of southwestern Pennsylvania. It is a fundamental tenet of this report that technological measures which effectively protect wetlands will automatically provide significant protection to other social and natural resources at the same time. The residents of Appalachia have long experienced environmental destruction as a consequence of coal mining (Caudill 1976, 1963). The underground mines of southwestern Pennsylvania in the 21st century, far from incorporating new technologies to minimize environmental and social impacts, continue to wreak environmental havoc across hundreds of thousands of acres, across the lives of surface owners, and across highways, gamelands, and other public property. If this report helps to focus public attention on one small part of the ongoing damage from coal mining---that part relating to wetlands---it will have served its purpose.

We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect.

Aldo Leopold (1887-1948)

INTRODUCTION

Bituminous coal has been mined in Pennsylvania for more than 200 years. Its production has caused widespread, in some cases catastrophic, environmental destruction. Laws and regulations have been passed in attempts to reduce the adverse consequences of the mining of coal. Despite the regulatory controls that have been put in place, the coalfields continue to experience severe environmental damages from mining. This report examines underground mining in relation to the protections afforded to one important environmental resource: wetlands.

Wetlands are scarce in the landscape of Pennsylvania, yet they provide many benefits to society as a whole, far in excess of their proportion of the land surface. As a result of the increased understanding of the functions of wetlands and a recognition of their values for flood protection, water quality maintenance, fish and wildlife habitat, aesthetic, recreational, and other uses, wetlands have been afforded special protection both nationally and in Pennsylvania during the last quarter of the twentieth century. That protection is clearly written into the mining laws and regulations of the Commonwealth.

Like the canary of years past, wetland loss today serves as a warning of more widespread environmental problems associated with longwall mining.

This report focuses on recent permit applications illustrative of current regulatory practice concerning new or newly expanded underground mines. The record shows that the requirements of State wetland protection laws and regulations are virtually ignored by Pennsylvania regulators at every step of the permit process for new longwall mines.

It once was a common practice for coal miners to take caged canaries underground with them. In the enclosed spaces of the mines, poisonous gases that were odorless and invisible sometimes posed a life-threatening hazard to miners. The canary's small lungs and respiratory system would be affected first by the unseen danger. If the canary began to wheeze or gasp, or if it died, miners knew to get out fast before they too were overcome by the invisible gases. The canary served as a living alarm, a warning of danger in the mine.

Like the canary of years past, wetland loss today serves as a warning of more widespread environmental problems associated with longwall mining. It warns of unacknowledged and unregulated impacts associated with a high-extraction technology that was just beginning in southwestern Pennsylvania 25 years ago. It warns of the pervasive environmental destruction that continues to occur despite a quarter-century of environmental laws and regulations designed to prevent such damage from mining and other industrial operations. This warning exposes an apparent lack of commitment on the part of regulators obliged to apply and enforce environmental protections when reviewing and approving underground coal mine permit applications.

There is today a major disconnect between what the laws and regulations <u>say</u> is to be done to protect wetlands and other resources from coal mining and <u>what actually is being done</u> by the agencies whose responsibility it is to implement those laws in Pennsylvania. Unless mine operators and regulatory agencies conscientiously implement environmental protection requirements, all of the best intentioned laws, regulations, and application forms become meaningless. The uncontrolled destruction of wetlands by the

underground mining of coal is hidden from public view.

Unfortunately, recent efforts to change both the law and the regulatory structure for underground mining in Pennsylvania are explicitly designed to weaken, rather than to strengthen, current environmental protections. The current administration has actively promoted a "Regulatory Basics Initiative" intended to make Pennsylvania environmental laws no more stringent than the bare minimum required by the Federal government in all States. The regulatory failure to protect wetlands in Pennsylvania, however, as described in this report, long antedates the current administration. Most Pennsylvanians would be astonished to learn that wetland protection from destruction by longwall mining has long been virtually nonexistent, in contrast to some measure of PADEP protection of wetlands from most kinds of construction activity Statewide. The existing regulations, alas, are merely pretense in the context of underground mining.

Recent efforts to change the laws and regulations in Pennsylvania are meant to weaken, rather than strengthen, environmental protections.

Enforcement of the environmental controls imposed by law or regulation undoubtedly would entail additional costs to mining companies. The companies may be reluctant to pass those costs along to their consumers (primarily the electric utilities) in a highly competitive energy marketplace. As long as the economic costs of environmental damage can be passed along quietly to surface owners or to taxpayers, however, there is a strong incentive for mine operators to minimize any expenditures on environmental protection, to lobby bureaucrats and lawmakers for reductions in regulatory requirements, to suppress information concerning the actual extent of current and future impacts, and to continue to create far greater environmental damage than necessary. Mine operators cannot be faulted for keeping a close watch on the bottom line. Our public servants and elected officials, however, whose sworn duty is to uphold and enforce the Constitution, laws, and regulations of the Commonwealth, have no such excuse.

SECTION I.

IMPACTS OF COAL MINING: AN OVERVIEW

The extraction of coal from the earth and its refinement into a marketable product historically have formed an environmentally destructive process. Despite a host of laws and regulations written to protect environmental resources from the adverse effects associated with new mines, significant impacts continue to occur. Laws, regulations, and especially enforcement have been slow in keeping up with new technologies, such as high-extraction longwall methods, and the environmental impacts they entail.

Evidence of environmental destruction from coal mining is not hard to find. After years of public outcries, the United States Congress in 1977 acknowledged:

> [M]ining operations result in disturbances of surface areas that burden and adversely affect commerce and the public welfare by destroying or diminishing the utility of land for commercial, industrial, residential, recreational, agricultural, and forestry purposes, by causing erosion and landslides, by contributing to floods, by polluting the water, by destroying fish and wildlife habitats, by impairing natural beauty, by damaging the property of citizens, by creating hazards dangerous to life and property by degrading the quality of life in local communities, and by counteracting governmental programs and efforts to conserve soil, water, and other

Figure 1. The rolling, dissected plateaus of southwestern Pennsylvania offer few locations suitable for wetlands, as suggested by this view of Greene County.

Figure 2. This wet meadow near Khedive in Greene County was identified as a marsh by the National Wetlands Inventory.

Figure 3. Herbaceous wetland fed by spring at the base of a coal waste pile near Tenmile Creek, Washington County. Like many such wetlands, this one was not identified by the National Wetland Inventory.

natural resources. [SMCRA §101(c), 30 *U.S.C.* §1201(c)]

Similarly, in 1966 the Pennsylvania Legislature determined that:

> Present mine subsidence legislation and coal mining laws have failed to protect the public interest in Pennsylvania in preserving our land. Damage from mine subsidence has seriously impeded land development of the Commonwealth. Damage from mine subsidence has caused a very clear and present danger to the health, safety and welfare of the people of Pennsylvania. Damage by subsidence erodes the tax base of the affected municipalities. [Bituminous Mine Subsidence and Land Conservation Act, 52 *P.S.* 1406.3]

Unfortunately, these findings are equally pertinent some thirty years later.

The severe environmental destruction so long characteristic of coal mines is neither necessary nor acceptable to the public. Mining and environmental protection do not have to be mutually exclusive. Federal and state laws and regulations have been established, ostensibly to enable mining activities to occur without sacrificing the environment. Yet impacts continue to occur, and the public remains unaware of current circumstances in the coalfields.

The public remains unaware of the ongoing environmental damage occurring in the coalfields.

The landmark Federal mining law, the Surface Mining Control and Reclamation Act (SMCRA), was enacted in 1977. It established certain minimum standards for environmental protection and was intended to be implemented by the States, which could elect to be more (but no less) stringent when protecting public resources. The enactment of environmental laws was only the first step; implementation by regulators and compliance with those laws by mine operators are other crucial steps if the anticipated environmental protection is ever to be achieved.

Today, more than 25 years after the enactment of SMCRA and complementary Pennsylvania legislation, many adverse environmental effects are still being caused by new mines. Some of the old problems have been addressed, but they have not been eliminated. At the same time, developments in the technology for extracting coal, such as longwall mining methods, have created new problems and raised new issues which are not adequately addressed by the pre-longwall laws and regulations. The environmental consequences resulting from the new high-extraction technology have not yet been fully appreciated by legislators or regulators.

The adverse impacts of mining activities today are supposed to be addressed at various steps in a mine-planning process that starts long before a permit to mine is ever issued. Applicants are supposed to demonstrate that they have studied the resources of their mine site and planned their operations so that environmental impacts are minimized. Adverse impacts that cannot be avoided are supposed to be offset in some appropriate manner through remedies of various kinds, including wetland replacement.

For example, to prevent acid mine drainage, wastewater is to be handled so as to minimize its potential to form acid. Treatment facilities are to be utilized to cleanse mine wastewater before it is discharged to a stream, and the discharge itself is to be monitored to detect any unexpected pollution. Additionally, bonds must be posted to address potential future problems in the event the mine operator goes bankrupt or the treatment facilities prove to be inadequate before the postmining site has been fully restored to a stable condition.

Two of the most notorious impacts historically associated with underground coal mining are stream pollution resulting from acid mine drainage and damage to buildings and water supplies as a result of subsidence. The

potential for these impacts currently receives some attention during the regulatory review process. In contrast, the potential and actual loss of wetlands as a result of longwall mining is virtually unrecognized despite State and Federal regulatory restrictions designed to protect what are now viewed as scarce and valuable natural resources. Wetlands fail to receive so much as a mention in the recent, controversial report by PADEP (1999b) on the effects of subsidence resulting from underground bituminous coal mining. This attests to the State's inability to identify environmental damages, not a surprising finding, given the scant inventory data it collects on resources at risk.

Wetland impacts are but one facet of the environmental damage from longwall coal mining in southwestern Pennsylvania. The people, through their elected representatives, have indicated that the natural resources of the Commonwealth must be protected. Laws and regulations protective of wetlands have been put on the books in Pennsylvania. The fundamental problem is that the permit review process is seriously flawed. At present it allows unnecessary environmental destruction by underground coal mining to an extent far beyond that allowed to other industries, to highways, or to commercial or residential development in the Commonwealth.

The permit review process for underground coal mines is seriously flawed, unnecessarily allowing environmental destruction far beyond that allowed for other types of construction or development.

The lax treatment afforded to wetlands is not an anomaly, unfortunately, but merely the tip of an iceberg of inadequate and unlawful implementation of the regulatory process for permitting new longwall mines in Pennsylvania. Streams are dried up or altered to the extent that fish and invertebrate populations are devastated. Entire aquatic ecosystems are permanently changed. Surface owners' homes are damaged, their mental and physical health jeopardized, their water supplies depleted or contaminated with methane and radon gases, and their daily lives disrupted, sometimes for years after the actual mining passes beneath them. Historic and archaeological resources are sacrificed. The quality of life in local communities is degraded. The productivity of waterways and of the land surface is severely impaired.

All those impacts deserve thorough attention beyond the scope of this report. Here, the focus is on wetlands and secondarily on aquatic resources; each of the many other classes of environmental impact from longwall mining deserves similar analysis.

SECTION II.

WETLANDS IN SOUTHWESTERN PENNSYLVANIA

As defined for both Commonwealth and Federal regulatory purposes, wetlands are:

> Those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas. [25 *Pa. Code* 105.1; 33 *CFR* 328.3; 40 *CFR* 230.3]

A wetland is land that is transitional in nature between uplands and open water, and it shares characteristics common to both. In practice, three parameters are used to recognize areas eligible for regulation as wetland: soil, vegetation, and hydrology. As the name implies, wetlands typically are *wet*, usually for some extended period of time each

year. Prolonged wetness may result from inundation or saturation associated with surface water or groundwater.

Wetlands are wetter than adjacent uplands because they receive more water, either because the topography traps precipitation and runoff, subsurface conditions prevent water from seeping down into the soil, groundwater reaches the surface to form springs or seeps, or these factors occur in some combination. Some wetlands may be wet year-round; other wetlands may be wet only seasonally, and thus dry for some part of the year. When wetland hydrology is seasonally absent, the wetland nature of an area may not be obvious to the casual observer.

Although water is an essential feature, a wetland is unlike a pond, lake, or river in that it is not permanently covered by water so deep that rooted plants cannot grow in it. A wetland must have "hydrophytic vegetation," that is, plants peculiarly adapted to tolerate oxygen-poor, wet substrate conditions. A wetland also must have "hydric soil," which is soil that formed when oxygen was lacking as a result of prolonged inundation or saturation.

Although scarce, wetlands are among the most productive natural ecosystems in the world, providing many benefits to people and to society as a whole.

All three parameters (water, hydrophytic plants, and hydric soil) must be present for an area to be regulated as a wetland. The Army Corps of Engineers *Wetland Delineation Manual* (USA-EL 1987) specifies the technical procedures to be used to recognize and delineate wetlands subject to both Federal and Pennsylvania regulatory jurisdictions. Regulated wetlands must be identified case by case on each property subject to mining or other construction activity.

The National Wetlands Inventory (NWI) is a nationwide resource map atlas of wetlands and other waters prepared by the US Fish & Wildlife Service (USFWS) using the categories of Cowardin *et al.* (1979). NWI mapping is based on the laboratory interpretation of high altitude, vertical aerial photographs. Although limited ground-truthing was employed, the NWI did not rely on detailed field investigations. As a result, NWI maps typically understate the actual extent of wetlands (Stolt and Baker 1995; Klemow *et al.* 1999). NWI maps are not intended to be used for regulatory purposes, but rather as one source of information in preparation for a formal field delineation (USA-EL 1987).

Whether large or small, bodies of open water such as lakes, farm ponds, and other artificial impoundments are easily recognized on aerial photographs and thus on NWI maps. Also, emergent wetlands are generally identified, as well as the larger forested wetlands along floodplains. In contrast, small areas of forested wetlands away from streams are seldom identified on NWI maps in Pennsylvania, despite their ecological significance. Like the streams in this region, few wetlands of any kind have been inventoried biologically in southwestern Pennsylvania.

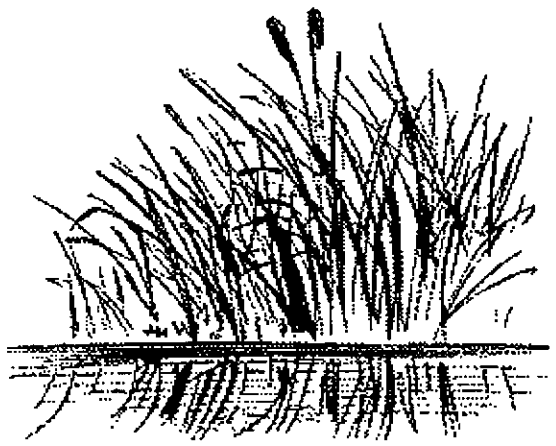
Wetlands are scarce features in Pennsylvania, where they have been reported to represent just over 1% of the total land area (Tiner 1990). Wetlands are particularly scarce in the unglaciated southwestern section of the Commonwealth where most Pennsylvania coal is mined today. Nowhere in Washington or Greene Counties are there wetlands to rival the expanse of Conneaut Marsh or the ubiquitous swampy depressions of the Poconos. Only a few of the larger, more conspicuous wetlands have been identified on available maps. To identify wetlands here requires careful fieldwork. Yet wetlands in southwestern Pennsylvania perform all the vital functions that they do everywhere else.

Fewer than 2,000 acres of vegetated wetlands were mapped by the NWI in Washington and

Greene Counties combined, representing only about 0.2% of the land area (Figure 4). The largest wetlands in the region are encountered along the floodplains of streams. Other wetlands are found in depressions outside floodplains or around seeps and springs along or at the bottom of hillsides.

Although scarce, wetlands provide many benefits to people and to society as a whole. Some wetlands protect property from floodwaters by stabilizing streambanks or shorelines or by providing areas where excess water can be temporarily stored and then gradually released. Many wetlands located along streams can trap the sediments and pollutants in runoff before they can get into the waterways. Some wetlands provide recharge for groundwater; others contribute to the baseflow of streams. Not every wetland will necessarily provide every potential function. In general, however, wetlands are critical to the health of any region's streams, groundwater, and wildlife.

Vegetated wetlands are among the most productive natural ecosystems in the world (Tiner 1987). The high level of biological activity associated with the often complex structure of their vegetation allows wetlands to retain or recycle nutrients and to perform other water-purifying functions. Some wetlands provide important aesthetic, educational, or recreational values for trapping, hunting, fishing, nature observation, and scientific study.



Wetlands provide habitat for an impressive diversity of plants and animals, including many which are considered rare or endangered. According to the PADEP (1997a), 32 of the 38 species of amphibians in Pennsylvania (84%) spend a majority of their time in wetlands. Twenty-five percent of all reptiles in the Commonwealth (11 of 41 species) spend nearly 99% of their life in wetlands. About 122 species of shore and wading birds, waterfowl, and some song birds perform most of their activities in, on, or around wetlands. Some game birds, such as turkey, depend on wetlands especially in the winter. Mammals associated with wetlands include muskrat, otter, and beaver. Of the more than 650 kinds of plants deemed rare, threatened, or endangered in Pennsylvania, 75% are hydrophytes (Schmid & Kartesz 1994).

For three hundred years wetlands were not treasured as natural resources in the United States (Vileisis 1997, Schmid 2000). Only as a result of an increased understanding of the functions of wetlands and a recognition of their values for flood protection, water quality maintenance, fish and wildlife habitat, aesthetic, recreational, and other uses, have wetlands been afforded special protection nationally and in Pennsylvania, at least on paper, for the past two decades.

The importance of wetlands for water quality protection and purification is exemplified in the fact that use of constructed wetlands is one of the more popular, long-term methods of treating acid mine drainage (AMD). The physical characteristics of wetlands and the biochemical processes that occur in them provide a natural and effective way to aid in the removal of metals and the amelioration of AMD. According to staff at the PADEP Bureau of Abandoned Mine Reclamation (BAMR), 16 projects undertaken in Pennsylvania in the past three years are using constructed wetlands to treat AMD. Indeed, almost all AMD-treatment systems currently being funded by BAMR utilize constructed wetlands in some phase or aspect of the treatment process.

Figure 4. National Wetland Inventory overlay for the Claysville, Pennsylvania, 7.5-minute USGS topographic quadrangle. The 50 vegetated wetlands (solid black) identified on this map occupy a negligible percentage of the maturely dissected Appalachian Plateaus in Washington County, but are critical components of the terrestrial and aquatic ecosystem. A majority of the features mapped by NWI here are manmade ponds. I-70 and US-40 extend east-west across the upper part of the quadrangle. The drainage is generally southwestward in this upper watershed of Wheeling Creek, a tributary of the Ohio River.

Figure 5. Typical sweetflag-dominated wetland on a valley floor, Washington County. This wetland was not identified by the National Wetland Inventory.

Longwall mining today is a major threat to natural wetlands. Hempel (1998) reported from his examination of internal studies from several Consolidation Coal Company mines that about 60% of all springs, ponds, and wells are permanently dewatered or degraded by longwall mining. Those waterbodies get most of the protection offered by mining regulators; the percentage of damaged wetlands can be presumed to be at least as high, given the virtual absence of any effort to identify or regulate wetland resources.

The Pennsylvania Constitution guarantees every citizen the right to clean air and pure water and entrusts the Commonwealth to conserve and maintain its natural resources for the public benefit.

SECTION III.

ENVIRONMENTAL PROTECTION IN PENNSYLVANIA

The overall framework for environmental protection in Pennsylvania is embodied in Article 1, Section 27, of the State Constitution (the so-called Environmental Rights Amendment), adopted in 1971, which states that:

> The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic, and aesthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.

During the 1970s, major environmental protection laws and regulations were adopted at both the Federal and State levels. One year after the 1969 passage of the National Environmental Policy Act (NEPA), Congress adopted the Clean Air Act (with major amendments in 1977). In 1972, the Federal Water Pollution Control Act (now the Clean Water Act) was adopted, also with major amendments in 1977.

These Federal laws provide several checks and balances aimed at assuring at least a modicum of environmental protection. Sections of the Clean Water Act (CWA) delegate to the States the authority to administer water quality protection programs. Federal oversight of the State programs, however, typically is retained by the US Environmental Protection Agency (EPA). Point -source discharges are regulated under the CWA Section 402 NPDES (National Pollutant Discharge Elimination System) permit programs administered by Pennsylvania and most other States. Section 404 of the CWA, administered by the US Army Corps of Engineers, regulates dredge and fill activities in wetlands and other waters of the United States. Many states, including Pennsylvania, have complementary programs that regulate activities in wetlands and other waters.

Pennsylvania enacted water pollution control legislation long before the environmental movement swept the nation in the 1970s. In 1905, the Purity of Waters Act (replaced in 1984 by the Safe Drinking Water Act) was passed to protect public health and assure supplies of clean drinking water by setting standards for domestic sewage disposal. Act 375, passed in 1913, made it illegal to discharge coal, culm, or refuse into streams. Act 355, also passed in 1913, regulated dams and encroachments in navigable streams (replaced by Act 325, the current Dam Safety and Encroachments Act of 1978).

On 22 June 1937, the original Clean Streams Law was enacted in Pennsylvania (Act 394, P.L. 1987). This law established the basic

State regulatory authority for protecting streams from pollution. The law has been amended a number of times since. The Clean Streams Law defines "pollution" broadly to include "contamination of any waters of the Commonwealth" by "physical, chemical, or biological" means.

Section 315 of the Clean Streams Law specifically addresses the operation of mines. It requires (among other things) that mine operations comply with other relevant environmental laws of the Commonwealth, notably including the Dam Safety and Encroachments Act, as well as the provisions of the Clean Streams Law itself. The Law authorizes the PADEP to regulate coal mining activities which may adversely affect Commonwealth waters (see *Plumstead Township Civic Association v. Department of Environmental Resources*, 597 *A.2d* 734, 738; *PA Commw.* 1991).

The Clean Streams Law regulations appear at 25 *Pa. Code* Chapter 93. Chapter 93 defines wetlands as one of the classes of surface waters of the Commonwealth. The existing uses of such waters are to be maintained and protected [25 *Pa. Code* 93.4a(b)]. When wetlands are dewatered or drowned by surface subsidence, or polluted by contaminated wastewaters, their existing uses are not maintained or protected.

As scientists and policymakers have learned more about the functions and values of wetlands, particularly during the past 30 years, wetland protection has become recognized as a critical component in the overall goal of water quality protection. Having lost half the wetlands extant in the eighteenth century, Pennsylvania must guard its remaining wetland resources if it is to fulfill the promise of its Constitution to current and future generations.

Any structure or activity that affects a wetland, stream, or other regulated body of water is subject to Chapter 105 wetland regulations, including mines.

Pennsylvania Wetland Regulation

In Pennsylvania, wetlands are specifically protected by the Dam Safety and Encroachments Act (DSEA), which became law in 1978 (P. L. 1375, No. 325, as amended). Two of the stated purposes of the Act (Section 2) are to:

> Provide for the regulation of dams and reservoirs, water obstructions and ***encroachments*** in the Commonwealth, in order to protect the health, safety and welfare of the people and property. [emphasis added]

and

> Protect the natural resources, environmental rights and values secured by the Pennsylvania Constitution and conserve the ***water quality, natural regime and carrying capacity of watercourses***. [emphasis added]

Several key definitions in the Dam Safety and Encroachments Act are as follows:

An encroachment is broadly defined in the Act as:

> Any structure or activity which in any manner changes, expands or diminishes the course, current or cross section of any ***watercourse***, floodway or ***body of water***. [emphasis added]

A watercourse or stream is defined in the Act as:

> Any channel of conveyance of surface water having a defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

A body of water is defined in the Act as:

> Any natural or artificial lake, pond, reservoir, ***swamp, marsh or [other] wetland***. [emphasis added]

The definitions quoted above from the DSEA are repeated in the regulations promulgated in 25 *Pennsylvania Code* Chapter 105: Dam Safety and Waterway Management. Any structure or activity that affects a wetland, regulated stream, or other body of water is subject to the DSEA and the requirements of the Chapter 105 regulations.

The Division of Waterways, Wetlands, and Erosion Control (DWWEC) [formerly the Bureau of Dams and Waterways Management - BDWM] in the Pennsylvania Department of Environmental Protection (PADEP) is responsible in general for the administration and enforcement of the Act and the Chapter 105 regulations. To implement the DSEA and the regulations, the PADEP established a permit review process. Impacts on wetlands and other regulated waters of the Commonwealth are not allowed until a written permit is obtained from or is registered with the DWWEC or its designee, except for certain classes of minor waivered activities in the non-wetland open waters of small watersheds. Permits for most activities regulated under Chapter 105 are issued by the six regional DWWEC offices. The Southwestern Regional DWWEC office is located in Pittsburgh (Figure 6).

The two types of permits issued under the Chapter 105 Program are for: 1) Dams and 2) Water Obstructions and Encroachments. A project that will have minimal impact may conform with the specific requirements of one or more of the eleven "general permits" for activities in relatively non-sensitive areas, or it may qualify for the abbreviated paperwork associated with a "small projects" permit. Regulated activities that may qualify for such minor approvals typically include temporary or minor road crossings, stormwater outfalls, and bridge deck replacements.

The authority to register "general permits" (GPs) under the Chapter 105 program has been delegated to 43 County Conservation Districts statewide. The Conservation Districts in Greene and Washington Counties have the delegated authority to register only two of the general permits (GP-6 for Agricultural Crossings and Ramps, and GP-9 for other Agricultural Activities). Since 1990, the registration of general permits for mining activities within mine permit areas has been delegated to the Bureau of Mining and Reclamation (BMR) in PADEP.

Activities in more sensitive regulated areas, or those that do not meet the strict limitations set for "general" permits, must obtain an "individual" permit which involves public notice and a comprehensive environmental review. Individual permit applications for most kinds of proposed construction are reviewed by one of the six regional offices of DWWEC.

An individual permit can authorize impacts on wetlands or other water bodies only after a specific, written determination has been made by PADEP that, among other things, the impacts have been minimized, there is no practicable, non-aquatic, alternative location for the activity, the project will not violate a State water quality standard, the project will not pollute groundwater or surface water resources or interfere with their uses, and the affected wetlands will be restored or replaced in acreage and function.

If a landowner wants to construct a factory or a residential subdivision in Pennsylvania, he must first identify any wetlands on his property and then design his development to avoid or minimize encroachments into them. If there are unavoidable wetland impacts associated with the development, the plans will be subject to the Chapter 105 regulatory review process. If even a fraction of an acre of wetlands must be disturbed, the builder will be involved in a permit review that can take up to a year or longer to complete. State and municipal public works projects (*e.g.*, highways and local roads) similarly must endure lengthy permit review if the projects affect wetlands. Unavoidable wetland losses greater than 0.05 acre (2,178 square feet) must be compensated.

According to statistics compiled by the Bureau of Water Quality Protection (PADEP 1999c), impacts to a total of 93,218 linear feet (17.65 miles) of streams were authorized by the six DWWEC offices (Figure 6) statewide in 1998. During that same year, a total of 70.9 acres of permanent wetland impacts (and 4.9 acres of temporary wetland impacts) were authorized by DWWEC. A total of 98.9 acres of wetland replacement (including open water) was required by DWWEC permit conditions. The PADEP does not keep track of wetland replacement actually accomplished (as opposed to that required on paper by permit condition), and their data do not include wetland impacts that are unacknowledged or unreported. Hence the available numbers must be viewed with some skepticism.

Within the DWWEC Southwestern Regional office, 103 waterway permits were issued authorizing 23,958 linear feet of stream disturbances during 1998. In addition, 36 permits covering all types of new construction other than mining were issued for impacting a total of 13.8 acres of wetlands, for which 15.0 acres of wetland replacement were required.

A Chapter 105 individual permit can authorize impacts on wetlands or other water bodies only after a written determination by PADEP that the project will not pollute groundwater or surface water resources or interfere with their uses.

The DWWEC regulatory process generally is working to protect wetlands throughout the Commonwealth. The same cannot be said of mining permits processed by the BMR, which silently authorize wetlands to be destroyed with virtually no restrictions.

Stream diversions, impoundments, and water withdrawals all are subject to regulatory review and approval because of the impacts such activities can cause beyond the boundaries of the properties where they take place. Proposed alterations of the quantity and flow of surface water and groundwater are subject to PADEP permit requirements statewide. When private or public water providers propose to withdraw significant amounts of groundwater, they are subject to regulatory oversight because of the detrimental effects such withdrawal can cause on wetlands and on existing water users (see Oley Twp. *v.* DEP and Wissahickon Water Co. 1996 *EHB* 1098). At least the same level of regulatory review should be afforded to the enormous longwall mines that disrupt surface and groundwater patterns in a section of the Commonwealth that has exceptionally scarce wetlands.

The criteria for approving structures and activities in wetlands are listed at 25 *Pa. Code* 105.18a; Subsection (a) deals with "exceptional value wetlands" and Subsection (b) addresses "other wetlands". Among the listed criteria, two of particular relevance to longwall mining activities are that:

> The project will not cause or contribute to pollution of groundwater or surface water resources or diminution of the resources sufficient to interfere with their uses. §105.18a(a)5 and §105.18a(b)5.

and

> The cumulative effect of this project and other projects will not result in a major impairment of this Commonwealth's wetland resources. §105.18a(b)6.

In reviewing any project that affects wetlands, including activities associated with the mining of coal, the PADEP must ensure that the project will not result in the pollution or diminution of regulated water resources (including wetlands). In addition, the cumulative wetland effects of the project (including all wetland impacts of a given mine) *and other projects* (including all other mines in a given watershed) must be evaluated by PADEP.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
REGIONAL OFFICES

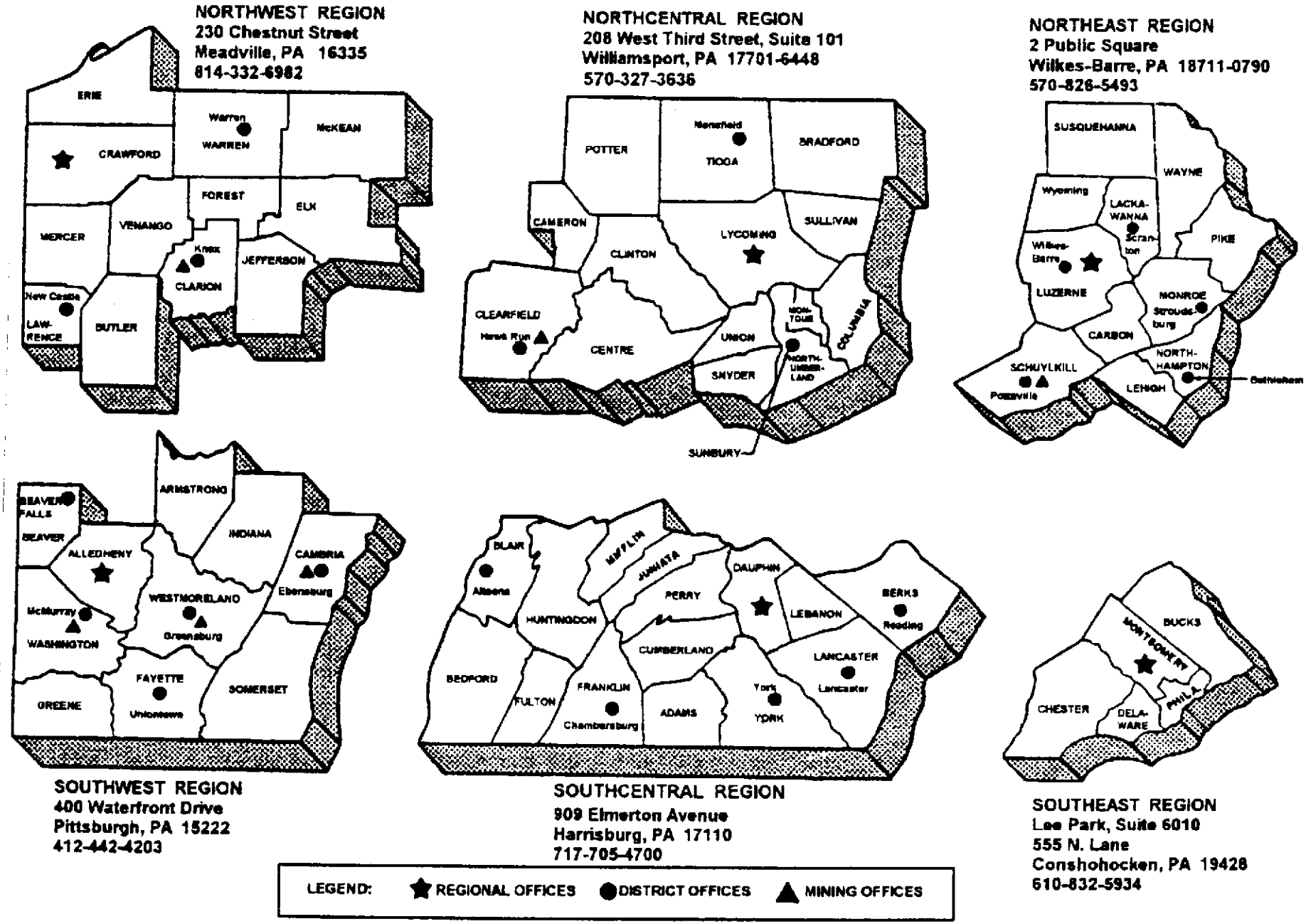


Figure 6. Administrative offices of the Pennsylvania Department of Environmental Protection.

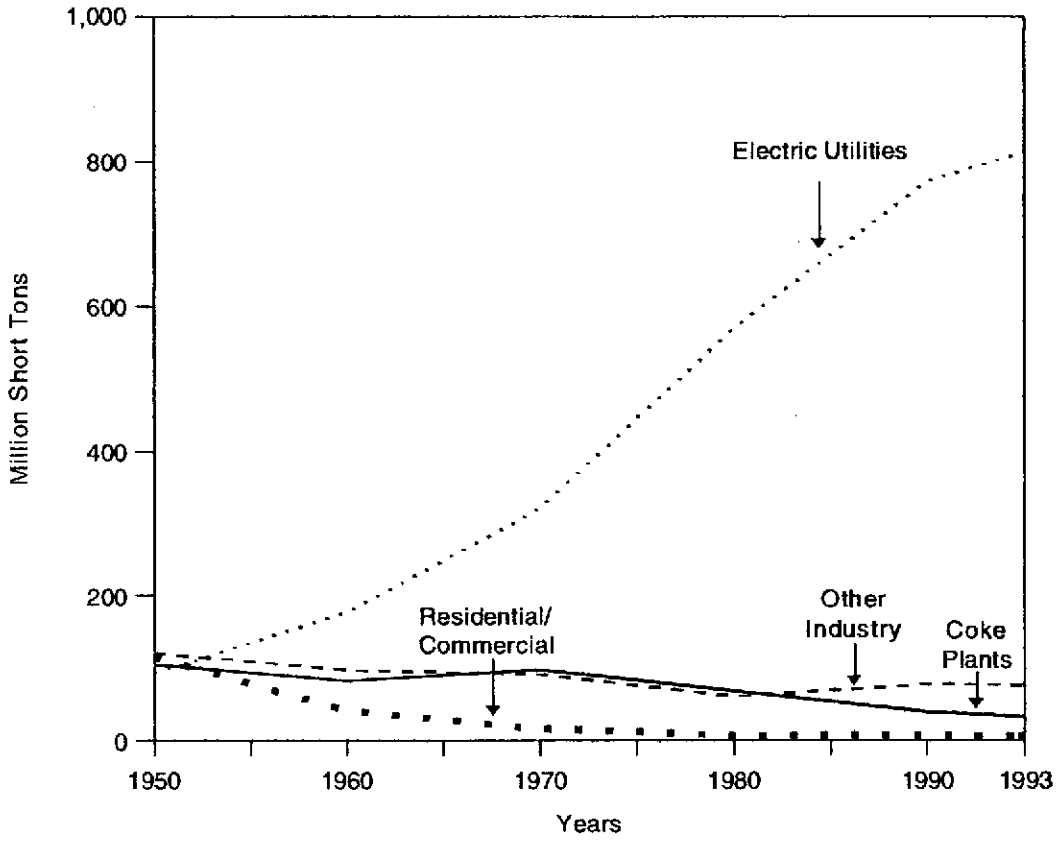


Figure 32. Coal use trends in the United States, 1950-1993 (EIA 1995a).

According to the most recent statistics available from PADEP, the six regional offices of the DWWEC issued a total of 676 individual Chapter 105 permits in 1998. Of these, 191 were for activities in floodways, 519 were for activities in streams, 203 were for activities to impact (fill or excavate) wetlands permanently or temporarily, and 31 were for activities in lakes, ponds, or reservoirs. In addition, a total of 3,790 Chapter 105 general permits were registered either by the PADEP regional offices or by County Conservation Districts in 1998.

Delegation of Chapter 105 Responsibilities to BMR

The Chapter 105 wetland regulatory process can be cumbersome, but it functions effectively for most industries and most types of construction activities throughout the Commonwealth. Mining is not exempt from any of the requirements of Chapter 105. A special arrangement has been established, however, for reviewing the wetland encroachments and obstructions associated with mining activities.

A 1981 agreement transferred responsibility for the administration and enforcement of the Dam Safety and Encroachments Act of 1978 for all mine-related operations from the Bureau of Dams and Waterways Management to the Bureau of Mining and Reclamation.

On 5 October 1981, an agreement was formalized between two offices of PADER (now the PADEP): the Bureau of Mining and Reclamation (BMR) and the Bureau of Dams and Waterways Management (BDWM; now the Division of Waterways, Wetlands and Erosion Control). According to the terms of this agreement (see Appendix A), responsibility for the administration and enforcement of the DSEA of 1978 was delegated to the Bureau of Mining and Reclamation for all mine-related operations, with the exception of certain mine-related dams which remain the responsibility of the BDWM.

The 1981 agreement applies to all underground as well as surface mining activities. The BMR District Mining Office in McMurray is responsible for reviewing permit applications for all underground bituminous coal mines in Pennsylvania, and for issuing PADEP approval pursuant to the DSEA and the Chapter 105 regulations.

The "one-stop" PADEP permitting arrangement was made "...in the interest of cost saving, public relations and prompt permit processing...", but these goals were not stated to preclude environmental protection in general or wetland protection specifically. The environmentally protective mandates of PADEP in administering the environmental laws of the Commonwealth were imposed upon BMR through the delegation agreement. Twenty years later they still lack implementation.

Any activity which results in the filling, excavation, or hydrological change of a wetland is an encroachment per Chapter 105. Wetland encroachments are to be regulated by BMR in accordance with the delegation agreement when it reviews proposed coal mining activities. Such activities may be associated with the excavation of coal, its preparation, and/or its transport. Numerous references to Chapter 105 and its requirements have been incorporated directly into the BMR's mining regulations (25 *Pa. Code* Chapters 86, 89, and 90), making it clear that the wetland protection provisions are to be applied, where relevant, to any type of mining activity.

Most construction activities throughout the Commonwealth that are authorized by a Chapter 105 general permit, and even some minor activities that may require an individual permit, can receive automatic Federal

authorization in accordance with the Corps' State Programmatic General Permit (SPGP-1). However, Chapter 105 activities that are authorized by BMR are not eligible for the SPGP and require Corps approval.

The delegation of Chapter 105 authority to BMR has not brought with it a concomitant increase in wetland expertise or staff. Among the technical professionals in each regional office of DWWEC it is common to find biologists, aquatic ecologists, or persons similarly qualified to evaluate the potential impacts of proposed construction on wetlands and other aquatic resources. In the Mine Permit Section at the McMurray District Office there are 5 mining engineers, 3 mining specialists, 4 hydrogeologists, 1 senior civil engineer - hydraulic [permits unit supervisor], and 1 mining engineer supervisor [section chief], but no biologists or ecologists. The lack of professionals having biological training is one factor likely contributing to the extraordinary discrepancy between BMR and DWWEC when reviewing applications for wetland encroachments in Pennsylvania.

BMR appears in general to ignore most Chapter 105 requirements for wetland protection. When approving longwall mining applications, BMR even ignores its own mining regulations which mandate compliance with Chapter 105. DWWEC requires landowner consent before wetland destruction can be permitted in Pennsylvania. BMR affords surface landowners no role in wetland permitting.

BMR records for 1998 indicate that statewide it authorized 7.41 acres of wetland impacts for surface mining activities and 12.69 acres of wetland impacts for underground mining activities. Of the latter, 0.72 acre of impacts were for three, separate underground mines (all three made contributions to the PA Wetland Replacement Fund in lieu of actual wetland replacement). In addition, a coal preparation plant was authorized to impact 7.37 acres of wetlands, for which 15.73 acres of wetland replacement were proposed. Finally, a refuse disposal facility was authorized to impact 4.6 acres of wetlands, for which 5.46 acres of replacement wetlands were required. The actual extent of wetland impact due to underground mining is far greater than the reported numbers indicate, as discussed at length below.

SECTION IV.

LONGWALL COAL MINING IN PENNSYLVANIA

The Commonwealth lies at the northeastern end of the Appalachian coal fields, which have produced about 90% of the coal historically mined in the United States (Figure 7). Bituminous ("soft") coal underlies more than 13,000 square miles in the western and central sections of the state.

Currently, Pennsylvania accounts for 7.11% of US coal production by all methods combined, ranking fourth (behind Wyoming, West Virginia, and Kentucky) in statewide production. Within Pennsylvania, Greene County had the highest total production in 1998 with more than 38 mst of bituminous coal (nearly all by underground methods), followed by Washington County with 10.2 mst. Greene and Washington Counties together accounted for more than 78% of all coal produced by underground methods in 1998 in Pennsylvania. Other top coal-producing counties in 1998 included Armstrong County (6.7 mst), Somerset County (6.1 mst), Indiana County (5.5 mst), and Clearfield County (4.5 mst). In all, 21 counties in Pennsylvania

Longwall mining expanded significantly when Pennsylvania mining law was amended in 1994 to allow subsidence where previously it was prohibited.

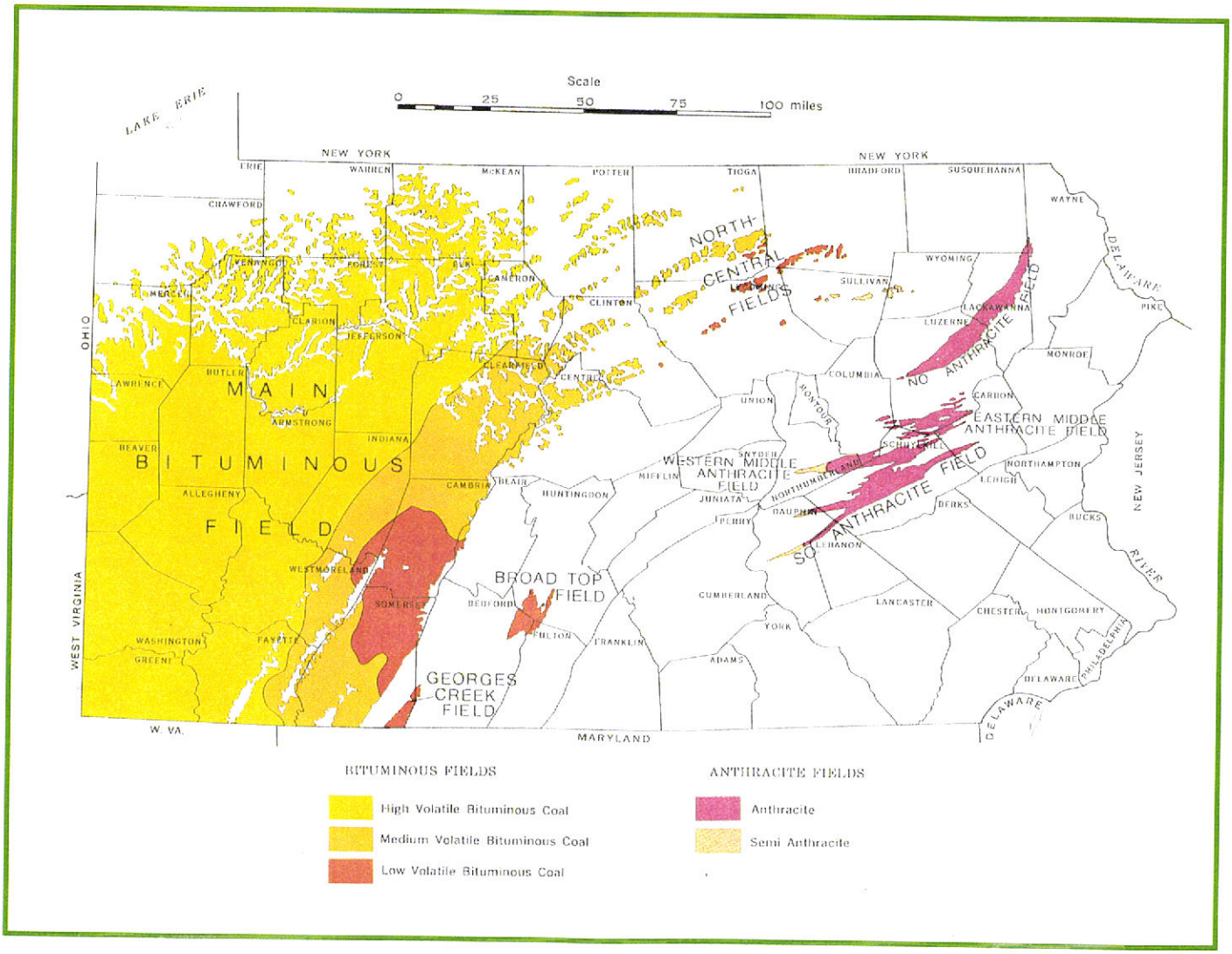


Figure 7. Coalfields in Pennsylvania (PADEP 1998b).

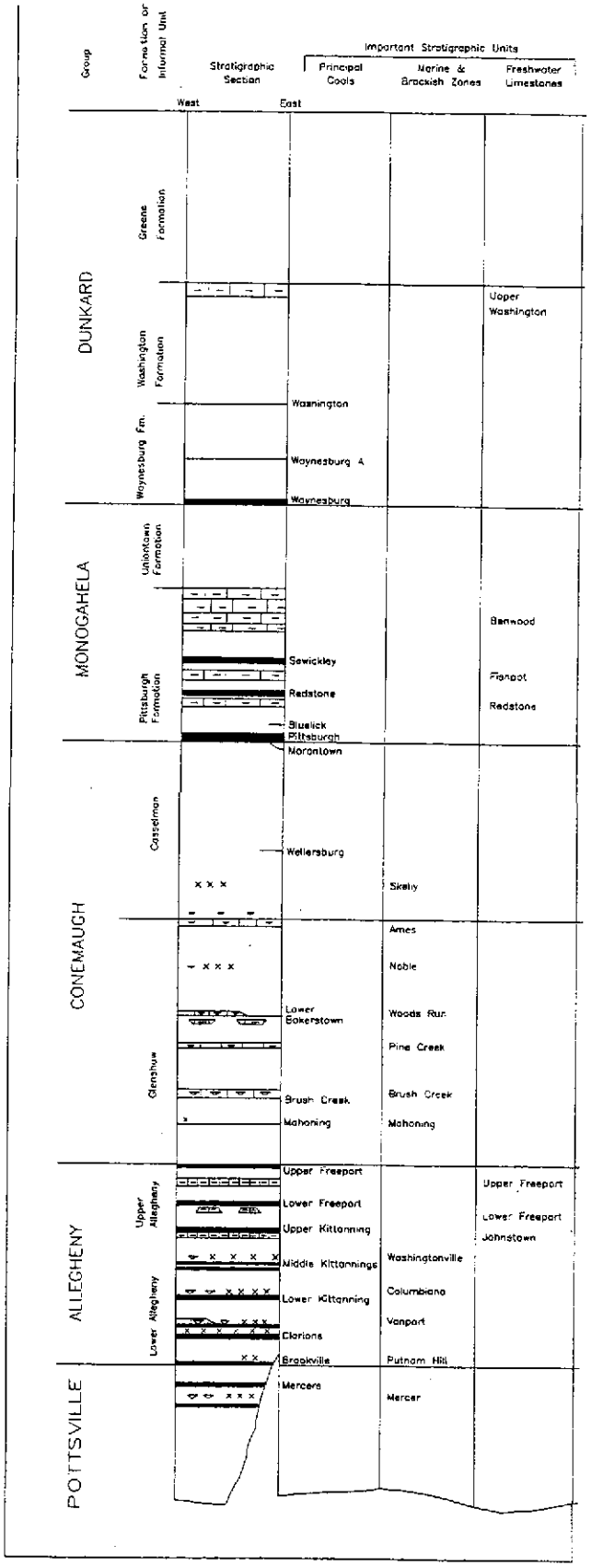


Figure 8. Generalized stratigraphic section showing the principal geologic formations in the bituminous coalfields of Pennsylvania. Approximate vertical scale is 1 inch = 200 feet; principal coal seams, listed in center column, are not to scale (PADEP 1998a).

produced bituminous coal in 1998 (PCA 1999).

The high-volatile Pittsburgh seam (Figure 8), historically the most important bituminous coalbed nationwide, covers more than 8,000 square miles in Pennsylvania, Ohio, West Virginia, and Maryland. The Pittsburgh seam averages more than 5 feet in thickness and currently accounts for more than 60 percent of the total bituminous coal production in Pennsylvania (PCA 1999). At present only the Pittsburgh seam is being mined using longwall technology, and the active mines are in Washington and Greene Counties.

Pittsburgh seam bituminous coal is especially valuable for metallurgical uses. However, the steelmaking industry has declined in importance nationwide, so most Pittsburgh seam coal today is used for electric power generation. Relatively high in the sulfur that causes air pollution, Pennsylvania coal must compete with lower sulfur coal imported from western States as well as from foreign sources in a marketplace that seeks out the lowest priced commodity. Its high energy content allows Pittsburgh-seam coal to be blended with coals lower in sulfur but less energy-rich.

Total PA coal production generally decreased during the last 20 years, while underground production nearly doubled, largely due to an increased use of the high-extraction longwall method.

Electric utilities are the largest consumers of coal in the United States, accounting for 90% of total coal use nationwide (Figure 32). Pennsylvania utilities, which likewise account for 90% of the coal consumed in the Commonwealth, used coal to generate 59% of their electric power output in 1998 (PCA 1999).

Most of the privately-owned coal resources in Pennsylvania are owned by parties different from the land surface owners. Mineral owners have the right to extract their coal, subject to certain restrictions and environmental regulations.

The two most common techniques currently used for the underground mining of coal are traditional room-and-pillar and longwall. Both of these techniques could be used at the same time in different parts of a single mine, but typically are not, except to the extent that mine entries in longwall mines resemble traditional room-and-pillar areas.

The most highly productive underground mining method today is longwall mining, which allows the rapid and complete extraction of coal from a seam. Longwall panels can be 1,000 feet wide and 2 miles long (Figure 9). Longwall mining is most effective where the coal seam is of uniform thickness (as the Pittsburgh seam tends to be) and where the seam has been unaffected by any previous mine activity. A dozen or more coal seams may overlie the Pittsburgh seam at any given location (Figure 8). Because of the subsidence typically associated with longwall mining operations, the subsequent recovery of coal from overlying seams is effectively precluded.

Coal production played an important role in the history and economy of Pennsylvania. In the 1700s, Pennsylvania coal fueled the Industrial Revolution in the United States. It supported the Colonial iron industry, Andrew Carnegie's steel mills in the late 1800s, and the electric power plants of modern times. Some 10 billion tons of bituminous coal have been mined in Pennsylvania over the past 200 years, nearly one-fourth of all the coal ever mined in the United States. Bituminous coal mining in Pennsylvania reached its peak in 1918, when 181,000 underground miners produced 177.2 million short tons (mst).

In the late 1970s and early 1980s, during the early years of the implementation of SMCRA, the proportions of coal produced by underground and by surface mining methods were about equal. In 1976, total bituminous coal production in Pennsylvania was 85.75

mst, consisting of 44.33 mst from underground mines and 41.42 mst from surface mines. Total coal production trended generally downward during the next 18 years (Figure 10), until the mid-1990s when it began to increase once again, only to decline once more in 1999.

The general decline in total coal production for several decades was largely a result of decreases in surface coal production. By 1998, more than three times as much bituminous coal was produced in Pennsylvania by underground as by surface mining methods. The 1998 underground production of 61.285 mst was higher by 52% than the production only ten years earlier, whereas the 1998 surface production of 18.260 mst was lower by 33% than the 1988 production (PCA 1999).

Not only has the underground share of total coal production increased dramatically during the past several decades, but it has also become significantly more efficient in terms of its human labor requirements. Statistics compiled by the Energy Information Administration (EIA) and reported by the National Mining Association (NMA 1999) reflect these efficiencies. In 1983, there were 3,337 coal mines nationwide, with 175,642 miners producing 782.1 mst. Fifteen years later in 1998, there were 1,750 mines (a decrease of 48%), with 81,000 miners (a decrease of 54%), yet total coal production exceeded 1,118 mst (an increase of 43%).

Production efficiencies related to longwall mining have led to significant reductions in the number of underground miners.

The trends in Pennsylvania are even more dramatic. Total underground bituminous coal production in the Commonwealth increased by 64% between 1983 and 1998, while the number of coal miners underground decreased by 81%.

Advances in coal-production technologies historically have contributed to increased productivity per unit of human labor. In the earliest underground mines, coal was produced by hand. Coal-cutting machines first became available in the late 1880s, and mechanical coal-loading equipment was introduced in the early 1920s (EIA 1995a).

The recent trends of increasing production and decreasing employment in underground coal mines to a large extent reflect an increased use of the high-extraction longwall mining method. The longwall method of mining was introduced in southwestern Pennsylvania relatively recently, about 25 years ago. During the early years of its use, it was treated as an experimental method, and the operations employing it were relatively small by today's standards (Figure 11).

Longwall mining started to become a major influence on the landscape of southwestern Pennsylvania only during the mid to late 1980s. Total longwall production nationwide increased 79% between 1993 and 1997 (*National Coal Leader*, Nov. 1998). Today longwall mining accounts for about 75% of the bituminous coal produced from Pennsylvania's underground mines (PADEP 1999b).

For example, Consol Energy, the fourth largest coal producer in the United States and currently the largest producer of coal from underground mines, traces its roots to 1864. (This company is now owned by RWE AG, a $71-billion conglomerate based in Germany.) In 1972, Consol started its first US longwall operation in West Virginia. By 1998, its 16 longwall mines accounted for 77% of Consol's total underground coal production. Of the top three underground coal mines in the United States in terms of 1998 production, two were longwall mines in southwestern Pennsylvania owned by Consol (Enlow Fork Mine, ranked #1 with 8.8 mst; Bailey Mine, ranked #3 with 8.3 mst; National Mining Association 1999). Consol currently controls five of the eight active longwall mines in Pennsylvania.

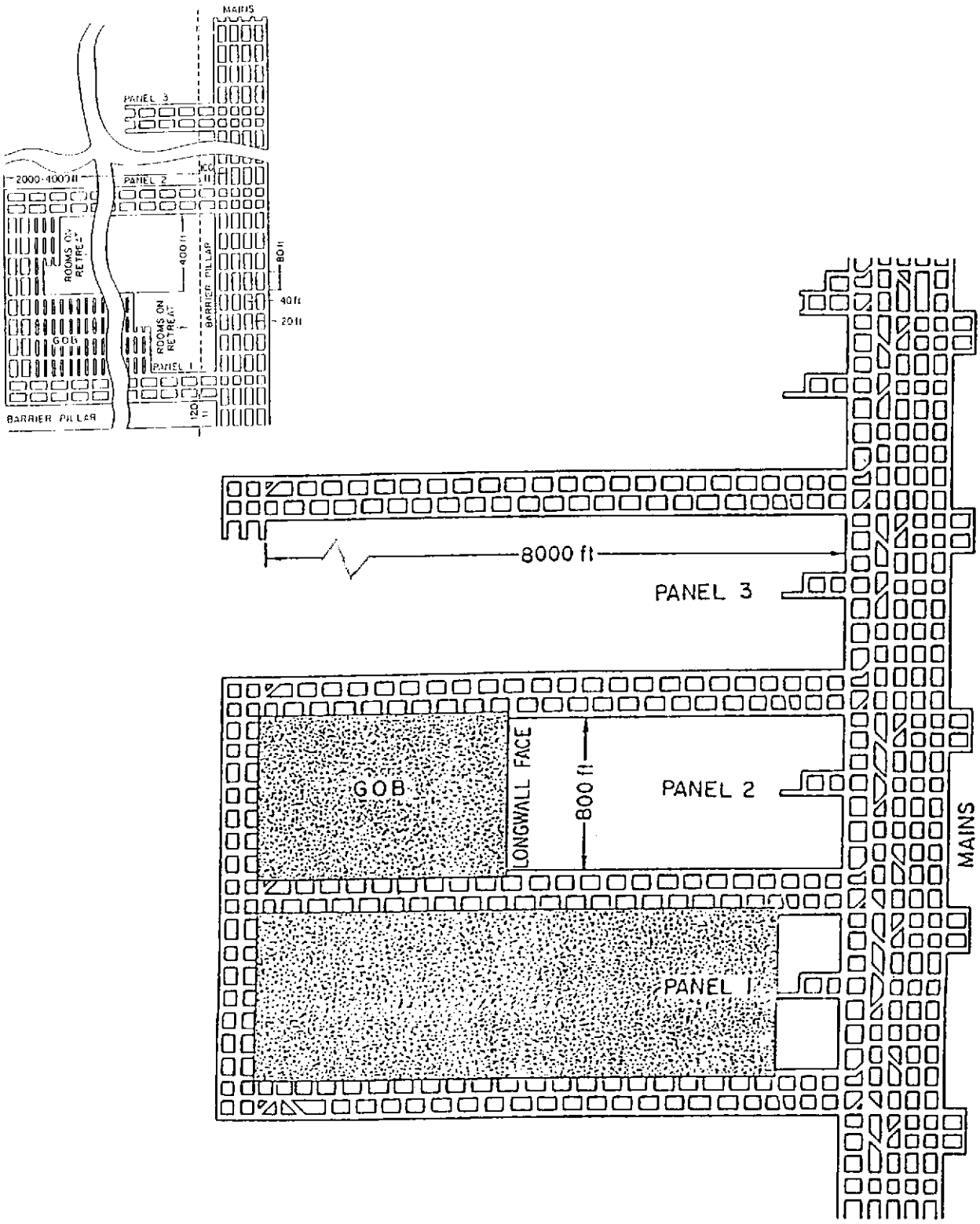


Figure 9. Typical layouts of room-and-pillar (upper left) and longwall mines. These plan views are drawn at the scale of 1 inch equals 800 feet. In the longwall panels, the mine roof collapses to form broad swaths of gob, and the subsidence may extend all the way to the surface. Above the coal support pillars left in the entries between the longwall panels, subsidence is much reduced.

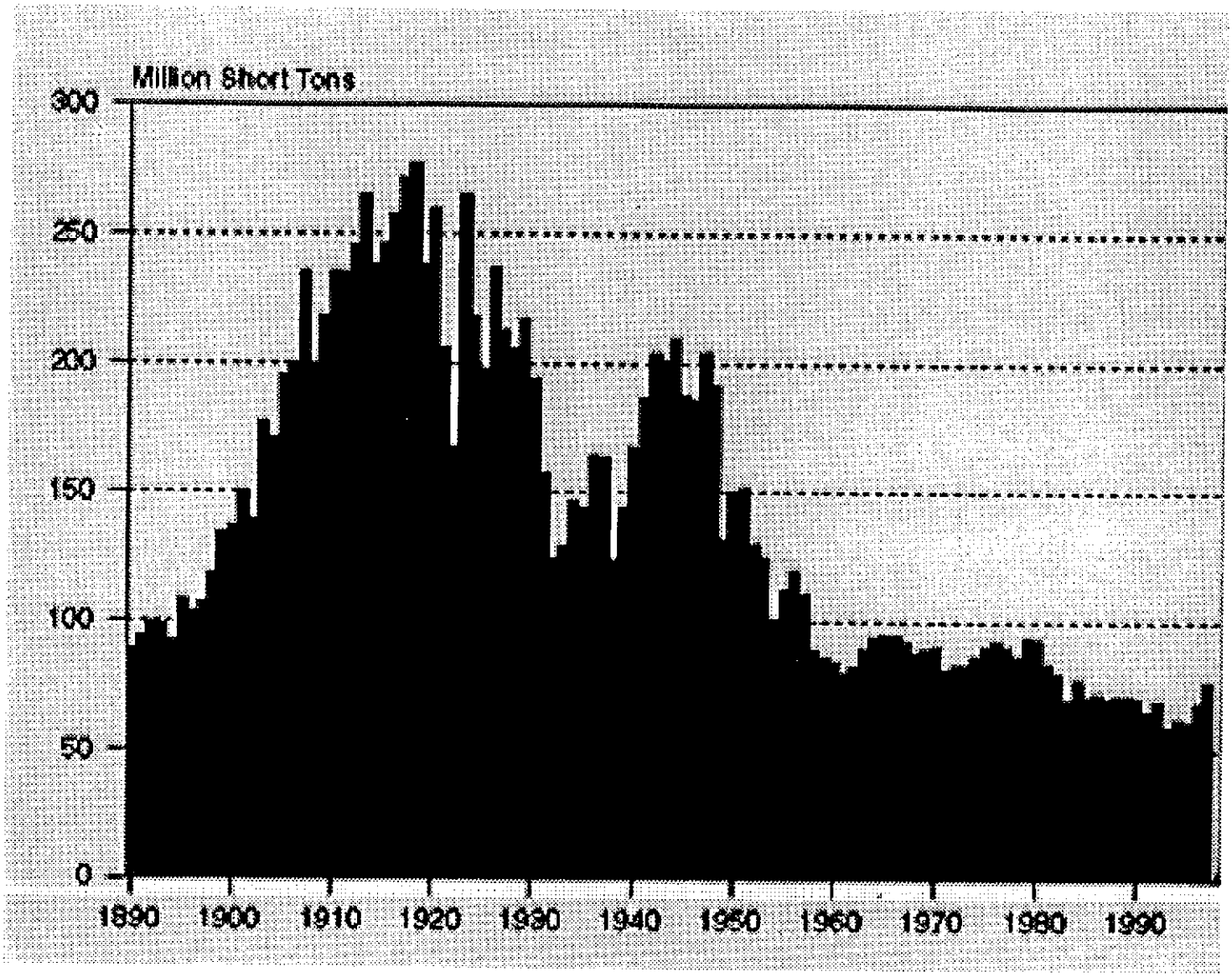


Figure 10. Coal production in Pennsylvania over the past century (EIA 1993b). At the present rate of production, coal reserves in Pennsylvania will last 300 years. Washington and Greene Counties each have about 4 billion tons of bituminous coal reserves. Hence their remaining wetlands are at risk for many years to come.

Consol Energy reduced the number of its operating mines from 55 in 1972 to 25 in 1998 (a 55% decline), while increasing total annual coal production by 27%. Between 1978 and 1998, Consol reduced its number of employees approximately 60%, from over 21,000 to fewer than 8,600 (McDonald and Brune 1999). As a result of its use of improved technologies, Consol increased productivity from 39.5 short tons per worker per day during the first quarter of 1999 to 46.3 tons during the first quarter of 2000 (*Coal Outlook*, 1 May 2000, p. 2). Efficient technology has led to significant layoffs of miners.

Throughout the United States there were 73 active longwall operations in 1993 (EIA 1995b). Ten of these were in Pennsylvania, all in either Greene or Washington Counties (Figure 12).

Eight of the ten longwall mine operations active at the end of the 1990s are currently active (Table 1). Three corporate entities control these eight longwall mines: the German conglomerates RWE which owns Consol (5 mines) and RAG which owns Cyprus Amax (2 mines), plus Ohio-based Maple Creek (1 mine). None of these entities is controlled by a Pennsylvania corporation. Yet these longwall mine operators get preferential treatment from PADEP when they are allowed to destroy wetlands with impunity, unlike hundreds of other permittees Statewide.

Individual longwall mines are major operations, affecting tens of thousands of acres over a period of several decades. The use of longwall mining in Pennsylvania received an enormous boost in 1994 when the state mining laws were amended by Act 54 to allow subsidence (with "restoration") where previously subsidence was forbidden. Longwall mining clearly is the technology of choice for the foreseeable future in southwestern Pennsylvania, and hundreds of thousands of additional acres are at stake.

In Pennsylvania in 1998, the 7,985 remaining miners produced 79.54 mst of bituminous coal (PCA 1999). In terms of numbers of mines, underground mines represented only 10% of all coal mining operations (53 underground vs. 472 surface operations in 1998), yet the output from underground mines accounted for 77% of Pennsylvania's total coal production (PCA 1999). The "Act 54 Report" prepared recently by the PADEP reported that the 10 underground mines using longwall methods at that time (the other 74 mines in the survey used traditional room-and-pillar methods) mined 63% of the total acreage from 1993 through 1998 (PADEP 1999b).

While coal production historically played an important role in the economy of Pennsylvania, more than 200 years of coal mining here also have left a legacy of environmental devastation. According to PADEP information (PADEP 1996, 1998b; Rossman *et al.* 1997), the legacy of coal mining in Pennsylvania includes the following facts:

- Pennsylvania has one-third of all abandoned mine-related environmental problems in the United States.
- More than 2,500 miles of Pennsylvania streams currently are degraded by acid mine drainage (AMD) pollution.
- 52% of all miles of waterways listed as "impaired" on Pennsylvania's 1998 Section 303(d) inventory list were degraded by AMD -- more than all other categories combined.
- Pennsylvania has 250,000 acres of unreclaimed coal mine land (abandoned mine land, AML).
- Some 2.6 billion cubic yards of coal refuse cover Pennsylvania's landscapes, material generally unsuitable for plant regrowth and potentially a source of AMD.

- The environmental problems caused by past coal mining affect 45 of Pennsylvania's 67 counties.

These statistics hint at the vast environmental destruction wrought by coal mining in Pennsylvania. According to the Federal Office of Surface Mining, Pennsylvania ranks first in the nation in the total estimated cost of environmental cleanup needed for the past mining of coal---over $15 billion. In recent years, Pennsylvania spending for mine reclamation has averaged $21 million annually.

Appropriations for abandoned mine reclamation from Pennsylvania's "Operation Scarlift", which provided on average $8 million annually for 25 years, ended in 1995. The Commonwealth's future receipt of money from the Federal Abandoned Mine Reclamation Fund, historically the principal source of expenditures for AMD and AML cleanup efforts, is in "jeopardy" due to the fact that the trust fund is scheduled to stop collecting revenues from active coal operators in 2004 (PADEP 1998b).

At the current rate at which public funds for reclamation are being spent, it will require more than 400 years to clean up the *known* contamination from *existing* abandoned mines.

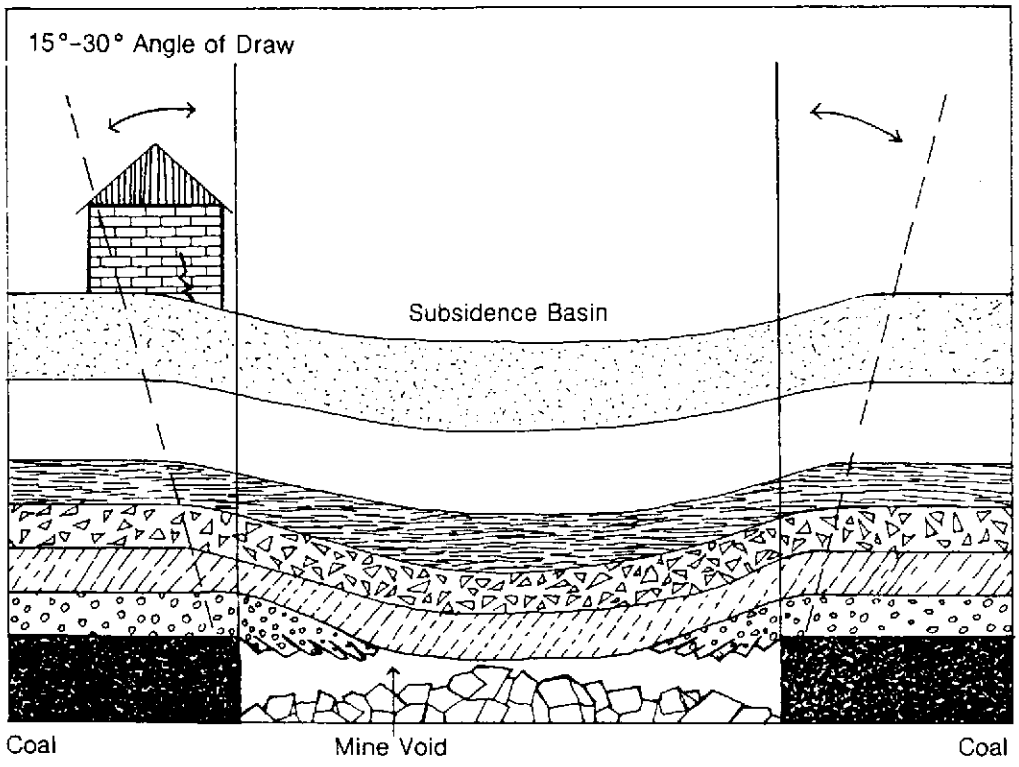
Under the current "Growing Greener" initiative, whereby PADEP is authorized to allocate nearly $240 million over 5 years in funding for environmental projects statewide, $3.5 million has been earmarked for fiscal year 1999-2000 for contracts for abandoned mine reclamation and AMD abatement projects. This pittance will help supplement, at least for the short term, the uncertain future public funding for abandoned mine cleanup.

Even at the rate at which authorized funds for publicly sponsored reclamation have been spent in the recent past, it will require more than 400 years just to clean up the *known* contamination from *existing* abandoned mines. Clearly it would be fiscally prudent, if nothing else, to prevent more such debacles in the future rather than try to clean them up afterwards. Modern technology and compliance with environmental requirements can reduce substantially the adverse impacts of new mining operations, but only if that technology is utilized and the environmental requirements are enforced.

As illustrated by the popularity of longwall mining, the coal-owning conglomerates have been eager to adopt labor-saving innovations that increase the recovery of coal, despite their high demands for capital investment. New technology that would protect the environment also costs money, whereas exporting environmental damage to surface owners, to the taxpaying public, and to the environment is much cheaper for the industry absent stringent enforcement of existing law. Coal is abundant on the national and world markets, and profit margins can be slim. Coal operators are understandably reluctant to spend money on environmentally protective technology or methods if they are not required to do so by agencies responsible for enforcing the laws of the Commonwealth.

If the technology exists and the regulatory structure is in place to prevent environmental destruction from coal mining, one might well wonder why such damage still occurs. The principal reason appears to be that PADEP (and the Federal agencies), which should be enforcing the environmental protections of existing laws and regulations and encouraging the use of protective technology in every new mine they approve, fail to do so---despite regulations that look reassuring on paper and notwithstanding the claims of their public spokespersons.

Because of the historic record and the extraordinary potential for environmental damage, the public might expect that applications for coal mining activities receive a more rigorous and comprehensive review to



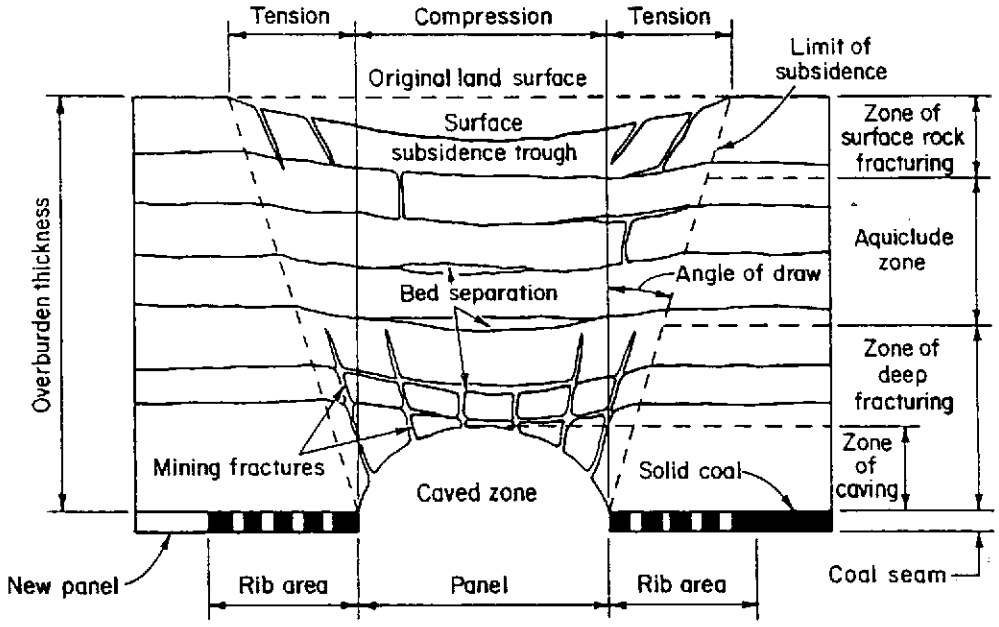


Figure 11. Schematic cross-sections (not to scale) showing subsidence and potential for water loss associated with longwall mining (from McElfish 1990). The support offered by rib areas at the entries lessens subsidence as compared with the centers of panels.

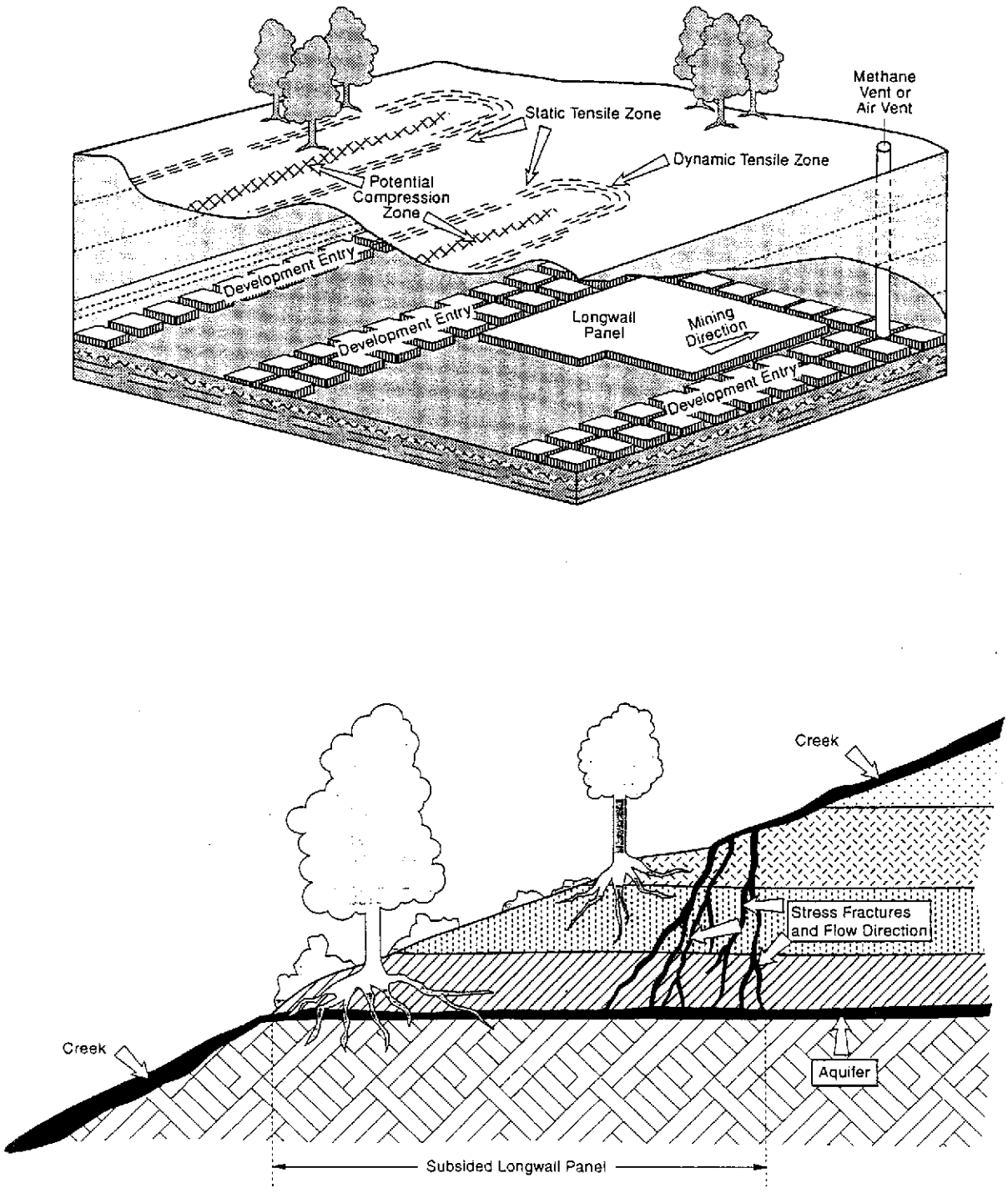


Figure 13. Block diagram (top) and schematic cross-section showing the relationship between panels and surface subsidence in the landscape above longwall mines (Briede & Dixon 1998). Entries with their room-and-pillar coal support typically retain their surface elevation, while the centers of panels subside, giving rise to a surface landscape of ridges and depressions. The cross-section shows how a stream or wetland can be dewatered by fractures from longwall panel subsidence that provide alternative pathways for near-surface waters.

identify potential environmental impacts than applications for other types of development, such as housing subdivisions. One might expect that a State agency whose very name involves the words *environmental protection* would be using every regulatory tool at its disposal to prevent further degradation of the Pennsylvania environment by coal mining. Yet this is not the case. Instead, the review of the permit process described in this report documents how the PADEP and its BMR downplay the adverse environmental impacts of mining while seeking to accommodate the mining industry by issuing mine permits expeditiously and by paying little or no attention to their own environmental regulations or to public or review agency comments.

> **undermine** *vt 1: to excavate the earth beneath*
> *2: to wash away supporting materials from under*
> *3: to subvert or weaken insidiously or secretly*
> *4: to weaken or ruin by degrees.*
> (G. & C. Merriam Co. 1974)

Longwall Mining Effects on Surface Water Resources

The word "undermine" has become a common part of our everyday language. Its use always has negative connotations, and for good reason.

By its very nature, underground coal mining entails a risk of surface subsidence as gravity induces the downward movement of the overlying rock strata to fill the void left where coal has been removed. Traditional room-and-pillar mining methods were designed to leave behind sufficient coal to support the mine roof, thereby preventing its collapse and surface caving. Properly designed room-and-pillar mines were not supposed to collapse; when they did, it was accidental. Surface subsidence is an unusual, unplanned failure of room-and-pillar mine design and technology. PADEP sells insurance to surface owners against such damage at premiums subsidized by taxpayers.

In some cases, secondary "robbing" of support columns without proper authorization would result in surface subsidence with unpredictable damage to human safety and property as well as to the natural environment. Pillar removal, known as "retreat mining," also leads to collapse of the mine roof.

Longwall mining, by contrast, induces deliberate, uneven subsidence of the land surface relatively quickly after mining. Longwall mining aims to remove virtually all of the coal in rectangular panels from beneath extensive areas. The consequent mine roof collapse is a normal, or "planned", part of the longwall operation. The entries, where some support coal is left, subside less than the panels where all coal is removed (Figure 13).

The United States Office of Surface Mining describes longwall mining and the surface effects of subsidence as follows:

> The extraction of material from underground mines without leaving adequate support for the overlying soil and rock layers (the overburden) results in their collapse above the mine into the void and may result in the subsidence of surface lands over the mined-out area. The downward movement can be accompanied by horizontal movement, strain, tilt, and even by locally upward movements of the land surface. Most surface subsidence in the United States has been attributed to the underground mining of coal....[T]roughs (depressions in the ground surface formed by the sagging of the overburden into the mined-out area) are commonly related to subsidence of a longwall mine. ... The surface area affected by subsidence can be larger than the mined-out areas as a result of angle of draw. ... Ninety percent of the surface subsidence caused by longwall mining occurs within 4 to 6 weeks of mining. ... Subsidence can lead to functional impairment of surface lands, features, or facilities. (USOSMRE 1999)

The PADEP also recognizes the effects of longwall mining on surface water resources. In the introductory passage to its Technical

Guidance Document entitled *Perennial Stream Protection* (PADEP 1997c), it states:

> As documented by case histories and technical literature, underground mining operations have induced stream flow losses. ...in some cases they have adversely impacted stream uses.

There is no question that longwall mining causes adverse surface effects due to subsidence. Indeed, the certainty of prompt subsidence is promoted as one of the "advantages" of longwall methods over more traditional underground mining methods, in that the adverse effects can be observed shortly after mining and can be "repaired" by the mine operator. Just because subsidence from longwall mining is certain and to some extent predictable, however, does not make it benign, particularly if *all* of the adverse effects are not anticipated, acknowledged, or reported and if the effects that are acknowledged are not adequately remedied by the mine operator (Figure 14).

Wetlands can be damaged by longwall coal mining by fill or regrading for surface construction, by ponding, or by loss of water through cracks and fissures created by subsidence.

The meager existing literature on longwall mining of coal shows physical, chemical, and biological changes in streams as a direct consequence of mining (Tibbott 1998, CECI 1999). Replacement of riffles by pools due to subsidence can reduce aquatic habitat scores by 50% and decrease the number of species present (Kepler 1999). Subsidence and fracturing can induce the acidic water associated with overlying coal seams to enter wells and streams. Similarly, adverse changes can and do occur in wetlands. The impacts on streams as a result of longwall mine subsidence have only recently begun to receive serious attention through formal studies. Similar impacts on wetlands have not yet received the same level of attention.

Like structures (Figures 15 and 16), wetlands can be damaged by longwall coal mining activities in a variety of ways. There can be direct impacts when wetlands are filled or regraded in connection with the construction of mine entries, preparation plants, haul roads, refuse disposal areas, boreholes, airshafts, or other mine-related activities that take place on the surface. Hydrologic impacts on wetlands can occur when surface water is lost as a result of direct drainage into underground mine voids or as a result of diversion into the cracks and fissures created by subsidence. Wetlands can be converted into ponds when excess water is trapped in subsided depressions (Figure 17). Acidic discharges also can have deleterious effects on wetlands.

Most wetlands and streams affected by longwall mining have not been previously influenced by coal mining activities, and thus they display the natural biological communities typical of freshwater resources in southwestern Pennsylvania (for example, see AEC 1991). The effects of "planned" subsidence can be just as devastating to these resources as more obvious regrading or fill activities. When the hydrology crucial to a wetland's existence is removed or excessively augmented, the wetland first loses its ability to function effectively and ultimately ceases to exist altogether.

Although subsidence from longwall mining is intentional and certain, its precise extent and impacts are less predictable. Nevertheless, prediction of wetland loss and formation apparently has never been attempted by mine operators or required by BMR.

The surface damage from subsidence that occurs to houses, barns, highways, streets, railways, springs, wells, pipelines, streams, wetlands, farm fields, forests, and other surface features often is not evident to the casual observer. The undulating surface imposed by subsidence cuts across the more imposing topography of hills, valleys, and

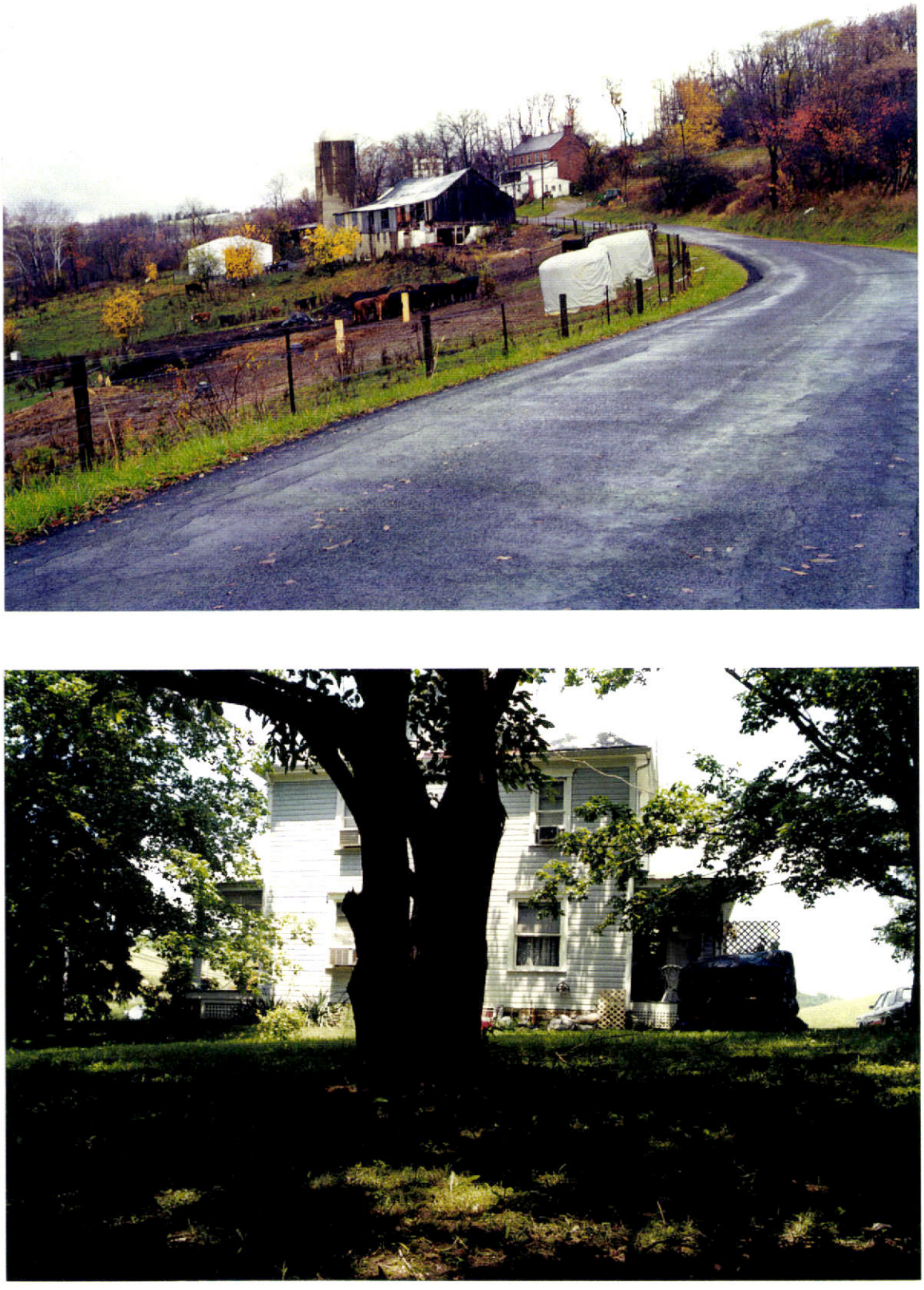


Figure 14. Replacement water supplies (known locally as "water buffaloes") in Washington (top) and Greene (bottom) Counties. Loss of springs and seeps following longwall mining dries up wetlands and streams; chlorinated drinking water can cause upset to livestock.

Figure 15. Subsidence damage to Interstate 70 following longwall mining, Washington County. The bridge opening can no longer accommodate two lanes of traffic. Wetland damage is not so obvious to the casual observer.

streams on the surface landscape. Typically, the most obvious sign that an area has experienced subsidence is the appearance of "water buffaloes" (drinking water replacement tanks) in homeowners' yards (Figure 14). Scaffolding and bracing around homes and businesses may help to reduce structural damage during the most active period of subsidence (Figure 15). In general, the thicker the coal seam that is removed and the closer it lies to the surface, the greater the resulting surface subsidence.

On 27 April 1966, the Bituminous Mine Subsidence and Land Conservation Act (BMSLCA) was enacted by the Pennsylvania legislature. The BMSLCA was adopted because damage from uncontrolled mine subsidence was acknowledged to be seriously impeding land development, eroding the tax base, and causing a clear and present danger to the public health, safety, and welfare (PADEP 1999b). The BMSLCA was amended in 1980 and again in 1994, the latter amendment commonly known as "Act 54".

Despite a requirement to consider backstowing, and to provide a rationale if opting not to use it, mine operators have been encouraged to ignore this procedure that could significantly reduce subsidence impacts.

One of the original elements of the BMSLCA was "[t]he prevention of damage from mine subsidence" (emphasis added). The Act 54 amendments shifted that policy in a most significant way to "[t]he prevention or restoration of damage from mine subsidence" (emphasis added). Previously subsidence damage to many resources was to be *avoided*, but since Act 54 it has been *allowed* in Pennsylvania. Few of the resources previously protected under the policy of "prevention" now are included under the policy of "restoration". Wetlands and other natural resources typically have no standing or representation at all in the Act 54 "restoration" process. The unfortunate reality for many surface owners who now are victimized by "planned" subsidence is that any restoration or other compensation they ultimately receive may only be partial and may come years after the damage is experienced.

Where subsidence damage can be predicted, human occupants and property owners can be forewarned to anticipate the mining-induced earthquakes. Residents often must move out of their dwellings during the period of most active surface movement while cracks appear and poisonous gases are most prevalent (Figure 16). Wetlands, streams, and other natural resources cannot simply get out of the way.

One method to prevent or minimize subsidence, whose use is required in certain limited situations, is to leave areas unmined so as to provide the necessary surface support. Mine operators are reluctant to do this because (a) it requires that more of the natural resource be left in the ground, and (b) it interrupts the efficient flow of the longwall operation and thereby adds to its costs.

A second method to prevent or minimize subsidence is to backfill, or backstow, waste material into the mine void during the brief interval after coal removal but prior to advance of the hydraulic jacks allowing roof collapse. Backstowing technology has been used successfully for many decades in underground coal mines in Europe that must minimize surface damage in populated areas. To the extent that the underground void is filled with waste coal, overburden, and other solid materials, the opportunity for surface subsidence necessarily is reduced (Bise *et al.* 1993, NAE 1975). The reduction in subsidence can be highly significant in lessening surface damages both to wetlands and to structures.

A secondary benefit of backstowing is that it reduces coal refuse piles on the surface. Such piles otherwise are a necessary and

highly damaging consequence of underground mining, destroying streams, wetlands, and valleys on the land surface (Figures 17 and 22).

Coal wastes generated by a Pennsylvania longwall mine typically make up about one third of the total material extracted from the mine. The volume of such waste from current operations alone, if backstowed, is not sufficient to fill the void left by the removal of salable coal. Hence there is ample room to accommodate old piles of coal wastes in new longwall mines (Figure 17). There currently is no economic or regulatory incentive for mine operators to dispose of coal wastes (new or old) underground, however, despite the empty rhetoric of Pennsylvania regulations. So there is no backstowing.

PADEP regulations ostensibly require that backstowing be used. In the Chapter 90 regulations relating to coal refuse disposal, the primary demonstration required to obtain a permit is as follows:

> The person who conducts coal refuse disposal activities shall maximize, to the extent technologically and economically feasible and consistent with applicable deep mine safety requirements, the underground disposal of refuse in abandoned, inactive or active deep mines, or in abandoned or unreclaimed surface mines. The application shall include a statement specifying whether or not disposal of coal refuse in abandoned, inactive or active deep mines or in abandoned or unreclaimed surface mines is proposed for the operation and, if not, outlining the technical, economic and safety considerations prohibiting such disposal. [§90.3. General requirements: permit]

Despite this apparent requirement at least to consider backstowing, and to provide a rationale if opting not to use it, mine operators have been encouraged virtually to ignore it.

To date there has been no inventory of wetlands in areas above longwall mines prior to mining nor any followup inventory of wetland losses and gains in those areas post-mining. Wetlands created by subsidence are not "planned" in terms of size, location, or type.

Coal industry representatives argue that alternatives to prevent subsidence are impractical and too costly to implement. For example, in the Vesta Mining Company application (Permit #63951601) for a new 227-acre coal waste disposal pile, the only discussion of backstowing was as follows:

> [Backstowing] is seldom used. This method involves mixing the fine refuse with water to produce a slurry then injecting this slurry into worked out portions of the underground mine. Unfortunately, this method is very costly, won't work in longwall mines (because the roof is collapsed eliminating the mine voids) and doesn't include the coarse refuse. (Killam 1994a)

The disposal of coarse refuse underground was not discussed at all by the mining consultant, particularly not as a means of lessening subsidence. Instead, the BMR approved a non-slurry spoil disposal pile 250 feet deep that would bury 2 miles of permanent stream with a diverse fauna, plus more than 3 acres of acknowledged wetlands along the stream corridor. Available, inactive room-and-pillar mines of the Vesta complex as well as the proposed new Hillsboro longwall mine were conveniently nearby for backstowing but were not even considered by applicant or regulators. The Chapter 90 refuse disposal regulations focus on the surface disposal of coal wastes, not their return underground, despite the decorative fig leaf of §90.3.

If a strong regulatory stance were to be taken by the PADEP, requiring nothing more than strict enforcement of its existing regulations, it might create the necessary incentive to mine operators to explore the feasibility of various alternatives to prevent or minimize subsidence effects. With a balance of "carrot" and "stick" approaches, the PADEP could create an environment whereby mine operators would

Figure 16. Typical structures undergoing subsidence above a longwall panel along Interstate 70, Washington County. The mine is several hundred feet below ground.

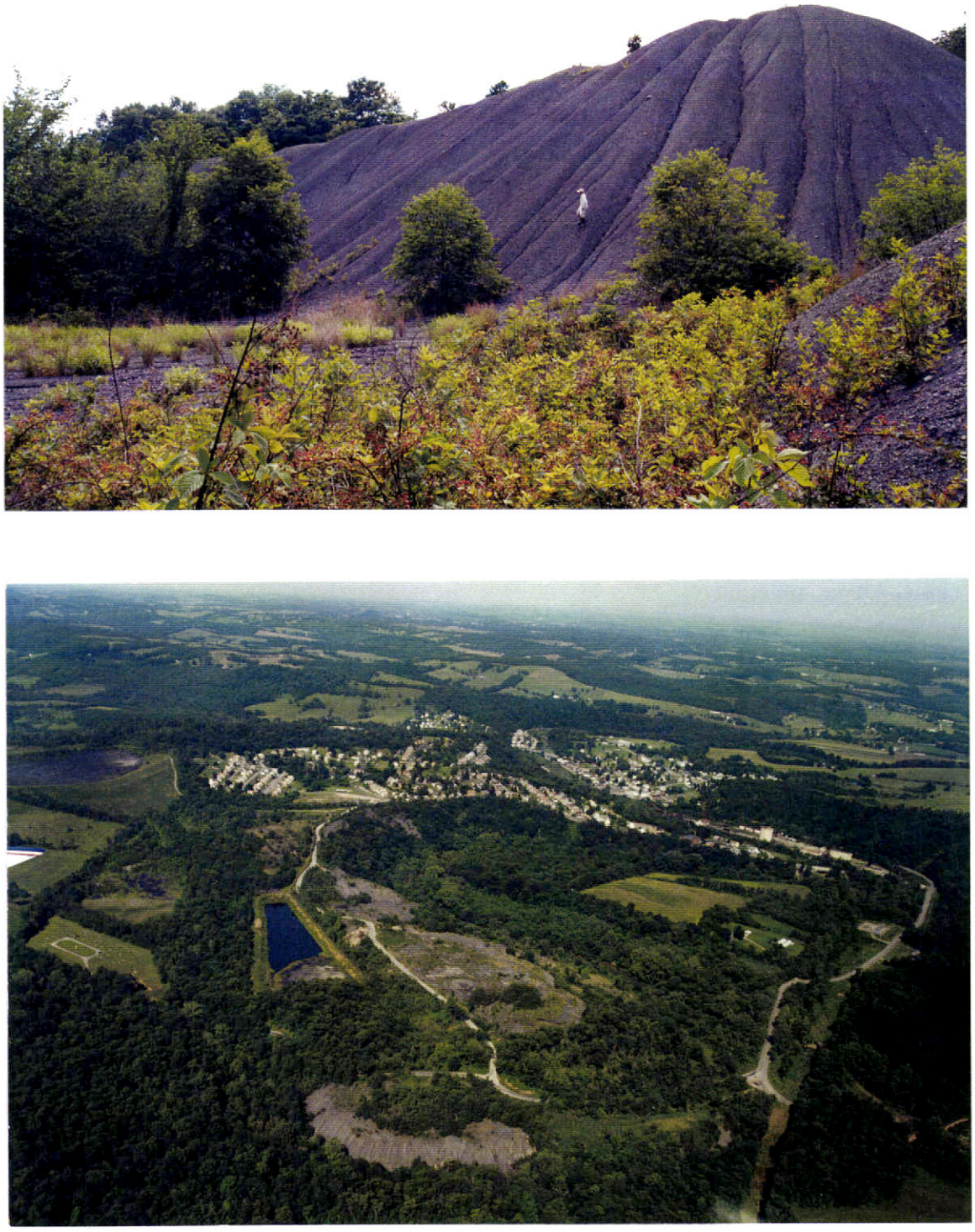


Figure 17. Spoil piles from traditional room-and-pillar mining at Marianna, Washington County. Small wetlands in the vicinity are not visible from the air or identified by the National Wetland Inventory.

refine innovative new technologies to address the subsidence problem.

Unfortunately, mine operators in Pennsylvania currently lack *any* incentives to minimize subsidence impacts on wetlands and other surface resources. The only adjustments required by PADEP are those by surface landowners and the public at large, who must continue to deal with the damage and distress that "planned" subsidence imposes upon them by mine operators authorized by the State to extract privately-owned coal. The traveling public must absorb the cost of delay during highway and public road closures and repairs, while taxpayers must defray the costs of road repair. In contrast, wetland losses are seldom noticed.

The BMR repeatedly has ignored its own regulations and failed to require permit applicants to consider existing technology to minimize subsidence and to mitigate unavoidable effects properly. The unfortunate and unnecessary wetland impacts that result are documented in this report. The disastrous effects of subsidence are not limited, of course, to wetlands.

Wetlands inadvertently created by subsidence are not "planned" in terms of size, location, or type, and thus cannot be credited as "replacement" for wetlands impacted.

Wetland Creation By Subsidence

Wetland destruction by subsidence from longwall mining currently is inevitable, because wetlands are completely ignored by mine engineers and regulators alike. Mine-induced subsidence can accidentally create new wetlands by producing new surface depressions or by turning existing wetlands into ponds.

Although wetlands can be and have been created as a result of longwall mining activities, there currently is no basis for assessing any changes in wetlands as a result of longwall mining across the landscape of southwestern Pennsylvania. There is good reason, however, to anticipate significant net losses from mine subsidence.

If a trough is created at the ground surface above the center of a longwall panel, it can cause surface water to drain and collect there. Depending on site-specific soil and other physical characteristics, water may periodically or permanently become ponded and allow wetland soil and plants to develop. If a wetland already exists, however, too much water can turn the wetland into an open water pond (Figure 18).

There is no reason to expect that wetlands dried up or drowned in one place are replaced by new wetlands created elsewhere in the same watershed. To date there has been no inventory of existing wetlands in the areas above the longwall mines prior to mining nor any followup inventory of wetland losses and gains in those areas post-mining. The wetlands created by subsidence are created inadvertently. They are not "planned" in terms of size, location, or type.

The wetlands created by subsidence typically occur on land not owned by the mine operator. These new wetlands may be viewed as a nuisance by the surface landowner. If a wetland is created in an inconvenient location, such as in a lawn or farm field, the landowner understandably may request the mine operator to eliminate (drain) it promptly. No permits to drain such wetlands are required by PADEP. Drain pipes outletting at streams can be observed on farmlands in areas subsided by longwall mine panels (Figure 19).

Wetland Creation for Impact Mitigation

In a typical Chapter 105 individual permit, wetlands impacted by a proposed project must be replaced by the creation or restoration of new wetlands as mitigation. BMR, however, does not require mine applicants to address the issue of wetlands lost to subsidence, regulations notwithstanding. Even for wetland impacts associated with the surface activities of underground mining operations, no examples of actual wetland replacement could be found.

The PADER (1992) prepared a guide for the intentional creation of replacement wetlands by permittees. Such creation of wetlands to mitigate unavoidable losses authorized by PADEP permit generally has been expensive and plagued by lack of success (McCoy 1992, Kline 1991, Jackson 1990). No similar review is available for mitigation projects initiated since PADER guidance became available.

Eight Pennsylvania Department of Transportation (PennDOT) wetland mitigation projects constructed during the 1980s across the State produced 10.7 acres of replacement wetlands at an average cost of just under $150,000 per acre. Only 25% of these replacement areas were deemed fully effective as functioning wetlands when inspected by the US Fish and Wildlife Service (McCoy 1992).

In Washington County, the new wetlands created for impacts associated with the Monongahela Valley Expressway cost $282,367 per acre, and the 2.7 acres achieved an "effectiveness score" of only 50%. Such experience is the basis for resource agency demands that wetlands permitted to be filled be replaced at acreage multiples greater than 1:1. In short, intentional wetland replacement is not cheap, and it may not be effective. Plans must be designed by competent professionals, carefully implemented by knowledgeable supervisors in appropriate sites, and monitored following construction, if functioning wetlands are actually to be created (other than by accident) in the coalfields or anywhere else.

SECTION V.

WETLAND PROTECTION IN MINING REGULATIONS

The environmental regulations that apply specifically to underground coal mining activities are set forth in the following chapters of Title *25 Pennsylvania Code*:

- **Chapter 86**: Surface and Underground Coal Mining: General
- **Chapter 89**: Underground Mining of Coal and Coal Preparation Facilities
- **Chapter 90**: Coal Refuse Disposal.

Specific wetland protection provisions of the Chapter 105 regulations have been incorporated directly into PADEP coal mining regulations.

Underground mining activities regulated in accordance with Chapters 86 and 89 include both the "[s]urface operations incident to underground extraction of coal..." and the "[o]peration of a mine...and any other work done on land or water in connection with a mine." The general impression gained from examining the PADEP regulations is that they address room-and-pillar mining more adequately than longwall mining. Subsidence is an inevitable aspect of the longwall method of mining, absent the effective refilling of the void left where coal has been removed. In contrast to room-and-pillar mining, the subsidence associated with longwall mining is purported to be "generally uniform and more predictable" (EIA 1995). This characteristic is viewed as

Figure 18. Marsh identified by the National Wetland Inventory near Khedive, Greene County, now impounded by panel subsidence above a longwall mine. The concrete pad and driveway are all that remain of a former residence, except for the now-flooded septic tank.

Figure 19. Streamside pastures along Enlow Fork (top is upstream, bottom is downstream) in a reach where drains have been constructed to prevent wetland development following subsidence from longwall mining, Greene County. The streambed here has been converted from riffle to pool habitat, with consequent reduction in fish and other aquatic biota.

an advantage of longwall mining to the extent that the effects of subsidence can be anticipated, affected parties warned when earth movement is expected to peak, and impacts somewhat remedied or compensated by the mine operator. Unlike the localized and accidental subsidence from room-and-pillar mining, the intentional subsidence from longwall mining affects---unevenly---the entire landscape of tens of thousands of acres.

That the surface effects of subsidence to some extent are factored into the overall planning of a mine is evident from the attention paid by mine operators in negotiations with homeowners above a longwall panel before and after mining has moved through an area. Because subsidence is such an intrinsic part of longwall mining, and because its expression on the surface is virtually assured, its effects on regulated wetlands and streams should be scrutinized during mine planning and design, just as are its effects on buildings and roads. Instead, wetlands are routinely ignored.

As discussed in Section III above, PADEP's Chapter 105 regulations define an "encroachment" as any "structure or activity which changes, expands or diminishes the course, current or cross section of a watercourse, floodway or body of water [including wetlands]." Thus, any proposed activity which directly disturbs a wetland, or which changes its hydrology, by law must undergo regulatory review. Adverse effects on wetlands are supposed to be mitigated through conditions of a PADEP permit, once the unavoidability of damage has been established and the damage has been minimized to the extent practicable. Existing uses of wetlands and other surface waters are required to be maintained and protected [25 *Pa. Code* 93.4a(b)].

Full compliance with all of the requirements of the Dam Safety and Encroachments Act, including its wetland provisions, is mandated by the Clean Streams Law as well as by Pennsylvania coal mining laws. Similarly, the coal mining regulations consistently mandate compliance with Chapter 105 and Chapter 93 for all mining activities. Yet for the past twenty-five years these laws have been ignored by the BMR with respect to wetlands when permitting longwall mines.

Some of the specific wetland protection provisions of the Chapter 105 regulations have been incorporated directly into PADEP coal mining regulations and/or into the permit application form(s) for new coal mining activities. Numerous statements in the mining regulations and in the mine permit application forms are clear in their intent that the policies and requirements of the Chapter 105 regulations are to be followed by mine operators. Actual performance, however, falls far short of implementing this intent. A few examples drawn from files at the McMurray District Mining Office illustrate this failure in the subsequent sections of this report.

Approval of an underground mine permit is contingent upon compliance with the substantive requirements of the *Clean Streams Law* and the *Dam Safety and Encroachments Act* according to the mining regulations.

What the Regulations Require

The coal mining regulations make many direct references to Chapter 105, such as the following:

> Flow from perennial and intermittent streams within the permit area may be diverted if the diversions ... [c]omply with other requirements of this chapter and Chapter 105 ....
>
> §89.56 (stream channel diversions)
> §90.105 (stream channel diversions)

> [A]n application shall contain the necessary information to demonstrate how each proposed water obstruction and encroachment will meet the requirement of Chapter 105 ....

§90.36 (stream diversions, water obstructions and encroachments)

> Crossing of a perennial or intermittent stream shall be made using bridges, culverts or similar structures. Bridges, culverts or other encroachment or water obstruction shall meet the requirements of Chapter 105....

§90.134(b) (Haul roads and access roads: general)

> [S]tream crossings [other than fords] shall be made using bridges, culverts or other structures designed, constructed and maintained in accordance with recognized engineering standards and Chapter 105.... §89.26(f)3

> Large impoundments shall be designed, constructed and maintained in accordance with the Dam Safety and Encroachments Act (32 *P.S.* Sec. 693.1 - 693.27) and Chapter 105...
> §89.111(b).

The very first criterion for approval of a mining permit, as listed in §86.37 [Criteria for permit approval or denial], is that:

> (a)(1) The permit application is accurate and complete and that the **requirements of the *Acts*** and this chapter have been complied with. (emphasis added)

"Acts" are defined at §86.1. [Definitions] as including:

> (i) The Surface Mining Conservation and Reclamation Act (52 *P.S.* §1396.1 - 1396.31).
> (ii) The Air Pollution Control Act (35 *P.S.* §§ 4001 - 4015).
> (iii) The Clean Streams Law (35 *P.S.* §§ 691.1 - 691.1001).
> (iv) The Coal Refuse Disposal Control Act (52 *P.S.* §§ 30.51 - 30.66).
> (v) Article XIX-A of The Administrative Code of 1929 (71 *P.S.* §§ 510-1 -- 510-1081).
> (vi) The Bituminous Mine Subsidence and Land Conservation Act (52 *P.S.* §§ 1406.1 - 1406.21).
> (vii) The Dam Safety and Encroachments Act (32 *P.S.*§§ 693.1 -693.27).
> (viii) The Solid Waste Management Act (35 *P.S.* §§ 6018.101 - 6018.1003).

Inasmuch as the *Clean Streams Law* and the *Dam Safety and Encroachments Act* are listed, it is clear that any mine permit approval is contingent upon compliance with the substantive requirements of those laws. Thus, there is a clear, direct, and mandatory obligation for wetland protection within the mining regulations themselves.

Furthermore, Section 89.7(d) [Applicability] states that

> The development, design, implementation and approval of these [underground mining] plans does not relieve the operator of the responsibility to meet the performance standards of this chapter and the **requirements of the acts.** (emphasis added)

Clearly, by regulation new mines are to be developed and operated in accordance with, among other pertinent legislation, the Clean Streams Law and the Dam Safety and Encroachments Act. This obviously includes wetland protection from unregulated encroachments and from degradation.

Another clear reference to wetland protection is provided in §89.74(a)(2), which specifies the information to be provided in an underground mining application regarding fish and wildlife resources, as follows:

> Site-specific resource information necessary to address the respective species or habitats shall be required when the proposed permit area or adjacent area is likely to include one or more of the following:...(ii) Habitats of unusually high value for fish and wildlife such as important streams, ***wetlands***, riparian areas, cliffs supporting raptors, areas offering special shelter or protection, migration routes, or reproduction and wintering areas. (emphasis added)

The cited section defines "wetlands" as one of the "habitats of unusually high value for fish and wildlife". This characterization is supported by a vast array of scientific data. As previously noted, wetlands frequently serve as critical reproduction and wintering areas.

The subsequent section, §89.74(b), requires that impacts during mining operations on species and habitats (including wetlands) identified in §89.74(a) be minimized (not an optional or discretionary action):

> [T]he operator will minimize disturbances and adverse impacts on fish and wildlife and related environmental values ... during the underground mining activities.

The same subsection, §89.74(b), requires that an enhancement plan be prepared by the applicant and that BMR provide a copy of that plan to the Pennsylvania Game Commission and to the Pennsylvania Fish and Boat Commission. The plan is to include measures to be used during reclamation and postmining "to develop aquatic and terrestrial habitat" including "restoration of streams and other wetlands".

A related passage at §89.26(c) similarly requires that

> roads [used in coal exploration or underground mining activities] shall be designed, constructed and maintained so that they do not cause damage to fish, wildlife and related environmental values.

Likewise, §89.65(a) states that

> The operator shall to the extent possible, using the best technology currently available, minimize disturbances and adverse impacts of the activities on fish, wildlife and related environmental values, and achieve enhancement of the resources when practicable.

Although the above passage mandates that impacts on fish and wildlife and related values be minimized, it is interesting to note how this requirement is a dilution of what it was prior to the 1998-1999 changes to the Pennsylvania mining regulations. The qualifier "to the extent possible" was added and the word "minimize" replaced the word "prevent".

Clearly, wetlands are environmental resources that are intended to be protected in their own right, and also as high value habitat for fish and wildlife, in the course of the design, operation, and reclamation of underground coal mines. The regulations are clear that the use of best technology currently available is mandatory, and mere cost is not a basis for non-compliance. Yet one would never guess this from a review of actual BMR longwall mine permit conditions or from field observations in mined areas.

Such minimal attention as BMR does accord to wetlands is confined to the effects of "surface mining activities". This key term is narrowly defined at §86.1 to exclude the surface effects of subsidence. Nevertheless, whatever exemption from regulating subsidence effects that BMR may infer from SMCRA and Pennsylvania mining laws, the obligation to enforce wetland protections through 25 *Pa. Code* Chapters 93 and 105 remains as a result of the Clean Streams Law, the Dam Safety and Encroachments Act, and the federal Clean Water Act.

SECTION VI.

WETLAND PROTECTION IN THE UNDERGROUND MINE PERMIT APPLICATION

The permit application review process is the heart of any environmental regulatory program for new construction activities, including coal mining. Regulations represent the practical implementation, the means of putting into practice, laws that aim to protect environmental resources. Any permit application, in turn, should reflect and incorporate the essence of the pertinent regulations.

In theory, the application form should mirror

the regulatory requirements, making the review process easier (1) for the applicant who must understand and comply with the requirements, (2) for agency review staff who must evaluate proposals efficiently, and (3) for the affected public. Permit applicants and their professional consultants generally seek to provide regulators with the minimum information required to secure timely approval, so having accurate application forms is important to efficient permit review.

The basic application form for a proposed new underground mine, or for a "modification" to an existing mine, is the "Bituminous Underground Mine Application" (Form ER-MR-317). This complex document consists of 24 modules and encompasses 63 pages plus a 2-page Appendix A.

Except for Module 14, all of the modules in the current application were last revised during January 1991. Module 14 was revised during September 1993 as Form ER-MR-311. Thus, many of the existing mine operations in southwestern Pennsylvania, such as the Bailey Mine and the Enlow Fork Mine which began operations in the 1980s, used a different application format in securing their initial permit and early revisions. The ensuing sections discuss, module by module, the current underground mine application form.

The "Bituminous Underground Mine Application" (Form ER-MR-317) is a complex document consisting of 24 modules and encompassing 63 pages Completed applications are large and include folded drawings.

In addition to filling in the blanks in the mine application modules, applicants are supposed to prepare and attach supplementary reports, analyses, maps, and other detailed information to support statements made on the application forms. Through their consultants, mine operators provide BMR with whatever information is necessary to obtain permit approvals, and they provide that information in the format specified by BMR. The BMR format for the display of environmental information is complex, and it serves to render environmental review a difficult exercise for major longwall mines, especially for the affected public.

Longwall coal mines are massive operations with an inherent propensity for environmental damage. PADEP's mining regulations and BMR's application forms also are massive. There is overlap between the subject matter of the various modules in the current application form and duplication between the corresponding modules of the different applications that pertain to a single mine. A specific mine application or amendment typically is a sizable document, and its drawings may go through several revisions before final approval. A revised application form proposed by BMR during March 1999 is discussed in a subsequent section of this report.

As discussed above in Section III, the 1981 agreement between BDWM and BMR obligates BMR to administer and enforce the Dam Safety and Encroachments Act, Clean Streams Law, and related rules and regulations for mining activities. As detailed above in Section V, there also are numerous, clearly articulated statements in the Commonwealth statutes and in the PADEP mining regulations that mine activities are to be conducted so as to protect wetlands and comply with Chapter 93 and 105 requirements.

Several of the modules in the underground mine application ask whether "surface activities" will be conducted within or near certain areas or resources. Some modules, or parts thereof, must be completed only for "surface activities". The term "surface activities", however, is not defined in any of the modules or in the mining regulations. The McMurray District Mining Office interprets "surface activities" to mean "surface mining activities".

As discussed previously, the term "surface *mining* activities" has two definitions in the Chapter 86 mining regulations (86.1 and 86.101). The latter clearly includes subsidence as a surface effect of underground mining activities, but the former does not. On 17 December 1999, the federal Office of Surface Mining (OSM) ruled that subsidence due to underground mining is not a surface coal mining activity, and the PADEP-BMR concurs. The regulatory definition at 86.101, however, has not been revised.

Whether or not subsidence is subject to regulation pursuant to SMCRA or to related Commonwealth mining laws and regulations, its effects on surface water resources are significant and subject to other regulations not unique to coal mining. Because subsidence due to longwall mining activities disrupts surface and groundwater movement and patterns, it clearly constitutes one type of "encroachment" which is subject to the Chapter 105 regulatory requirements, just like tunnels of any kind beneath wetlands throughout the Commonwealth.

The wetland impact disclosure provision of Module 1 typically is circumvented because no encroachment fee is provided, even where wetland impacts are acknowledged.

The following discussion evaluates how well, and to what extent, the current Bituminous Underground Mine Application incorporates wetland protection requirements. Both positive aspects of and deficiencies in the application modules are noted, as well as suggestions for improvements. Actual examples of information provided for specific modules from recent mine applications are discussed to illustrate current applicant and agency practice.

Considerable information about wetlands---their extent, location, functions, values, and the potential direct and indirect impacts of mining activities on them---ostensibly is solicited in the Bituminous Underground Mine Application. The principal section of the application devoted to wetland issues is Module 14 (Streams/Wetlands). Other sections where the applicant currently is directed to provide wetland-specific information include Module 8, Section 8.6 (Prediction of Hydrological Consequences/Protection of Hydrologic Balance); Module 10, Exhibit 10.1 (Site Plan Map) and Exhibit 10.3 (Land Use/Vegetation Maps); and Module 19, Exhibit 19.2 (Environmental Resources Map).

Overall, the modules are not carefully or consistently drafted to elicit the information necessary to assure wetland protection, as required by PADEP for all non-mining categories of wetland encroachments statewide. Given the length of the application and the cross-referencing (or lack thereof) of information among modules, finding specific information on a particular subject such as wetlands can be a formidable undertaking for anyone trying to review and understand a longwall mine permit file.

Each of the modules is discussed at least briefly below to illustrate the complex structure of the application and to indicate where wetland-related information would be expected to be found. As will soon become clear to readers of the ensuing discussion, Module 14 provides only part of the information relevant to wetlands that is to be developed in a mine application.

MODULE 1 - APPLICATION

This module asks basic information about the applicant and the proposed work, and must be signed by the applicant (or responsible official) in the presence of a notary public. In addition, this module includes a fee schedule check-off. Five of the seven activities/items for which fees are required are for typical Chapter 105

activities, including bridges, stream enclosures, channel changes, other water obstructions/encroachments, and Chapter 105 dams. A separate page requires information regarding every proposed NPDES point source wastewater discharge, and it requires a separate applicant signature certifying the completeness and accuracy of the NPDES information.

Positive Aspect:

The applicant is alerted from the outset to the fact that Chapter 105 requirements are to be addressed during permit review. To complete this module accurately, and to calculate the appropriate filing fee, every single wetland to be encroached upon by planned subsidence or other surface activities in the proposed application must be identified through field delineation. In this respect, mining activities (on paper) are treated the same as any other proposed development or construction activity in the Commonwealth. Reviewers should be able to tell directly from the Module 1 fees paid how many wetlands are going to be affected by any proposed mining activity.

Deficiencies:

1) The application form fails to make crystal-clear to applicants and reviewers that each wetland affected by encroachments and/or obstructions such as fill or planned subsidence requires identification and entails a filing fee.

2) The fees assessed for all Chapter 105-regulated mining activities are too low because they have not been updated in many years. They do not begin to reflect the taxpayers' cost for even superficial PADEP review of such applications. They are lower than current fees for any non-mining Chapter 105 activities.

Suggestions for Improvement:

1) Applicants should be reminded that a fee is due for *each* wetland where an obstruction or encroachment is proposed, including wetlands affected by either surface activities (shaft construction, regrading, roads, refuse disposal, ditching/draining, etc.) or underground activities (*e.g.*, planned subsidence), or both. In a non-mining context, all activities that affect the hydrology of wetlands (*e.g.*, drilling or tunneling beneath a wetland) are subject to regulation under Chapter 105 throughout the Commonwealth.

2) The fees for Chapter 105 activities should be increased to at least equal those currently required in non-mining Chapter 105 applications. (The March 1999 application form proposed by BMR would equalize fees.)

Actual Examples:

Enlow Fork Mine, Permit #30841317, Consol Pennsylvania Coal Company: During January 1999, Consol applied for the 40th permit revision for its Enlow Fork Mine in East Finley Township, Washington County. This permit revision, to install the 3 North #2 Air Shaft and related facilities for the underground longwall operation, was approved by BMR on 1 October 1999. An access road, fill for a construction pad, a sewage treatment plant, and a sedimentation pond discharge channel all were proposed within 100 feet of Rocky Run, a warm-water fishes (WWF) stream reported by the applicant to be intermittent. The proposed work also was described as affecting six wetlands totaling 0.344 acre. Despite the fact that these wetland encroachments were acknowledged in Module 14 of the application, no fee for such encroachments was included in the total application fee. The wetland disclosure provision of Module 1 was circumvented entirely, and no encroachment fee was collected.

Emerald Mine, Permit #30841307, Cyprus Emerald Resource Corp. Permit Revision 31 in 1998 required the fill of 0.17 acre of wetlands in conjunction with the addition of the No. 8 Shaft and the No. 4 Bleeder Shaft in Franklin Township, Greene County. Despite the fact that these wetland encroachments

were acknowledged in other modules of the application, no fee for the encroachments was reported in Module 1. Here again, the wetland disclosure provision of Module 1 was circumvented entirely, and no encroachment fee was collected.

MODULE 2 - GENERAL INFORMATION

This module provides a checklist classifying all the modules as included or not included with the application. It requires a signature by the applicant or responsible official. It also requires signature by the person(s) authorized by the applicant to prepare the application, and spaces are provided for a registered professional engineer, a professional geologist, and a registered land surveyor.

Positive Aspect:

The checklist is a helpful index of the modules that the applicant deems relevant to the application for a specific proposed activity.

Deficiencies:

1) There is a note here which states that certain items in Modules 13, 14, 16, and 17 can be certified only by a qualified, registered professional engineer. Modules 13 and 16 repeat this directive, but no such directive is found in either Module 14 or 17. Module 15 also contains this directive, although it is not so noted on the Module 2 checklist.

2) The signature of the appropriate professional certifies that the plans, reports, and specifications of the application have been prepared "in conformance with 25 *PA Code* Chapters 86, 87, and 89". Curiously absent is any direct reference to Chapter 93 or 105, which suggests a lack of emphasis on water obstructions and encroachments in streams and wetlands. As pointed out above, however, there are numerous references to the Chapter 93 and 105 requirements within Chapters 86, 87, and 89. Thus, any application prepared in accordance with Chapters 86, 87, and 89 is required to meet the provisions of Chapters 93 and 105 as well. The responsible professional(s) should be directed to certify directly that all Chapter 93 and 105 requirements have been met.

3) Although Module 14 (Streams/ Wetlands) was revised and renamed during September 1993, its old title (Stream Variances/Relocations) still is used in the checklist, which could mislead applicants as to which version of the form is to be used and what information is to be provided, particularly with respect to wetlands.

Suggestions for Improvement:

1) The note should be revised to state accurately which other modules require professional certification.

2) Each of the certification paragraphs should be revised to include "and in conformance with 25 *Pa. Code* Chapters 93 and 105...".

3) The checklist should be revised to reflect the current name of Module 14: "Streams/Wetlands".

MODULE 3 - OWNERSHIP/ COMPLIANCE INFORMATION

This module generally is not applicable to wetlands, with one possible exception: the application should request that any past violations by the applicant of the Federal Clean Water Act, the Pennsylvania Clean Streams Law, and/or the Pennsylvania Dam Safety and Encroachments Act be reported, along with the status of resolution of the violation.

MODULE 4 - AREAS WHERE MINING IS PROHIBITED OR RESTRICTED

The purpose of Module 4 is to determine whether any mining is proposed in areas where it is prohibited or restricted. No definitions of "prohibited", "restricted", or "limited" are given in the Chapter 86 regulations or in Module 4. For the most part the "prohibited/restricted" areas for which information is sought in Module 4 correspond to the areas listed in Subchapter D of Chapter 86 (Areas Unsuitable for [Surface] Mining [Activities]), specifically §86.102 (Areas where [surface] mining is prohibited or limited).

Positive Aspect:

At least one additional "area" not included in included in Subchapter D of Chapter 86 is listed in Module 4, *viz.*, watersheds designated as "high quality waters" pursuant to 25 *PA Code* Chapter 93.

Deficiencies:

1) In Section 4.5.a of Module 4, the applicant is asked whether the proposed permit area is within a watershed designated as "High Quality Waters" (HQ). However, no similar question is asked concerning watersheds designated as "Exceptional Value Waters" (EV). Waters designated as either HQ or EV are considered to be "special protection" waters in Pennsylvania, and of the two, EV Waters are supposed to receive the greater level of protection (Figure 15). Yet EV waters are completely ignored here.

HQ and EV waters are designated only after a lengthy PADEP review process including public notice. EV waters exist in the coal-mining counties, and in the future additional ones may be designated. The application form should anticipate this situation.

A shortcoming of Module 4 is that the applicant nowhere is asked if *wetlands* are proposed to be affected by mining, other surface activities, or subsidence.

2) As discussed above in Section III, any activity that changes the course, current, or cross-section of any wetland is regulated by 25 *Pa. Code* Chapter 105, and the existing uses of any wetland must be maintained and protected in accordance with 25 *Pa. Code* 93.4a(b). Such activities, therefore, clearly are "restricted" in accordance with Chapter 93 and 105 requirements and should appropriately be included in this module, yet they are not. Nowhere in Module 4 is the applicant asked whether mining, other surface activities, or subsidence are proposed to affect wetlands. In addition to any on-surface mining activities that will fill or regrade wetlands, the planned surface subsidence that results from longwall mining alters the topography and hydrology that determine the very existence of wetlands.

Suggestions for Improvement:

1) Line "a" in Section 4.5 should be split into two questions, asking whether the permit area is within a High Quality watershed and whether it is within an Exceptional Value watershed.

2a) The scope of Section 4.5 should be expanded from "Streams" to "Streams/ Wetlands" and a line "c" should be added to ask whether any wetlands exist within the proposed permit area (including all areas to be affected by underground and surface mining). A cross-reference here to Module 14 (Streams/ Wetlands), where the identification and assessment of all wetlands within the permit area are to be provided, would be appropriate to help maintain consistency between the two modules.

2b) Inasmuch as "... activities involved in or related to underground coal mining which ... produce changes in the land surface, or disturb the surface, air or water resources of

the area" are included in the definition of "surface mining activities" at §86.101, this module should direct that all regulated waters and wetlands subject to potential subsidence should be inventoried fully and delineated accurately prior to permit review.

Actual Example:

Emerald Mine, Permit #30841307, Cyprus Emerald Resources Corp. A typical revision to add 1,954 acres to the permit boundary and extend the subsidence plan boundary in 1997 answers most of the questions in Module 4 as "Not applicable. No surface activity sites are [currently] proposed in this permit application." BMR did not require inventory of lands at risk of "mere" subsidence in Module 4, despite the fact that nine NWI wetlands were indicated within the expansion area as shown in Module 19 of this particular application (see discussion below of Module 19).

MODULE 5 - PROPERTY INTERESTS/RIGHT OF ENTRY

This module requires information about each legal or equitable owner, leaseholder, or purchaser of record for each parcel of surface land that will be affected by mining activities, for each subsurface coal tract within the underground mine permit area, and for all properties within 1,000 feet of those areas. This information could be useful to applicants seeking landowner permission to inventory wetlands at risk in Module 14 (Streams/ Wetlands), although its use or utility for that purpose is not mentioned here in Module 5 (Figure 20). Whether any surface owner has given consent for wetlands to be disturbed is not asked in this module.

Mining applications require a considerable number of notifications to reach affected surface owners. For example, Maple Creek Mining Inc./UMCO Energy Inc., New Century Mine #63921301, filed permit information with BMR in April and May 2000. This mine is to affect only 2,060 acres near Charleroi in Washington County. Yet it was necessary to notify the owners of 944 surface parcels.

MODULE 6 - OPERATION PLAN

This module requires the applicant to list many types of information about the proposed operations and facilities, including a summary of operations, a location map, a general description of mining activities, proposed surface activities/sites, existing structures, proposed tanks and chemical storage areas, and measures to be taken to protect fish, wildlife, and related environmental values.

Positive Aspect:

In Section 6.2, the applicant is required to provide a USGS Location Map (Exhibit 6.2) on which are to be shown numerous specific features and environmental resources. Exhibit 6.2 is a major document on which environmental information within the permit area is to be displayed.

Deficiencies:

1) It is not made clear in Module 6 that wetlands are to be included on Exhibit 6.2; they are not specifically listed here as one of the resources to be shown. Module 14 (Section 14.3.b), however, specifically directs that wetlands are to be included on Exhibit 6.2.

2) Section 6.4 (Surface Activities/Sites Covered by Application) lists five types of surface sites/activities and directs the applicant to identify those which apply to the subject application, implying that these may be the only categories of sites/activities that would be relevant. Surface areas subject to planned subsidence are not among the five listed categories.

3) Section 6.7 (Fish and Wildlife Protection) directs the applicant to "Describe the measures which will be taken to prevent or

mitigate adverse effects on fish, wildlife, and related environmental values." No definition of "related environmental values" is provided in the application or the regulations. Wetlands certainly qualify as "related environmental values", but are not specifically identified as such. Furthermore, there is no cross-reference here to Module 14.

Suggestions for Improvement:

1) Wetlands should be listed specifically as a resource to be identified on the Location Map (Exhibit 6.2) for consistency with Module 14. It generally is difficult to show the limits of delineated wetlands accurately on maps of such small scale as the 1:24,000 (1 inch = 2,000 feet) used by USGS, but as a general index to wetland location within a vast mine complex Exhibit 6.2 mapping would be very useful.

2) Inasmuch as "... activities involved in or related to underground coal mining which ... produce changes in the land surface, or disturb the surface, air or water resources of the area" are included in the definition of "surface mining activities" at §86.101, surface areas subject to planned subsidence should be identified along with the other listed categories of surface activities/sites in Section 6.4.

3a) A definition for "other related environmental values" should be provided on the application form. Applicants cannot be expected to address impacted resources unless those resources are defined by BMR, at least by citing illustrative examples. References to sources such as the natural heritage inventory of Washington County (Wagner 1994) would be appropriate here.

3b) Wetlands should be added specifically to the list in Section 6.7, which should be revised to read: "Describe the measures which will be taken to prevent or mitigate adverse effects on fish, wildlife, *wetlands*, and *other* related environmental values." These wetland protection measures should be cross-referenced to, and used in conjunction with, the wetland analyses and evaluations required in Module 14 (Streams/ Wetlands).

MODULE 7 - GEOLOGIC INFORMATION

The applicant is required to provide specific information regarding the local and regional geology and the nature of the coal seam and overburden. In Section 7.2, the applicant is required to

> Provide drill hole data sufficient to describe the geology and hydrology of the underground permit and adjacent areas. Information must be adequate to assess the probable hydrological consequences and subsidence effects of the proposed mining operation.

Information on any wetlands present within the area potentially affected by planned subsidence would be highly relevant to the descriptions of the general geology and near-surface hydrology of the area as well as to the assessment of probable hydrological consequences, but these data are not specifically requested. They should be.

MODULE 8 - HYDROLOGY

Module 8 is potentially one of the more important parts of the coal mine application in terms of developing the information necessary to identify wetlands and potential impacts to wetlands from mining activities. Unfortunately, that potential at present is not fully realized. Wetland hydrology, which is inextricably related to surface water and/or groundwater, is nowhere mentioned here. Hence it is generally ignored by mining hydrologists employed by applicants and by BMR permit reviewers.

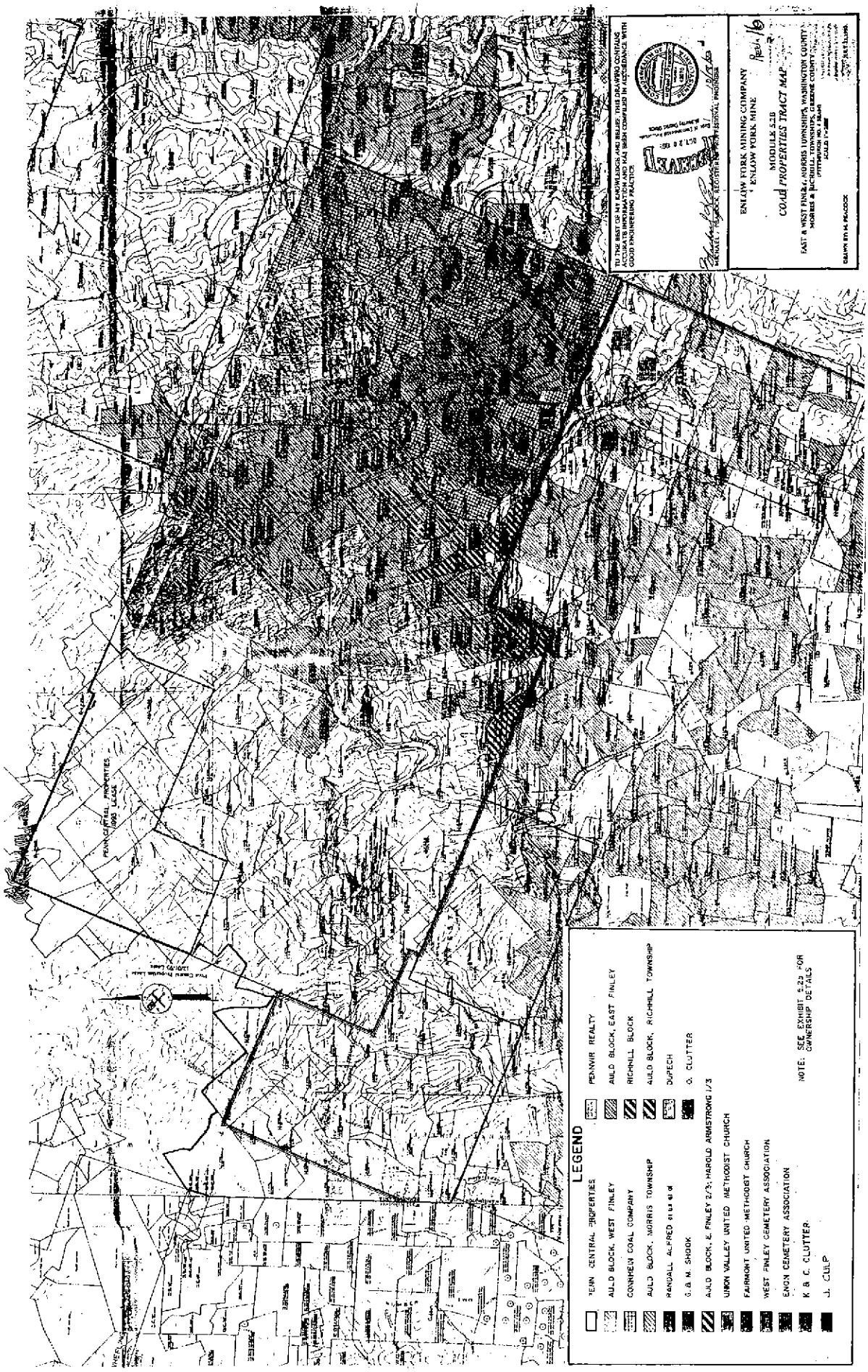


Figure 20. Ownership pattern for part of the Enlow Fork Mine, Greene County, Pennsylvania. This drawing was submitted for Module 5.2B of Revision No. 16 in 1993.

Figure 21. Typical spring (top, at auger) and associated, spring-fed wetland in Washington County. Such springs traditionally were tapped for domestic and agricultural water supplies.

Positive Aspects:

1) Module 8 requires considerable information about the existing groundwater and surface water resources in the mine permit area and the potential for proposed mining activities to impact them. Wetlands depend for their existence on continued hydrologic inputs of surface waters and/or groundwater. Throughout Module 8, applicants are instructed to describe or provide specific information about "surface water resources", or "local water resources", **which resources include wetlands** according to the 25 *Pa. Code* Chapter 105.1 definitions for "regulated waters of this Commonwealth" and "body of water".

2) In Section 8.6 (Prediction of Hydrologic Consequences/ Protection of Hydrologic Balance), the applicant is directed to provide a narrative description addressing ten specific concerns and how each will be prevented or mitigated. One of the listed concerns is stated as follows: "The potential draining of dams, ponds, impoundments, and *wetlands* which overlie the underground permit area." (emphasis added) The inclusion of "wetlands" here is significant and clearly indicates that BMR requires wetland impacts to be addressed in Section 8.6, despite the imprecise drafting of Module 8 in general.

Deficiencies:

1) In Sections 8.1 through 8.4, applicants are directed to provide considerable information about the surface and groundwater hydrology of the proposed permit area, but no specific mention of "wetlands" is made. In Section 8.5, background sampling and measurements of the quantity and quality of surface waters and groundwater are to be provided, but again no specific mention is made of "wetlands". The predictable absence of data on wetlands that results from these incomplete Module 8 inventory requirements necessarily frustrates an adequate assessment of hydrologic impacts in Section 8.6. Public water supplies rightly are addressed in Module 8; the water supply of wetlands should receive like attention.

Likewise, in Section 8.7, a hydrologic monitoring plan is to be developed to detect and mitigate adverse hydrologic consequences of the proposed mining activity, but no specific mention of "wetlands" is included among potentially affected targets of hydrologic change.

In Module 8, applicants are "required" to assess the potential draining of wetlands which overlie the underground permit area. But they are nowhere directed to inventory wetlands at risk of draining, so no meaningful assessment is ever provided.

2) To assess the potential draining of wetlands which overlie the underground permit area in Section 8.6, and how it will be prevented or mitigated, one first must know the location and extent of wetlands and the source(s) of their water supply. Unfortunately, by not specifically asking the applicant to inventory all wetlands within the underground permit area or to provide background sampling or measurements of wetlands, Module 8 all but ensures that the assessment of the potential for draining wetlands required in Section 8.6 will not be adequate for even a bare minimum of wetland protection.

Suggestions for Improvement:

To correct Deficiencies 1) and 2): "Wetlands" should be specifically identified as a surface water resource to be identified, inventoried, delineated, sampled, and monitored in Sections 8.1 through 8.5, and 8.7, along with other surface water resources such as streams, ponds, and lakes. Indeed, Module 14 requires the applicant to show existing wetlands on three separate exhibits; one of them, or a fourth, ought to be Exhibit 8.3 - Hydrologic Data Map.

Actual Example:

Emerald Mine, Permit #30841307, Cyprus Emerald Resources Corp. In the application for the 32nd revision, which added 1,954 acres to the permit boundary in 1997, the applicant stated:

> In general the water table conforms to a somewhat subdued version of the local topography, moving radially from areas of high elevation to discharge locations in the valleys (e.g., springs and streams). Impermeable zones act as barriers to vertical movement, tending to perch the water and direct it laterally to springs on the hillsides. These perched groundwater zones result in many contact springs where fractured, permeable strata outcrop above unfractured, relatively impermeable strata. [8.1(1)]

Yet the response to 8.6.(c)(7) request for discussion of potential draining of dams, ponds, impoundments, and wetlands which overlie the permit area merely states:

> The depth of cover is greater than 400 feet at private ponds, impoundments, and wetlands within the proposed subsidence control plan area which should preclude any adverse effects that mining activities may have on these facilities.

The very same Revision 32 at 8.2(k)(1) forecasts a maximum surface vertical displacement of 3.7 feet as a result of the proposed removal of the 4- to 7-foot thick Pittsburgh seam! Such planned surface displacement, which varies from place to place in the field, would be expected to have major impact on any wetlands subject to subsidence. When wetland resources are not inventoried, of course, adverse effects cannot be identified, assessed, compensated, or included in any statistics.

MODULE 9 - LOCAL MINING, WASTE DISPOSAL, WATER, SEWAGE, AND GOVERNMENT INFORMATIONAL [*sic*]

This module requires the applicant to map and to provide specific information about each active, completed, or abandoned surface mine, underground mine, coal refuse disposal site, and other disposal site (hazardous, municipal, or residual waste) located in or within 1,000 feet of the mine permit area. Other information to be provided for areas within and adjacent to the proposed mine area relates to public water supplies and suppliers, sewage authorities, and local governmental jurisdictions.

Positive Aspect:

Section 9.4 requires the applicant to identify all public water supplies with groundwater or surface water sources within 1 mile of the underground mine. This information is helpful in part in determining whether any Exceptional Value wetlands (*i.e.*, "wetlands located along an existing public or private drinking water supply, including both surface and groundwater sources, that maintain the quality or quantity of the drinking water supply") exist within the permit area.

Deficiency:

The relevance of wetlands to the information required in Section 9.4 regarding public water supplies at present is not explicit.

Suggestion for Improvement::

Section 9.4 should mention that wetlands located along an existing public or private drinking water supply, including both surface and groundwater sources, that maintain the quality or quantity of the drinking water supply are considered Exceptional Value wetlands and that they should be specifically identified as such in Module 14 (Streams/Wetlands).

MODULE 10 - SURFACE ACTIVITY SITE MAPS

This module requires applicants to provide two sets of large-scale maps (1" = 50' or 1" = 100') of many important surface features and resources at each *surface activity site* associated with a proposed underground mine. One set, the Site Plan Maps (Exhibit 10.1), is to show the site as it will appear during the development and operation of the mine. The other set, the Land Use/Vegetation Maps (Exhibit 10.3), is to show the site as it exists prior to mining and as it will exist after reclamation. In addition, a Soils Map (Exhibit 10.2), excerpted from the county soil survey, is to locate any prime farmland soils within the permit area of each surface activity site. Cross-section drawings also are to be provided to show the extent of proposed site grading.

Applicants are "required" to identify wetlands on Exhibits 10.1 and 10.3, but this directive often is ignored.

Positive Aspect:

Among the resources to be identified on both Exhibit 10.1 and Exhibit 10.3 are "... all surface water bodies such as streams, lakes, ponds, springs, *and wetlands...*" (emphasis added). The directive to applicants to include "wetlands" among other "surface water bodies" on these large-scale maps is significant, is consistent with Chapters 93 and 105, and clearly indicates the BMR's responsibility to protect them.

Deficiencies:

1) The specific requirement here to identify wetlands on Exhibits 10.1 and 10.3 is not cross-referenced to the section of the permit application form that most closely relates to wetland identification and assessment, *viz.*, Module 14 (Streams/ Wetlands).

2) Although wetlands are required to be shown on Exhibits 10.1 and 10.3, there is no guidance provided as to how wetlands are to be identified.

3) Because "surface activity sites" are not defined in this module, it is not clear that all areas on the surface which will be affected by planned subsidence are to be included in Exhibits 10.1 and 10.3.

Suggestions for Improvement:

1) The requirements for wetland resource information in Exhibits 10.1 and 10.3 and in Module 14 (Streams/ Wetlands) should be cross-referenced to each other.

2) As in Module 14, it should be clearly stated here that wetlands are to be identified, delineated, and classified in accordance with normal Chapter 105 policies and procedures.

3) "Surface activity sites" should be defined in this Module specifically to include all areas on the surface that will be affected by planned subsidence as well as those that may be at risk from surface grading. A cross-reference should be provided to Modules 18 and 19. The intentional subsidence of the land surface represents the most widespread threat to wetlands associated with longwall mining.

Actual Examples:

Enlow Fork Mine, Permit #30841317, Consol Pennsylvania Coal Company: During January 1999, Consol applied for the 40th permit revision for its Enlow Fork Mine in East Finley Township, Washington County, to install the 3 North #2 Air Shaft and related facilities. Exhibits 10.1 and 10.3 were combined on a single drawing, rather than presented as separate drawings as required. No wetlands were identified on Exhibit 10.1/10.3, despite the fact that six wetlands totaling 0.344 acre were proposed to be filled or otherwise

disturbed (per Module 14) in conjunction with the proposed air shaft. No wetlands within 1,000 feet of the site were shown on the Exhibit, despite the fact that the NWI overlay for the Claysville quadrangle shows a 4-acre emergent wetland (PEM1A) less than 600 feet to the northwest of the surface activity site. BMR approved the permit revision without requesting any changes or corrections to Exhibits 10.1/10.3.

Bailey Mine, Permit #30841316, Consol Pennsylvania Coal Company: On 24 February 2000, BMR approved Consol's 71st permit revision for its Bailey Mine in Richhill Township, Greene County. This permit revision added 11,120 acres to the underground mine permit area and 4,126 acres to the subsidence control plan area. Despite the fact that numerous wetlands of various types (including marsh, forested, riverine, and palustrine) are identified on the NWI maps for the 17 square-mile area overlying the expanded permit, and despite the fact that the Pennsylvania Game Commission pointed out numerous times during its review of this activity that wetlands were at risk of adverse impact, BMR required no Exhibits 10.1 or 10.3 and thus no identification of wetlands.

MODULE 11 - LAND USE/ VEGETATION/PRIME FARMLAND INFORMATION

This module requires applicants to provide information relating to land use, vegetation, and prime farmland for each *surface activity site* associated with a proposed underground mine. There is some overlap with Module 10, inasmuch as some of this same information is to be provided on Exhibits 10.2 (Soils Map) and 10.3 (Land Use/Vegetation Maps).

Positive Aspect:

Some of the information to be compiled for this module could be helpful in identifying potential wetland areas (*e.g.*, natural vegetation characteristics and soil map units deemed hydric or known to include hydric inclusions).

Deficiencies:

1) Because "surface activity sites" are not defined, it is unclear to applicants that areas on the surface that will be affected by planned subsidence are to be addressed in this module.

2) Although the potential exists to use the information compiled in this module to aid the applicant in the identification of wetland areas in Module 14 (Streams/Wetlands), there is no directive to do so.

Suggestions for Improvement:

1) "Surface activity sites" should be revised in this module specifically to include areas on the surface that will be affected by planned subsidence. A cross-reference should be provided to Modules 18 and 19.

2) Wetlands should be specifically listed as an existing land use to be identified in Module 11. Wetland (hydrophytic) vegetation should be specifically listed as a class of resource types to be displayed. This wetland-related information should be cross-referenced with the information to be provided in Module 14. Unless scarce wetland resources are identified, they will never receive any protection.

MODULE 12 - E & S CONTROLS/SITE DEVELOPMENT PLANS

For each surface activity site a narrative description is required regarding site preparation, grading, and construction activities; erosion and sedimentation controls to be employed; and haul roads. Descriptions are to be cross-referenced to the Site Plan Map (Exhibit 10.1).

Positive Aspects:

The site preparation and facility construction activities to be discussed qualify as activities subject to the regulatory requirements of 25 *Pa. Code* Chapters 93 and 105 to the extent that they affect wetlands or other bodies of water.

Deficiencies:

1) The applicant is not directed to identify the existence of wetlands in areas proposed for site preparation and facility construction activities, although it is essential to do so in order to demonstrate compliance with Chapter 105.

Module 14 *appears* to solicit considerable information about wetlands, making it potentially the most relevant and important part of an underground mine application with respect to wetland identification and assessment. In practice, however, Module 14 is largely ignored by BMR and by mine applicants.

2) Subsection "d" of Section 12.3 (Haul Roads) directs the applicant to complete Module 14 if a proposed haul road involves the crossing of any intermittent or perennial stream, but makes no reference to affected wetlands.

Suggestions for Improvement:

1) Applicants should be required to describe whether any site preparation or facility construction activities will affect wetlands, and to cross-reference this information with the information provided in Module 14 (Streams/Wetlands).

2) Section 12.3.d should be revised to include "wetlands" in addition to "streams".

MODULE 13 - TREATMENT SYSTEMS

This module requires plans, reports, and specifications for systems proposed to treat drainage from underground workings and surface runoff that will contact coal or other sources of water pollution. All such plans, reports, and specifications are to be prepared by a licensed professional engineer.

Positive Aspect:

Properly designed treatment systems can help protect the water quality of surface water resources, including wetlands.

Deficiency:

Man-made wetlands have been used successfully to treat acid mine drainage, but there is no mention of that fact in this module.

Suggestion for Improvement:

The module should mention the possibility of using man-made wetlands to treat mine drainage. Cross-references should be included here to Module 14, and reference should be made to *Constructed Wetlands for Mine Drainage Treatment* (PADEP 1998f). It also should be pointed out explicitly that no part of a *natural* wetland can be authorized for use as a treatment facility.

MODULE 14 - STREAMS/WETLANDS

Module 14 potentially represents the most relevant and important part of each underground mine application with respect to the identification of, and the assessment of impacts on, wetlands. It solicits considerable information relevant to wetlands, similar in many ways to the information required of applicants for a non-mining Chapter 105 individual permit statewide. In practice, however, Module 14 is largely ignored by the BMR and by mine applicants.

Module 14, revised during 1993, is Form ER-MR-311: Rev. 9/93. This is a different form number from all of the other modules in the underground mine application. It was developed and updated by BMR for the Bituminous *Surface Mine* Application. The revised Module 14 of the surface mine application was then incorporated directly into the underground mine application. (Prior to 1993, Module 14 was called "Stream Variances/Relocations" and it did not address wetlands at all.)

Positive Aspects:

1) Section 14.3 (Wetland Related Information) applies to the entire "proposed permit area", not just to surface activity sites.

2) Section 14.3.a. requires the applicant to identify the person(s) making the wetland determination for the permit area and his/her qualifications.

3) Section 14.3.b directs that all wetlands are to be identified, delineated, and classified in accordance with normal Chapter 105 policies and procedures when preparing mine permit applications. Neither in Chapter 105 nor in Module 14 is there any specified minimum size of regulated wetland. The extent and classification of regulated wetlands can be determined only upon field examination by qualified professionals. Wetlands in the coalfields of southwestern Pennsylvania tend to be small and not subject to identification from aerial photographs (Figure 21).

Two of the three drawings (Exhibits 9 and 18) on which wetlands are supposed to be identified according to Section 14.3.a do not exist in the underground mine application.

4) Existing wetlands, defined and delineated in accordance with Chapter 105 requirements, are to be identified on three different exhibits (6.2, 9, and 18). Unfortunately, as discussed below under *Deficiencies* (Item 2), the referenced exhibits do not exist in the underground mine application form modules.

5) Specific information about wetlands, which is the same information required in a noncoal Chapter 105 individual permit application, is to be provided for the entire permit area. Section 14.3.b. specifically seeks the information necessary to determine whether any identified wetlands qualify as "exceptional value wetlands" as defined at §105.17(1). The same section elicits information about the functions of each individual wetland identified in the proposed mine permit area. One or more of the eight functions listed is associated with any wetland found in southwestern Pennsylvania.

6) In Sections 14.4.a. and 14.4.b., applicants are required to discuss and evaluate any practicable alternatives to the proposed mining activities that would have lesser wetland impacts.

7) Any wetlands in the proposed permit area that will be directly affected must be identified, and the impacts must be described and assessed (Section 14.4.c.).

8) Any wetlands in the proposed permit area that will be indirectly affected must be identified, and the impacts must be described (Section 14.4.d.). Planned subsidence impacts wetlands through alteration of topography, substrate, and/or hydrology.

9) Potential cumulative wetland impacts of the proposed and anticipated mining activities in the general area must be identified and explained (Section 14.4.e.).

10) Section 14.5 requires the applicant to provide a wetland mitigation/replacement plan, including specific details, and to identify the location of the wetland replacement site(s) on Exhibit 9 - Operations Map and on Exhibit 18 - Land Use and Reclamation Map. (As mentioned above under Module 9, there is no Exhibit 9; perhaps what is meant instead is

Exhibit 6.2 - Operation Plan. Likewise, there is no Exhibit 18; perhaps what is meant instead is Exhibit 10.3 - Land Use/Vegetation Map.) Section 14.5.f informs the applicant of the existence of a publication entitled "Design Criteria for Wetlands Replacement" (PADER 1992) which provides general guidance for designing wetland replacement as mitigation for the unavoidable impacts of any kind of development activity in Pennsylvania, including bituminous coal mining.

11) In Sections 14.1.g. and 14.2.c., applicants are required to provide a characterization of the existing water quality and water quantity of streams adjacent to proposed surface activities, as well as the 25 *PA Code* Chapter 93 protected water use classification for the streams.

Deficiencies:

1) Section 14.1 (Mining Activities Within 100 Feet of a Stream) and Section 14.2 (Stream Relocation and Channel Changes) apply only to proposed "surface mining activities" rather than the entire permit area.

Section 14.4.d. defines "altering the wetland hydrology" as an "indirect" effect, when in fact, any activity that alters the hydrology of a wetland by changing its course, current, or cross-section is a *direct* "encroachment" subject to the Chapter 105 regulatory provisions, a critical regulatory distinction that appears to go unheeded by BMR.

2) Section 14.3.a. requires the applicant to identify the person(s) making the wetland determination and his/her qualifications, but no signed certification as to accuracy is required. (PADEP has not established any minimum professional qualifications for persons performing wetland delineations.) In Module 2, a certification signature for the overall application is required from an engineer, geologist, and/or land surveyor, but those professionals would not necessarily have any education or experience relevant to wetland identification, wetland value classification, wetland assessment, or wetland mitigation.

3) The Wetland Delineation Report and data sheets are not specifically directed to be attached to the application, so they are not provided by applicants.

4) After BMR revised its *Surface* Mine Application form in 1993, it used the revised Module 14 for its *Underground* Mine Application form as well. In so doing, however, it failed to make the few necessary changes that would have made Module 14 meaningful in the context of an Underground Mine Application, such as references to appropriate exhibits. The exhibits cited in Section 14.3.b (Exhibits 6.2, 9, and 18) are relevant in the *surface* mine application but not in the *underground* mine application.

Referenced Exhibit 6.2 in the *surface* mine application is the "Environmental Resources Map" (1" = 400' maximum), which is Exhibit 19.2 in the *underground* mine application. There is an Exhibit 6.2 in the underground mine application (USGS "Location Map", 1" = 2000'), but the information to be shown thereon is not comparable to that for the "Environmental Resources Map". Furthermore, Module 6 of the underground mine application does not specify that wetlands be identified on Exhibit 6.2, although that would be helpful.

There is no Exhibit 9 in Module 9 ("Local Mining, Waste Disposal Water, Sewage and Government Informational" [*sic*]) of the Underground Mine Application. Exhibit 9 in the *Surface* Mine Application is the "Operations Map" (maximum scale 1" = 400'). The comparable map in the Underground Mine Application is Exhibit 10.1 ("Site Plan Map", 1" = 100' maximum), on which wetlands are required to be shown, but only for each surface activity site. Furthermore, there is no cross-reference in Module 14 to Exhibit 10.1.

There is no Exhibit 18 in Module 18 ("Subsidence Control") of the Underground Mine Application. Exhibit 18 in the *Surface* Mine Application is the "Land Use and Reclamation Map" (maximum scale 1" = 400'). The comparable map in the Underground Mine Application is Exhibit 10.3 ("Land Use/ Vegetation Maps", 1" = 100' maximum), on which wetlands are required to be shown, but only for each surface activity site. Furthermore, there is no cross-reference in Module 14 to Exhibit 10.3.

5) Section 14.4.d. misleadingly addresses "indirect" effects on wetlands, parenthetically defining such effects as "...(*e.g.*, altering the wetland hydrology)...". In fact, any activity that alters the hydrology of a wetland by changing its course, current, or cross-section is a direct "encroachment" subject to the Chapter 105 regulatory provisions. This critical regulatory requirement appears to have been missed in the drafting of this module.

6) Effects on wetlands from planned subsidence are not specifically cited as requiring assessment. They should be.

7) A lengthy excerpt from §105.18a (relating to permit requirements for activities in Exceptional Value wetlands), which is mentioned in Section 14.3.b., is provided at the end of Module 14. The excerpted passage is confusing at best, and misleading at worst. The excerpt is incomplete because it omits the lengthy section of §105.18a relating to permit requirements for activities in *Other* wetlands. *Other* wetlands are presumably much more common than Exceptional Value wetlands. Hence, the excerpted passage can give the mistaken impression that impacts only on Exceptional Value wetlands need to be addressed in the mining application.

8) Sections 14.5.b and 14.5.d (Note: Section 14.5.c is missing entirely from the module) direct applicants to identify existing wetlands and proposed replacement wetlands, respectively, on the "Operations Map (Exhibit 9)", but as pointed out above, there is no Exhibit 9 in Module 9. Module 6 (Operation Plan) requires an Exhibit 6.2 (Location Map) in the underground mining application, but does not specifically list "wetlands" among the features to be identified on it.

9) Section 14.5.d directs applicants to identify proposed replacement wetlands on the "Land Use and Reclamation Map (Exhibit 18)", but as pointed out above, there is no such exhibit or named map in Module 18 (Subsidence Control).

Module 14 should require that the Wetland Delineation Report and data sheets be included in the application, just as in any Chapter 105 permit application

Suggestions for Improvement:

1) A certification paragraph and signature line should be added in this Module for "Wetland Professional".

2) The citations to Exhibits 9 and 18 in Sections 14.3 and 14.5 should be corrected so that they refer the applicant to actual exhibits elsewhere in the underground mining application. Citations should be made to Exhibits 10.1, 10.3 and 19.2, where wetlands are specifically listed as resources to be identified (Figure 24).

3) The Wetland Delineation Report and data sheets should clearly be directed to be included in the application where wetlands or waters are found on the permit area, just as in any Chapter 105 joint permit application.

4) Section 14.4.d. should be revised to remind applicants that any activity that alters the hydrology of a wetland (planned subsidence, for example) is subject to the regulatory provisions and requirements of Chapters 93 and 105.

5) Module 14 should be completed

Figure 22. Immense valley fill/slurry impoundment to accommodate longwall mine waste at Waynesburg, Greene County.

Figure 23. Coal preparation plant and (background) mine waste disposal area, Greene County.

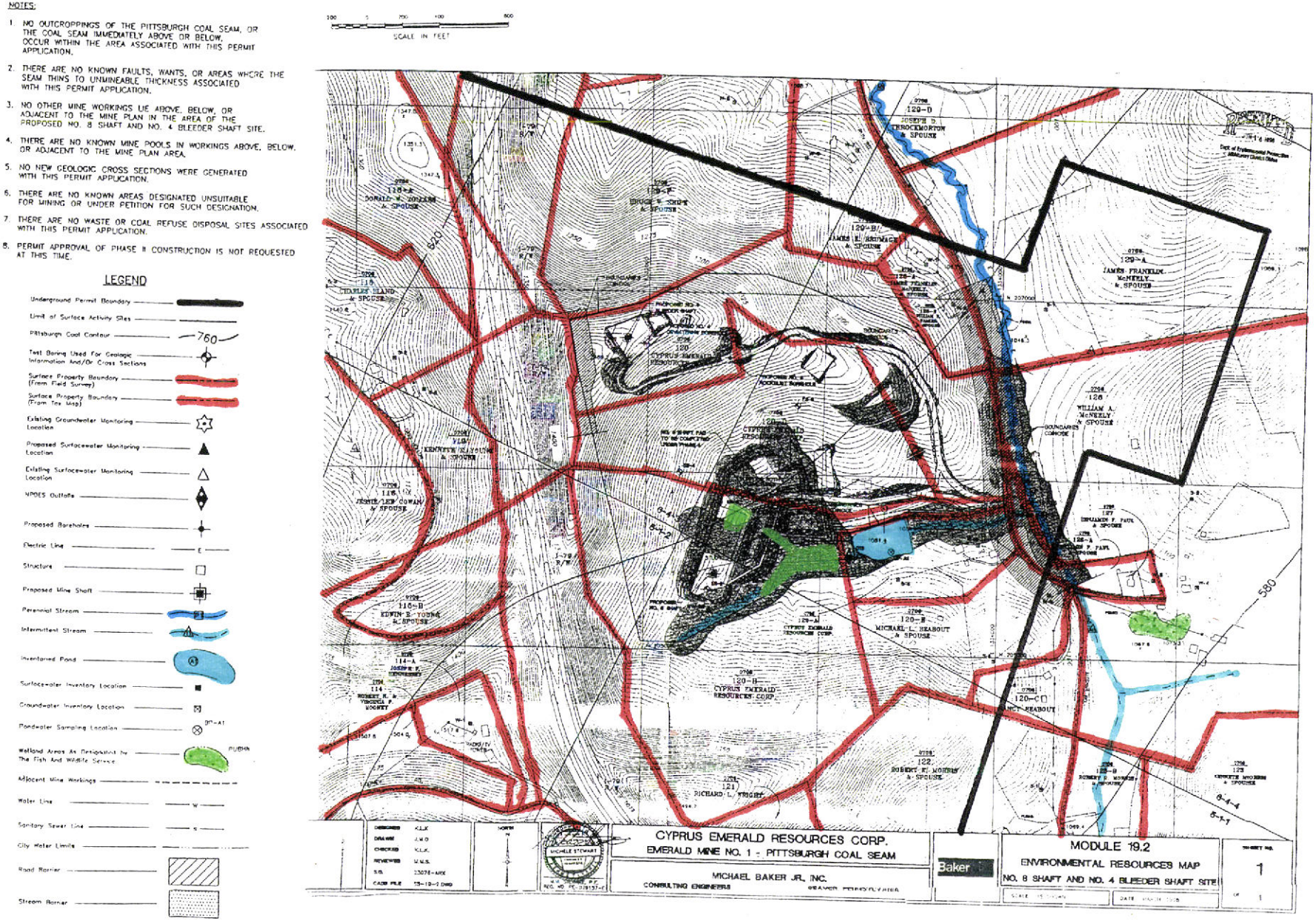


Figure 24. Example of a Module 19 Environmental Resources Map prepared for the northeastern corner of Emerald Mine No. 1 (Revision 31), Greene County, Pennsylvania, June 1998. Two field-identified wetlands are shown onsite (total 0.91 acre), of which 0.17 acre is to be filled. An NWI wetland is shown east of the permit area, and an NWI pond is adjacent to the proposed earthwork. Note the numerous owners of surface properties. I-79 crosses this mine left of center.

whenever a permit or permit revision involves the addition of underground mine acreage or additional acreage to the subsidence control plan. Several sections of Module 14 (*e.g.*, 14.3, 14.4, and 14.5) are not limited to "surface mining activities", and thus deal with all wetlands above the underground mine permit area.

6) The excerpt from §105.18a(a) should be deleted because it is confusing to applicants. A simple cross-reference to the requirements at 25 *Pa. Code* §105.18a would sufficiently inform applicants of the criteria by which proposed activities in wetlands will be evaluated, whatever their value classification.

Actual Examples:

The following examples illustrate how BMR ignores the PADEP wetland protection requirements of Chapter 105 and of its own mining regulations.

McMurray District Office, Review Comments Form, Bituminous Underground Coal Mine Application A 25-page form is used by staff at the McMurray office when conducting the initial review of mining applications for completeness. The form devotes a single page to each of the 24 Modules, plus a cover page. Generally, each major section of each module (and in some cases, subsections as well) is listed on its appropriate page. Check-off boxes are provided to indicate whether the required information is included, is not applicable, or is included but incomplete. Space also is provided for the reviewer's additional comments. Tellingly, the review page for Module 14 (which references the obsolete title "Stream Variances/Relocations") omits entirely the key sections regarding wetlands---Sections 14.3, 14.4, and 14.5.

The form used by the McMurray District Office to perform its initial completeness review of underground mine applications omits entirely from Module 14 the key sections regarding wetland identification and assessment --- Sections 14.3, 14.4, and 14.5.

Enlow Fork Mine, Permit #30841317, Consol Pennsylvania Coal Company: During January 1999, Consol applied for the 40th permit revision for its Enlow Fork Mine in East Finley Township, Washington County. This permit revision, to install the 3 North #2 Air Shaft and related facilities, was approved by BMR on 1 October 1999. An access road, fill for a construction pad, a sewage treatment plant, and a sedimentation pond discharge channel all were proposed within 100 feet of Rocky Run, classified by PADEP as WWF and reported by the applicant to be an intermittent stream. Six wetlands totaling 0.344 acre were proposed to be filled or otherwise disturbed.

The following deficiencies in the Module 14 for this application either were not noticed by BMR review staff or were not considered significant when approving this longwall mining permit revision.

- The official PADEP-BMR form for Module 14 was not used for this application. The applicant used its own, transcribed copy of the form, which quietly omitted numerous, relevant questions from the existing form!

- Section 14.1 addresses surface mining activities proposed within 100 feet of an intermittent or perennial stream. Section 14.1.b requires a description and justification of the proposed activities. A brief description was given, but the only justification provided was "...to develop this site in a practical manner...". This response hardly seems adequate in light of the regulatory requirement in Subchapter D (Areas Unsuitable for Mining) §86.102(12), which states that the PADEP may grant a variance from the outright prohibition on surface mining activities within 100 feet of an intermittent stream only if the mine operator "...demonstrates beyond a reasonable doubt that there will be ***no adverse hydrologic impacts, water quality impacts or other environmental resources impacts*** as a

result of the variance." (emphasis added)

♦ Section 14.1.g requires "A characterization of the existing water quality and quantity of the stream including downstream water uses, and 25 *Pa. Code* Chapter 93 Protected Water Use Classification." No response at all was given, nor was any reason for the lack of a response!

♦ Section 14.3 requires specific wetland-related information. Although a brief wetland delineation report eventually was provided on 27 May 1999 (four months after filing the application) to supplement this Module 14, the report is incomplete in that it does not address most of the specified items in Section 14.3, including information regarding wetland value classification and information about the functions of the delineated wetlands. Section 14.3 also directs the applicant to identify delineated wetlands on three separate Exhibits in the application, which was not done. The lack of this information effectively renders BMR review of the proposed wetland impacts impossible.

BMR acknowledged that wildlife habitat and wetland documentation, delineation, protection, and/or mitigation have never been made a permit requirement during its review of subsidence control acreage.

♦ Section 14.4 requires specific information regarding wetland impacts, including a description and analysis of a) alternatives considered, b) practicability of alternatives, c) wetlands (and their functions) directly affected by the proposed activities, d) wetlands indirectly affected, and e) proposed or anticipated cumulative wetland impacts. The applicant's three-sentence response merely states that it is not practical to avoid disturbing six wetlands totaling 0.344 acre. No justification was set forth, no alternatives were considered, no wetland functions were identified, and no possible cumulative impacts were evaluated. No mention was made of any wetland impacts associated with the 39 prior revisions of this permit, nor of any other wetlands affected by other mines permitted in the watershed, nor of any future wetland impacts associated with this mine.

♦ Section 14.5 requires considerable information for wetland mitigation/replacement proposals. Indeed, a "Note" in Section 14.5.d states "At minimum, wetland replacement must be at a 1:1 ratio (replacement acres: affected acres)", echoing the minimum requirements of 25 *Pa. Code* 105.20a (Wetland replacement criteria). Section 14.5 clearly is not set up as an optional request, but this applicant apparently read it that way; the simple, candid response given here is "Wetland replacement is not proposed". The applicant had no intent to comply with §105.20a. Inasmuch as the BMR readily issued the permit in the absence of compliance with Chapter 105, the applicant's submission demonstrably was acceptable to the agency, even though none of the required written findings were made. Moreover, no permit application or predischarge notification regarding the proposed wetland destruction was made to the Army Corps of Engineers pursuant to Section 404 of the Clean Water Act.

Bailey Mine, Permit #30841316, Consol Pennsylvania Coal Company: During December 1996, Consol applied for the 71st permit revision for its Bailey Mine in Richhill Township, Greene County. This permit revision, to add 11,120 acres to the underground mine permit area and 4,126 acres to the subsidence control plan area, was approved by BMR on 24 February 2000. As in other permit revisions involving no specific surface facilities, no Module 14 was submitted by the applicant. No fee for any regulated "encroachments" was paid. No Module 14 was requested by the BMR, who noted "[t]his revision added underground acreage only (no additional surface acreage); therefore, no Exhibit 10.1 or Module 14 was required" [memo from Joe Kalynchuk to Joe Leone, 19

April 2000].

During the course of its review of this application, the Pennsylvania Game Commission (PGC) advised the BMR that it believed that subsidence associated with the proposed mining will "adversely impact riparian wetland habitats" and that there is "a critical need for an adequate 'protection and enhancement plan'" pursuant to Section 89.74 (letters from W. Capouillez to W. Plassio, dated 13 October and 3 November 1999). When the permit revision was issued without consideration of its expressed concerns, the PGC filed an appeal of the decision on 22 March 2000 (Environmental Hearing Board 2000). In a file memo detailing the sequence of events leading to the permit appeal, the PGC noted that "DEP concurs with Consol's previous comment that wildlife habitat and wetland documentation, delineation, protection, and/or mitigation has never been made a permit requirement during DEP's review of subsidence control acreage" (PGC file memo on Bailey Mine Revision, dated 8 March 2000).

Contributions to the PA Wetland Replacement Fund Project are routinely accepted by BMR in lieu of actual replacement for acknowledged wetland impacts, without the required demonstrations that onsite creation is not practicable.

Vesta Bituminous Coal Mining Activity Permit #63951601, Vesta Mining Company. During December 1997 a permit was granted to construct and operate a new coal preparation plant, 227-acre waste coal refuse disposal pile, and wastewater discharges in North Bethlehem Township, Washington County. The following problems posed no difficulty to BMR when issuing the permit:

♦ NWI maps showed no wetlands for this site. Wetlands on half of the site were field-identified accurately by a consultant (Keilman Environmental Services 1992). Not all existing wetlands and waters were acknowledged on the other half of the site investigated by a different consultant (Killam 1994b). Yet the wetland delineation was attributed entirely to the original consultant in the formal permit application submitted ten months later (Killam 1994c; see Schmid & Co., Inc. 1998).

♦ The PADEP permit fails to mention the loss of 2 miles of a Daniels Run tributary (4 acres of highly productive stream channel, (Figure 25) and of 3.35 acres of wetlands to the proposed construction of a coal refuse pile, as shown on the application drawings.

♦ The planned loss of additional onsite wetlands and a pond was ignored entirely in the application narrative although shown on the drawings.

♦ The permit area and resource inventory do not include an offsite "mitigation area" where existing wetlands meeting the PADEP definition of "Exceptional Value Wetlands" were proposed to be destroyed in order to form a sediment basin, in clear violation of *25 Pa. Code* 93.4a(b) and (d).

♦ No replacement for the authorized loss of onsite or offsite wetlands was proposed by the applicant or required by PADEP in accordance with 25 *Pennsylvania Code* 105.20a.

Emerald No. 1 Mine, Permit #30841307, Cyprus Emerald Resources Corp.: During March 1998, Cyprus applied for the 31st permit revision for its Emerald No. 1 Mine in Franklin Township, Greene County, to install the No. 4 Bleeder Shaft and the No. 8 Shaft (Figure 17). Attachment 14.3.a to this application is a wetland report, which identifies wetlands using the *Corps 1987 Manual*. To compensate for the 0.17 acre of wetlands to be impacted, the applicant proposed, and the BMR accepted (without preparing the required Record of Decision), a $1,000 contribution to the PADEP Wetland Replacement Project Fund. This

contribution was calculated in accordance with the PADEP fee schedule for wetland compensation, which heavily subsidizes permittees Statewide who are allowed to fill wetlands. PennDOT's actual per-acre cost to successfully create the required wetland functions in southwestern Pennsylvania a decade earlier was 64 times as much as this Fund contribution (McCoy 1992).

Since 1996 such contributions to the Fund have been accepted by PADEP as satisfying Chapter 105 wetland mitigation requirements for impacts totaling less than 0.5 acre, but only after the applicant first demonstrates that on-site replacement is not practicable, is not environmentally necessary, is not environmentally sustainable, and that on-site area is not adequate for a replacement site. No such demonstrations were made by the applicant in this case. Indeed, it is hard to imagine that the applicant would have been unable to find a half acre of suitable upland on which to create replacement wetlands anywhere within the 16,548 acres of the underground mine permit area (or even within the 310 acres of surface activity areas associated with this mine). Evidently BMR did not require that the permittee even consider doing so.

Unresolved discrepancies between proposed activities described in a mine's air quality application and those described in the same mine's operation plans make it virtually impossible for the public to understand what has been submitted to or approved by PADEP.

On occasion, a mine applicant actually appears to follow the required procedure of identifying and avoiding wetlands, as in the recent application for surface activities at the Maple Creek Mining, Inc./UMCO Energy Inc. New Century Mine (#63921301). Earthwork was proposed to be kept outside all identified wetlands, although no basis for the wetland determination was included with the application.

MODULE 15 - MINE OPENINGS

This module requires designs, reports, and specifications for mine openings (*e.g.*, shaft, slope, or drift entries) and mine seals proposed as part of the mine operation. All such designs, reports, and specifications are to be prepared by a licensed professional engineer. Module 15 is relevant to wetlands only to the extent that wetlands may exist in the vicinity of a proposed mine opening where it reaches the surface or where it tunnels beneath a wetland. Section 15.2.a requires applicants to "... provide a drawing showing those features which are relevant to protecting the hydrologic balance" for each shaft, slope, or drift entry. This module should direct that wetlands near or above mine openings be identified on the drawing and protected when the mine opening is designed.

MODULE 16 - IMPOUNDMENTS

This module requires design plans, reports, and specifications for impoundments proposed as part of the mine operation. All such plans are to be certified by a qualified registered professional engineer or land surveyor.

Positive Aspects:

Section 16.3 specifically directs the applicant to indicate whether a proposed impoundment meets the regulatory criteria for a Chapter 105 dam. Section 16.6 (Removal of Impoundments) alerts the applicant that plans for any impoundment which is proposed to remain following reclamation will be forwarded for review to the Bureau of Dams and Waterway Management (now Division of Waterways, Wetlands and Erosion Control).

Deficiencies:

Impoundments typically are sited in topographic depressions. Such depressions

Figure 25. Unnamed, spring-fed, perennial tributary of Daniels Run (Tenmile Creek/Monongahela River basin), Washington County. Two miles of this stream were authorized by PADEP-BMR for destruction in 1997 along with 3.4 acres of acknowledged wetlands. Most of the wetlands are located along the valley above the stream channel and downslope from springs and seeps. Invertebrate diversity was as high in this stream as in any other in southwestern Pennsylvania.

Figure 26. Subsidence is visible along a railroad, Washington County. The upper photo shows the five feet of new ballast necessary here to restore railroad function after longwall mining. The lower photo shows that subsidence has continued since repairs were made to the roadbed.

may contain natural wetlands. Module 16 fails to advise applicants that the construction of an impoundment of any kind in a wetland is considered a significant impact that requires mitigation and replacement. In fact, wetlands are never mentioned in Module 16 of longwall mining applications.

Suggestion for Improvement:

This module should advise applicants that the construction of an impoundment of any kind in an existing wetland is considered a significant impact that requires a consideration of alternatives as well as mitigation and replacement, whether or not it is a part of coal mining operations.

MODULE 17 - AIR POLLUTION AND NOISE CONTROL

This module addresses concerns with air and noise pollution in conjunction with coal processing facilities, mine ventilation equipment, access and haul roads, loading and unloading areas, conveyors, stockpiles, and crushing and sizing equipment. It does not apply to wetlands.

In the case of the Vesta Bituminous Coal Mining Activity Permit #63951601, Vesta Mining Company, for a coal preparation facility in North Bethlehem Township, Washington County, there were significant discrepancies between the proposed surface facilities described in the air quality application and those described in the mine operation plan (Schmid & Co., Inc. 1998). Discrepancies in the plans submitted to BMR apparently posed no impediment to permit issuance, although they make it virtually impossible for the public to ascertain what has been submitted to or approved by PADEP.

MODULE 18 - SUBSIDENCE CONTROL

This module requires the applicant to provide an inventory of structures within the subsidence control plan boundary and for adjacent lands that potentially may be affected within a 25-degree angle of draw. It also requires descriptions of various aspects of the subsidence control plan, including how mining will be conducted to prevent planned subsidence damage to certain structures or resources and what measures will be taken to minimize damage to certain others (Figure 26).

Positive Aspects:

The required information includes specific details about how the mine operation will be conducted to prevent, minimize, or repair damages due to planned subsidence. Among the resources specifically to be protected are perennial streams (defined in §89.5 as providing habitat for two or more species of aquatic organisms), the values and uses of which are to be maintained by specific mining methods or techniques. Anticipated effects of planned subsidence on the land surface due to high extraction mining, as well as measures to mitigate such damage as may occur, also must be discussed.

Deficiencies:

1) As pointed out previously, Module 14 (Streams/Wetlands) directs the applicant to identify all existing wetlands in the permit area on each of three exhibits, one of which is reported to be Exhibit 18 (Land Use and Reclamation Map); unfortunately, no such Exhibit of that name or number is mentioned in Module 18 of the underground mining permit application.

2) Wetlands are not specifically mentioned anywhere in Module 18 among the various features or resources to be described or identified in the Subsidence Control Plan,

despite the certainty of damage to wetlands by subsidence.

Suggestions for Improvement:

1) If the reference to Exhibit 18 in Module 14 is intentional, such an Exhibit should be included in Module 18 and the applicant should be directed to identify all wetlands on it, with the appropriate cross-reference to Module 14.

2) Concern for wetlands should be specifically added to the following sections of Module 18:

- In Section 18.2.f., where the applicant is directed to describe in detail how mining activities will be planned and conducted to prevent subsidence damage to seven other specific features,

- In Section 18.2.i., where the applicant is directed to describe measures which will be taken to assure that the value and uses of perennial streams are not impaired,

- In Section 18.2.k., where the applicant is directed to discuss the anticipated subsidence effects on the surface lands which overlie parts of the mine where high percentage (longwall) extraction of coal will take place,

- In Section 18.2.l., where the applicant is directed to describe the methods which will be used to mitigate subsidence damage which may occur.

No wetlands were identified on Exhibit 19.2 in the Bailey Mine permit revision application to add more than 11,000 acres to the longwall operation, despite the fact that the National Wetland Inventory maps identify numerous emergent, forested, and riverine wetlands within the mine permit area.

MODULE 19 - UNDERGROUND MINE PLAN MAPS

In this module the applicant is directed to map the extent of the underground permit and subsidence control areas, and within those areas to identify numerous natural and man-made features and resources (Figure 27).

Positive Aspect:

Section 19.2 directs the applicant to prepare an Environmental Resources Map (at a scale of 1" = 500' or larger) on which are to be shown numerous features and resources, including wetlands. The inclusion of "wetlands" among other listed "surface water bodies" on these large-scale maps is significant, and clearly indicates the BMR's obligation to protect them. In theory, the Environmental Resources Map should be the single most important exhibit in the application for identifying wetlands and other natural resources that require protection (Figure 29).

Deficiencies:

1) There is no directive in Module 19 as to *how* wetlands to be shown on Exhibit 19.2 are to be identified. Typically, if wetlands are shown at all, the wetlands are those depicted on airphoto-based National Wetland Inventory (NWI) maps, which significantly underreport wetlands, particularly spring seeps in forested regions of Appalachia (Stolt and Baker 1995; Klemow 1998; Klemow *et al.* 1999; Schmid 2000).

2) There are no cross-references between Exhibit 19.2 and Module 14 (Streams/ Wetlands) or Section 8.6 (Prediction of Hydrologic Consequences) of Module 8. Lacking a direct connection with Module 14 and Sections 8.6, simply showing wetlands on Exhibit 19.2 provides no protection of them and no assessment of potential impacts to them.

3) Section 19.3 directs the applicant to prepare a Subsidence Control Plan Map (at a scale of 1" = 500' or larger). Section 19.3.d.

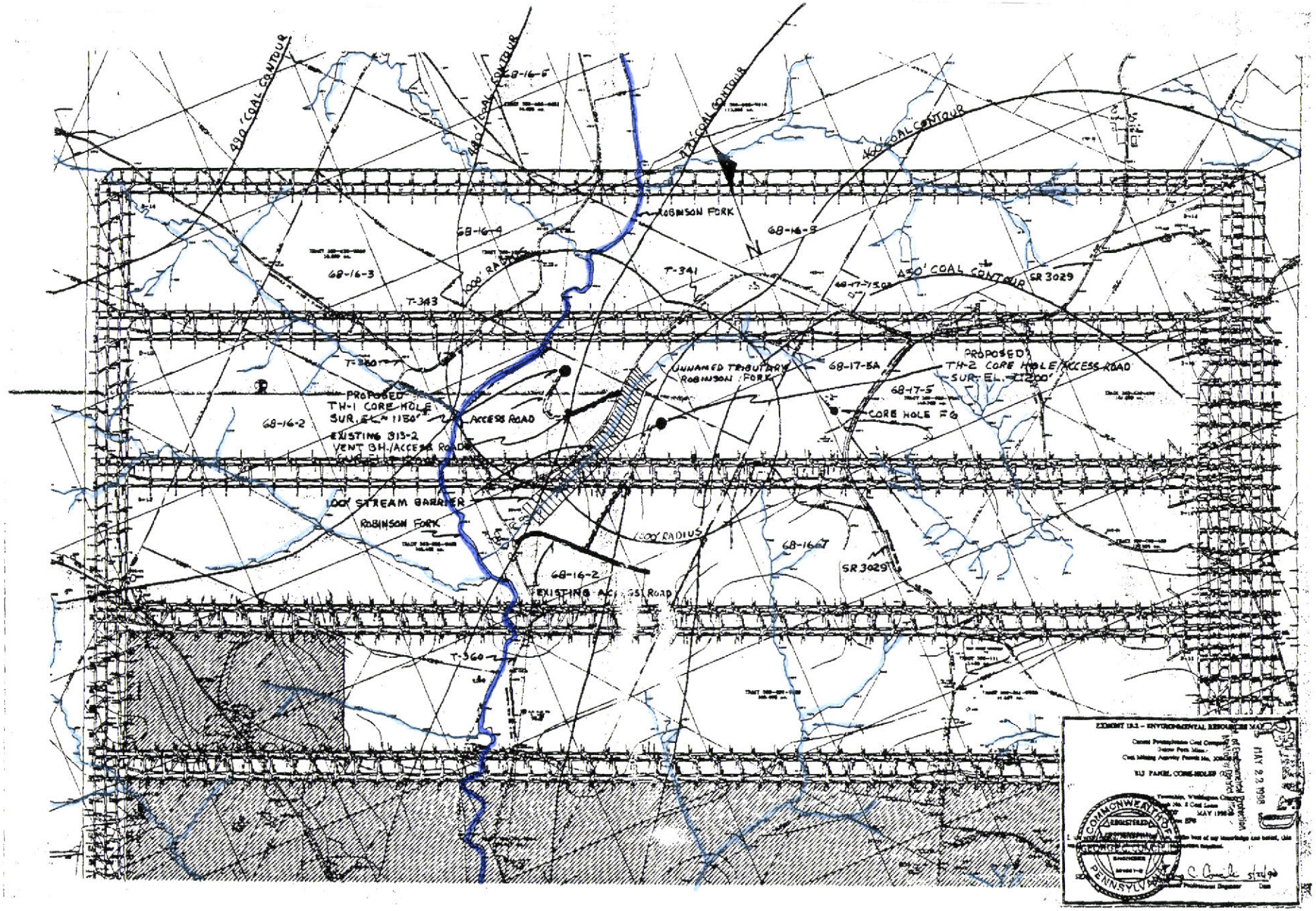


Figure 27. Environmental Resources Map (Module 19.2) for Enlow Fork Mine, Revision No. 35 for boreholes, 1998, showing longwall panels, entries, contours of depth of cover above the Pittsburgh seam, and mined-out areas (diagonal shading). The longwall panels pass beneath Robinson Fork (which flows southwest-northeast through the center of the depicted area) and its tributaries. Wetlands were field-delineated in the vicinity of this surface activity, then filled.

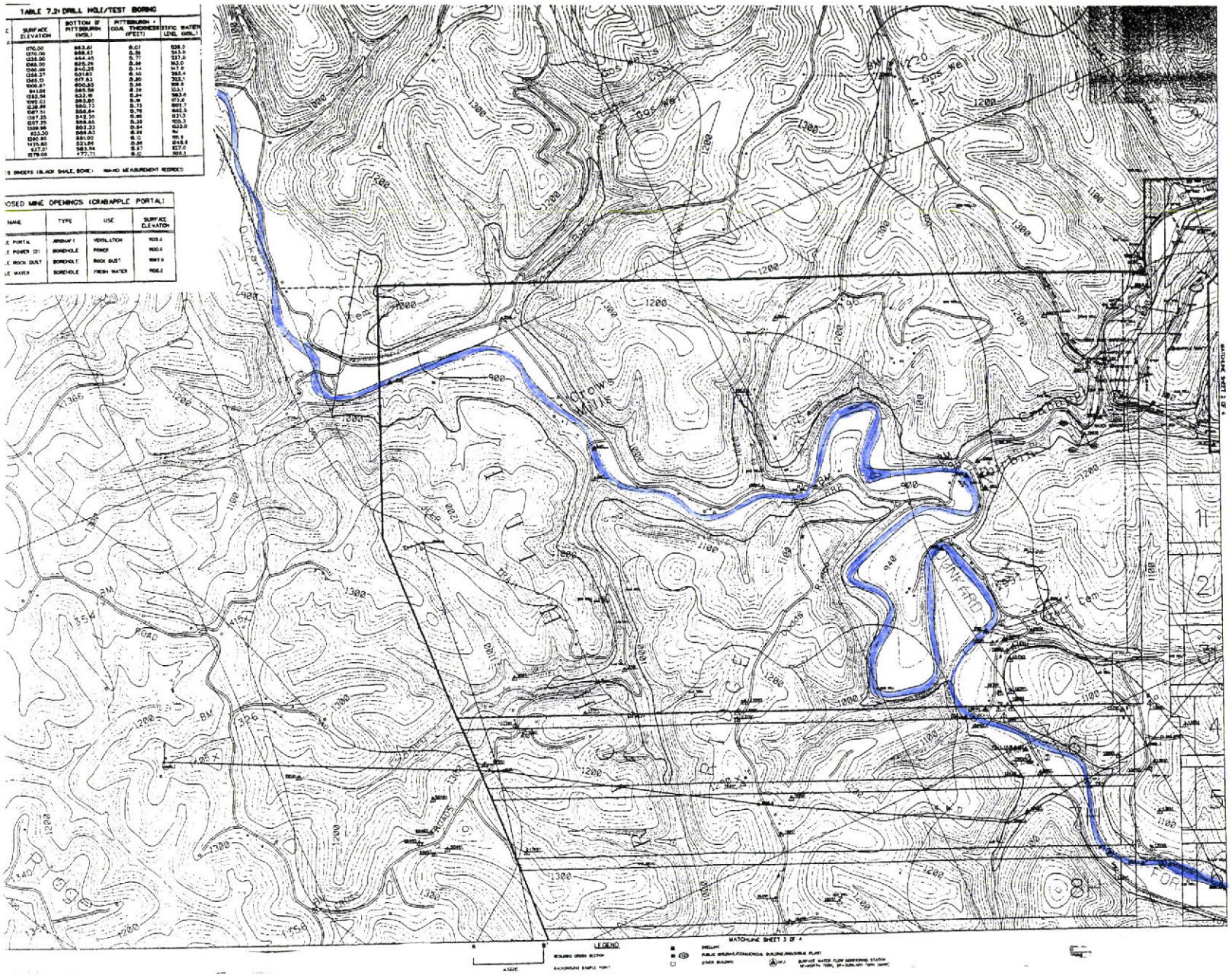


Figure 28. Environmental Resources Map (Exhibit 19.2) for a section of the Bailey Mine, Greene County, Pennsylvania, submitted with Revision 71. The longwall panels cut across topographic features such as Dunkard Fork of Wheeling Creek. No wetlands were identified in the 11,000 acres of permit area added by Revision 71, either from NWI mapping or field investigation.

lists twelve "features and resources relevant to subsidence control plan development". Inasmuch as planned subsidence can change both the topography and hydrology of wetlands, it is essential that all existing and proposed wetlands be identified on this map. Wetlands, however, are not specifically mentioned among the resources to be shown on this map.

Suggestions for Improvement:

1) Module 19 should make it clear that wetlands to be identified on Exhibit 19.2 are to be delineated according to the PADEP wetland delineation policy stated at 25 *Pa. Code* 105.451.

2) There should be a cross-reference between Exhibit 19.2 and both Module 14 and Section 8.6.

3) Section 19.3 should add "wetlands" to the list of resources that are to be delineated and shown on the Subsidence Control Plan Map. Appropriate cross-references also should be made to Module 14 and Section 8.6.

Actual Examples:

Bailey Mine, Permit #30841316, Consol Pennsylvania Coal Company: During December 1996, Consol applied for the 71st permit revision for its Bailey Mine in Richhill Township, Greene County. This permit revision, to add 11,120 acres to the underground mine permit area and 4,126 acres to the subsidence control plan area, was approved by BMR on 24 February 2000. Exhibit 19.2 for this permit revision is an enlargement to 1" = 500' of the 7.5-minute USGS topographic quadrangles. The Exhibit identified no wetlands within the permit area, despite the fact that the National Wetland Inventory overlays to the relevant USGS quadrangles identify numerous emergent, forested, and riparian wetlands within the mine permit area (Figure 26).

Emerald Mine, Permit #30841307, Cyprus Emerald Resource Corp. The Environmental Resources Map submitted for Permit Revision 32 in 1997 identifies only 10 of the 13 NWI wetlands mapped within the 1,954-acre permit expansion area. No field confirmation of the nature, functions, or extent of the NWI wetlands or analysis of probable impacts was performed by the applicant or required by BMR.

MODULE 20 - RECLAMATION PLAN

This module directs the applicant to discuss proposed plans for reclamation of each surface activity site, including a reclamation schedule, postmining land use, specifications regarding regrading, soil evaluations, and temporary and permanent revegetation. This module is generally not applicable to wetlands. Any plan for mitigation or replacement of wetlands impacted presumably would be separate from the typical mine reclamation plan that covers non-wetland areas, and would be described in accordance with Module 14, Section 14.5. A cross-reference to the wetland replacement plan in Module 14 would be appropriate here.

MODULE 21 - RECLAMATION COST ESTIMATES

This module includes separate forms for "Structure Demolition" (Form 21.1A), "Surface Area Reclamation" (Form 21.2A), and "Mine Seals" (Form 21.3A), on which are to be listed relevant specifications and estimates of reclamation costs. If a postmining discharge is expected, the costs of anticipated water treatment also are to be provided.

The costs associated with any wetland mitigation or replacement project proposed in accordance with Section 14.5 should be listed on Form 21.2A to facilitate their inclusion in performance bond calculations. That is not clearly stated, and no examples of such costs having been bonded were found in BMR files.

MODULE 22 - UNDERGROUND DISPOSAL/BACKSTOWING

This module must be completed if any water, waste, or backfill material is proposed to be placed in underground mine voids. If solid waste material can be returned to the mine void, the extent of subsidence can be reduced. If the amount of surface subsidence is reduced, the impacts on wetlands and other resources that otherwise would be affected is lessened. As discussed above, impacts on wetlands and other surface resources could be reduced significantly if backstowing were practiced in southwestern Pennsylvania. This module typically is not required, prepared, or submitted.

MODULE 23 - IN SITU PROCESSING

This module must be completed if activities involving the in-place processing of coal or coal byproducts are proposed. Descriptions are to be provided of measures to be taken "to prevent groundwater and surface water contamination, damage to fish and wildlife, and threats to the public health and safety". Wetlands are not specifically mentioned, but should be. In-situ processing of coal is rare in southwestern Pennsylvania, and this module normally is not prepared.

MODULE 24 - SOCIAL AND ECONOMIC IMPACT STATEMENT FOR HIGH QUALITY WATERS

This module must be completed if the proposed area to be mined is located within a High Quality watershed classified by PADEP pursuant to 25 *Pa. Code* Chapter 93. Physical and chemical information about the coal, the use and nature of each proposed receiving stream, land use information, and certain economic statistics are to be provided. The overall impact of the proposed mining operation, considering adverse impacts versus net benefits, is to be determined.

In High Quality watersheds, the waterways are of such excellent quality that the PADEP has granted them special protection status following an elaborate review process that includes public notice. As a result, activities that could potentially degrade the quality and use of those waters are supposed to receive closer scrutiny than normal. One of the important functions of wetlands is their ability to protect and maintain water quality. Wetlands within any watershed help to support and maintain the uses of the waterways, but this is especially important in High Quality watersheds. Wetlands, unfortunately, are not mentioned specifically among the resources to be addressed in this module.

Also missing from this module is any identification or assessment of EV (Exceptional Value) waters or watersheds. EV waters are even rarer than HQ waters and are supposed to be afforded even greater regulatory protection. It is not clear why there is an entire module devoted to the assessment of impacts in HQ waters and no comparable assessment for EV waters, unless PADEP has determined that it intends never to designate any EV waters in counties with underground mines. The BMR Technical Manual for Stream Protection (PADEP 1998f) does advise applicants to consider EV as well as HQ waters.

Actual Example:

Mine 84, Permit #63831302, Eighty-Four Mining Company. When the application to renew the permit for this mine in Somerset Township, Washington County, was submitted in 1997, the operation encompassed 35,458 acres (55 square miles) of permitted underground area. Overlying a previously unmined section of the permit area is part of the Little Chartiers Creek watershed (classified as HQ-WWF). In Module 4 of this permit application, the applicant correctly acknowledges that the proposed permit area for the longwall operation is within a

designated High Quality watershed. Consequently, Module 24 should have been completed and included with the application, but none was.

During 1995, comments were submitted to PADEP by People United to Save Homes (PUSH) in response to an earlier permit revision application for Mine No. 84. Those comments pointed out that the required Module 24 had not been submitted. No Module 24 was submitted with the 1997 renewal application, despite the "requirements" and the earlier comments directed to PADEP, yet the permit was issued on 4 November 1997.

APPENDIX A: REQUIREMENTS FOR PERMIT TRANSFER, CHANGES IN NAME OR OWNERSHIP

This 2-page appendix lists the required paperwork associated with the transfer of a permit to a new entity or the change in name or ownership of the permittee. To the extent that the creation and monitoring of a wetland replacement project are permit conditions, those responsibilities should be highlighted in this section and transferred formally with any change in permittee.

Permit Revisions and Renewals

Permits for longwall coal mines in Pennsylvania currently are applied for in a piecemeal fashion. An entire mine operation never is approved and bonded all at once. These major operations methodically expand beneath thousands of acres, and the undermining continues over a period of years or decades.

As defined at §86.52 in the mining regulations, a "permit revision" is necessary whenever there is "a change to the coal mining activities set forth in the application upon which the permit is issued". As with the original application, the revision application must "demonstrate [that] the proposed revision complies with the acts and this chapter". Permit "renewals" can be authorized to extend the term of a mine permit in accordance with §86.55. Applications for permit renewals are made using a Renewal Application, Coal Mining Activity Permit (5600-PM-MR0385). Permit renewals require the typical public notices as well as publication in the *Pennsylvania Bulletin*.

It is common practice for a mine operator to seek numerous permit revisions to expand the longwall operation. A permit revision may involve a relatively minor change, such as the installation of a bleeder airshaft or a ventilation borehole. Alternatively, a permit revision may be sought to allow the mine operator to add substantial additional acreage to the underground mine or subsidence control areas. A single permit revision can address an area the size of the City of Allentown (17 square miles).

By piecemealing a single, huge longwall mine operation into smaller "revisions", each separate application can appear to involve fewer impacts that by themselves may be considered relatively minor, absent cumulative review. Yet a single permit revision can address an area the size of the City of Allentown.

The dozens of permit revisions for the same mine operation span decades and encompass many dozens of square miles. According to both the regulations [§86.52(d), §86.55(b)] and technical guidance on permit renewals (PADEP 1997b), the proposed addition of acreage to a coal mine operation is considered a new permit application, and it is not to be processed as either a permit revision or permit renewal. In practice, expansions of mine permit areas are treated by BMR as "revisions" in that they are not assigned new permit numbers and they are listed among other revisions on each successive version of the original permit. BMR commendably lists the

current cumulative totals for underground permit acreage and surface activity acreage in each permit revision. It consistently fails, however, to keep a cumulative tally of wetland impacts and other encroachments.

Actual Examples:

Bailey Mine, Permit #30841316, Consol Pennsylvania Coal Co. On 24 February 2000, the 71st permit revision was approved for this mine in Richhill Township, Greene County, which began operating in 1985. This permit revision authorized an additional 11,120 acres (more than 17 square miles) of underground mine, increasing the total size of the underground mine permit area to 30,321 acres (more than 47 square miles). No wetlands were identified from NWI or other sources within the application for the additional 11,120 acres (Figure 28).

Emerald Mine No. 1, Permit #30841307, Cyprus Emerald Resources Corp. This mine in Franklin Township, Greene County, received its original permit on 9 July 1986. Twelve years later, its 32nd revision increased the underground mine permit area by 1,954 acres to 16,548 acres, nearly half of its currently projected total of 35,000 acres (55 square miles). No wetlands were shown.

By piecemealing a single, huge longwall mine operation into smaller components, each separate application can appear to involve fewer impacts that by themselves may be considered relatively minor. If the entire operation were to be presented and evaluated at one time, the cumulative impacts of all phases and all related aspects could be more effectively assessed.

Several sections of the underground mine permit application suggest that full disclosure of all aspects of the mine *is supposed* to be made. Section 5.3 (Anticipated Permits) in Module 5 directs the applicant to identify "any contiguous coal tracts or surface lands for which it is anticipated that individual permits for mining will be sought in the future" (emphasis added). Section 14.4.e in Module 14 asks the applicant whether "the cumulative impact of the proposed and anticipated mining activities [will] result in a major impairment of the wetland resource in the general area" (emphasis added), and to explain how the determination was made. These application questions aimed at identifying the full extent of an anticipated mine operation typically receive, if any, only vague and incomplete responses that are not challenged by BMR.

The review and permitting of underground mines in a piecemeal fashion is analogous to what would occur if residential developers were allowed to obtain wetland permits lot by lot, rather than for an entire subdivision. For underground coal mines, of course, the individual "lots" may encompass several thousand acres.

The review and permitting of underground mines in piecemeal fashion is like allowing residential developers to obtain wetland permits lot by lot, rather than for an entire subdivision. Coal mine "lots" may encompass several thousand acres.

Applications for Related Mining Facilities

Activities directly related to an underground mine, such as coal preparation and coal refuse disposal, often (although not always) are conducted in close proximity to the mine where the coal is extracted (Figure 29). BMR currently uses separate application forms to review coal preparation facilities and coal refuse disposal facilities.

Underground mine operators who propose to build a coal preparation plant need to submit a separate "Bituminous Coal Preparation Plant Application" (Form ER-MR-314, last revised during January 1989). This application consists of 24 modules and is a total of 45 pages long.

Figure 29. Preparation plant for coal from longwall mines dominates the landscape of the Enlow Fork of Wheeling Creek, Greene County. Subsidence has brought significant degradation of the aquatic ecosystem here.

Figure 30. Longwall mine portal, Greene County.

Figure 31. Typical valley wetlands in Washington County not identified by the National Wetland Inventory. No replacement for these wetlands was required by PADEP-BMR when it approved their destruction in 1997, although they had been identified by the applicant.

Underground mine operators who propose to develop a coal refuse disposal facility need to submit the "Coal Refuse Disposal Application" (Form ER-MR-39, undated). This application consists of 19 Modules and is a total of 62 pages long.

When applications for these related aspects of a single mine operation are not made simultaneously, the specific details of the proposed operation may differ from one application to the next, generating unresolved contradictions. BMR does not require consistency between the different applications for mining operations, so the public understandably has difficulty in commenting on probable impacts.

Actual Example:

Vesta Mine "Reopening", Permit #63951601, Vesta Mining Company. This new corporate entity applied for a permit for a coal preparation facility and a refuse disposal facility in North Bethlehem Township, Washington County, in 1997. These facilities were intended to serve a proposed underground Hillsboro Coal Company Mine (File #63971301), for which a separate permit application was made that same year by a related company owned by the same conglomerate. Details concerning the methods of mining, annual rate of production, need for haul roads and rail sidings, and source of coal for the preparation plant varied significantly between the two applications and within different modules of the same application (Schmid & Co., Inc. 1998).

Interagency review is not effective in preventing mine-related damages to wetlands or other environmental resources because little information is provided and comments are ignored by BMR.

Review and Comment by Other Agencies and by the Public

In the course of BMR review of an underground mine permit application, other State and Federal agencies are offered an opportunity to review and comment. The BMR has established Memoranda of Understanding (MOUs) with the Pennsylvania Game Commission (PGC), the Pennsylvania Fish and Boat Commission (PFBC), and the US Office of Surface Mining in the Department of the Interior. In addition, the BMR has established Interagency Agreements with the PADEP Bureau of Waste Management and with the Pennsylvania Historical and Museum Commission.

The opportunity for comments by other agencies potentially could provide "checks and balances" during the mine permit review process. It might also bring some technical ecological expertise into the process. In reality, neither happens. In its MOU with the PGC, PADEP specifically retains its "lead role in identifying and delineating wetlands areas and in evaluating the impact of proposed mining activities on wetlands" (PADEP 1998e). Likewise, in its MOU with the PFBC, the PADEP asserts that "DEP mining program staff will have the lead role in evaluating the impact of proposed coal mining activities on wetlands pursuant to the provisions of Chapter 105" (PADEP 1998d). The BMR's lead role includes the ability to disregard comments.

In the procedures established pursuant to the MOUs with both PGC and PFBC, the PADEP provides to the resource agency only those "portions" of a coal mine application that BMR determines are "appropriate" or "relevant". The commenting agencies then are required to provide their review/response within 30 days. Lack of a response within that timeframe is deemed concurrence with the application.

In general, interagency review is not particularly effective in preventing mine-related damages to wetlands or other environmental

resources. When no inventory data or analysis are provided in applications, review comments regarding wetlands cannot be substantive. The PGC and PFBC can provide comments only; the BMR retains final decision-making authority.

The Pennsylvania Game Commission has a standard letter of comment that it issues for most longwall permit applications. The rather noncommittal, bureaucratic comment appears to reflect their relative impotence in the environmental review process:

> We [PGC] have reviewed the [subject] material and have determined that if all requirements of 25 PA Code Chapters 86 and 87 are adhered to, we can find no basis for objecting to the issuance of this permit.

The standard PGC comment does not directly mention Chapters 93 or 105. PGC sought, however, to challenge the Doverspike coal slurry impoundment permit (discussed below) and recently filed a formal appeal of Revision 71 of the Bailey Mine permit (see discussion under Module 14) because no wetland information is being provided by BMR that would make substantive PGC review possible.

The public review process, like the application forms and the regulatory requirements, appears to be a formality meant to placate and mislead the general public with respect to wetland protection.

The US Fish and Wildlife Service (USFWS) also often raises objections when it believes they are warranted. That its comments and objections, like those of the State environmental resource agencies, usually are ignored by BMR, is a source of frustration to USFWS.

Public notices provide a bare minimum of information regarding mining applications. Copies of the full application are made available at the McMurray District Office of BMR and at the county courthouse or other public location. Advertised public hearings provide an opportunity for the public to acquire additional information about proposed mining activities. Yet it is difficult at best for the public to review new applications for mines in the absence of information on prior activities not included in complex new applications.

The public is accustomed to having the concerns expressed during public hearings and in writing during the permit process ignored by BMR. Public concerns seldom, if ever, are reflected in permit conditions attached to mining approvals. Hence the perception is widespread in the coalfields that BMR is allied with politically powerful coal interests against the general public, a perception reinforced by BMR's routine failure to protect wetlands and other resources.

Actual Examples:

Doverspike Brothers Coal Slurry Impoundment, Permit #33860701, D33060, and D33061. The USFWS recounted at length the unwillingness of BMR to consider the objections of the US Environmental Protection Agency, the USFWS, and the Pennsylvania Fish Commission to the Doverspike coal slurry impoundment in Ringgold Township, Jefferson County (Hietsch 1992). About 3.5 acres of wetlands and 3,000 feet of healthy perennial stream were eliminated following the issuance of permits in 1989 and 1990. The applicant began construction prior to issuance of all requisite permits, but incurred no penalty. No replacement of the impacted wetlands was proposed or required. A PGC challenge to these permits was rejected as untimely.

84 Mine, Permit #6381302, Eighty-Four Mining Company. Another instructive example of the unwillingness of BMR to accommodate public comments is found in the record of an application to expand the former Bethlehem Steel Corporation Mine 84 in Washington County (now owned by Consol/RWE). The

Eighty-Four Mining Company proposed to add more than 9,500 acres to the authorized subsidence area of a mine complex that already occupied 27,900 acres. An exhaustive review of this application was submitted by affected landowners organized as People United to Save Homes (PUSH 1995). The line-by-line review pointed out some 230 omissions of "required" information from those modules that were submitted by the applicant to support its application.

Predictably, no Module 14 was submitted. In that section of the proposed subsidence area within the Washington East USGS topographic quadrangle, the PUSH group identified 55 acres of wetlands at risk. None of these wetlands had been acknowledged in the permit application. Photographs of the wetlands were provided to BMR. Moreover, 14 existing ponds in the subsidence control area were omitted from the applicant's exhibits (Funderburk 1995).

The "Written Findings Document", which BMR is required to prepare for each mine it approves, is itself deficient because it omits at least three important criteria for approval concerning impacts.

The public comments clearly were ignored by BMR. The permit was promptly approved. The same practice of dismissing public comments appears repeatedly in the records of public hearings on longwall mining applications. That such incomplete applications are readily accepted and approved by BMR, even after the deficiencies are pointed out during public review, leads to the inescapable conclusion that the public review process, like the application forms and the environmental requirements in the regulations, is merely a formality meant to placate and mislead the general public.

Permit Approvals

Before a permit for an underground mine is issued, the BMR is required to prepare a "Written Findings Document" which ostensibly states that the applicant has satisfied all of the conditions required for approval. The BMR uses a pre-printed form with 13 listed standards and a signature line for *Chief, Permits Section.*

The "Written Findings Document" paraphrases the required conditions for approval per §86.37 and §86.38. However, it is deficient in several important ways because it omits at least three crucial considerations found at §86.37(a), namely that

> the requirements of the acts ... have been complied with,

that

> The assessment of the probable cumulative impacts of all anticipated coal mining in the general area on the hydrologic balance [has been made], (emphasis added)

and that

> the activities proposed under the application have been designed to prevent damage to the hydrologic balance within and outside the proposed permit area. (emphasis added).

The permit approval for a given mine application or revision typically does not reference a specific set of drawings. Between the initial receipt of an application by BMR and permit approval, project drawings and data may be revised numerous times. Unless specific, dated drawings and written narratives are referenced in the official permit, it cannot be clearly determined afterwards what activities were approved and which conditions were imposed by BMR.

Actual Example:

In the application for Vesta Bituminous Coal Mining Activity Permit #63951601 there were various designs for the proposed wastewater discharges subject to NPDES permit approval.

The approved permit allows two effluent outfalls to an unnamed tributary, but the application drawings show three outfalls to Daniels Run itself. Just what outfalls BMR actually approved in this permit cannot be deciphered from the permit file, and the permit itself cites no drawings. Such lack of care exhibited during the BMR permit review and approval process provides no basis for public confidence in the achievement of environmental protection for waters, wetlands, or other resources.

Proposed Underground Mine Permit Application Form

During March 1999, the PADEP-BMR circulated for public review and comment a draft of a proposed new application form. Entitled "Application For Bituminous Underground Mine, Coal Preparation Plant And/Or Coal Refuse Disposal Area" (Form 5600-PM-MR0324), the new form consists of 31 modules and is 116 pages in total length, not counting the 11 pages of instructions that accompany it. As of June 2000, the proposed consolidated form had not been finalized, and there was no information as to when it might be adopted for use.

The following paragraphs summarize highlights of the proposed new application form as it relates to the identification and protection of wetland resources. This summary is not intended to provide a thorough review and analysis of the proposed new form.

The new application form would consolidate and replace information currently required in the three existing, separate applications for related underground coal mine operations. The new form elicits little new information beyond existing requirements. Its primary purpose appears to be to reduce duplication among the old application forms by reformatting the information requested. The new form offers the potential for applicants to provide a consistent proposal to mine coal, clean it in preparation for sale, and dispose of the resultant waste. The proposed application form is significant in that it provides some insight into what the BMR currently considers important in the review process for new underground coal mines.

Provisions for wetland protection and compliance with Chapter 105 requirements continue to be included on the proposed form. In general, however, the wetland information required in the proposed application form appears to be substantially less comprehensive than in the existing application forms.

The principal section of the proposed application which is devoted to wetland issues is Module 15 (Streams/Wetlands). This module is similar in some respects to the existing Module 14 (Streams/ Wetlands). Several major deficiencies exist, however, which make the proposed Module 15 even less protective of wetlands than the existing Module 14 might be, if Module 14 were properly completed by applicants.

One significant deficiency in Module 15 appears in its third section (15.3 - Wetland Related Information) which requires an inventory of only those wetlands which "occur on or within 1,000 feet of surface activity sites". This is a major change from the comparable section of existing Module 14. Current Section 14.3 (Wetland Related Information) addresses all wetlands that "exist within the proposed permit area", which includes all areas above the underground mine area, not just the surface activity sites.

Another major deficiency in proposed Module 15 is that there is no mention as to how those wetlands that are to be inventoried are to be delineated. Presumably, as stated in Module 14 of the existing application form, "wetlands should be identified and delineated in accordance with the Department's Wetland Delineation Policy referenced in 25 *Pa. Code* Section 105.451" using the 1987 *Corps Manual*, but this statement does not appear in the proposed Module 15.

Inasmuch as not all wetlands are to be identified in Section 15.3, the impact analysis and assessment subsections of Section 15.4 and the wetland mitigation/replacement requirements of Section 15.5 presumably would apply only to the inventoried wetlands. Because the underground mine operation can cause significant direct and indirect impacts to any wetlands that overlie it, irrespective of any surface activities, many wetland impacts will not be identified and so will never be assessed in accordance with proposed Section 15.4, or mitigated/replaced pursuant to Section 15.5.

Another deficiency of Module 15 is that Section 15.5 (Wetland Mitigation/ Replacement) is phrased so as to make it appear that wetland mitigation may be optional: "If wetland mitigation measures or wetland replacement are proposed, address the following..." (emphasis added). Applicants likely would be pleased to consider wetland mitigation optional, but the applicable mining, Chapter 93, and Chapter 105 wetland regulations do not suggest that BMR lawfully can allow it to be so.

Subtle but significant changes in BMR's proposed application form would further weaken the protection of wetlands.

These rather subtle, but significant changes in the proposed application form would further weaken the protection of wetlands because they do not elicit an adequate amount of information about the wetlands at risk. Chapter 105, of course, requires that *all* wetland encroachments must be identified, and that those wetlands where encroachments cannot be avoided must be replaced, with no exception for underground coal mines.

Other sections of the proposed application form where the applicant is directed to provide wetland-specific information include Module 6, Exhibits 6.2 and 6.3 (Environmental Resource Maps); Module 8, Section 8.3 (Inventory Information), Section 8.4 (Background Sampling and Measurements), and Section 8.5 (Prediction of Hydrological Consequences/ Protection of Hydrologic Balance); Module 9, Exhibit 9.1 (Operations Map); and Module 26, Exhibit 26.4 (Remining Map). In each of these cases except Section 8.5, however, the wetlands to be identified are only those which occur on or within 1,000 feet of a surface activity site.

In proposed Section 8.5.a, a narrative description is to be provided addressing, among other things, the potential draining of "wetlands which overlie the underground permit area". This directive suggests that PADEP expects all wetlands, not only those near surface activity sites, to be identified and potential impacts to them assessed. This interpretation, however, is contrary to the explicit directives in proposed Module 15, the principal section of the application that deals with wetlands. The apparent conflict in directives is not resolved in the application form or its instructions. Obviously, the conflict should be resolved before the new form is adopted. The numerous recommendations set forth above regarding individual modules of the existing form also should be incorporated into the new form.

Section Summary

Despite the formal agreement between DWWEC and BMR that BMR will administer and enforce the DSEA, the Clean Streams Law, and related Chapter 93 and 105 regulations for mining activities, and despite clearly articulated statements throughout the mining regulations that mine activities are to be conducted so as to protect wetlands and comply with the DSEA, Clean Streams Law, and all applicable Chapter 93 and 105 requirements, BMR routinely does not do so.

Inadequacies with the underground mine application forms themselves, and with the information provided by applicants that BMR accepts, result in a number of significant

consequences:

1) Necessary and appropriate inventory information about the type and location of wetland resources, that would enable the evaluation of compliance with Chapters 93 and 105, is not elicited by the modules, much less addressed by BMR.

2) As a result of 1), impacts on wetlands are not quantified or assessed, nor are they avoided or minimized, because most wetlands are never even acknowledged to exist.

3) No baseline monitoring in wetlands is required to ascertain their water source or functional values.

4) No plans for monitoring wetlands during and after mining operations are required to detect hydrologic, topographic, or other alterations.

5) Mitigation for wetland impacts from mine activities typically is inadequate because

a) the extent of wetland damage is not fully acknowledged, and

b) mitigation plans are not held to the same standards and guidelines as under the Chapter 105 Regulatory Program for non-mining activities (see PADER 1992). Typically, wetland mitigation is not required at all for underground mine-related impacts; in some cases, mine applicants' proposed "mitigation" may actually destroy additional wetlands (see Schmid & Co., Inc. 1998).

Furthermore, as discussed at length in preceding paragraphs, BMR does not ensure that applicants provide the wetland-related information ostensibly required in its forms or in accordance with its regulations. Hence there is no possibility for BMR to comply with its responsibilities under the Delegation Agreement, and there is no indication that BMR has ever tried to do so.

The primary function of provisions relating to wetlands in the bituminous underground coal mine application forms appears to be to mislead the public into thinking that BMR might be fulfilling its regulatory responsibilities, when in fact it is not.

BMR does not ensure that applicants provide the wetland-related information ostensibly *required* in its forms or in accordance with its regulations. Hence there is no possibility for BMR to comply with its responsibilities under the Delegation Agreement to enforce Commonwealth or Federal laws protective of wetlands.

SECTION VII.

GENERAL SUMMARY AND CONCLUSIONS

Wetlands are important natural resources that are valued in Pennsylvania and in the United States as a whole. State and Federal laws and regulations have been established to protect wetlands. In permit applications for most types of new development in Pennsylvania, other than longwall mining activities, wetland resources are being identified and potential effects are being assessed. Where wetland impacts are demonstrated to be unavoidable, they are being authorized by PADEP, and compensatory mitigation of some sort is being required as a condition of permit approval.

Throughout the Commonwealth, builders and public agencies seeking to construct highways, residential subdivisions, commercial establishments, or factories in or near wetlands must first identify the wetlands on the property and then design their development to avoid them.

When so little as a fraction of an acre of wetlands must be disturbed by a construction project, the applicant will be involved in a Chapter 105 regulatory permit review that can take a year or longer to complete. Unavoidable wetland losses greater than 0.05 acre must be compensated. The DWWEC regulatory system generally is working to protect wetlands throughout the Commonwealth; not so with the procedures of BMR, which has been delegated Chapters 93 and 105 responsibility for coal mines.

Despite the appearance of wetland protection requirements built into the regulatory process for new underground coal mines, wetlands are *not* being protected at all from wholesale damage in the bituminous coalfields of Pennsylvania. The "protections" found in the Constitution, laws, regulations, and application forms are mere words on paper, with no apparent effect on Bureau of Mining and Reclamation review of proposals for new mines. This report provides some recent examples, but the failure of BMR to protect scarce wetlands and other water resources extends back for decades and presumably reflects deliberate administrative directives. The inescapable conclusion is that BMR considers the scarce wetlands on longwall mine sites not worthy of notice, let alone regulation or replacement.

PADEP is heavily subsidizing coal mine operators at the expense of the environment, surface landowners, and the taxpaying public at large. No comparable subsidy is offered to other classes of developers in the Commonwealth.

PADEP's current, overall regulatory philosophy emphasizes "flexibility" in achieving environmental compliance. It seeks to do this in part by establishing partnerships with permit applicants and by minimizing the cost burden it places on the regulated community. Such an approach to environmental protection should never become an end unto itself, which is what appears to have happened in the context of underground mine regulation. The BMR seems to have lost sight of the fact that its primary responsibility is environmental protection. In allowing coal mine operators a virtual exemption from wetland regulation, BMR seems to have responded to coal industry complaints that mining is over-regulated and operates on an unreasonably meager profit margin, rather than laws requiring wetland protection. Unrestricted mining on a vast scale that devastates streams and wetlands is not lawful in Pennsylvania. It should not be allowed by BMR. Compensation for natural resource damages of all types should be sought from coal operators, just as it is sought from other industries that cause environmental harm.

Examination of the BMR files for mine after underground mine leads to the inescapable conclusion that BMR seeks deliberately to ignore the requirements protective of wetlands, the same requirements that PADEP imposes upon other types of industrial and construction activities Statewide, where wetlands are more abundant than in Washington and Greene Counties. Dozens more instances exist in the BMR files for each characteristic example cited in this report.

Proposed alterations of the quantity and flow of surface water and groundwater for nonmining activities are subject to PADEP permits statewide. Stream diversions, impoundments, and water withdrawals all are subject to regulatory review and approval. At least the same level of regulatory review should be afforded to the enormous longwall mines that disrupt surface and groundwater patterns in a region of exceptionally scarce wetlands as in those parts of Pennsylvania where wetlands are relatively abundant. Instead, the current review by BMR of impacts on wetlands and other water resources from longwall mining is superficial to nonexistent. Perhaps longwall mines are just too big for BMR to adequately comprehend --- after all, a single mine may encompass 35,000 acres –

the same size as the entire City of Pittsburgh (55 square miles).

By not applying the laws and regulations protective of wetlands equally to all entities who would destroy them, PADEP is heavily subsidizing coal mine operators at the expense of the environment, surface landowners, and the taxpaying public at large. No comparable subsidy is offered to other classes of developers in the Commonwealth.

Coal operators quietly are being allowed to encroach upon wetlands with impunity. When wetlands are destroyed without replacement of their critical functions, the resultant decreases in water quality or quantity and increases in downstream flooding eventually become problems that surface landowners and taxpayers at large have to bear. Longwall mine operators, who have shown the ability to raise massive amounts of capital to increase coal production per man-hour and per acre, are given no incentive to apply innovative technologies to reduce environmental impacts.

The BMR has the authority to regulate and the responsibility to protect wetlands in the context of its review of underground mine applications. It chooses not to implement either. This report demonstrates that:

Virtually all requirements for wetland identification and protection imposed on new construction in Pennsylvania are routinely ignored for longwall mining operations.

- BMR staff do not have the necessary training or expertise to identify wetlands or to understand the Chapter 93 and Chapter 105 regulatory requirements that they are obligated to enforce.

- BMR makes no attempt to elicit the necessary information from mine applicants about existing wetland resources and potential impacts.

- The application and review forms used by BMR are inadequate, are inconsistent with PADEP regulations, and fail to provide essential information that would make assessment of wetland impacts possible.

- Information about wetlands that clearly is required by the existing forms is not submitted by applicants, and the omissions are routinely ignored by BMR when processing permits and issuing approvals for longwall mining activities.

- BMR routinely ignores the comments of other agencies and the public regarding needed protection of wetlands and other resources.

- If any wetland impacts happen to be acknowledged by an applicant, the BMR makes little or no attempt to require compensation in accordance with 25 *Pa. Code* Chapter 105 (Figure 31).

- BMR routinely ignores the Chapter 105 requirement that it prepare specific written findings each time it approves a wetland encroachment.

As a result, virtually all of the requirements for wetland identification and protection imposed on new construction in Pennsylvania are routinely ignored for longwall mining operations. Adverse impacts on wetlands are routinely approved without being identified, avoided, minimized, or compensated. In most cases, adverse wetland impacts are not even acknowledged because no effort has been made by applicants or demanded by regulators to identify the wetlands at risk.

The justification for wholesale suspension of laws intended to protect wetlands when the BMR processes applications for longwall mines has nowhere been publicly acknowledged by the PADEP. Instead, this long-standing administrative practice is concealed from the public by regulations and forms that pretend to offer some measure of

protection to wetlands but in practice do not. In this respect wetlands are but one illustrative class of resources routinely destroyed by high-extraction coal mining in Pennsylvania.

SECTION VIII.

OPPORTUNITIES FOR CHANGE

The failure of BMR to protect wetland resources when permitting underground coal mines is clear. This situation, although disgraceful, is not unalterable. Indeed, there are numerous opportunities to correct and improve the current practices and procedures. Several such opportunities are mentioned below.

There is no justification for any significant loss of wetlands to underground mining whatsoever, and none has ever been provided in any permit application file. The technology exists to eliminate wetland loss resulting from longwall mining, but BMR refuses to require it.

☑ **The regulatory requirements could be simplified and made clearer as a positive first step toward actual enforcement. The proposed new application form is an opportunity in this regard.** As pointed out above, however, there are significant problems with the current version of the proposed new application form, including a general tendency to weaken current wetland protections.

The rules and regulations with which a mine operator must contend admittedly are complex and cumbersome. The affected public finds them and the resulting paperwork arcane, as well as ineffective. Making the regulations more understandable would be a positive step. However, this effort should not be equated with the Regulatory Basics Initiative focus on making the regulations less stringent.

Simplification actually may benefit BMR and the public even more than the mine operators, who have the financial resources to employ lawyers and engineers astute enough to understand the current regulations in all of their complexity, including the loopholes contained therein and as allowed by BMR practice.

☑ **The opportunity exists to employ and apply complex watershed hydrology models to existing conditions when predicting potential impacts from various mining alternatives.** Underground coal mines have become large and few in number, with each longwall operation now covering many dozens of square miles. Longwall mining entails huge capital investment and long-range planning and design. Hydrologic impact analyses ostensibly are required by the current regulations, but to date have not been carried out, especially with respect to wetlands. If properly executed, such models can help mine operators justify their operations and help BMR develop useful baseline databases against which to evaluate future mine projects.

For example, as a condition of the BMR approval of a recent revision for the Bailey Mine (Consol Pennsylvania Coal Company, Permit #30841316) in Greene County, periodic monitoring of stream flow in Enlow Fork was required to determine any adverse effects from recent longwall mining. As part of its monitoring, during September 1998 Consol began collecting baseline information on stream habitats, water quality, and benthic macro-invertebrate and fish communities in the stream (CECI 1999).

As a result of the Consol monitoring, the decreased habitat value in the subsided streambed of Enlow Fork has been clearly documented. A required monitoring and reporting effort such as this is a noteworthy and positive first step in understanding the true extent of damages of high-extraction mining to wetlands, streams, and other natural resources. It should be expanded to include wetlands, and it should be required for all longwall mine permits involving new or additional underground mine acreage.

☑ **Specific goals for the protection and preservation of wetlands and other water resources should be established as a condition of each underground mine permit. Compliance should be enforced by severe economic penalties for failure to achieve the required levels of performance.** In this way, the mine operators would have the opportunity and the flexibility to devise the most cost-effective technology to achieve compliance. Regulators for their part need to ensure that the goals that they set are concrete and measurable, and that regular, thorough monitoring and reporting is provided by mine operators subject to agency and public review and inspection.

☑ **Enforcement of existing environmental regulatory requirements could provide a strong economic incentive for mine operators to reexamine the potential of backstowing.** Backstowing technology has long been available to eliminate significant subsidence and with it most wetland damage from longwall mining. The principal challenges are to improve the efficiency of backstowing techniques and to incorporate them into the early design of an operation so as to minimize the overall cost.

SECTION IX.

RECOMMENDATIONS

To achieve wetland protection from longwall mining in southwestern Pennsylvania several fundamental changes are necessary.

First, **the administrative decision must be made to enforce existing laws and regulations pertaining to the underground mining of coal**. Every opportunity should be taken by the news media, by environmental groups, by candidates for public office, by residents of the coalfields, and by the taxpayers of Pennsylvania to condemn the environmental lawlessness documented in this report. There appears to be no justification for any significant loss of wetlands to underground mining whatsoever, and none has ever been provided in any permit application file. The technology exists to eliminate wetland loss from longwall mining. BMR refuses to require it.

Second, **detailed environmental inventory and assessment of wetlands and water resources must be required in each application** for an underground bituminous coal mining activity permit, permit renewal, or increase in permit area, together with post-mining monitoring and reporting to demonstrate that wetland protection is being achieved. PADEP either should require this of BMR and assign appropriate staff, or reassign current BMR responsibilities for wetland protection to other agencies willing, competent, and staffed to discharge them.

Third, **underground coal mining application forms must be revised to demand the necessary information regarding wetlands** as mandated in 25 *Pennsylvania Code* Chapter 86, 89, 90, 93, and 105 regulations, thus making possible environmentally protective regulation such as governs other

types of industrial development and construction in Pennsylvania. Specific recommendations, module by module, were presented in Section VI of this report. Reviewers independent of BMR should closely critique proposed forms and publicize their findings.

Fourth, **the impacts of mining on wetlands and other classes of resources should receive widespread publicity and public discussion** in the news media and in the political arena. For much too long, the wholesale, unregulated destruction of wetlands by longwall coal mining has been allowed to proceed hidden from public view.

Fifth, **charitable foundations that truly are concerned with environmental quality in southwestern Pennsylvania should fund surveys of resources at risk from underground mining and of the probable impacts of proposed new mining activities** by competent experts independent of PADEP and not beholden to the mining industry. These professionals should review each underground mining activity permit application and compare results with the claims of permit applicants and BMR for several years, until such time as PADEP has demonstrated a willingness and an ability to identify and regulate impacts credibly. Systematic field examination of recent longwall impacts should be part of this review, providing comparison of actual field conditions with the representations made in permit applications.

Sixth, **environmental organizations and residents of the coalfields should vigorously pursue litigation aimed at compelling compliance with existing environmental laws.** The widespread and decades-long flouting of existing law by the coal industry with the ready collaboration of BMR is unlikely to change soon in the absence of court action. Until PADEP demonstrates that it can process permit applications in an environmentally protective manner, the need for litigation should be evaluated for each permit issued by BMR.

Seventh, **all of the longwall mining permits approved by PADEP during the past 25 years should be subjected to a formal audit** by qualified professionals to ascertain the extent of wetland loss that has occurred in the absence of impact minimization and compensation. For any mining operation that is still active, full restitution for past wetland damage should be required as a precondition for the approval of any permit renewal or additional mining activity. As demonstrated by PennDOT experience, planned wetland creation in southwestern Pennsylvania is costly. At least twice the acreage of wetlands lost must be created in hopes of avoiding net loss of wetland functions. When no mitigation is performed for the wetlands lost to longwall mining, the public suffers, especially the residents of the coalfields.

It is safe to state that there is no surplus of public funds in Pennsylvania just waiting to be applied to the remediation of past and future wetland loss so as to preserve private profits for multinational conglomerates. Ultimately, the vast economic subsidy of longwall mining that results from ignoring wetlands and other adverse environmental impacts leads to severe underpricing of coal in the marketplace, to the economic detriment of less environmentally damaging fuels.

Eighth, **surface owners should become familiar with wetlands on their property and should insist that these resources receive full regulatory protection** every time that a longwall mining application is processed by BMR. Measures effective in protecting wetlands will at the same time protect structures from damage. Formal notice is provided to each affected surface owner when mine applications are filed. Surface owners as individuals and as organized groups should make sure that every effort to avoid or minimize subsidence damage to wetlands is imposed upon applicants by regulators. Surface owners should insist that their consent be obtained prior to disturbance of any wetlands by mining, just as for wetland

disturbance by any other kind of construction activity.

Ninth, **Federal oversight agencies should fulfill their responsibilities to insure that wetlands are protected under Federal laws administered by BMR.** The Army Corps of Engineers and US Environmental Protection Agency are obligated to protect wetlands by Section 404 of the Clean Water Act. The Office of Surface Mining in the US Department of the Interior has chosen not to concern itself with the impacts of subsidence on wetlands or other resources, but its own regulations purport to require compliance with all other Federal laws when mining permits are issued by State agencies with primacy under the Federal Surface Mining Control and Reclamation Act. These agencies have failed to hold PADEP-BMR accountable for its failure to comply with Federal requirements for wetland protection and antidegradation. A detailed review of Federal involvement in wetland protection relating to longwall mines is beyond the scope of this report. But BMR is not alone in its failure to uphold the law, and Federal agencies must shoulder part of the blame.

If the actions recommended above were taken, wetland protection might someday become a reality in southwestern Pennsylvania, and wetland restoration might begin to make amends for the accumulated losses from longwall mining. There is no justification for allowing any significant or uncompensated wetland loss as a result of underground mining. If wetlands were regulated appropriately, there also might be reason to hope for the protection from longwall mining of other aspects of the human environment that are beyond the scope of analysis in this report. The impacts of longwall mining on resources other than wetlands warrant at least as detailed analysis as the review of wetlands provided here.

Longwall mining is a capital-intensive industry. Coal mine operators have shown the ability to raise vast amounts of money to purchase the machinery that extracts an ever-higher proportion of the coal resource from the earth using ever-dwindling amounts of human labor. The widespread exemption of the underground bituminous coal mining industry from environmentally protective laws that apply to other types of development in Pennsylvania continues to impose many costs of longwall mining on wetlands and other environmental resources, on surface owners, and on the taxpayers of the Commonwealth.

This shortsighted result of regulatory failure has had and continues to have significant adverse impacts on the environment and on the daily lives of current and future generations of citizens of Pennsylvania, both coalfield residents and taxpayers at large. Such lawless behavior on the part of State government and the mining industry should not be tolerated any longer in Pennsylvania.

AUTHORSHIP AND ACKNOWLEDGMENTS

This report was prepared by James A. Schmid and Stephen P. Kunz. Both of these professionals have long experience in environmental consulting and impact assessment. Both are certified as Senior Ecologists (Ecological Society of America), as Professional Wetland Scientists (Society of Wetland Scientists), and as Wetland Delineators (Army Corps of Engineers). Both have commented at length to PADEP on proposed amendments to environmental regulations for many years.

The authors regularly prepare applications for PADEP permits for all kinds of construction activities throughout the Commonwealth. Both have been involved with major assessments of environmental resources and impacts of coal mining on behalf of the US Environmental Protection Agency in the West Virginia coalfields. Dr. Schmid has also assessed coal

mining operations in Kentucky and Texas and coal-handling rail facilities affecting wetlands and other waters in New York State, on the Delaware River in Pennsylvania, and in southern New Jersey. He has supervised environmental assessments of bituminous coal mining activities, power plants, landfills, and shopping centers in western Pennsylvania for the US Environmental Protection Agency and other clients.

Dr. Schmid and Mr. Kunz each have long experience in wetland identification, assessment, and replacement which includes field delineation, written reports, and successful wetland creation and restoration projects. Schmid & Company has helped clients satisfy major and minor wetland regulatory and permit requirements for diverse projects in western Pennsylvania and in the mid Atlantic states. When the US Fish and Wildlife Service evaluated in the field the effectiveness of all wetland mitigation for Corps of Engineers Section 404 permits issued during the period 1985-1992 in the State of New Jersey, Schmid & Company projects all were deemed "fully successful," and they constituted 21% of all projects so classified Statewide (USFWS 1994).

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Appendix A:

Memoranda of Understanding

1. Delegation of Certain Regulatory Authority from Bureau of Dams and Waterways Management to Bureau of Surface Mining (1981)

2. Delegation of Authority (1982)

3. Addendum to Memorandum of Understanding Between the Bureau of Mining and Reclamation and the Bureau of Dams and Waterway Management (1990)

4. Memorandum of Understanding Between the Department of Environmental Protection and the Pennsylvania Game Commission Regarding the Regulation of Coal Mining Within the Commonwealth (1998)

5. Memorandum of Understanding Between the Department of Environmental Protection and the Pennsylvania Fish and Boat Commission Regarding the Regulation of Coal Mining Within the Commonwealth (1998)

DELEGATION OF CERTAIN REGULATORY AUTHORITY FROM
BUREAU OF DAMS AND WATERWAYS MANAGEMENT
TO BUREAU OF SURFACE MINING

Whereas, the Office of Resources Management, through its Bureau of Dams and Waterways Management (BDWM) is charged with the administration and enforcement of the Act of 1978, P.L. 1375, No. 325, as amended, (Dam Safety and Encroachments Act) and Act of 1978, P.L. 851 (Flood Plain Management Act);

Whereas, the Office of Environmental Protection, by its Bureau of Mining and Reclamation (BMR) is charged with the administration and enforcement of the Act of 1945, P.L. 1198, as amended, (Surface Mining Conservation and Reclamation Act), the Act of 1968, P.L. 1040 (Coal Refuse Disposal Control Act), the Act of 1966, 1st Sp. Sess. P.L. 31 (Bituminous Mine Subsidence and Land Conservation Act), and, insofar as it relates to coal mining and processing, the Act of 1937, P.L. 1987 (The Clean Streams Law); and

Whereas, the Office of Resources Management is committed to the expeditious processing of applications for the construction and operation and maintenance of dams, water obstructions and encroachments relating to surface mining activities, and a "one step" permit system;

Whereas, it is in the interest of cost saving, public relations and prompt permit processing that certain classifications of dam and all types of water obstruction and encroachment relating to surface mining and reclamation, coal refuse disposal, coal processing facilities and other related facilities be reviewed and processed by the Office of Environment Protection through the Bureau of Mining and Reclamation.

NOW, THEREFORE, the Director of the Bureau of Mining and Reclamation, by and through his staff and regional offices, will process and coordinate surface mining and reclamation, coal refuse disposal, and coal processing operations involving certain dams, water obstructions and encroachments in the following manner:

A. Water Obstruction and Encroachments

1. BMR will receive and process applications and issue or deny permits for all water obstructions and encroachments located in, along, or across, or projecting into any watercourse, floodway or body of water required for development or operation of surface mining and coal refuse disposal sites. BMR will coordinate as required with other state agencies, interstate water basin commissions and federal agencies.

2. BMR will forward to BDWM for review and comment on all projects that may imperil life or constitute significant hazard to property or environment, or requires submerged land lease agreements.

3. BMR will inspect those structures or activities processed and permitted in accordance with A.1 and A.2 under Policy (Responsibilities). If there are problems, BDWM will provide technical assistance as requested.

4. BMR will coordinate enforcement actions for those structures for which they issue or deny a permit. BMR will respond to complaints for all water obstructions and encroachments relating to surface mining and coal refuse disposal operations.

B. Dams

1. BMR will refer all permit applications for dams and reservoirs to BDWM for permitting except dams that:

a. have a contributory drainage area of 100 acres or less; the greatest depth of water at maximum storage elevation of 15 feet or less; and a maximum impounding capacity of 50 acre-feet or less, or

b. are Size Classification C, Hazard Potential Classification 3, and are regulated by MSHA in accordance with 30 CFR 77.216-1 and 2, or

c. are Hazard Potential Classification 3 and are temporary in nature (i.e., will be removed at the completion of mining).

2. BDWM will review, provide comments and recommendations to BMR for temporary Hazard Potential Classification 3 dams.

3. BMR will inspect those structures for which they permit. If there are problems, BDWM will provide technical assistance as requested.

4. BMR will coordinate enforcement actions for those structures for which they issue or deny a permit.

Date: 10-5-81

CLIFFORD L. JONES
Secretary
Department of Environmental Resources

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
P.O. BOX 2063
Harrisburg, PA 17120

The Secretary

DELEGATION OF AUTHORITY

The Chief of Technical Services and Permitting Section of Mining and Reclamation is hereby authorized to issue permits and approve or disapprove plans as authorized by the following Acts, Codes and Chapters insofar as that authority is vested, assigned, or delegated to the Department of Environmental Resources or to the Secretary of the Department of Environmental Resources. This authorization is to be exercised in accordance with all applicable laws, rules, and regulations of the Commonwealth.

The Act of May 31, 1945, P.L. 1198, No. 418, as amended (Surface Mining Conservation and Reclamation Act).

The Act of June 22, 1937, P.L. 1987 (The Clean Streams Law).

The Act of July 1, 1937, P.L. 2681, (Storage, Handling and Use of Explosives).

The Act of July 10, 1957, P.L. 685 (Use of Explosives).

Act of September 24, 1968, P.L. 1040 (Coal Refuse Disposal Act).

The Act of 1978, P.L. 1375, No. 325, as amended (Dam Safety and Encroachment Act).

The Act of 1978, P.L. 851 (Flood Plain Management Act).

Federal Surface Mining Control and Reclamation Act, P.L. 95-87.

Federal Clean Water Act, P.L. 95-217.

Administrative Code 1901-A and 1920-A, P.L. 177

Title 25, Pennsylvania Code, Chapters 77, 99, 100, 125, 207, 209, 210, 211 and 401.

Date 1/15/82

PETER S. DUNCAN

Executive Acting Manager

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ADDENDUM
TO
MEMORANDUM OF UNDERSTANDING
BETWEEN THE
BUREAU OF MINING AND RECLAMATION
AND THE
BUREAU OF DAMS AND WATERWAY MANAGEMENT

BACKGROUND:

The Department of Environmental Resources is committed to the efficient review of permit applications that involve both mining and dam safety and waterway management activities, and the efficient inspection of activities pursuant to such permits. Whenever possible, the Department has implemented a "one step" permit system to allow prompt permit processing and efficient use of the Department's staff.

POLICY:

BMR District Offices will receive, process, approve or disapprove the use of general permits, when the proposed obstruction or encroachment activity is undertaken as part of the mining operation and is located within the confines of the mining permit.

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Joseph J. Ellam, Director
Bureau of Dams and Waterway Management
Date 8/23/90

Ernest F. Giovannitti, Director
Bureau of Mining and Reclamation
Date 8/17/90

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF MINING AND RECLAMATION

DOCUMENT NUMBER: 560-0600-102

TITLE: Memorandum of Understanding with the Pennsylvania Game Commission

EFFECTIVE DATE: October 1, 1998

AUTHORITY: Surface Mine Conservation and Reclamation Act
The Administrative Code of 1929

POLICY:
The Department will cooperate with the Pennsylvania Game Commission (PGC) in administering laws and regulations relating to the protection and enhancement of wildlife and wildlife habitat.

PURPOSE:
This document outlines procedures in which the Department and the PGC will cooperate in the review of coal mining applications, monitoring and enforcement and land unsuitable for mining provisions.

APPLICABILITY:
This document applies to all coal mining permit applications.

DISCLAIMER:
The policies and procedures outlined in this guidance document are intended to supplement existing requirements. Nothing in the policies or procedures shall affect regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of the Department to give these rules that weight or deference. This document establishes the framework, within which the Department will exercise its administrative discretion in the future. The Department reserves the discretion to deviate from this policy statement if circumstances warrant.

PAGE LENGTH: 11

LOCATION: Vol. 12, Tab 113

MEMORANDUM OF UNDERSTANDING

Between the Department of Environmental Protection and the Pennsylvania Game Commission Regarding the Regulation of Coal Mining Within the Commonwealth

BACKGROUND

This Memorandum of Understanding is intended to clearly set out procedures and areas of cooperation which the Commonwealth of Pennsylvania, Department of Environmental Protection (Department or DEP), and the Pennsylvania Game Commission (Commission or PGC) shall employ to accomplish the timely, efficient and comprehensive review of the operations for mining of coal within the Commonwealth to ensure, insofar as possible, that the wildlife and wildlife habitat protection and enhancement provisions of the Commonwealth laws and regulations pertaining to coal mining are fulfilled.

The Department has primary responsibility for the administration of the Commonwealth's coal mining regulatory program. The Surface Mining Conservation and Reclamation Act, Act of May 31, 1945 (P.L. 1198, No. 418), as amended, the Coal Refuse Disposal Control Act, Act of September 24, 1968 (P.L. 1040, No. 318) as amended, the Bituminous Mine Subsidence and Land Conservation Act, Act of 1966 (P.L. 31, No. 1) and 25 Pa. Code Chapters 86-90 contain wildlife resource protection provisions. Under Section 2161 of the Game and Wildlife Code (34 Pa. C.S. §2161), the Commission has primary responsibility for wildlife and wildlife habitat and concurrent authority to enforce the Dam Safety and Encroachments Act (32 P.S. §693.1 et. seq.) (DSEA). Sections 501 and 502 of the Administrative Code of 1929 (71 P.S. §§181 and 182) require Commonwealth departments and agencies to coordinate their work and activities with other Commonwealth departments and agencies.

This Memorandum of Understanding recognizes the Department's role as the agency responsible for the administration of the Commonwealth's coal mining regulatory program and its lead role under the aforesaid DSEA and applicable regulations (25 Pa. Code Chapter 105) in identifying and delineating wetlands areas and in evaluating the impact of proposed mining activities on wetlands. This memorandum also recognizes the Commission's vital interest in the protection, preservation and enhancement of wildlife, including threatened and endangered species, and their habitats and the concurrent authority of the Commission to enforce the DSEA and regulations promulgated thereunder as outlined above.

This Memorandum of Understanding identifies the resources and methods to be employed in the following program areas:

1. Regulation and permitting of surface coal mining, coal preparation, coal refuse disposal and the surface effects of underground coal mining.

2. Designation of lands unsuitable for mining.

POLICY

Both agencies affirm that they will cooperate fully in achieving the common goal of allowing the planned, carefully regulated and environmentally safe recovery of the Commonwealth's coal resources, while avoiding irretrievable losses to the existing wildlife resources through the protection of important habitats, the enhancement of the existing habitat values wherever possible, and the mitigation of those temporary losses which are unavoidable.

It is the policy of the DEP and the PGC to encourage open dialogue with the staff of the other agency at all levels, to provide technical assistance to the other when requested, and to share information. In addition, DEP and the PGC will cooperate to achieve the objectives under the Commonwealth's Reclaim PA initiative for reclamation of abandoned mine lands.

The DEP will seek advice and counsel of the PGC relating to the protection of wildlife and endangered or threatened species. When the PGC advises DEP that proposed coal mining operations will adversely impact wildlife resources, or their related environment, or threatened and endangered species, or their related habitats, the DEP will consult with the PGC to determine measures that will protect wildlife resources and threatened and endangered species and their related habitats.

ORGANIZATION

Within fifteen (15) days of the signing of this memorandum, both agencies shall exchange organizational charts identifying the staff positions, titles, roles and present personnel who will act as liaison for the orderly implementation of the coal mining review program.

PROCEDURES

Permitting

1. The Department will provide to the Commission appropriate portions of each coal mine application which it receives in order to allow the Commission to review pertinent sections for the adequacy and completeness of any wildlife protection provisions required by the regulations.

2. The Department will encourage applicants to consult with the Commission in the areas of threatened and endangered species, critical wildlife habitats, important wildlife resources, wildlife protection or enhancement techniques, coal refuse disposal site selection, and mitigation plan development.

3. The Department will provide, if possible, at least 10 working days notice of pre-application field meetings to the Commission. The Commission will, in turn, arrange to have an agency representative attend the field meeting whenever a site is planned for areas with threatened or endangered wildlife species and/or critical habitats of these species and areas with habitat of unusually high value for wildlife.

4. The Commission will conduct on-site investigations deemed necessary to accurately inventory and analyze the wildlife habitat values associated with each application. Based on its findings, the Commission will provide a written report to the Department detailing the results of its review and investigation within thirty (30) days of its receipt of each application. If the Commission does not reply within this time period, the Department will presume that no comments are being made. For new permits, during this 30-day time period, the Commission may request a 15-day time extension if necessary to do a more complete review.

5. The Commission's report will include, but not be limited to:

(a) commenting on the adequacy of any wildlife habitat vegetation information provided by the applicant;
(b) requesting additional information where necessary to comply with the regulations;
(c) a determination of the impact of mining on the wildlife resource;
(d) recommending changes in the mining and reclamation plans to mitigate adverse impacts on the wildlife resource;
(e) recommending reclamation techniques for the enhancement of the existing habitat; and
(f) recommending denial of the mining permit if significant long-term losses to wildlife resources will occur or where the applicant will be unable to comply with the wildlife performance standards of the regulation.

The Commission will also provide a copy of its completed Wildlife Impact Review Checklist for each permit application reviewed.

6. The Department will consider the recommendations of the Commission, and wherever it agrees that there has been a failure of the applicant to fulfill the wildlife protection provisions of the regulations, it shall communicate the Commission's objections to the applicant for resolution. The Department shall require the applicant to correct such deficiencies prior to the issuance of any permits. If the Department finds that it cannot agree with the recommendations of the Commission, it shall identify the areas of disagreement. Resolution of areas of disagreement will be attempted through informal conferences with the appropriate District Mining Office and PGC staff. It is understood that the Department has the final decision-making authority and is required to act on permit applications in a timely manner. The Department shall provide a written reply with an explanation of its findings in any instances where it cannot agree with the Commission's recommendations, to include a written notification of its intent to issue or deny the permit application.

Monitoring and Enforcement

1. When requested, the Department will arrange in a timely manner, for the Commission staff to conduct inspections of mining operations to evaluate wildlife protection, mitigation and enhancement conditions or to conduct wildlife assessment studies. The Department shall provide the means for Commission staff to obtain any training, authorization or credentials which may be required to allow the Commission's employees to enter mining areas for those purposes. Both agencies shall participate in seminars and training sessions wherever

required or appropriate to fulfill the conditions of this Memorandum of Understanding or the regulations.

2. When requested by the Department, the Commission shall provide expert testimony on matters concerning wildlife and their habitats, in any legal proceedings arising out of the coal mine regulatory program.

Land Unsuitable for Mining (25 Pa. Code Sections 86.101 – 86.129)

1. The Department will: (a) provide notification concerning areas under petition which involve potential wildlife impacts; (b) provide information to the Commission from the Department's Areas Unsuitable Data Base, upon request; and (c) incorporate Commission findings and recommendations into the detailed study and decision-making process.

2. The Commission will: (a) provide preliminary comments on petition allegations; (b) assist in field studies to collect information when needed; (c) participate in public hearings and legal actions; and (d) provide available resource data when requested.

3. The Department will develop guidelines for identifying critical habitats and important wildlife resources and develop an inventory of such critical habitats.

PROGRAM FUNDING

As the Department meets the provisions of the Department of the Interior, Office of Surface Mining grant requirements, it will receive grants for the purpose of developing, administering, and enforcing a state program. The PGC, as set forth herein, shall cooperate with and provide technical assistance to the Department for the purpose of assisting in the development and administration of its State program.

To ensure that the provisions of this memorandum are effectively carried out, the Department shall provide funding to the Commission for the fiscal years, and in the amounts, shown below:

Fiscal Year	Amount
October 1, 1998 - September 30, 1999	$42,500
October 1, 1999 - September 30, 2000	$43,250
October 1, 2000 - September 30, 2001	$54,250
October 1, 2001 - September 30, 2002	$45,000
October 1, 2002 - September 30, 2003	$46,500

A project budget for each fiscal year is attached to this memorandum. The budget includes an estimate of the expenditures for services to be rendered. The Commission will submit an annual billing to the Department for services rendered during the preceding fiscal year. Should it become necessary to increase or decrease the above budget amounts for any of the fiscal years shown, such increase or decrease shall be accomplished through an amendment to this memorandum signed by both the Commission and the Department.

IMPLEMENTATION

This Memorandum of Understanding shall take effect upon signature approval by the Department's Deputy Secretary for Mineral Resources Management and the Commission's Executive Director, and approval by the appropriate authorities referenced on the signature page.

The Agencies shall exchange information and consult with each other, where appropriate, prior to implementing additional plans, programs, or activities that may directly or indirectly affect the other Agency.

Following annual review, if either the Deputy Secretary or the Executive Director determines that the terms of this memorandum are in need of modification, he or she may notify the other in writing of the specific changes desired with proposed modification language and the reason(s) for change. With their mutual consent, the proposed change(s) shall become effective within thirty (30) days.

State Laws, Rules and Regulations

Nothing in this memorandum shall in any way be so construed as to impair the powers, privileges and duties of the Commission or the Department, or their representatives in the execution of the laws of the Commonwealth, or of the rules and regulations of the said Commission and the Department now in force or hereinafter enacted or adopted having reference to the management, control, protection and development of the Commonwealth's wildlife resources and the coal mining regulatory program.

This memorandum is not intended to and does not create any contractual rights or obligations with respect to the signatory agencies or any other parties. Any dispute arising hereunder shall be submitted to the Office of General Counsel for final resolution.

DURATION OF MEMORANDUM

This memorandum is in effect for a five (5) year period beginning October 1, 1998 and ending September 30, 2003. After the five-year period has passed, it will be reviewed, modified as needed, and a new memorandum established if necessary. In addition, either party may terminate this memorandum at any time upon sixty (60) days written notice to the other.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Robert C. Dolence — Date
Deputy Secretary for
Mineral Resources Management

PENNSYLVANIA GAME COMMISSION

Vernon R. Ross — Date
Executive Director

APPROVED AS TO LEGALITY AND FORM:

Chief Counsel, PGC — Date

Chief Counsel, DEP — Date

Deputy General Counsel — Date

APPROVED BY:

Comptroller, DEP — Date

Comptroller, PGC — Date

I hereby certify that funds in the amount of $231,500 are available under appropriation:

001-035-703-99-7-5600-00429-	310	$42,500
001-035-703-00-7-5600-00430-	310	$43,250
001-035-703-01-7-5600-00431-	310	$54,250
001-035-703-02-7-5600-00432-	310	$45,000
001-035-703-03-7-5600-00433-	310	$46,500

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Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797

PROJECT BUDGET - FISCAL YEAR 1998-1999

1. Summary of Services to be Rendered

65 Number Pre-Applications Reviewed
130 Number New Mining Permit Applications Reviewed
100 Number Mining Permit Revision Applications Reviewed

2. Estimated Cost for Services to be Rendered

CATEGORY	FEDERAL	STATE	TOTAL
Salaries, Benefits and Indirect Costs	$40,000.00	$40,000.00	$80,000.00
Travel (including vehicle use), Equipment, Supplies, Other	$2,500.00	$2,500.00	$5,000.00

Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797

PROJECT BUDGET - FISCAL YEAR 1999-2000

3. Summary of Services to be Rendered

65 Number Pre-Applications Reviewed
130 Number New Mining Permit Applications Reviewed
100 Number Mining Permit Revision Applications Reviewed

4. Estimated Cost for Services to be Rendered

CATEGORY	FEDERAL	STATE	TOTAL
Salaries, Benefits and Indirect Costs	$39,750.00	$39,750.00	$79,500.00
Travel (including vehicle use), Equipment, Supplies, Other	$3,500.00	$3,500.00	$7,000.00

Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797

PROJECT BUDGET - FISCAL YEAR 2000-2001

5. Summary of Services to be Rendered

65 Number Pre-Applications Reviewed
130 Number New Mining Permit Applications Reviewed
100 Number Mining Permit Revision Applications Reviewed

6. Estimated Cost for Services to be Rendered

CATEGORY	FEDERAL	STATE	TOTAL
Salaries, Benefits and Indirect Costs	$40,500.00	$40,500.00	$81,000.00
Travel (including vehicle use), Equipment, Supplies, Other	$13,750.00	$13,750.00	$27,500.00

Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797

PROJECT BUDGET - FISCAL YEAR 2001-2002

7. Summary of Services to be Rendered

65 Number Pre-Applications Reviewed
130 Number New Mining Permit Applications Reviewed
100 Number Mining Permit Revision Applications Reviewed

8. Estimated Cost for Services to be Rendered

CATEGORY	FEDERAL	STATE	TOTAL
Salaries, Benefits and Indirect Costs	$41,000.00	$41,000.00	$82,000.00
Travel (including vehicle use), Equipment, Supplies, Other	$4,000.00	$4,000.00	$8,000.00

Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797

PROJECT BUDGET - FISCAL YEAR 2002-2003

9. Summary of Services to be Rendered

65 Number Pre-Applications Reviewed
130 Number New Mining Permit Applications Reviewed
100 Number Mining Permit Revision Applications Reviewed

10. Estimated Cost for Services to be Rendered

CATEGORY	FEDERAL	STATE	TOTAL
Salaries, Benefits and Indirect Costs	$42,000.00	$42,000.00	$84,000.00
Travel (including vehicle use), Equipment, Supplies, Other	$4,500.00	$4,500.00	$9,000.00

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF MINING AND RECLAMATION

DOCUMENT NUMBER: 560-0600-101

TITLE: Memorandum of Understanding with Pennsylvania Fish and Boat Commission

EFFECTIVE DATE: October 1, 1998

AUTHORITY: Surface Mining Conservation and Reclamation Act
The Administrative Code of 1929

POLICY:
The Department will cooperate with the Pennsylvania Fish and Boat Commission (PFBC) in administering laws and regulations relating to the protection and enhancement of aquatic resources and related environmental values.

PURPOSE:
This document outlines procedures in which the Department and the PFBC will cooperate in the review of coal mining applications, monitoring and enforcement and land unsuitable for mining provisions.

APPLICABILITY:
This document applies to coal mining permit applications.

DISCLAIMER:
The policies and procedures outlined in this guidance document are intended to supplement existing requirements. Nothing in the policies or procedures shall affect more stringent regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of the Department to give these rules that weight or deference. This document establishes the framework, within which the Department will exercise its administrative discretion in the future. The Department reserves the discretion to deviate from this policy statement if circumstances warrant.

PAGE LENGTH: 13

LOCATION: Vol. 12, Tab 112

MEMORANDUM OF UNDERSTANDING

Between the Department of Environmental Protection and the Pennsylvania Fish and Boat Commission Regarding the Regulation of Coal Mining Within the Commonwealth

BACKGROUND

Within the Commonwealth of Pennsylvania, the duties of the Pennsylvania Fish and Boat Commission (Commission or PFBC) are to administer and enforce laws and regulations relating to the protection and enhancement of aquatic resources (to include fish, reptiles, amphibians and other aquatic organisms) and related environmental values. The Department of Environmental Protection (Department or DEP), through the Bureaus of Mining and Reclamation (BMR) and District Mining Operations (DMO), is the regulatory authority responsible for the administration and enforcement of laws and regulations related to coal mining.

Sections 501 and 502 of the Administrative Code of 1929 (71 P.S. §§181 and 182) require Commonwealth departments and agencies to coordinate their work and activities with other Commonwealth departments and agencies. In view of the necessity for close cooperation between the DEP and PFBC to ensure that aquatic resources, environmental protection and coal development make the greatest possible contribution to the welfare of the Commonwealth's citizens, the two agencies will cooperate in implementing the laws and regulations applicable to coal mining and related activities within their respective responsibilities and programs. Aquatic resource conservation and environmental protection are recognized by the Fish and Boat Code, Act of October 16, 1980 (P.L. 996, No. 175), as amended, the Clean Streams Law, Act of June 22, 1937 (P.L. 1987, No. 394), as amended, the Surface Mining Conservation and Reclamation Act, Act of May 31, 1945 (P.L. 1198, No. 418), as amended, the Coal Refuse Disposal Control Act, Act of September 24, 1968 (P.L. 1040, No. 318), as amended, the Bituminous Mine Subsidence and Land Conservation Act, Act of April 27, 1966 (P.L. 31, No. 1), as amended and the Dam Safety and Encroachments Act, Act of November 26, 1978 (P.L. 1375, No. 325), as amended (hereinafter collectively called the Acts).

Over the years, DEP mining program staff have gained considerable experience in identifying and delineating wetlands areas. In addition, Chapter 105 of the Department's regulations has been revised to include specific requirements and procedures for permit applicants to identify and delineate wetlands and to describe measures to avoid unnecessary adverse impacts on wetlands. DEP mining program staff will have the lead role in evaluating the impact of proposed coal mining activities on wetlands pursuant to the provisions of Chapter 105.

POLICY

It is the policy of the DEP and the PFBC to require that care and effort will be made during any coal mining operation to maintain, enhance where practicable, or restore streams, wetlands, lakes and other bodies of water (including natural or man-made), and riparian vegetation as functioning parts of the ecosystem upon which aquatic resources depend. Particular attention shall be given to streams, wetlands, or lakes that are critical habitats to aquatic resources.

It is the policy of the DEP and the PFBC to encourage open dialogue with the staff of the other agency at all levels, to provide technical assistance to the other when requested, and to share information. In addition, DEP and the PFBC will cooperate to achieve the objectives under the Commonwealth's Reclaim PA initiative for reclamation of abandoned mine lands.

The DEP will seek advice and counsel of the PFBC relating to the protection of aquatic resources and endangered or threatened species. When the PFBC advises DEP that proposed coal mining operations will adversely impact aquatic resources, or their related environment, or threatened and endangered species, or their related habitats, the DEP will consult with the PFBC to determine measures that will protect aquatic resources and threatened and endangered species and their related habitats.

PROCEDURES

Permitting

1. The Department will encourage applicants to consult with the Commission in the areas of threatened and endangered species, critical aquatic and wetland habitats, fishery resources, fisheries protection or enhancement techniques, coal refuse disposal site selection, and mitigation plan development.

2. The Department will provide, if possible, at least 10 working days notice of pre-application field meetings to the Commission. The Commission will, in turn, arrange to have an agency representative attend whenever a site is planned for an environmentally sensitive watershed or involves an intermittent or perennial stream buffer zone encroachment, intermittent or perennial stream relocation, or wetland encroachment.

3. The Department will provide the Commission with relevant portions of coal mining activity permit applications, including the social and economic impact statement for high quality waters, for: (a) new operations; (b) revised operations pursuant to 25 Pa. Code Section 86.54, (relating to public notice of permit revision); (c) NPDES applications; and (d) variances where an applicant proposes to conduct mining activities within 100 feet (30.48 meters) of an intermittent or perennial stream or which would physically impact a wetland.

4. The Commission will review the relevant portions of the coal mining activity permit application provided by DEP. The PFBC review will:

(a) Provide a completeness review of the documents and plans, as provided, for aquatic resource impact, protection and enhancement activities at the proposed mine site;
(b) Advise the DEP on the adequacy of such documents and plans and, where necessary, specify informational needs to make the plans complete;
(c) Perform a technical analysis of the completed plan to determine whether the plan is in compliance with the Acts; and
(d) Offer specific recommendations, where appropriate, to be considered in the coal mining activity permit application review process.

5. The Commission will respond with comments on coal mining activity permit applications within 30 days of receipt of such applications. This time period may be extended by DEP where circumstances warrant. However, failure of the Commission to respond within the specified time period will signify concurrence with the application.

6. The Commission will identify the existence of any threatened or endangered species and critical habitat(s) for aquatic resources within the area of the proposed coal mining activity and provide recommendations for protection of these species and habitat(s) and for achieving enhancement of these resources, when practicable, as provided for in the Department's regulations.

7. During the review of stream variance requests, no relocations of perennial streams shall be permitted unless some demonstration of environmental enhancement is made by the applicant or the applicant provides adequate justification as to why environmental enhancement is not practicable. Variances of stream protection barriers shall be evaluated on a site-specific basis. A variance will only be permitted when no additional risk is placed upon their habitat values for fish and wildlife and providing it conforms with the Department's regulations. Wetland encroachments shall be evaluated on a site-specific basis to ensure protection of wetland resources.

8. The Department will provide the opportunity for interagency resolution prior to issuance of a coal mining activity permit if the Department feels that the PFBC comments cannot be addressed in the permitting process. Where the technical review staffs of the agencies cannot resolve their concerns, either agency can request that a DEP representative and a PFBC representative meet for final resolution of the issues before the Department takes final action on the application. However, it is understood that the DEP has the final decision-making authority and is required to act on coal mining activity permit applications in a timely manner, and the PFBC has legal rights of appeal.

9. Pursuant to the requirements of 25 Pa. Code Section 86.39, (relating to final permit action), the Department will consider PFBC comments and provide written notice to the PFBC of its final permitting decision. Such notice will include any specific permitting provisions necessary for the protection/enhancement of aquatic resources.

10. The PFBC will provide DEP on an annual basis with the current listing of wild trout streams as defined in 25 Pa. Code Section 105.1 (relating to definitions).

11. The agencies will participate in seminars and training sessions as appropriate.

Monitoring and Enforcement

1. The Department will arrange, when necessary, for Commission staff to conduct investigations of mining activity permit sites to evaluate the effectiveness of the approved aquatic resource mitigation/enhancement plan or to conduct aquatic impact assessment studies of specific permitted mine sites.

2. When necessary, the Commission will provide expert testimony in Department legal proceedings and the Department will provide expert testimony in PFBC legal cases.

3. The Department will provide copies of compliance orders which involve effluent violations or water pollution to the Commission. It is understood that the Commission does not intend to initiate separate enforcement actions based on compliance order notification.

4. Where the Commission determines that a violation exists which requires Department action, the PFBC will notify the appropriate DMO and, if known, the Surface Mine Conservation Inspector. The DMO will follow-up on such notifications, either written or oral, and notify the PFBC of the action taken.

Land Unsuitable for Mining (25 Pa. Code Sections 86.101-86.130)

1. The Department will: (a) provide notification concerning areas under petition which pertain to fish, reptiles, amphibians, their habitats and critical concerns, or in cases which involve probable hydrologic impacts; (b) make information in the areas unsuitable database available to PFBC on request; and (c) incorporate PFBC comments required by law into the detailed study and decision-making process.

2. The Commission will: (a) provide preliminary comments on petition allegations; (b) assist in field studies to collect information when needed; (c) participate in public hearings and legal actions; and (d) provide annual resource summaries collected from its inventory program.

3. The Department and Commission will develop guidelines for identifying critical habitat and important fishery resources and develop an inventory of such critical habitats.

PROGRAM FUNDING

As the Department meets the provisions of the U.S. Department of the Interior, Office of Surface Mining grant requirements, it will receive grants for the purpose of developing, administering, and enforcing a State program. The PFBC, as set forth herein, shall cooperate with and provide technical assistance to the Department for the purpose of assisting in the development and administration of its State program.

To ensure that the provisions of this memorandum are effectively carried out, the Department will provide funding to the Commission for the fiscal years, and in the amounts, shown below:

Fiscal Year	Amount
October 1, 1998 - September 30, 1999	$40,000
October 1, 1999 - September 30, 2000	$40,000
October 1, 2000 - September 30, 2001	$40,000
October 1, 2001 - September 30, 2002	$40,000
October 1, 2002 - September 30, 2003	$40,000
October 1, 2003 - September 30, 2004	$40,000

A project budget for each fiscal year is attached to this memorandum. The budget includes an estimate of the expenditures for services to be rendered. The Commission will submit an annual billing to the Department for services rendered during the preceding fiscal year. Should it become necessary to increase or decrease the above amounts for any of the fiscal years shown, such increase or decrease shall be accomplished through an amendment to this memorandum signed by both the Commission and the Department.

IMPLEMENTATION

This Memorandum of Understanding shall take effect upon signature approval by the Department's Deputy Secretary for Mineral Resources Management and the Commission's Executive Director, approval as to legality and form by the appropriate legal authorities referenced on the signature page, and approval by the comptrollers indicated.

The agencies shall exchange information and consult with each other, where appropriate, prior to implementing additional plans, programs, or activities that may directly or indirectly affect the other agency.

Following annual review, if either the Deputy Secretary or the Executive Director determines that the terms of this memorandum are in need of modification, he or she may notify the other in writing of the specific changes desired with proposed modification language and the reason(s) for change. With their mutual consent, the proposed change(s) shall become effective within 30 days.

This memorandum is not intended to and does not create any contractual rights or obligations with respect to the signatory agencies or any other parties. Any dispute arising hereunder shall be submitted to the Office of General Counsel for final resolution.

DURATION OF MEMORANDUM

This memorandum is in effect for a six-year period beginning October 1, 1998 and ending September 30, 2004. At the end of this period, it will be reviewed, modified as needed, and a new memorandum established if necessary. In addition, either party may terminate this memorandum at any time upon 60 days written notice to the other.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Robert C. Dolence 10-21-99
Robert C. Dolence Date
Deputy Secretary for
Mineral Resources Management

PENNSYLVANIA FISH AND BOAT COMMISSION

Peter A Colangelo 9/29/99
Peter A. Colangelo Date
Executive Director

APPROVED AS TO LEGALITY AND FORM:

Louise E. Stoepler 9/21/99
Chief Counsel, PFBC Date

Assistant
Michael D. Bedrin 10/20/99
Chief Counsel, DEP Date

Donna Clemens 11-5-99
Deputy General Counsel Date

APPROVED BY:

Lawrence Hoffman 12/21/99
Comptroller, DEP Date

Barbara Chernicoff 12/22/99
Comptroller, PFBC Date

I hereby certify that funds in the amount of $240,000 are available under appropriation:

001-035-703-99-7-5600-00429-310 – $40,000
001-035-703-00-7-5600-00430-310 – $40,000
001-035-703-01-7-5600-00431-310 – $40,000
001-035-703-02-7-5600-00432-310 – $40,000
001-035-703-03-7-5600-00433-310 – $40,000
001-035-703-04-7-5600-00434-310 – $40,000

PROJECT BUDGET – FISCAL YEAR 1998-1999

1. Summary of Services to be Rendered

65 Number Pre-Applications Reviewed
130 Number New Mining Permit Applications Reviewed
100 Number Mining Permit Revision Applications Reviewed

2. Estimated Cost for Services to be Rendered

CATEGORY	FEDERAL	STATE	TOTAL
Salaries, Benefits and Indirect Costs	$36,000	$36,000	$72,000
Travel (including Vehicle Use), Equipment, Supplies, Other	$4,000	$4,000	$8,000
Totals:	$40,000	$40,000	$80,000

Pennsylvania Fish and Boat Commission
P.O. Box 67000
Harrisburg, PA 17106-7000

PROJECT BUDGET – FISCAL YEAR 1999-2000

3. Summary of Services to be Rendered

65 Number Pre-Applications Reviewed
130 Number New Mining Permit Applications Reviewed
100 Number Mining Permit Revision Applications Reviewed

4. Estimated Cost for Services to be Rendered

CATEGORY	FEDERAL	STATE	TOTAL
Salaries, Benefits and Indirect Costs	$36,000	$36,000	$72,000
Travel (including Vehicle Use), Equipment, Supplies, Other	$4,000	$4,000	$8,000
Totals:	$40,000	$40,000	$80,000

PROJECT BUDGET – FISCAL YEAR 2000-2001

5. Summary of Services to be Rendered

65 Number Pre-Applications Reviewed
130 Number New Mining Permit Applications Reviewed
100 Number Mining Permit Revision Applications Reviewed

6. Estimated Cost for Services to be Rendered

CATEGORY	FEDERAL	STATE	TOTAL
Salaries, Benefits and Indirect Costs	$36,000	$36,000	$72,000
Travel (including Vehicle Use), Equipment, Supplies, Other	$4,000	$4,000	$8,000
Totals:	$40,000	$40,000	$80,000

Pennsylvania Fish and Boat Commission
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Harrisburg, PA 17106-7000

PROJECT BUDGET – FISCAL YEAR 2001-2002

7. Summary of Services to be Rendered

65 Number Pre-Applications Reviewed
130 Number New Mining Permit Applications Reviewed
100 Number Mining Permit Revision Applications Reviewed

8. Estimated Cost for Services to be Rendered

CATEGORY	FEDERAL	STATE	TOTAL
Salaries, Benefits and Indirect Costs	$36,000	$36,000	$72,000
Travel (including Vehicle Use), Equipment, Supplies, Other	$4,000	$4,000	$8,000
Totals:	$40,000	$40,000	$80,000

PROJECT BUDGET – FISCAL YEAR 2002-2003

9. Summary of Services to be Rendered

65 Number Pre-Applications Reviewed
130 Number New Mining Permit Applications Reviewed
100 Number Mining Permit Revision Applications Reviewed

10. Estimated Cost for Services to be Rendered

CATEGORY	FEDERAL	STATE	TOTAL
Salaries, Benefits and Indirect Costs	$36,000	$36,000	$72.000
Travel (including Vehicle Use), Equipment, Supplies, Other	$4,000	$4,000	$8,000
Totals:	$40,000	$40,000	$80,000

Pennsylvania Fish and Boat Commission
P.O. Box 67000
Harrisburg, PA 17106-7000

PROJECT BUDGET – FISCAL YEAR 2003-2004

11. Summary of Services to be Rendered

65 Number Pre-Applications Reviewed
130 Number New Mining Permit Applications Reviewed
100 Number Mining Permit Revision Applications Reviewed

12. Estimated Cost for Services to be Rendered

CATEGORY	FEDERAL	STATE	TOTAL
Salaries, Benefits and Indirect Costs	$36,000	$36,000	$72,000
Travel (including Vehicle Use), Equipment, Supplies, Other	$4,000	$4,000	$8,000
Totals:	$40,000	$40,000	$80,000