United States
Environmental Protection
Agency

Region 3
Sixth and Walnut Sts.
Philadelphia, PA 19106

903R81100

January 1981

EPA

Areawide Environmental Assessment for Issuing NPDES New Source Coal Mining Permits in West Virginia

PREFACE

A new comprehensive management process is being instituted in West Virginia by Region III of the United States Environmental Protection Agency (EPA). The new process is designed to ease the regulatory burden on the coal mining industry by cutting costs and saving valuable time in obtaining new coal mining permits while simultaneously insuring environmental protection. Instead of requiring applicants to prepare a full environmental report on all potential mining impacts for all new wastewater discharges, which is the normal case where Environmental Impact Statement procedures apply, EPA's innovative approach will substantially reduce pre-mining application procedures for approximately 85% of all applications. The areawide review process and the cooperation of West Virginia's Department of Natural Resources will allow approximately 60% of all applicants to obtain draft water discharge permits within one month of receipt of the application by EPA.

The new process is both speedy and efficient. EPA's extensive data gathering and resource analysis compares the potential impacts of coal mining to the sensitivity of the State's natural resources. This allows areas highly sensitive to coal mining to be singled out for detailed permit review while streamlining the permitting process in less sensitive areas. Nevertheless, all applications will continue to receive a case-by-case environmental review and public notice, based on the data gathered during the areawide environmental inventory and all other information available to EPA-Region III.

JANUARY 1981

EPA

Areawide Environmental Assessment for Issuing NPDES New Source Coal Mining Permits in West Virginia

Prepared by:
U.S. Environmental Protection Agency — Region III
Environmental Impact Branch
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

Joseph T. Piotrowski, Project Monitor
Evelyn B. Schulz, Assistant Project Monitor
Rosemarie M. Baldino, Production Advisor

Assisted by:
Wapora Inc.
Wesley R. Horner, Project Manager
James A. Schmid, Technical Advisor

AREAWIDE ENVIRONMENTAL ASSESSMENT PROCESS. AN INTRODUCTION

Coal mines that begin to discharge water to streams after September 17, 1977 are generally considered by EPA to be "New Sources." Before a New Source permit can be issued by EPA, a thorough environmental review is required. The Areawide Environmental Assessment Process is designed to maximize EPA's use of existing resource data when reviewing New Source coal mining permit applications from West Virginia. EPA is seeking to minimize the time and effort needed by applicants to prepare applications and by EPA staff to review them.

Using existing environmental data, EPA has identified areas with significant resources that are considered sensitive to new mining, and the most intensive review will be reserved for permit applications from such areas. This document alerts potential permit applicants to the significance and sensitivity of these areas as well as the reasons for these determinations. Applicants in areas identified by this Areawide Assessment to be less sensitive to New Source coal mining can obtain permits in a short turnaround time with minimal review. In many cases applicants will be able to shorten the review period by submitting necessary resource-specific data and proposed mitigations along with the permit application.

Information from the areawide process has been used to develop three products: this Areawide Assessment for West Virginia as a whole, seven river basin-specific Supplemental Information Documents, and a series of 1:24,000-scale overlay maps. This Areawide Assessment summarizes the entire New Source process and EPA's findings for issuing New Source NPDES coal mining permits in West Virginia. It will be used to support Findings of No Significant Impact (FONSI's) on permit applications from non-sensitive areas in West Virginia. Copies of this assessment can be obtained from:

EPA Region III, Enforcement Division
West Virginia Section (3EN23)
Sixth and Walnut Streets
Philadelphia PA 19106
Telephone 215-597-1370.

The encyclopedic Supplemental Information Documents (SID's) summarize the inventory findings and detailed assessment of impacts from future coal mining for each major river basin. The inventory data resulted from extensive contact with government agencies, educational institutions, and the interested public. The SID's address at length those measures which can be utilized by applicants and by EPA (in cooperation with other agencies) to avoid or minimize adverse effects on the natural and human environment. Each SID is printed in a looseleaf, working draft format so that updated information and new data can be inserted easily. Quantities of the SID documents are limited. Copies can be obtained from EPA's Enforcement Division until the supply is exhausted. The libraries to which copies of all seven SID's have been sent are listed in an appendix to this Areawide Assessment.

A series of plastic overlays (environmental inventory map sets) keyed to the standard 7.5 minute US Geological Survey topographic reference maps of the seven basins (1:24,000-scale) displays the resource and past mining inventory data analyzed in the SID's in a form that expedites EPA's review of permit applications. These maps allow EPA staff to review specific mine applications in their areawide context and greatly reduce the need for EPA to contact each resource managing agency with respect to each application. Additional mining operations and resource data can be entered on the maps by EPA permit staff. These maps are kept at the EPA Enforcement Division Office in Philadelphia. It is not anticipated that there will be a widespread demand for the maps, which in most cases repeat the data available in the SID's and elsewhere. To facilitate occasional reference to these inventory maps by interested applicants or others, however, EPA has made copies available in West Virginia for consultation during normal business hours at:

West Virginia Department of Natural Resources
Division of Water Resources Building
1201 Greenbrier Street
Charleston, West Virginia 25311

Contact: Mr. Lyle Bennett
Telephone: 304-348-5904

and at

US Office of Surface Mining-Region I
Division of Technical Services and Research
603 Morris Street
Charleston, West Virginia 25301

Telephone: 304-342-8125

EPA-Region III will implement the areawide process described here for all New Source NPDES permit applications from West Virginia received after January 1, 1981. EPA's environmental review of coal mining permit applications will continue until the entire NPDES program is delegated to the State of West Virginia. The current agreement between EPA and West Virginia anticipates delegation during September 1981. At that time, EPA will transfer all data developed in the Areawide Environmental Assessment Process to the West Virginia Department of Natural Resources for use in issuing State NPDES permits.

Coal and the Clean Water Act

With the enactment of Public Law 92-500, the Federal Water Pollution Control Act Amendments of 1972 (now known as the Clean Water Act [CWA]), it became a National goal to achieve "fishable and swimmable" waters throughout the United States. To achieve these ends, Section 402 of the CWA established the "National Pollutant Discharge Elimination System" (NPDES).

To implement this system, EPA has developed a permit program which establishes effluent discharge limitations for existing point sources of water pollution, according to category of discharge or industry. The performance standards for existing sources were followed by stricter limitations for "New Sources," which also are being issued industry by industry.

Because they are point sources of wastewater, coal mines must meet NPDES standards. All coal mines that begin construction after September 17, 1977 (the date when New Source effluent limitations were published in draft form), are subject to the New Source Standards of Performance. If they propose to discharge wastewater into surface waters, they must meet the applicable National New Source effluent limitations detailed in Table 1.

Table 1. New Source effluent limitations for the coal mining point source category.[1]

Parameter	Coal Preparation Plants With Acidic Wastewater Before Treatment[2]		Active Acid or Ferruginous Mine Drainage		Active Alkaline Mine Drainage	
	1-day maximum	Average of 30 consecutive daily values	1-day maximum	Average of 30 consecutive daily values	1-day maximum	Average of 30 consecutive daily values
Total suspended solids	70.0	35.0	70.0	35.0	70.0	35.0
Total iron[3]	6.0	3.0	6.0	3.0	6.0	3.0
Total manganese	4.0	2.0	4.0	2.0	--	--
pH range[4] (pH units)	6 to 9		6 to 9		6 to 9	

[1]The Nationwide minimum NPDES performance standards are for wastewater discharged after application of the best available demonstrated control technology by New Sources. Units are milligrams per liter (mg/l) except as otherwise indicated (40 CFR 434).

[2]No discharge to navigable waterways is allowed from facilities which do not recycle wastewater for use in processing.

[3]Total iron limitations are lower than the 7.0 (1-day maximum) and 3.5 (average of 30 consecutive daily values) maxima set for existing sources.

[4]Slightly higher pH may be allowed if necessary to achieve the manganese limitation.

Additional limitations with respect to settleable solids and pH currently are being formulated by EPA. These limitations will complete the full set of Best Available Technology Economically Achievable (BAT) requirements for various subcategories of existing and new coal industry facilities. The additional requirements will apply to discharges during large storm events, during bypass episodes, and from surface mines that have been regraded but are not yet released from performance bonds. The additional effluent limitations will cover both existing sources and New Sources in the coal mining industrial category. They will be published in early 1981.

The EPA regulations for New Source coal mines (40 CFR 434) include three basic categories of operations: new coal preparation plants, new surface or underground mines, and substantially new mines. First, new coal preparation plants, independent of mines, are considered New Sources if they are constructed after September 17, 1977, unless there were binding contractual obligations to purchase unique facilities or equipment prior to the September 17 promulgation date. Second, surface and underground mines that begin construction subsequent to September 17, 1977, automatically are considered to be New Sources, again unless there were binding contracts prior to that date. Third, other surface or underground mines may be regarded by EPA as "substantially new" operations requiring New Source NPDES permits, if they: (i) begin to mine a new coal seam not previously extracted by that mine, (ii) discharge effluent to a new drainage area not previously affected by that mine, (iii) cause extensive new surface disruption, (iv) begin construction of a new shaft, slope, or drift, (v) make significant additional capital investment in additional equipment or facilities, or (vi) otherwise have characteristics deemed appropriate by the EPA Regional Administrator to place them in the New Source category. Numerous existing mines may qualify as "substantially new." The determination of whether a mine is a New Source will be conducted case by case, based largely on the information supplied with the permit application to EPA.

Coal and NEPA

Congress, through Section 511(c) of the Clean Water Act, determined that New Source permits are "major Federal actions" with respect to the National Environmental Policy Act of 1969 (NEPA). Section 102(2)(C) of NEPA requires that:

[All agencies of the Federal Government shall] include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement [an Environmental Impact Statement or EIS] by the responsible official on.

i. the environmental impact of the proposed action

ii. any adverse environmental effects which cannot be avoided should the proposal be implemented

iii. alternatives to the proposed action

iv. the relationship between local short terms uses of man's environment and the maintenance and enhancement of long-term productivity, and

v. any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

NEPA binds EPA to a comprehensive environmental permit review process for New Source coal mining applications in West Virginia, so long as EPA administers NPDES permits. The New Source NPDES program offers significantly enhanced opportunity, as compared with the existing source program, for (i) public and interagency input to the Federal NPDES permit review process before mine construction begins, (ii) effective environmental review and consideration of alternatives that may avoid or minimize adverse effects, and (iii) implementation of environmentally protective permit conditions on mine planning and operation. Additionally, NEPA reviews can assist substantially in maintaining and protecting the present environmental, aesthetic, and recreational resources of the coal regions of West Virginia.

NPDES permits issued through delegated State programs are not considered significant Federal actions. Hence they are not subject to NEPA review. The procedure used by EPA in implementing the New Source NEPA

reviews in West Virginia, therefore, is expected to be an interim procedure until the State assumes the NPDES program. The information developed by EPA will be turned over to West Virginia when it takes over the NPDES permit program in September 1981.

Advantages of the Areawide Environmental Assessment Process

As energy consumers, all citizens stand to benefit from efforts to expedite the mining of West Virginia's untapped coal resources. As inhabitants of the ecosystem, all citizens stand to lose valuable environmental resources if New Source mining activities are uncontrolled. EPA's areawide approach to environmental assessment is designed to streamline the permit application process for New Source coal mines in a manner that will save time and money for EPA and for the permit applicant, while it identifies and protects valuable resources.

The typical NEPA review process for a proposed New Source without this areawide approach would require the permit applicant to submit a detailed Environmental Information Document and EPA to prepare either a Finding of No Significant Impact (FONSI) or an Environmental Impact Statement (EIS) for each permit application. This process could take as long as a year or more and be quite costly to both parties. The mine operator or his paid consultant would have to identify existing resources. This would involve contacting many Federal, State, and local agencies. The information then would have to be mapped and analyzed with regard to the proposed mining operations. After EPA reviewed the document, it would use the information to prepare the EIS or FONSI.

As the result of the Areawide Environmental Assessment Process, however, EPA already has collected and interpreted a great deal of information on existing conditions. Instead of collecting the data pertinent to each new mining operation, EPA has assembled all data available for the State of West Virginia. Existing resources within each of the seven river basin areas have been compiled on clear plastic overlays (environmental inventory map sets) to the standard 7.5-minute USGS topographic reference maps (1:24,000-scale). This mapping reduces the amount of interagency contact required of EPA during its NEPA review of a typical permit application. The uniform format provided by the USGS maps allows EPA's Enforcement Division to perform rapid "at-a-glance" environmental reviews which pinpoint exactly the locations of sensitive resources with regard to individual New Source coal mining operations.

EPA's areawide approach also serves to insure that all or at least most valuable resources are identified. EPA's data gathering process involved contacting numerous government, educational, and private institutions. Hundreds of documents were collected and reviewed by persons with the appropriate technical expertise.

The data gathering process allowed the designation of areas which are considered extremely sensitive to mining activities, those which are considered moderately sensitive to miing activities, those which are probably non-sensitive to properly regulated mining, and those for which more information must be obtained before the relative sensitivity to mining can be determined. These areas and the level of environmental review which EPA will employ now can be identified by the concerned citizen, environmentalist, and prospective coal mine operator.

The areawide process and its products have been designed for maximum flexibility and continuous updating. Citizens, industry, and other agencies can provide input to EPA's data base at any time by submitting information to EPA's Enforcement Division. The public notice and issuance of a draft permit processes insure opportunities for comment on individual permit applications.

The New Source NPDES Permit Process Using the Areawide Assessment

The West Virginia Department of Natural Resources (WVDNR) and EPA have developed a cooperative process to review the environmental impacts of proposed New Sources coal mining activities. A copy of each completed application for a State surface mine (SMA) number, underground opening (DR 14), or preparation plant (DR 23) is forwarded to EPA-Region III. These State application forms now include the administrative information that EPA uses to make the legal determination of whether the proposed facility is a New Source. EPA Enforcement Branch personnel then begin preliminary environmental review of proposed New Sources in coordination with the relevant State

agencies prior to receipt of the actual NPDES permit application. The typical NPDES permit application process is outlined in Figure 1. If the facility is a New Source, the State permit applicant is informed within 30 days that a valid New Source permit is required prior to the beginning of construction and is sent a NPDES application. He is also informed of any additional environmental data that EPA will require to complete the environmental review. EPA believes that most applicants will be able to supply any necessary data at the time a formal NPDES application is submitted to EPA.

NPDES New Source permits can be conditioned by EPA to avoid or minimize adverse effects on any type of significant resource. Thus, as part of the Areawide Environmental Assessment Process, baseline information detailing the existing environment. geography and geology; historic, aesthetic, and recreational sites; environmentally sensitive areas; stream water quality categories; and other potential issues of concern was compiled in a uniform format in the SID's and environmental inventory map sets. Together with the copy of the appropriate State permit application, these baseline data now allow a rapid review of New Source coal mining applications. This process also relieves the applicant of duplicative application requirements as well as the often expensive and time consuming burden of environmental data development in areas shown by these baseline data to be environmentally non-sensitive.

The intensity of NEPA review given to coal industry New Source permit applications will vary with the environmental sensitivity of the permit area (Figure 2). Two basic

Figure 1 **Typical NPDES Permit Process**

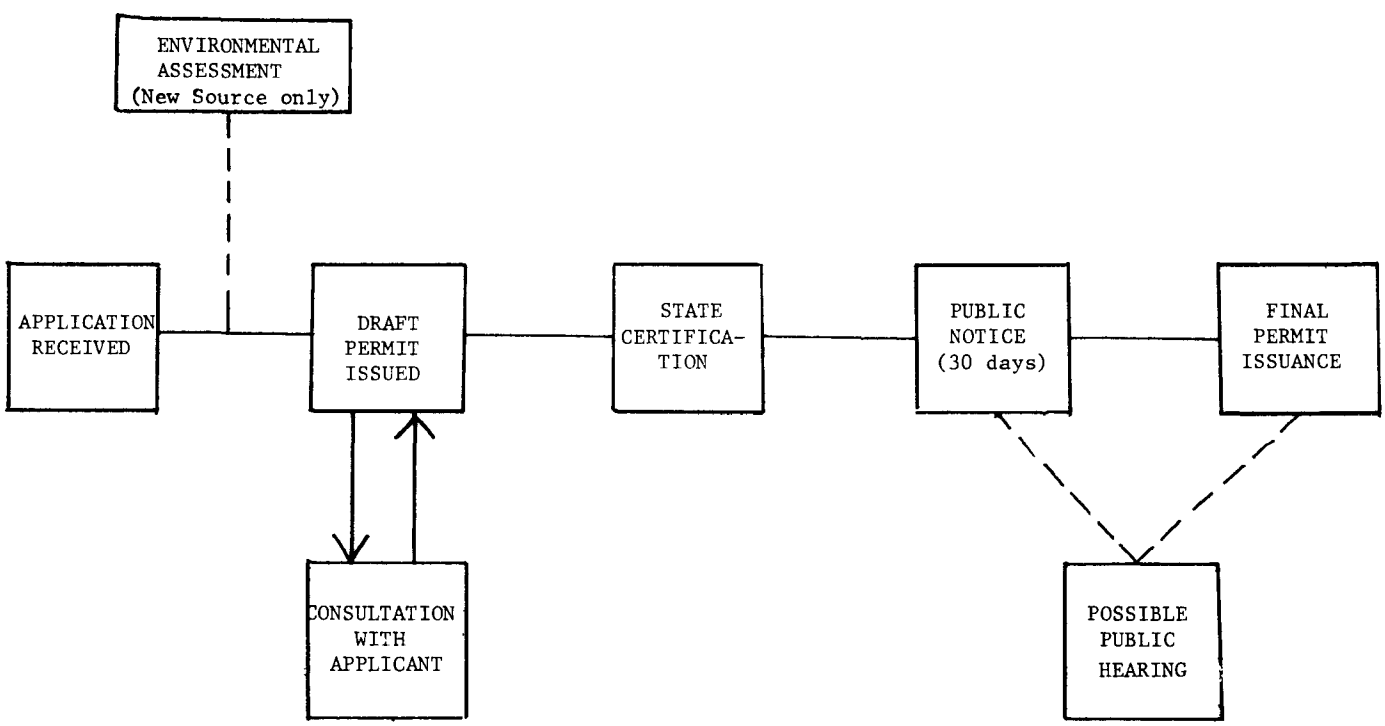
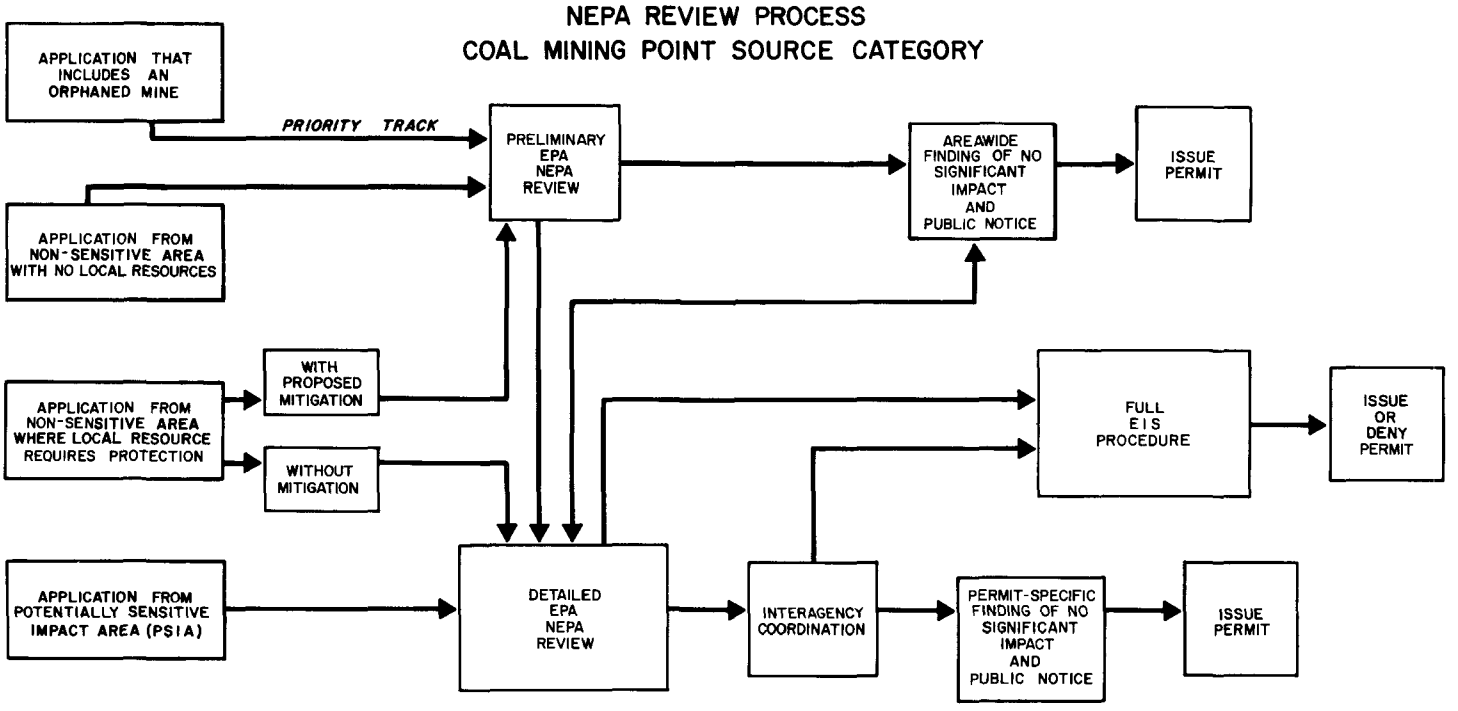


Figure 2 EPA NEW SOURCE NPDES PERMIT NEPA REVIEW PROCESS COAL MINING POINT SOURCE CATEGORY



classes of areas are depicted broadly in the Figure 3 map of West Virginia. There are many areas in which mining will have no significant adverse impacts, so long as all localized resources are proposed to be protected adequately. For mining industry permits from those areas, this Areawide Assessment document serves as a "Finding of No Significant Impact," provided that all other local, State, and Federal permit and approval requirements are satisfied and appropriate mitigative measures for specifically identified, localized resources are applied.

Additional scrutiny by EPA will be necessary for New Source applications where there are localized resources that the mine will affect, but the applicant has not proposed adequate protective measures. If the appropriate mitigation is not specified in the New Source permit application, a detailed NEPA review ordinarily will be required to develop suitable conditions for the permit. Examples of localized resources include National Register historic places, parks, cemeteries, wetlands, and critical habitats of endangered species. Such resources typically can be avoided or buffered by careful design of the mining facility.

A detailed review of New Source mines and other coal facilities on a case-by-case basis will be warranted in those areas designated as Potentially Significant Impact Areas (PSIA's) because of their high sensitivity to New Source coal mining. Criteria used to designate PSIA's in each of the seven basins are summarized in Table 2 and discussed in subsequent sections of this Areawide Assessment. Special attention was given by EPA to considerations of water quality and aquatic biota in defining the PSIA's of each river basin. The EPA conceptual approach to protecting surface waters is outlined in the general findings section of this Areawide Assessment; specific findings are indicated in the final basin-specific sections of this Areawide Assessment.

New Source applications within the Potentially Significant Impact Areas automatically will require individual NEPA review to develop measures or alternatives

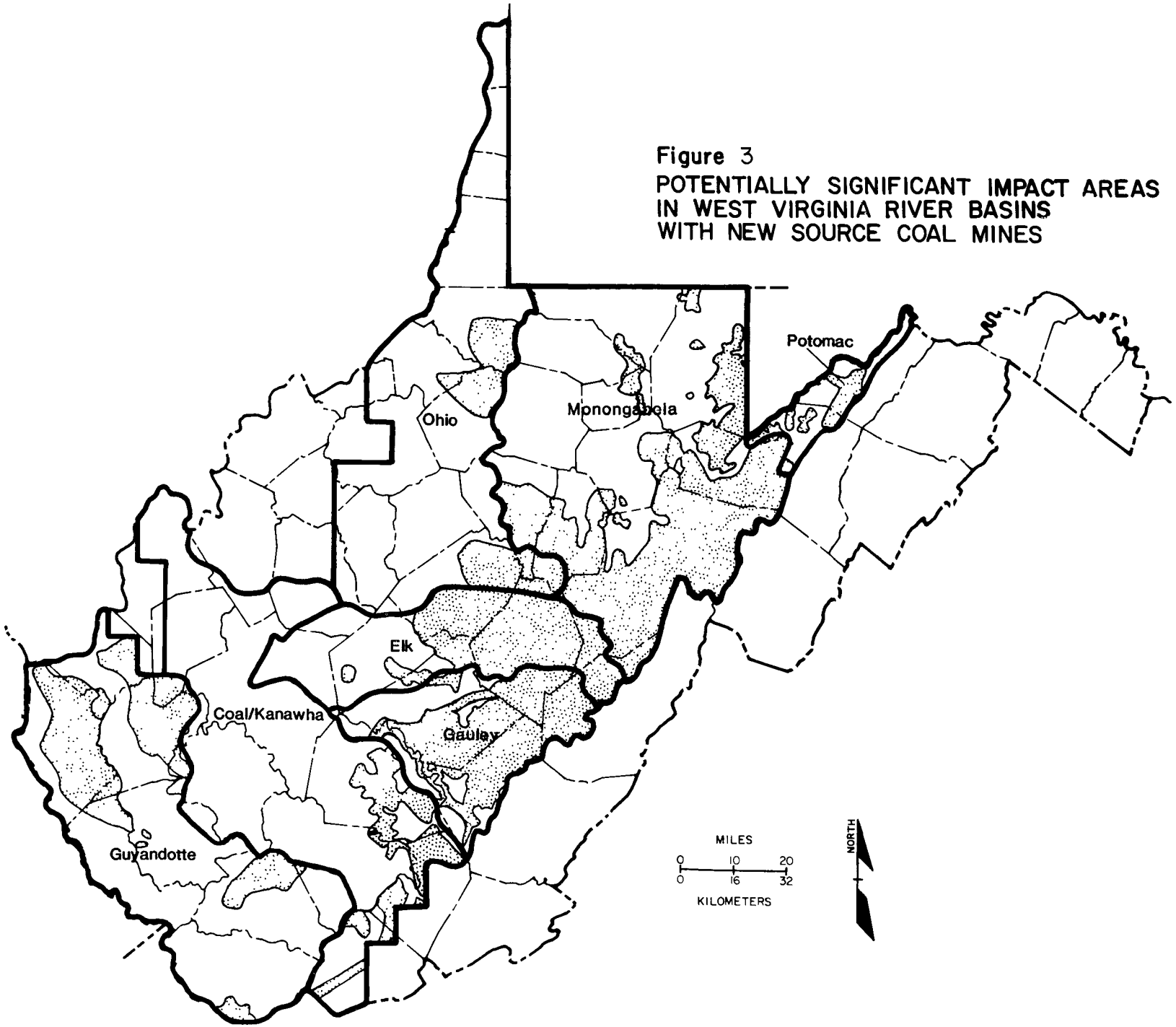


Figure 3
POTENTIALLY SIGNIFICANT IMPACT AREAS
IN WEST VIRGINIA RIVER BASINS
WITH NEW SOURCE COAL MINES

Table 2. Resource criteria used by EPA to designate Potentially Sensitive Impact Areas in West Virginia river basins for New Source coal mining.

PSIA Criterion/Basin	North Branch Potomac	Monongahela	Ohio/ Little Kanawha	Elk	Gauley	Coal/ Kanawha	Guyandotte/ Big Sandy/ Twelvepole/ Tug Fork
BIA Category II watershed	X	X	X	X	X	X	X
Federal recreational or multiple-use land		X		X	X		
National Natural Landmark		X			X		
National Wild/Scenic River or Study River		X			X	X	
Other Nationally Significant River					X	X	
National Wilderness Area (or proposed wilderness)		X			X		

to prevent or minimize the negative impacts of the proposed mining activities, if possible, or to develop the rationale to deny a permit, if alternatives or mitigation cannot sufficiently protect the affected, sensitive resources. Where potentially significant impacts cannot be avoided, a full EIS procedure is likely.

EPA recognizes the serious pollution problem posed by abandoned mines in West Virginia. Therefore it expects to accommodate with priority any application for the re-mining of abandoned mine sites, so long as the proposal anticipates that wastewater discharges and reclamation will satisfy all currently applicable standards.

EPA and USOSM

EPA has taken special care, when developing its areawide permit process, to rely upon the environmentally protective requirements of the permanent regulatory program currently being implemented by the US Office of Surface Mining (US Department of the Interior). Frequent reference is made to the USOSM regulations in the SID's, because the USOSM performance standards were written to abate many environmental abuses associated with coal mining. Should USOSM regulations not be in force, similar requirements may have to be imposed on NPDES New Source permittees by EPA to assure environmental protection.

Pursuant to the Surface Mining Control and Reclamation Act of 1977 (SMCRA; P.L. 95-87), detailed environmental protection performance standards applicable to the coal industry are to be applied through a phased, comprehensive regulatory program. The permanent regulatory program (44 FR 15311-15463; March 13, 1979) requires more detailed Federal standards than those set in the initial interim program, and they are to be imposed through a permit system. Some of the precise details of the program are in litigation and are not yet certain.

The SMCRA permit program for privately owned lands may be delegated to the State of West Virginia, following approval of air and water quality aspects by EPA and overall approval by the US Secretary of the Interior. Mining activity on Federal lands will continue to require Federal (USOSM) permits. Most coal lands in West Virginia are privately owned. The West Virginia program was approved in part by the US Department of the Interior during October 1980. The State is resubmitting its proposal, and a public hearing will be held by

USOSM during January 1981. If approved, the State SMCRA program could be implemented during early 1981.

EPA is currently working with USOSM to develop procedures for coordinating the New Source NPDES environmental review process for coal mining industry applications with the similar permit review mandated for those mines regulated by the US Office of Surface Mining under the Surface Mining Control and Reclamation Act of 1977 (44 FR 187.55322-55325, September 25, 1979). This coordination will reduce potential duplication of requirements and will result in an efficient and comprehensive review process. EPA is unlikely to be the lead agency for NEPA review for permits for coal mines if USOSM administers the SMCRA program in West Virginia.

GENERAL FINDINGS OF THE AREAWIDE ENVIRONMENTAL ASSESSMENT PROCESS

In this section the overall results which emerged from EPA's Areawide Environmental Assessment Process in the major river basins of West Virginia are discussed. Summaries of the principal types of resources evaluated for potential coal mining impacts, the results of these evaluations, and the impact on permit issuance are included. Inventory findings and evaluation methodologies are described in detail in each SID. EPA has concluded that for the majority of New Source coal mining applications, existing institutional mechanisms (both environmental performance standards and interagency coordination) will be sufficient to protect environmental resources and to allow issuance of NPDES permits.

EPA has evaluated the potential impacts of new mining on seven broad classes of environmental resources: water resources, aquatic biota, terrestrial biota, air quality and noise, cultural and visual resources, human and land use resources, and earth resources. Many of the resources in the basins which are both significant and sensitive to New Source mining are localized. These resources can be protected throughout the basins through mitigative measures which will be enforceable by EPA through special New Source permit conditions. The conditions may be technical in nature, requiring that special engineering practices be adopted during mining. Alternatively, permit conditions may be procedural or institutional, invoking coordination with some other State or Federal agency whose requirements will protect the resources adequately. Existing controls on new mining, most notably the USOSM permanent program requirements under SMCRA, will be utilized by EPA to the fullest extent possible.

Water Resources

Groundwater and surface water resources are of particular concern to EPA because of the Clean Water Act and the Safe Drinking Water Act. Public water supply sources (underground and surface) can be affected adversely by New Source mining activities that reduce water supply capacity or introduce chemical contaminants. EPA has mapped public water supply sources and will require mitigation where potential impacts on public water supplies may occur. For example, where underground mines are proposed within 1.5 miles of any active water supply well, an ongoing groundwater monitoring program will be required. Also, surface mines within 200 feet of any active water supply well or spring will require a detailed, permit-specific evaluation.

EPA finds that the impacts of mining activity on flooding (especially surface mining) are variable, poorly documented, and impossible to generalize. If USOSM permanent program regulations regarding locations of activities within the 100-year floodplain, construction of retention basins, and other actions to control the rate of mine runoff are implemented fully, the potential effects of new mining on flood levels should be mitigated adequately in most cases. EPA recognizes that, in certain instances where various factors overlap (extensive new surface mining in steeply sloping watersheds where there is considerable existing development on or near the floodplain, as in the Tug Fork Valley of southern West Virginia), adverse impacts may be significant and should be evaluated closely before New Source permits are issued. EPA will rely on the public notice aspects of the NPDES permit process to identify areas where flooding and other hydrologic impacts are potentially serious. In identified cases, EPA may elect to address the issue of individual and cumulative mine-related effects on flooding in a detailed site-specific manner.

Aquatic Biota

Aquatic biota are especially significant resources in West Virginia, and they have been damaged greatly by past mining practices. In many West Virginia streams significant biota have been shown to be quite sensitive to mining effluents that meet current New Source standards. The significance of the aquatic biota of individual streams has been evaluated on the basis of factors such as their recreational (sport fishing) importance, nature study value, and threatened or endangered status. Sensitivity was determined on the basis of all available data using the professional judgment of experienced aquatic biologists. Resource evaluations rely heavily on State stream data and evaluations.

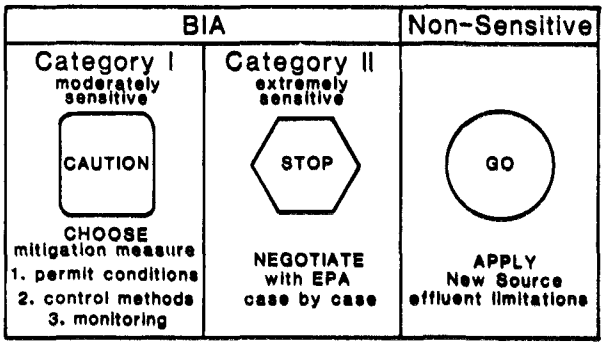
The watersheds that warrant special consideration in EPA's NPDES permit review program have been designated as Biologically Important Areas (BIA's). These areas are subdivided further into Category I (moderately sensitive) and Category II (extremely sensitive) BIA's on the basis of their judged sensitivity to mine-related pollutants, stream size, mine-waste assimilation capacity, and other available information. Full consideration also was given to factors such as the diversity of stream biota, the presence of rare or unusual species, and the cultural and recreational significance of the fishery resource in West Virginia.

The essential difference between BIA Category I and Category II areas is that EPA is confident that mitigative measures can be applied in BIA Category I areas for adequate protection of the sensitive aquatic biota identified. These mitigative measures may take the form of permit conditions, state-of-the-art control methods, and biological and chemical monitoring programs during mining. The selection of the appropriate mitigative measures will result from EPA's evaluation of the receiving stream's biological baseline taken from State reports, other previously verified data, or a site-specific pre-mining biological survey conducted by the applicant. Because of these requirements, EPA urges all applicants to contact EPA at the earliest stages of mine planning to eliminate unnecessary time and dollar expenditures.

In BIA Category II areas mitigative measures may not be sufficient to prevent adverse impacts. More extensive information on stream water quality, stream biota, and the impacts of the proposed new mining activity is necessary. Before mining takes place in BIA Category II areas, EPA will require that current data be provided on the proposed receiving stream in the form of a detailed biological assessment that defines species composition, assesses the susceptibility to mining of those species found, and determines alternatives (including special permit conditions) that will adequately protect the aquatic biota. The data also will form a baseline against which to compare actual impacts and judge the effectiveness of mitigations associated with the permit, if granted. The scope of each biological assessment will be determined by EPA on a case-by-case basis and should proceed as early as possible during mine planning. Background biological data can be supplied by the applicant or by the State. All BIA Category II areas are designated by EPA as PSIA's in each basin.

Certain areas have been classified by EPA as non-sensitive, based on aquatic characteristics, water quality characteristics, and physical characteristics of the waterbody. In these areas, the Nationwide New Source effluent limitations will be adequate to maintain or enhance present water quality.

Unclassified areas also have been identified by EPA. Here, current data are not adequate for classification as either BIA Category I, BIA Category II, or non-sensitive areas. These areas will require a brief but intensive investigation and report by either the State's or the applicant's qualified biologist for classification as either a non-sensitive or BIA Category I or II area so that permit review by EPA can proceed. Again, contact by the applicant with EPA at the earliest stage of mine planning is recommended for proposed facilities in unclassified areas.



Terrestrial Biota

Terrestrial biological resources include outstanding vegetation and wildlife. Such resources are important because of their commercial value (lumbering and trapping, for example), their significance as threatened and endangered species, and their inherent ecological value and functional role in high quality natural environments. EPA has mapped data provided by the WVDNR-Heritage Trust Program (now the Natural Heritage Program) and other sources concerning populations of endangered or other special interest species of plants and animals, outstanding trees, stands of virgin forest, wetlands, and other scarce but noteworthy biological features.

EPA has concluded that implementation of USOSM permanent program requirements should adequately identify the presence of valuable terrestrial biota on proposed mine sites and serve to protect any identified resources when New Source mining is proposed. Terrestrial biota of National significance (National Natural Landmarks) are included in the PSIA's of the basins.

Air Quality and Noise

In most cases, air quality and noise issues in the context of new mining operations are not expected to be significant, are localized in scope, and already are mitigated substantially by other EPA and State programs. Air quality impacts consist primarily of potential point source air quality impacts from coal preparation plants (particulate emissions) and the more generalized effects such as fugitive dust emissions resulting from blasting, hauling, and other mining activities. Preparation plants are regulated pursuant to the Clean Air Act by the West Virginia Air Pollution Control Commission, in accordance with the EPA-approved State Implementation Plan. Fugitive dust control measures for coal mines have been incorporated into the USOSM permanent program requirements. Therefore, EPA finds that major adverse impacts will be mitigated adequately and will not require special NPDES permit conditions. Blasting noise and vibration are addressed thoroughly by USOSM and WVDNR regulations and similarly will not require added NPDES permit conditions.

Cultural and Visual Resources

Many cultural and primary visual resources, if identified and specially designated, are protected by Federal laws such as the National Historic Preservation Act of 1966, the Archaeological and Historic Preservation Act of 1974, the Wild and Scenic Rivers Act, the Wilderness Act, and other Federal legislation. Such protection is recognized by the USOSM permanent program regulations. West Virginia law also protects State lands by prohibitions or other controls on coal mining. These resources are important for educational purposes, their contribution to the overall quality of life, and their considerable role in promoting tourism and other economic development efforts in West Virginia. New Source mining activity can affect archaeological and historic resources both by direct destruction prior to evaluation or salvage and indirectly through aesthetic degradation where these resources have not been investigated fully prior to mine planning. However, because cultural resources tend to have a site-specific localized character and tend to be located in developed areas removed from areas expected to be mined in the future, their protection is not expected to affect the New Source permit program significantly.

EPA has mapped all National Register sites as well as those other historic and archaeologic sites for which data were available. The procedures established by Congress through the National Historic Preservation Act and the Archaeologic Preservation Act will be sufficient to protect these identified resources. Other significant sites are likely to exist in West Virginia. To make certain that adequate information is developed in each case, EPA is affording the State Historic Preservation Officer the opportunity to utilize his mandated responsibilities and resources to identify additional cultural resources and to evaluate potential adverse impacts on these resources, as New Source permit applications are received by EPA. EPA will notify the State Historic Preservation Officer of potential New Source mining activity both at the time when the applicant is determined to be a New Source early in the process and later at the time of New Source draft permit issuance. In all cases,

EPA will not issue New Source NPDES permits prior to the completion of review procedures mandated by those acts where historic and archaeologic resources are involved.

Primary visual resources, where not protected by State or Federal ownership, will be evaluated by EPA on a case by case basis using a preliminary list of primary visual resources, a site-oriented visual basin impact methodology, and coordinated notification procedures by EPA to eliminate data gaps and to assess accurately the impact of New Source mining on these resources. In all primary visual resource cases, mitigative measures can be employed to reduce substantially the adverse impacts that otherwise might result from New Source mining. In extreme cases, EPA will not issue a New Source permit, if the primary visual resource cannot be protected adequately. Certain of these resources of National significance (including National Wild and Scenic Rivers, other National Rivers, and Wilderness Areas) are considered to be PSIA's in the basins.

Human Resources and Land Uses

Impacts from New Source mining can affect the local supply of community services and facilities, adequacy of the transportation network, overall housing market, and ability of the impacted government agencies to plan reasonably for the future. The potential for adverse impact becomes much greater as the size of the proposed mining activities and the number of these activities increase. EPA has established a mechanism which uses a preliminary screening of these issues based on an array of calculated threshold values. Data inputs include local unemployment rates and regional employment multipliers. Various coordinative procedures are brought into play which are designed to alert the agencies directly involved with planning for and managing potentially affected resources. These coordinative procedures essentially constitute mitigative measures which have been set out by EPA to address potential adverse effects, signaled when a threshold value is reached. In general, coordinative procedures will suffice to mitigate impacts while expediting permit issuance. Various ways to minimize potentially more substantial adverse effects also have been identified in the SID's.

Land use issues, particularly the compatibility of mining activities with other uses nearby, are addressed at length in the USOSM regulations. General land use capatibility issues also are addressed through EPA's public notice provisions as well as other coordinative procedures established by EPA.

USOSM permanent program regulations and SMCRA mandate protection of public lands, including parks, as well as cemeteries. The EPA public notice for each NPDES permit provides an additional opportunity for public land managers to have their interests considered when New Source permit conditions are written. Federal recreation and multiple use lands are included as PSIA's in the basins.

Earth Resources

Earth resource impacts primarily derive from or are a link in the chain of other resource impacts. The permanent conversion of prime agricultural land to non-farming uses by New Source surface mining is a direct adverse impact which potentially affects land productivity for future generations. Mining on unstable slopes or in areas prone to subsidence can give rise to direct adverse impacts (e.g., landslides and sinkholes) when associated with New Source mining. Mining on steep slopes exacerbates natural or manmade slope instability as well as sedimentation and erosion control problems and the danger of flash flooding. Mining activities when located in the floodplain interfere with the absorptive capacity of the natural cover, creating increased flood risks as well as related water-quality problems. Where the potential exists for toxic overburden and acid mine drainage, new mining ultimately is most likely to damage water resources and valuable aquatic and terrestrial biota.

As part of the Areawide Environmental Assessment Process, EPA has mapped and evaluated soils classified as prime agricultural land (regardless of whether these soils currently are in agricultural production) based on USDA-Soil Conservation Service criteria. EPA has enumerated those soil groups and soil series generally known to have stability problems and conditions under which instability and subsidence potential exist. EPA has mapped areas of

known instability when these data have been available. Steep slopes defined as those greater than 25% (14°) also have been prepared. Floodplain (100-year) designations, as determined by the US Geologicial Survey or the US Department of Housing and Urban Development, have been mapped by EPA. Areas with greatest potential for toxic overburden have been established with the assistance of the Division of Reclamation at WVDNR, using Reclamation's file data to determine where the probability for acid-producing overburden as well as toxic coal seams themselves is substantial.

EPA's regulatory controls to minimize earth resource impacts rely on successful application of the extensive USOSM permanent program requirements, especially relating to problems of toxic overburden, floodplain protection, and slope instability. To accommodate EPA's full range of NEPA responsibilities, some USOSM requirements have been extended. For example, the USOSM Nationwide steep slope requirements are imposed on slopes of 20° (36%) or more. Because of West Virginia's experience with instability on slopes of less than 20°, slopes between 14° (25%) and 20° will be considered on a case-by-case basis for application of USOSM steep slope performance standards such as those governing the downslope placement of mine spoil. Concerning prime farmland, USOSM requirements are restricted basically to that land currently in agricultural production. Because of EPA's NEPA concern relating to long-term effects and irretrievable and irreversible commitments of resources, lands classified by the US Soil Conservation Service as prime farmland will be considered carefully in individual permit reviews, whether or not these lands currently are in production.

Coal Resources

Given the large number of factors which affect the demand for coal as well as its supply, the implications of EPA's new Areawide Environmental Assessment Process for the future mining of coal in West Virginia cannot be quantified precisely. Nevertheless, generalized estimates of impact on future coal mining have been prepared by EPA, relying heavily on historical mining data, estimates of reserve tonnages, and evaluations of coal quality factors. Results of this generalized estimating process indicate that approximately 10% of potential future annual tonnage is located in PSIA's and, therefore, will not be able to take advantage of the streamlined approach provided by this new areawide process. More importantly, although a portion of the remaining 90% of this potential future annual tonnage will be conditioned by various types of mitigative measures, New Source permits for this tonnage can be issued expeditiously in the future, based upon the process undertaken by EPA as summarized in this Areawide Assessment. In so doing, EPA hopes to have accomplished important National energy objectives while preserving and protecting equally important environmental values.

BASIN-SPECIFIC FINDINGS OF THE AREAWIDE ENVIRONMENTAL ASSESSMENT PROCESS

This section summarizes EPA's principal findings for each basin. The areas that constitute PSIA's are identified, including BIA Category II and other PSIA components. In each case where aquatic resources contributed to PSIA designation, the entire sub-watershed area (all tributaries) of the stream is included in the PSIA. This is due to the anticipated transmission of pollutants from upstream areas to the downstream reaches known to have high quality water and biota. Furthermore, although sampling generally has not been conducted in the more remote headwater tributaries, there is strong reason to believe that the very significant and sensitive biota sampled at downstream stations also inhabit upper reaches of the streams.

Other important aquatic resource findings such as BIA Category I areas and those waterways deemed non-sensitive to New Source mining activities also are identified. Maps for each river basin illustrate those areas where lack of aquatic resource data currently precludes stream classification.

The Coal/Kanawha River Basin

Several PSIA's in the Coal/Kanawha River Basin have been identified on the basis of aquatic biological resources and coincide with the boundaries of BIA Category II areas (Figures 4 and 5 and Table 3). For example, Laurel Creek, Mill Creek, Wolf Creek, Glade Creek, and Mann's Creek, all of which are located in Fayette County, are PSIA's based on their State designation as trout waters corroborated by water quality and aquatic biological data available to EPA. These streams, to varying degrees, have been demonstrated to have high biological equitability and diversity ratings, suggesting that a high quality fauna is currently supported by relatively pristine waters. Mann's Creek also supports species of macroinvertebrates that are indicative of high quality water. Meadow Creek, Lick Creek, and the Little Bluestone River in Summers County and Camp Creek in Mercer County are designated as PSIA's because they support trout as well as other especially important and relatively rare aquatic species, as reported by the WVDNR-Heritage Trust Program.

In the Coal/Kanawha River Basin the PSIA's also include several scenic and recreational areas of Nationwide significance. The New River Gorge National River is a PSIA, defined by the "taking line" established by Congress in 1978 (P.L. 95-625) in Fayette, Raleigh, and Summers Counties. This 50,000-acre area has been authorized for acquisition by the National Park Service because of its multiple natural resource values (aquatic, terrestrial, cultural, and visual) and recreational potential. Babcock State Park, Grandview State Park, McKendree Public Hunting and Fishing Area, and Sandstone Falls State Park are included within the National River boundary (Figure 4).

The Bluestone River from its confluence with the New River to its headwaters was designated by Congress as a Study River for potential inclusion in the National Wild and Scenic Rivers System (established by P.L. 90-542 in 1968). The System serves to protect and preserve rivers with "remarkable scenic, recreational, fish and wildlife, historic, cultural, or other similar values..." Because the US Department of the Interior-Heritage Conservation and Recreation Service has designated the Bluestone River as a Study River in the System, EPA regards the Bluestone mainstem with a 1,000 foot buffer zone on each side as a PSIA (Figure 4).

Both the New River Gorge National River authorized boundary and the Bluestone River with its buffer zone include several areas that are classified as PSIA's because of their aquatic biota. These PSIA's generally are located in eastern and southern parts of the Basin where there has been little mining, urban, or industrial development. More specific PSIA locations are as follows:

- Laurel Creek: in Fayette County, this area includes the entire Laurel Creek watershed area beginning at the Laurel Creek juncture with the New River at Cotton Hill, including the small towns of Dempsey and Beckwith
- Wolf Creek: in Fayette County, this area includes the Wolf Creek watershed which adjoins Laurel Creek to the west; the watershed begins at South Fayette on the New River
- Mill Creek: in Fayette County, the area includes the Mill Creek watershed, encompassing the town of Ansted
- Glade Creek: in Fayette County, the Glade Creek watershed includes the towns of Danese, Pittman, and Landisburg
- Mann's Creek: in Fayette County, the area includes the Mann's Creek watershed in/near Babcock State Park
- Meadow Creek: in Summers County, the Meadow Creek watershed extends upstream from the New River
- Lick Creek: in Summers County, the Lick Creek watershed joins the New River north of Sandstone and includes the town of Green Sulphur Springs
- Little Bluestone River: in Summers County, this PSIA watershed includes the town of Jumping Branch
- Camp Creek: in Mercer County, the Camp Creek watershed is a PSIA which includes Camp Creek State Forest

Figure 4 **POTENTIALLY SIGNIFICANT IMPACT AREAS IN THE COAL/KANAWHA RIVER BASIN**

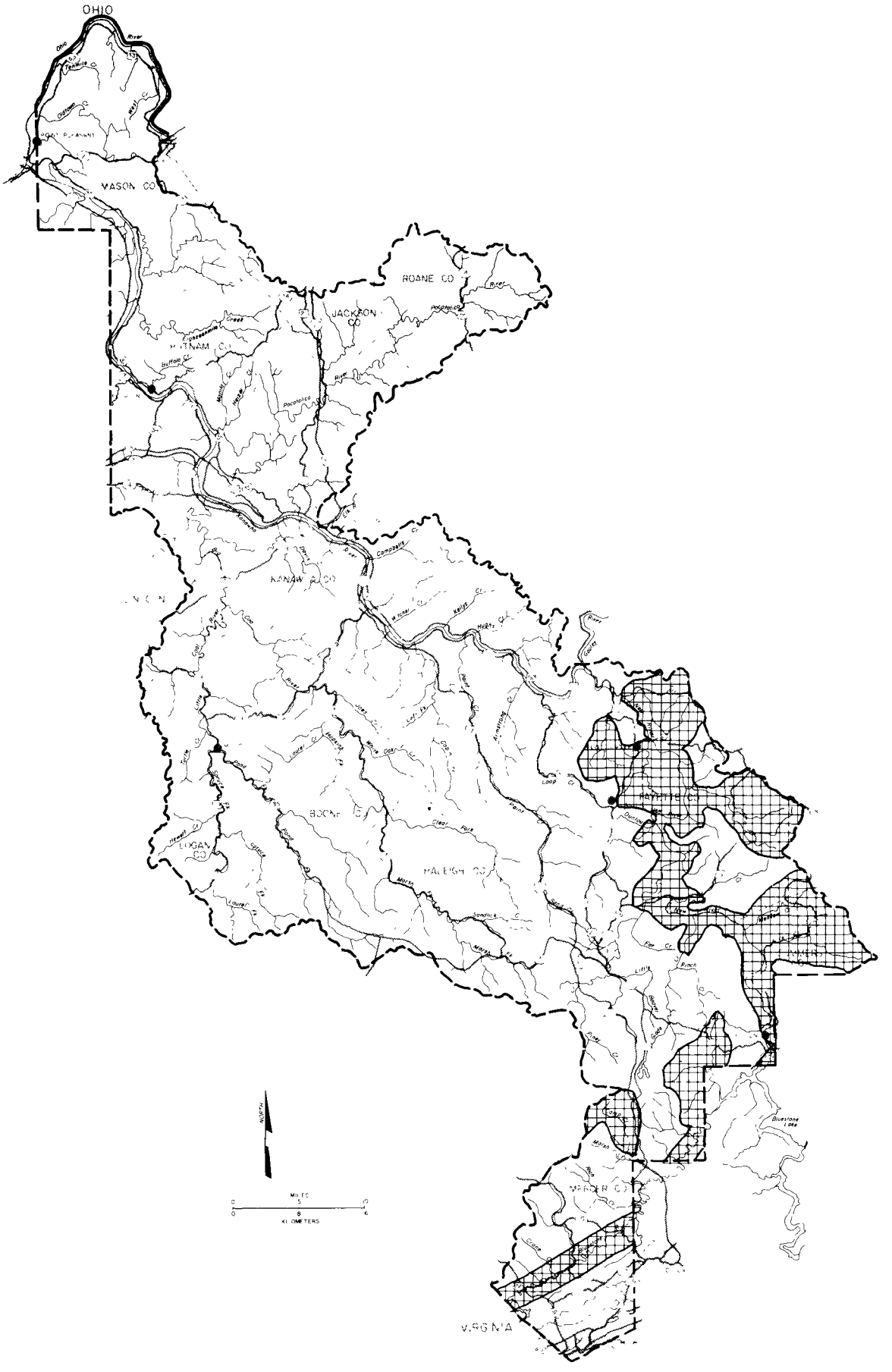


Figure 5 **BIOLOGICALLY IMPORTANT AREAS AND NONSENSITIVE AREAS IN THE COAL/KANAWHA RIVER BASIN**

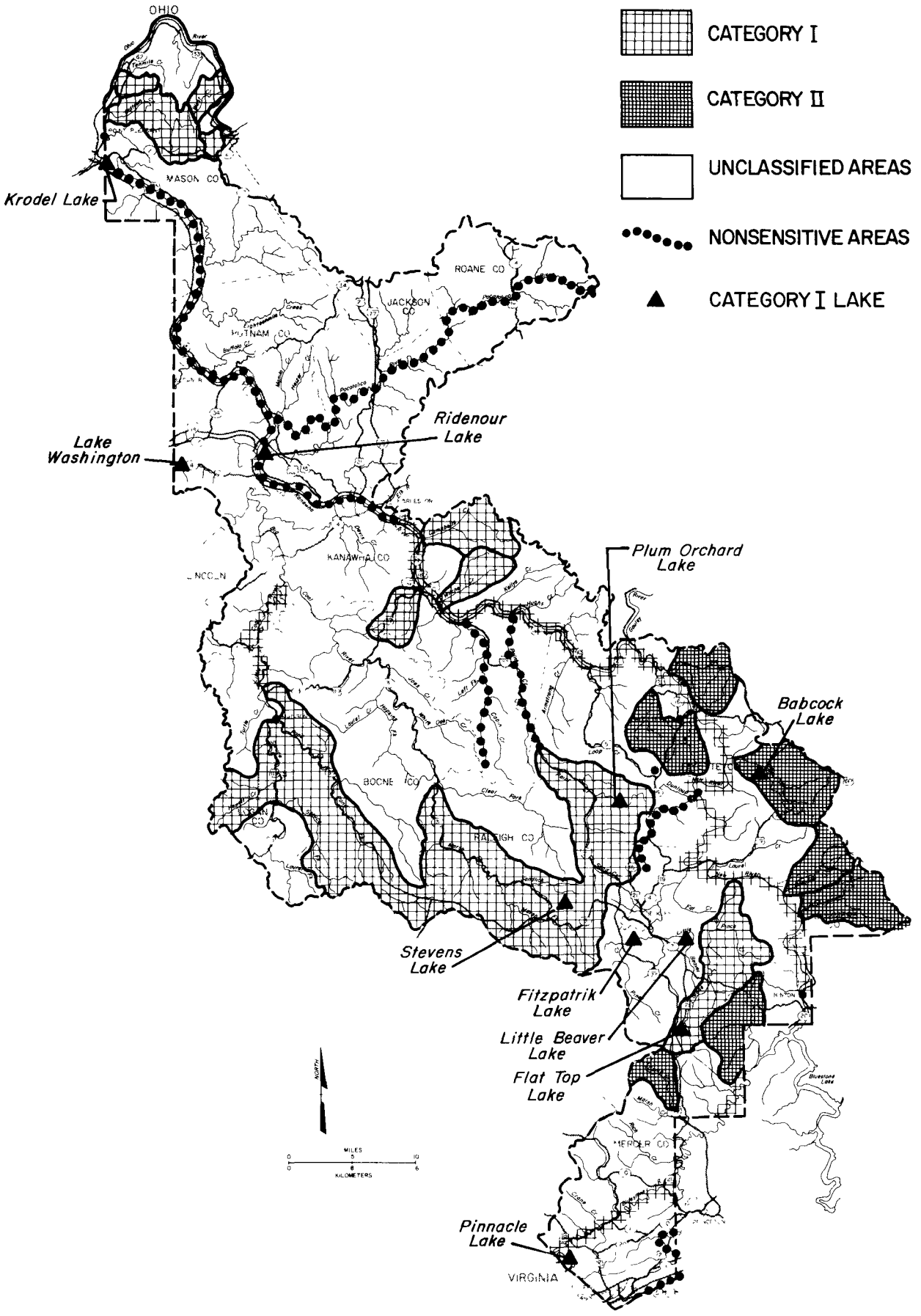


Table 3. Summary of major aquatic and water resource findings in the Coal/Kanawha River West Virginia. Waters include all watersheds unless specified as mainstem only. Lakes include a generalized buffer zone around the waterbody, encompassing all areas (potential mine sites) which would discharge directly into the lake.

BIA Category I	County	Reason for Designation
Mill Run	Mason	High equitability WVDNR-HTP Species: *Phoxinus erythrogaster*
Old Town Creek	Mason	High diversity
West Creek	Mason	Macroinvertebrate indicator species
Tombleson Run	Mason	High diversity WVDNR-HTP Species: *Hybopsis storeriana* *Notropis buchanani*
Krodel Lake (Lake only)	Mason	Trout lake Recreational area
Hurricane W.S. Res. (Lake only)	Putnam	Trout lake Recreational area
Ridenour Lake (Lake only)	Kanawha	Trout lake Recreational area
Mainstem Kanawha (above Charleston)	Kanawha, Fayette	High diversity, high equitability WVDNR-HTP Species: *Notropis buchanani* *Ichthyomyzon bdellium* *Percina copelandi* *Pimephales vigilax* *Epioblasma torulosa torulosa* *Lampsilis orbiculata orbiculata,* Important sport fishery and recreational area
Campbells Creek	Kanawha	High diversity
Lens Creek	Kanawha	High diversity
Witcher Creek	Kanawha	High diversity
Hughes Creek	Kanawha	High equitability
Paint Creek (above Mahon	Fayette	Trout stream High diversity, high equitability
New River Mainstem (Mainstem only below Bluestone Lake)	Fayette, Summers	High equitability High diversity WVDNR-HTP Species: *Notropis scabriceps* *Notropis platyrhynchus* Macroinvertebrate indicator species, Important warmwater sport fishery; many endemic fish species present

Table 3. Summary of major aquatic and water resource findings in the Coal/Kanawha River West Virginia (continued).

BIA Category I	County	Reason for Designation
Babcock Lake (Lake only)	Fayette	Trout lake Recreational area
Glade Creek	Raleigh	Trout stream
Pinch Creek	Raleigh	Trout stream
Marsh Fork	Raleigh	Trout stream
Fitzpatrick Lake (Lake only)	Raleigh	Trout lake
Little Beaver Lake (Lake only)	Raleigh	Trout lake
Pinnacle Lake (Lake only)	Mercer	Trout lake
Bluestone River (Mainstem only)	Mercer	WVDNR-HTP Species. *Phenacobius teretulus* Sport fishery
Little Coal River (Mainstem only)	Boone	High diversity, high equitability
Rock Creek	Boone	Macroinvertebrate indicator species
Spruce Fork	Boone Boone	High diversity, high equitability Trout stream
Pond Fork	Boone	High diversity, high equitability
Stevens Lake (Lake only)		Important sport fishery area
Flat Top Lake (Lake only)		Important sport fishery area
Plum Orchard Lake (Lake only)		Important sport fishery area
BIA Category II	**County**	**Reason for Designation**
Laurel Creek	Fayette	Trout stream High equitability
Mill Creek	Fayette	Trout stream
Wolf Creek	Fayette	Trout stream
Glade Creek	Fayette	Trout stream
Mann's Creek	Fayette	Trout stream Macroinvertebrate indicator species
Meadow Creek	Summers	Trout stream WVDNR-HTP Species: *Notropis scabriceps*

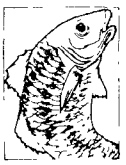
Table 3. Summary of major aquatic and water resource findings in the Coal/Kanawha River West Virginia (concluded).

BIA Category II	County	Reason for Designation
Lick Creek	Summers	WVDNR-HTP Species: *Notropis scabriceps*
Little Bluestone River	Summers	Trout stream
Camp Creek	Mercer	Trout stream
Non-Sensitive Areas	**County**	
Cabin Creek	Kanawha	
Paint Creek (lower half)	Kanawha, Fayette	
Kanawha River Mainstem (below Charleston)	Kanawha, Putnam, Mercer	
Pocatalico River	Kanawha, Roane	
Dunloup Creek	Fayette	
Brush Creek	Mercer	
East River (upper half)	Mercer	

- New River Gorge National River: an irregular zone of approximately 50,000 acres which parallels the New River, starting at South Fayette and the juncture of US 19 and the New River and continuing upstream to Hinton near the Raleigh-Summers County border. The area bounded is irregular in shape but approximates a corridor which averages 2 miles in width.

- Bluestone River: in Fayette, Raleigh, and Summers Counties, this PSIA is defined as a corridor 2,000 feet wide, centered on the mainstem of the Bluestone River, beginning at Bluestone Lake and continuing south and west to the West Virginia-Virginia border.

The BIA Category I watersheds that will receive special attention from EPA and non-sensitive areas that will require only NPDES effluent limitations are presented in Figure 5 and Table 3. Neither of these classes of areas is included in the PSIA's of the Basin. They are illustrated here because they are significant findings for EPA permit processing. Streams in large parts of the Basin cannot be classified on the basis of existing data and appear as unclassified areas in Figure 5.



The Elk River Basin

The PSIA's in the Elk River Basin reflect significant and sensitive aquatic biota and have been defined on the basis of BIA Category II waters (Figure 6 and 7 and Table 4). The PSIA's primarily are located in the eastern half of the Basin, where there has been little mining or other development. The headwaters of the Elk River and its upper tributaries have demonstrated high equitability and diversity ratings. Most of these streams are trout waters. Many streams support significant fisheries. Species of special interest as listed by the WVDNR-Heritage Trust Program have been located in some streams such as Old Lick Creek in Webster County, Sutton Reservoir in Braxton County, and the Elk River in Clay County. Many of the streams also happen to be lightly buffered against influxes of acid from sulfur-bearing coal and overburden and are, therefore, particularly vulnerable to New Source mining-related discharges. More specific PSIA locations are as follows:

- Elk River: in Pocahontas, Randolph, Webster, and Braxton Counties, this PSIA includes all areas tributary to the Elk River from the Clay-Braxton County border and upstream, including major streams such as Chimney Rock Creek, Back Fork of Elk River, Big Run, Bergoo Creek, Leatherwood Creek, Sugar Creek, Little Sugar Creek, Point Mountain Creek, Potato Knob Run, Left Fork of Holly River, Falls Run, Laurel Fork, Old Lick Creek, Right Fork of Holly River, Desert Fork, Laurel Creek, Sutton Reservoir, Birch River, Little Birch River, and Robinson Fork

- Elk River Mainstem. in Braxton and Clay Counties, this PSIA is restricted to the mainstem corridor of the Elk River, beginning at the juncture of the Kanawha-Clay County border (westernmost point) and continuing upstream to the Clay-Braxton County border

- Lilly Fork: in Clay and Nicholas Counties, the Lilly Fork watershed

- Little Sycamore Creek: in Clay County, the Little Sycamore Creek watershed including the towns of Shelton and Warfield

- Elk Twomile Creek: in Kanawha County, this PSIA watershed includes the towns of Airport Village and Rutledge.

The only BIA Category I area designated in the Basin is the lowest section of the Elk River Mainstem, from the Kanawha-Clay County border downstream to Charleston (Figure 7 and Table 4). There is only one non-sensitive stream in the Basin (Buffalo Creek), as determined by EPA on the basis of existing aquatic information. Most streams in the western half of the Basin cannot be classified on the basis of existing information.

Figure 6 POTENTIALLY SIGNIFICANT IMPACT AREAS IN THE ELK RIVER BASIN

WATERSHEDS THAT ARE PSIA's

RIVERS THAT ARE PSIA's

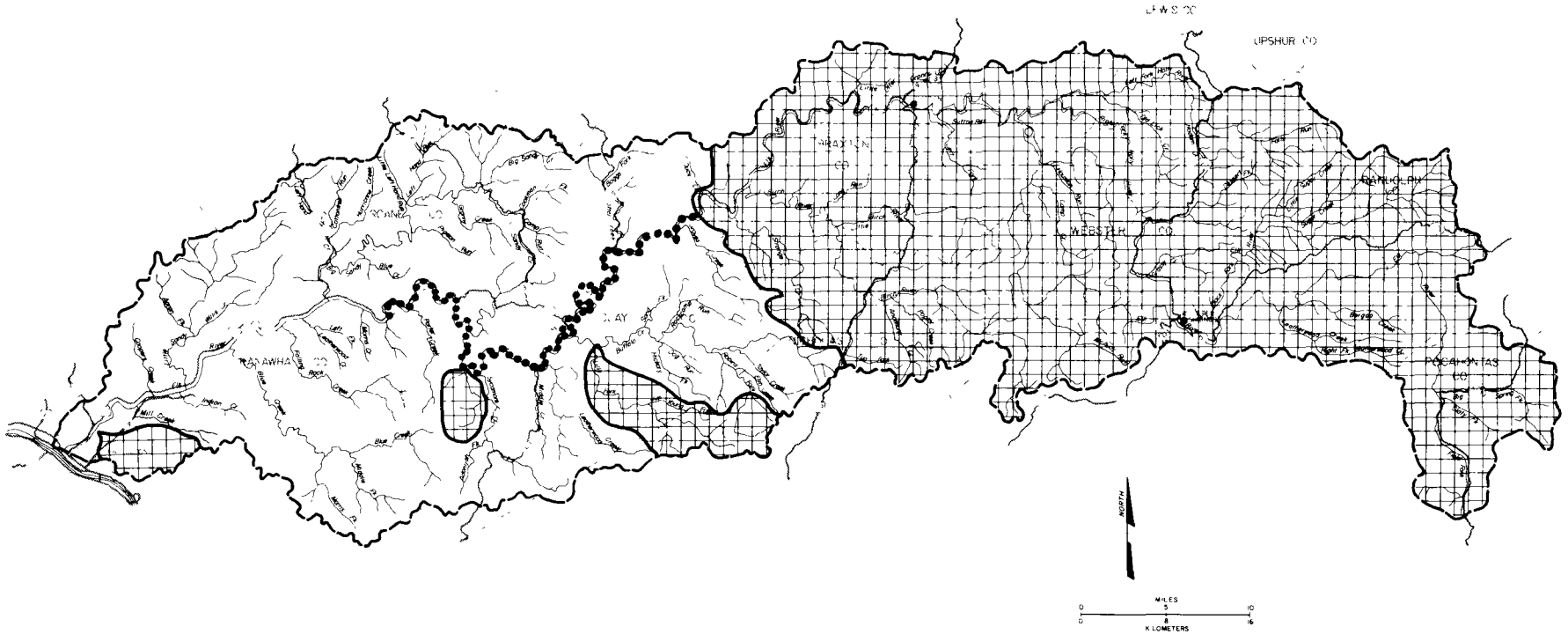


Figure 7 BIOLOGICALLY IMPORTANT AREAS AND NONSENSITIVE AREAS IN THE ELK RIVER BASIN

CATEGORY I

CATEGORY II

UNCLASSIFIED AREAS

NONSENSITIVE STREAM

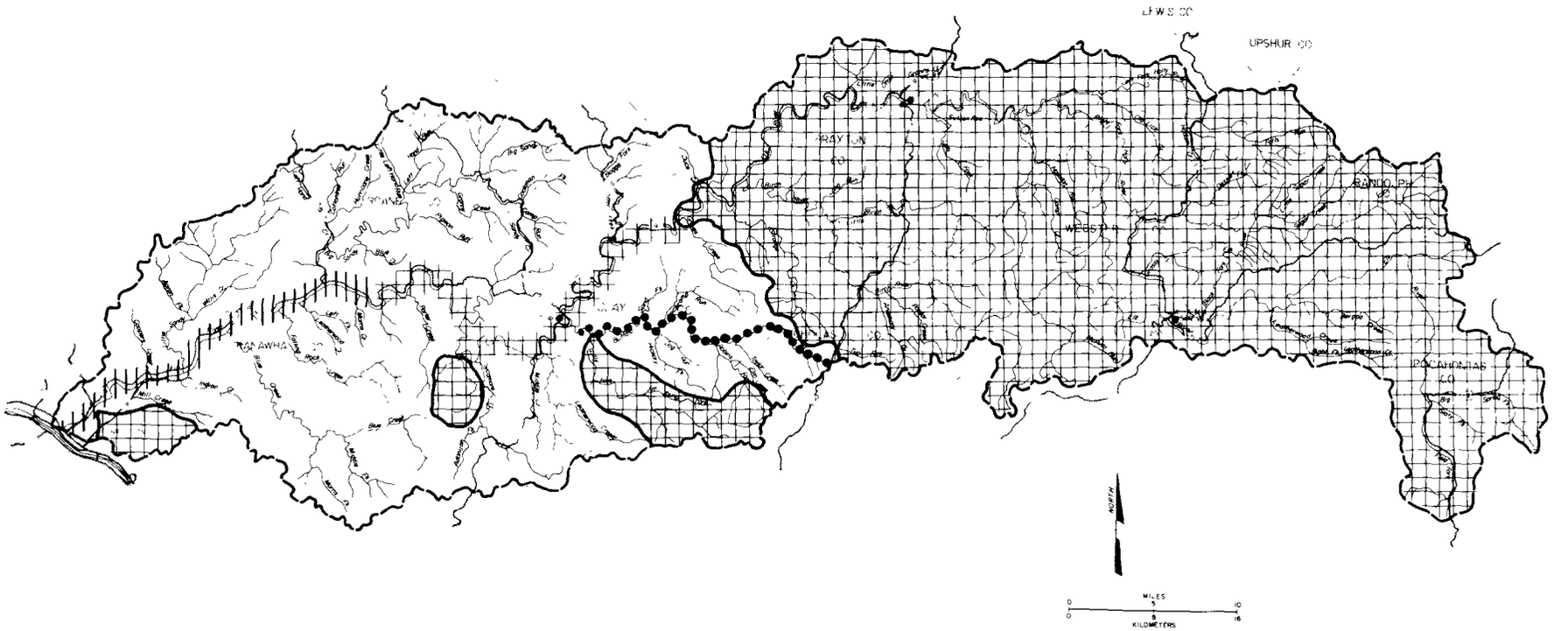


Table 4. Summary of major aquatic and water resources in the Elk River Basin, West Virginia. Waters include all watersheds unless specified as mainstem only. Lakes include a generalized buffer zone around the waterbody, encompassing all areas (potential mine sites) which would discharge directly into the lake.

BIA Category I	County	Reason for Designation
Elk River (mainstem only)	Kanawha	High diversity, high equitability Three or more gamefish species Three or more sensitive fish species WVDNR-HTP Species: Eastern sand darter Significant warmwater fishery
BIA Category II	**County**	**Reason for Designation**
Elk River (headwaters) and tributaries	Pocahontas	Various trout streams
Elk River	Randolph	Trout stream High diversity, high equitability WVDNR-HTP Species: Ohio lamprey, channel darter Three or more sensitive fish species
Chimney Rock Creek	Randolph	Trout stream
Back Fork of Elk (headwaters) and tributaries	Randolph	Various trout streams Lightly buffered stream
Elk River	Webster	Trout stream Significant warmwater fishery
Big Run	Webster	Trout stream
Bergoo Creek	Webster, Randolph	Trout stream Lightly buffered stream
Leatherwood Creek	Webster, Randolph	Trout stream Lightly buffered stream
Back Fork of Elk River	Webster	Trout stream
Sugar Creek	Webster	Trout stream
Little Sugar Creek	Webster	Trout stream
Point Mountain Creek	Webster	Trout stream
Potato Knob Run	Webster	Trout stream
Left Fork of Holly River	Webster	Trout stream High diversity, high equitability Two or more macroinvertebrate indicator species Three or more sensitive fish species Lightly buffered stream
Falls Run	Webster	Trout stream

Table 4. Summary of major aquatic and water resources in the Elk River Basin, West Virginia (continued).

BIA Category II	County	Reason for Designation
Laurel Fork	Webster	Trout stream
Old Lick Creek	Webster	High diversity, high equitability Three or more gamefish species Three or more sensitive fish species
Right Fork of Holly River	Webster	High diversity, high equitability Lightly buffered stream Three or more gamefish species Three or more sensitive fish species
Desert Fork	Webster	Trout stream
Laurel Creek	Webster	Three or more sensitive fish species Lightly buffered stream
Sutton Reservoir	Braxton	Important sport fishery Two or more macroinvertebrate indicator species High diversity, high equitability WVDNR-HTP Species: Silver lamprey
Elk River (mainstem)	Braxton	High diversity, high equitability WVDNR-HTP Species: Paddlefish, channel darter Two or more macroinvertebrate indicator species Three or more gamefish species Three or more sensitive fish species Trout stream Important warmwater fishery
Left Fork of Holly River	Braxton	Significant warmwater fishery
Birch River	Braxton	High diversity, high equitability Three or more gamefish species Three or more sensitive fish species
Little Birch River	Braxton	Significant warmwater fishery
Robinson Fork	Nicholas	High equitability
Elk River (mainstem only)	Clay	High diversity, high equitability WVDNR-HTP Species: Silver lamprey, Tippecanoe darter, Eastern sand darter Three or more gamefish species Three or more sensitive fish species Important warmwater fishery
Lilly Fork	Clay, Nicholas	Trout stream High equitability WVDNR-HTP Species: Ohio lamprey

Table 4. Summary of major aquatic and water resources in the Elk River Basin, West Virginia (concluded).

BIA Category II	County	Reason for Designation
Little Sycamore Creek	Clay, Nicholas	Two or more macroinvertebrate species
Elk Twomile Creek	Kanawha	Significant sport fishery
Non-Sensitive Areas	**County**	
Buffalo Creek	Clay, Nicholas	

The Gauley River Basin

Potentially Significant Impact Areas in the Gauley River Basin (Figure 8) have been designated by EPA on the basis of a variety of criteria. Aquatic and water resource evaluations have resulted in BIA Category II identifications in the Basin (Figure 9 and Table 5), which, in turn, are classified by EPA as PSIA's. These areas are oriented toward the eastern portion of the Basin, typically in the higher elevations and lesser developed areas where a variety of aquatic resources such as trout, aquatic species of special interest, and large and varied aquatic populations (high diversity and equitability values) are found.

In the Gauley River Basin, PSIA's also have been determined on the basis of Federal land holdings dedicated to multiple or recreational use such as the Monongahela National Forest, the Summersvile Lake Recreation Area, and other Federal land holdings and interests. All lands with special Federal designations, including lands with Federal fee-simple ownership and Federal surface ownership, are considered to be PSIA's. Included in these PSIA designations are National Special Interest Areas such as the Cranberry Back Country, National Wilderness Study Areas such as the Cranberry Wilderness Study Area, and National Natural Landmarks such as the Cranberry Glades Botanical Area. EPA intends to rely substantially on the inputs of the respective managing Federal agencies such as the US Forest Service (Monongahela National Forest) and US Army Corps of Engineers (Summersville Lake Recreation Area) when issues of potential New Source mining impacts arise. Regardless of other agency involvement and coordination, however, EPA will make sure that detailed site-specific evaluations are undertaken when New Source mining is proposed in or adjacent to these special Federal land holdings and interests.

PSIA's in the Gauley River Basin include the Gauley River, Cranberry River, and Meadow River, all of which have been designated by Congress as Study Rivers for potential inclusion in the National Wild and Scenic Rivers System (established by P.L. 90-542 in 1968). The System is designed to protect and preserve waters with "...remarkable scenic, recreational, fish and wildlife, historic, cultural, or other similar values..." These Study Rivers, administered by the US Department of the Interior-Heritage Conservation and Recreation Service, and a 1,000-foot buffer zone on each side will be protected by EPA through their PSIA classification.

In many instances, PSIA criteria overlap. For example, many BIA Category II designations are included in the Monongahela National Forest, further reinforcing the importance of the detailed evaluations that will be required by EPA in these areas prior to New Source permit issuance. More specific PSIA locations are as follows.

- Gauley River. in Pocahontas, Webster, and Randolph Counties, the Gauley River watershed above the confluence with the Williams River near the town of Donaldson
- Williams River. in Pocahontas and Webster Counties, the entire Williams River watershed
- Tea Creek: in Pocahontas County, the Tea Creek watershed
- Cranberry River: in Webster and Pocahontas Counties, the Cranberry River watershed above the Nicholas-Webster County border approximately six miles upstream from the town of Woodbine
- Cherry River. in Greenbrier and Nicholas Counties, the watershed of the Cherry River, including the North Fork and South Fork
- Laurel Creek: in Greenbrier and Nicholas Counties, the entire watershed
- Summit Lake. in Greenbrier County, the Lake with a generalized buffer zone including adjacent areas immediately upslope
- Taylor Run: in Nicholas County, the Taylor Run watershed
- Panther Creek: in Nicholas County, the Panther Creek watershed
- Muddlety Creek: in Nicholas County, the Muddlety Creek watershed above the town of Muddlety at the confluence of McMillion Creek

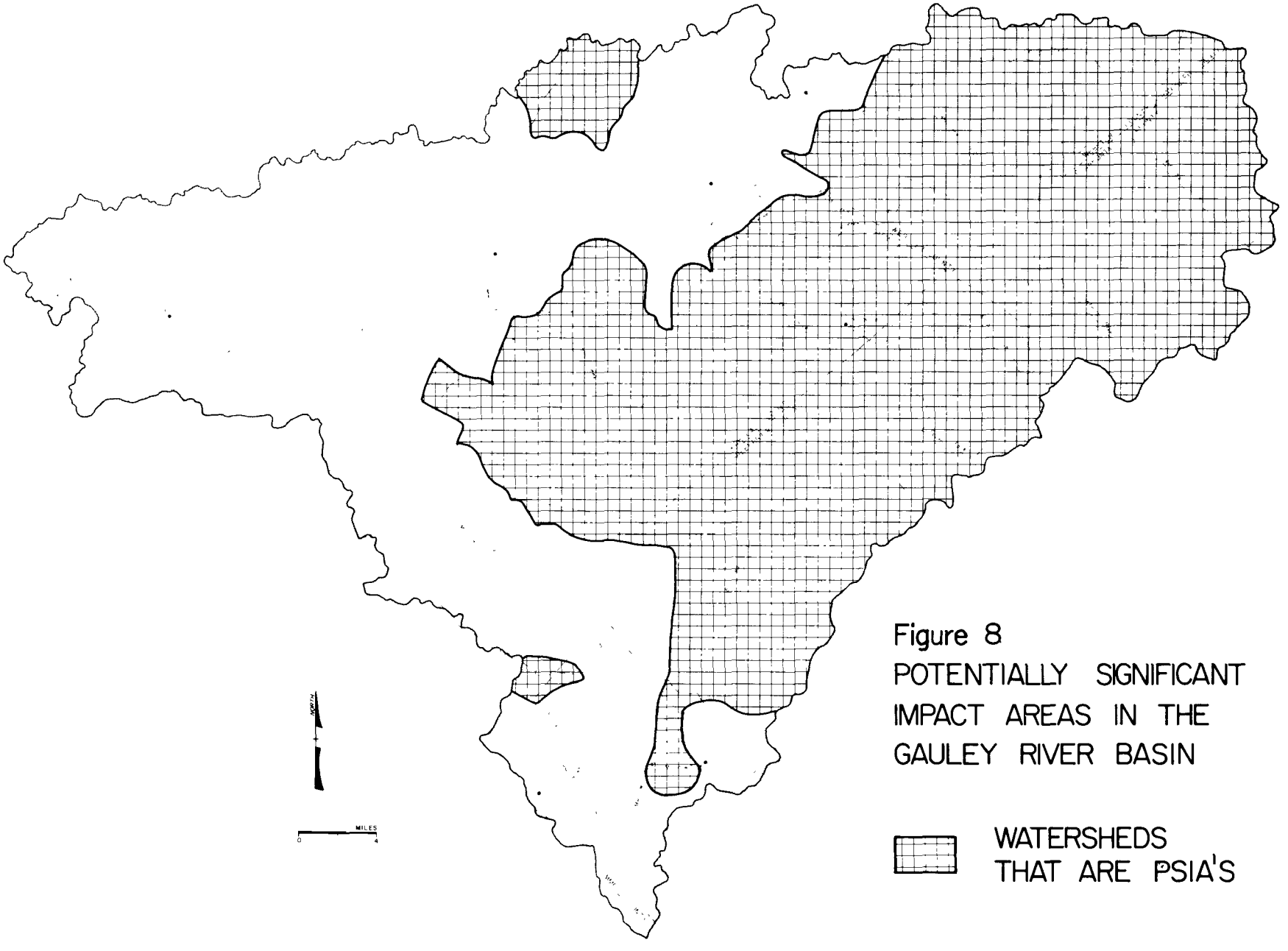


Figure 8
POTENTIALLY SIGNIFICANT IMPACT AREAS IN THE GAULEY RIVER BASIN

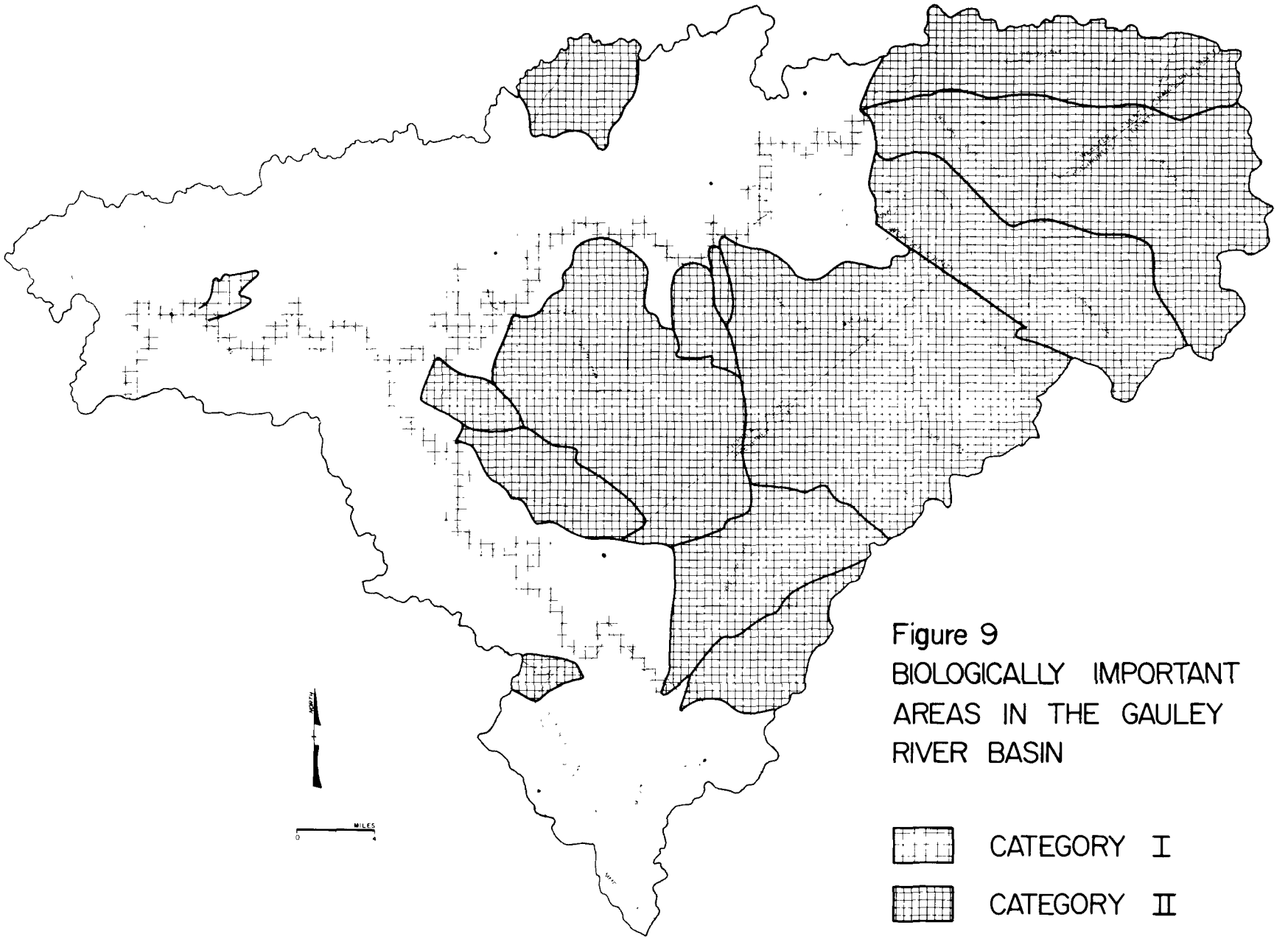


Figure 9
BIOLOGICALLY IMPORTANT AREAS IN THE GAULEY RIVER BASIN

Table 5. Summary of major aquatic and water resources in the Gauley River Basin, West Virginia. Waters include all watersheds unless specified as mainstem only. Lakes include a generalized buffer zone around the waterbody, encompassing all areas (potential mine sites) which would discharge directly into the lake.

BIA Category I	County	Reason for Designation
Little Elk Creek	Nicholas	Two or more macroinvertebrate indicator species
Gauley River (including Summersville Lake) below confluence with Williams River	Webster, Nicholas, Fayette	Trout stream (Summersville Lake tailwaters) and trout lake Important sport fishery, especially in Summersville Lake High diversity, high equitability WVDNR-HTP Species: Finescale saddled darter
Meadow River (below confluence with Big Clear Creek)	Greenbrier, Fayette	High equitability Important sport fishery
BIA Category II	**County**	**Reason for Designation**
Gauley River (above confluence with Williams River)	Pocahontas, Webster, Randolph	The Gauley above its confluence with Big Run is a trout stream; several of its tributaries are also trout streams High equitability, high diversity WVDNR-HTP Species: Finescale saddled darter
Williams River	Pocahontas, Webster	The Williams above Dyer is a trout stream; there are numerour trout streams in the drainage Two or more macroinvertebrate indicator species High diversity, high equitability WVDNR-HTP Species: Finescale saddled darter, Tonguetied minnow, New River shiner
Tea Creek	Pocahontas	Trout stream Two or more macroinvertebrate indicator species WVDNR-HTP Species: Finescale saddled darter
Cranberry River (above Nicholas-Webster County Line)	Webster, Pocahontas	The Cranberry and several of its tributaries are trout streams Two or more macroinvertebrate indicator species WVDNR-HTP Species: Tonguetied minnow
Cherry River (including N. & S. Forks)	Greenbrier, Nicholas	The Cherry and many of its tributaries are trout streams Two or more macroinvertebrate indicator species WVDNR-HTP Species: Finescale saddled darter, Tonguetied minnow

Table 5. Summary of major aquatic and water resources in the Gauley River Basin, West Virginia (concluded).

BIA Category II	County	Reason for Designation
Laurel Creek	Greenbrier, Nicholas	Trout stream WVDNR-HTP Species: Finescale saddled darter, Tonguetied minnow, Kanawha minnow
Summit Lake	Greenbrier	Important sport fishery Trout Lake
Taylor Run	Nicholas	Trout stream
Panther Creek	Nicholas	Trout stream Two or more macroinvertebrate indicator species
Muddlety Creek (above Muddlety)	Nicholas	Trout stream
Hominy Creek	Nicholas Greenbrier	Hominy Creek and several of its tributaries are trout streams High equitability
Deer Creek	Nicholas	Trout stream High equitability
Collison Creek	Nicholas	Trout stream
Anglins Creek	Nicholas, Greenbrier	Anglins Creek and many of its tributaries are trout streams
Wolfpen Creek	Fayette, Greenbrier	Trout stream
Big Clear Creek	Greenbrier	Big Clear Creek and several of its tributaries are trout streams
Little Clear Creek	Greenbrier	Little Clear Creek and several of its tributaries are trout streams
Non-Sensitive Areas		
None		

- Hominy Creek: in Nicholas and Greenbrier Counties, the entire watershed
- Deer Creek: in Nicholas County, the Deer Creek watershed
- Collision Creek: in Nicholas County, the Collision Creek watershed
- Anglins Creek: in Nicholas and Greenbrier Counties, the entire watershed
- Wolfpen Creek: in Fayette and Greenbrier Counties, the entire watershed
- Big Clear Creek: in Greenbrier County, the Big Clear Creek watershed
- Little Clear Creek: in Greenbrier County, the Little Clear Creek watershed
- Monongahela National Forest: in Nicholas, Webster, Pocahontas, Greenbrier, and Randolph Counties, a large area of Federal fee-simple and surface ownership in the northeastern portion of the Basin. The boundary is extremely irregular; furthermore, considerable areas within the boundary are excluded from this PSIA because of a lack of Federal ownership of any type. Included are the Cranberry Back County Special Interest Area, the Cranberry Wilderness Study Area, the Cranberry Glades Botanical Area, and numerous Federal Recreation Areas managed by the US Forest Service and the US Army Corps of Engineers.
- Summersville Lake Recreation Area. in Nicholas County, a US Army Corps of Engineers recreational area including those areas currently owned in whole or in part by the USACE
- Gauley River: in Fayette, Nicholas, Webster, Pocahontas, and Randolph Counties, the mainstem corridor including a 2,000-foot wide corridor centered on the River, resulting from Wild and Scenic River status
- Cranberry River: in Nicholas, Webster, and Pocahontas Counties, the mainstem corridor including a 2,000-foot wide corridor centered on the River, resulting from Wild and Scenic River status
- Meadow River: in Fayette, Nicholas, and Greenbrier Counties, the mainstem corridor including a 2,000-foot wide corridor centered on the River, resulting from Wild and Scenic River status.

BIA Category I designation as enumerated in Figure 9 and Table 5 have been identified by EPA on the basis of aquatic and water resources data and are protected by EPA through application of mitigative measures. Other resources throughout the Basin will trigger other mitigative measures. No non-sensitive streams have been identified by EPA in the Basin.

The Guyandotte River Basin

The Areawide Environmental Assessment Process in the Guyandotte River Basin has designated the following PSIA's (Figures 10 and 11 and Table 6):

- Mud River: in Cabell County, the Mud River watershed
- Ona Lake: in Cabell County, the Lake and a generalized buffer including adjacent areas immediately upslope
- Trace Fork: in Putnam and Lincoln Counties, the watershed is a PSIA
- Buffalo Creek: in Wayne County, the entire Buffalo Creek watershed
- Twelvepole Creek: in Wayne County, the entire Twelvepole Creek watershed
- Beech Fork: in Wayne County, the entire Beech Fork watershed
- Beech Fork Lake: in Wayne County, the Lake and a generalized buffer including adjacent areas immediately upslope
- Millers Fork: in Wayne County, the Millers Fork watershed
- East Fork of Twelvepole Creek: in Wayne County, the East Fork watershed
- Camp Creek: in Wayne County, the Camp Creek watershed
- Lynn Creek: in Wayne County, the Lynn Creek watershed
- East Lynn Lake: in Wayne County, the Lake and a generalized buffer including adjacent areas immediately upslope
- Lick Creek: in Wayne County, the watershed
- Rich Creek: in Wayne County, the watershed
- West Fork of Twelvepole Creek: in Wayne County, the watershed
- Big Creek: in Lincoln County, the watershed
- Dairy Hollow: in Logan County, the watershed of Dairy Hollow
- Stone Hollow: in Logan County, the watershed of Stone Hollow
- Frogtown Hollow: in Logan County, the watershed of Frogtown Hollow
- Tug Fork Mainstem: in Mingo, Wayne, and McDowell Counties, the entire Tug Fork mainstem from the town of Naugatauk upstream
- Clear Fork: in Wyoming County, the watershed
- Laurel Fork: in Wyoming County, the watershed
- Guyandotte River Mainstem: in Wyoming County, the Guyandotte River mainstem from R. D. Bailey Lake upstream
- Dry Fork: in McDowell County, the watershed above the town of War
- Berwind Lake: in McDowell County, the Lake and a generalized buffer including adjacent areas immediately upslope.

These PSIA's exactly coincide with all BIA Category II zones, determined on the basis of existing aquatic and water resource data. As Figure 11 and Table 6 indicate, these BIA Category II's are located throughout the Basin and are based on a wide variety of aquatic resources. Mitigative measures will be applied in BIA Category I areas as well as in other areas where sensitive and significant resources have been identified. Non-sensitive areas, based on aquatic and water resource evaluations, are included in Table 6; no additional aquatic and water resource measures beyond current New Source effluent limitations are required by EPA in non-sensitive areas.

Figure 10

POTENTIALLY SIGNIFICANT IMPACT AREAS IN THE GUYANDOTTE RIVER BASIN

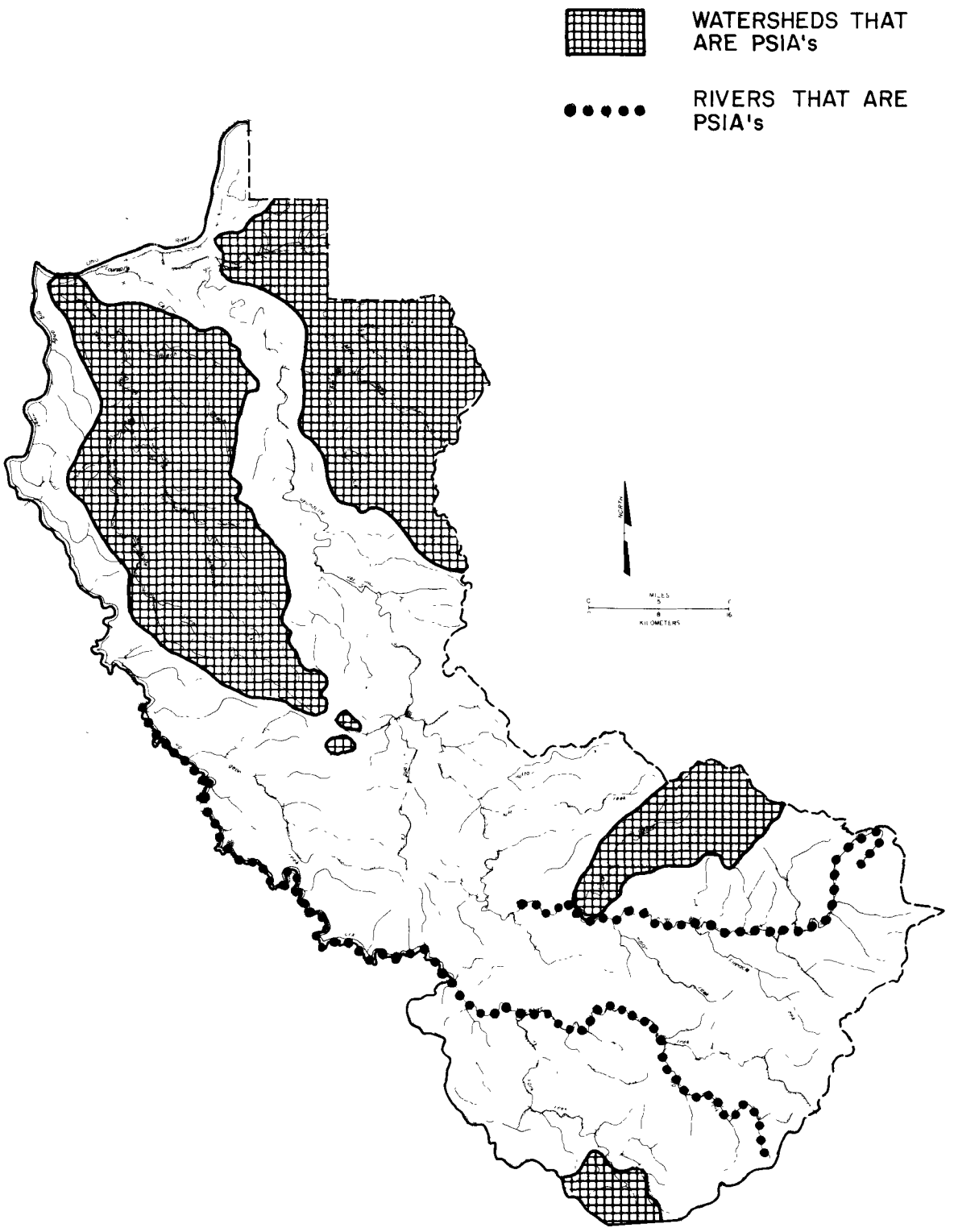
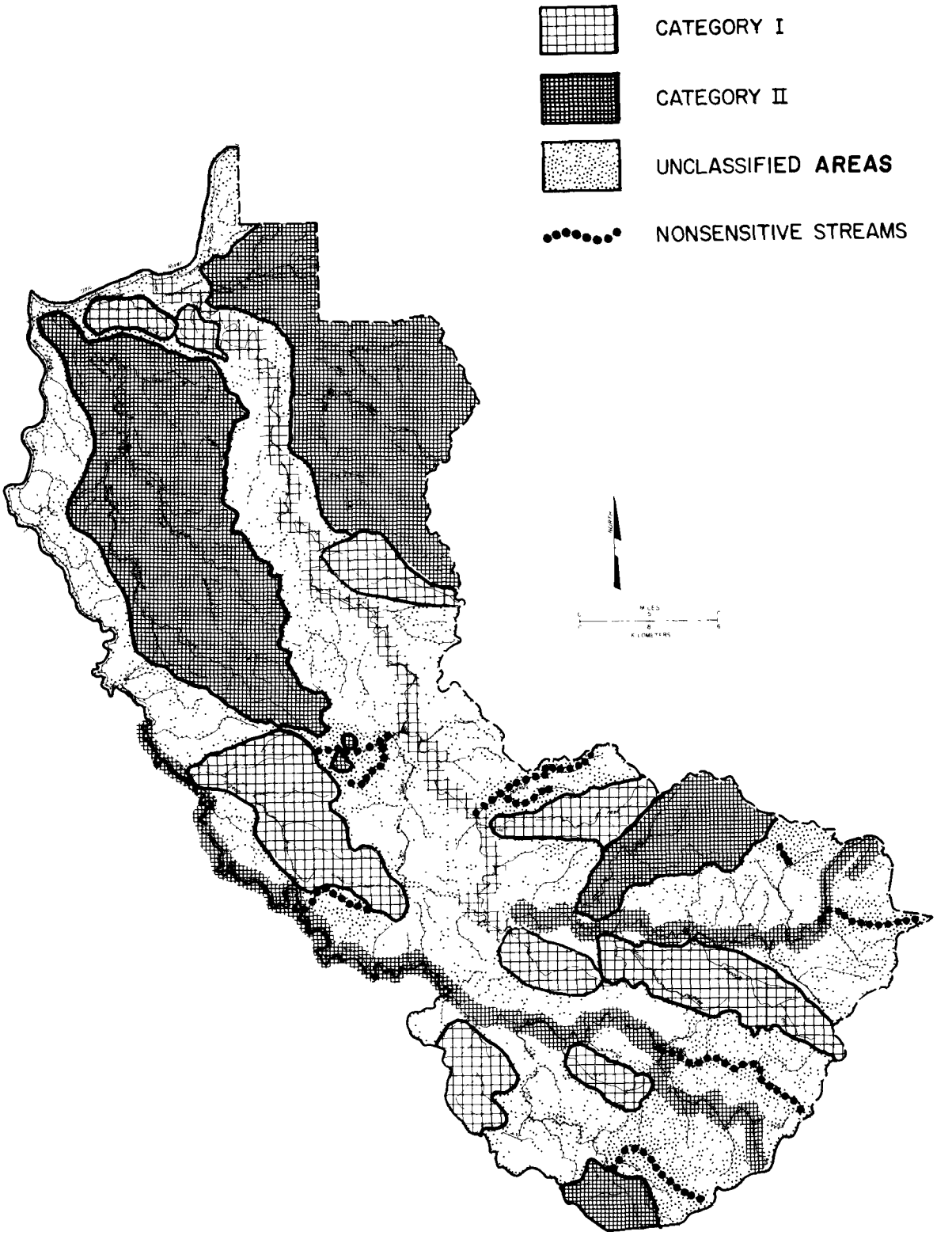


Figure II

BIOLOGICALLY IMPORTANT AREAS AND NONSENSITIVE AREAS IN THE GUYANDOTTE RIVER BASIN



NOTE:
STREAM CORRIDOR BIOLOGICALLY IMPORTANT AREAS HAVE BEEN EXAGGERATED FOR MAP READIBILITY.

Table 6. Summary of major aquatic and water resources in the Guyandotte River Basin, West Virginia. Waters include all watersheds unless specified as mainstem only. Lakes include a generalized buffer zone around the waterbody, encompassing all areas (potential mine sites) which would discharge directly into the lake.

BIA Category I	County	Reason for Designation
Davis Creek	Cabell	Macroinvertebrate indicator species
Fourpole Creek	Cabell	Macroinvertebrate indicator species Unusual macroinvertebrate species *Rhyacophilia ribox* (Applin and Tarter 1977)
Guyandotte River (Mainstem)	Lincoln, Logan Mingo	High diversity, high equitability WVDNR-HTP Species: *Percina copelandi*
Big Ugly Creek	Lincoln	Macroinvertebrate indicator species High diversity
Chief Logan Ponds (ponds only)	Logan	Trout lakes
Huff Creek	Logan, Wyoming	Trout stream High diversity
Laurel Lake	Mingo	Trout lake Important sport fishery (USFWS 1978)
Laurel Fork	Mingo	Macroinvertebrate indicator species Unusual macroinvertebrate species *Baetisca berneri* (Tarter, and Kirchner 1978) *Alloperla aracoma* (Harper and Kirchner 1978) *Peltoperla arcuata* (Tarter et al. 1976)
Pigeon Creek	Mingo	High diversity
R.D. Bailey Lake	Mingo, Wyoming	Recreational area and important sport fishery
Little Huff Creek	Wyoming	High diversity
Horse Creek Lake	Wyoming	Trout lake
Indian Creek	Wyoming	High diversity, high equitability
Pinnacle Creek	Wyoming	Trout stream High diversity
Panther Creek	McDowell	Trout stream Unusual macroinvertebrate species *Baetisea berneri* (Tarter and Kirchner 1978)
Clear Fork (of Tug Fork)	McDowell	Trout stream High diversity, high equitability

Table 6. Summary of major aquatic and water resources in the Guyandotte River Basin, West Virginia (continued).

BIA Category II	County	Reason for Designation
Mud River	Cabell	High diversity, high equitability WVDNR-HTP Species: *Ammocrypta pellucida* *Phoxinus erythrogaster* Unusual macroinvertebrate species *Allocapnia ohioensis* (Kirchner 1978)
Ona Lake	Cabel	Trout lake
Trace Fork	Putnam, Lincoln	High diversity WVDNR-HTP Species: *Phoxinus erythrogaster* Unusual macroinvertebrate species *Rhyacophilia ribox* (Applin and Tarter 1977)
Buffalo Creek	Wayne	WVDNR-HTP Species: *Phoxinus erythrogaster*
Twelvepole Creek	Wayne	Unusual macroinvertebrate species *Isoperla gibbsae* (Kirchner 1978)
Beech Fork	Wayne	High diversity, high equitability Macroinvertebrate indicator species
Beech Fork Lake	Wayne	Recreational area and important sport fishery Unusual macroinvertebrate species *Rhyacophilia ledra* (Applin and Tarter 1977)
Millers Fork	Wayne	High diversity Macroinvertebrate indicator species Unusual macroinvertebrate species *Rhyacophilia ribox* (Applin and Tarter 1977)
East Fork of Twelvepole Creek	Wayne	High diversity, high equitability Macroinvertebrate indicator species Trout stream (Tailwaters of E. Lynn Lake)
Camp Creek	Wayne	WVDNR-HTP Species: *Phoxinus erythrogaster*
Lynn Creek	Wayne	WVDNR-HTP Species: *Phoxinus erythrogaster*
East Lynn Lake	Wayne	Recreational area and important sport fishery
Lick Creek	Wayne	High diversity, high equitability
Rich Creek	Wayne	High diversity, high equitability
West Fork of Twelvepole Creek	Wayne	High diversity, high equitability Trout stream
Big Creek	Lincoln	Macroinvertebrate indicator species
Dairy Hollow	Logan	Macroinvertebrate indicator species
Stone Hollow	Logan	Macroinvertebrate indicator species

Table 6. Summary of major aquatic and water resources in the Guyandotte River Basin, West Virginia (concluded).

BIA Category II	County	Reason for Designation
Frogtown Hollow	Logan	Macroinvertebrate indicator species Unusual macroinvertebrate species *Alloperia aracoma* (Harper and Kirchner 1978)
Tug Fork (Mainstem)	Mingo McDowell	High diversity, high equitability
Clear Fork	Wyoming	Trout stream
Laurel Fork	Wyoming	Important sport fishery (Reed 1974)
Dry Fork (upstream from War)	McDowell	Trout stream
Berwind Lake	McDowell	Trout lake

Non-Sensitive Areas	County	Reason for Designation
Buffalo Creek	Logan	
Dry Fork (downstream from War)	McDowell	
Elkhorn Creek	McDowell	
Grave Creek	Raleigh	
Mate Creek	Mingo	
Mitchell Branch	Mingo	
Tommy Creek	Raleigh	
Copperas Mine Fork	Logan	
Trace Fork	Logan	

The Monongahela River Basin

Various resources in the Basin have given rise to PSIA designations (Figure 12). Federal land holdings dedicated to multiple or recreational use such as the Monongahela National Forest, the Tygart Lake Recreation Area, and other Federal land holdings and interests in fee-simple or surface ownership have been assigned PSIA status. Included in the National Forest are the Otter Creek and Dolly Sods Wilderness Areas, the Fernow National Experimental Forest, the Bowden Federal Fish Hatchery, the Sinks of Gandy, the Blackwater Falls Scenic Area, and other resources. Several National Natural Landmarks (the Gaudineer Scenic Area, Canaan Valley, Shavers Mountain Spruce-Hemlock Stand, Blister Run Swamp, Big Run Bog, and Fisher Spring Run Bog) also are included in the National Forest. The Cranesville Swamp Nature Sanctuary, a National Natural Landmark not located within the Forest, also has been designated a PSIA. EPA in all cases intends to maximize input from the respective Federal managing agencies (US Forest Service for the National Forest and US Army Corps of Engineers for the Tygart Valley Recreation Area, for example) when issues regarding New Source mining impacts arise. Regardless of other agency involvement and coordination, however, EPA will assure that detailed site-specific evaluations are conducted when New Source mining is proposed in or adjacent to these special Federal land holdings and interests.

PSIA's also are based on BIA Category II zones which, in turn, reflect the existence of a wide variety of significant and sensitive aquatic and water resources (Figure 13 and Table 7). In many areas, BIA Category II designations overlap with other PSIA criteria.

Specific PSIA locations are as follows:

- Tygart Valley River: in Marion, Taylor, Barbour, Upshur, and Randolph Counties, this PSIA includes the Tygart Valley River watershed upstream from Roaring Creek as well as the watersheds of Teter Creek, Frog Run, Webster Run, Wickwise Run, the Buckhannon River (Panther Fork and upstream), Sand Run, Fresh Creek, Right Fork of Tenmile Creek, Little Laurel Run, Middle Fork River (upstream from Cassity Fork), Right Fork of Middle Fork River, Hell Run, Service Run, and Hanging Run

- West Fork River: in Lewis and Upshur Counties, the watershed of the River upstream of Weston including Stonecoal Creek

- Youghiogheny River: in Preston County, the PSIA includes the watersheds of Snowy Creek and Rhine Creek

- Whiteday Creek: in Monongalia County, the Whiteday Creek watershed

- Cheat River: in Preston, Tucker, Randolph and Pocahontas Counties, the PSIA includes the watershed of the Cheat River upstream from Pringle Run and the watersheds of Dry Fork, Blackwater River (upstream from Beaver Creek), Pendleton Creek, Shavers Fork, Horseshoe Run, Minear Run, Panther Run, Wolf Creek, Buffalo Creek, Saltlick Creek, Bearwallow Run, Elsey Run, Daugherty Run, Roaring Creek (upstream from Lick Run), Muddy Creek (upstream from Jump Rock Run), Laurel Run, Laurel Creek, Blaney Hollow, Clover Run, Slip Hill Mill Run, and Wolf Run

- Elklick Run: in Tucker County, the watershed

- Chaffey Creek: in Tucker County, the watershed.

Areas where EPA will impose mitigative measures specifically to protect aquatic and water resources are shown in Figure 13 and Table 7. Mitigative measures may be imposed elsewhere depending upon the resources identified in the SID. Non-sensitive areas relating to aquatic and water resources also are presented in Figure 13 and Table 7. No additional measures will be required by EPA to protect the aquatic and water resources identified in these waterbodies.

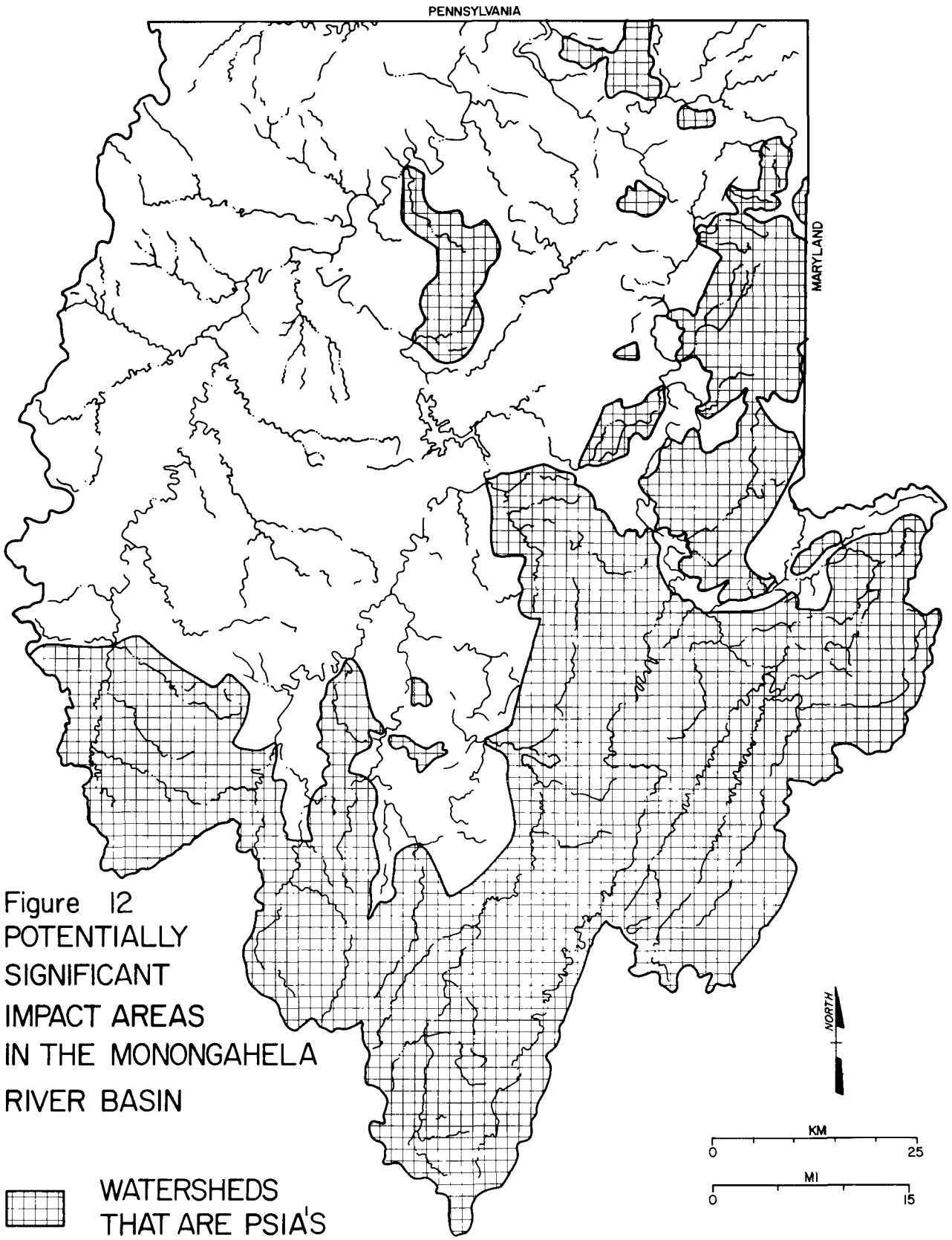


Figure 12
POTENTIALLY
SIGNIFICANT
IMPACT AREAS
IN THE MONONGAHELA
RIVER BASIN

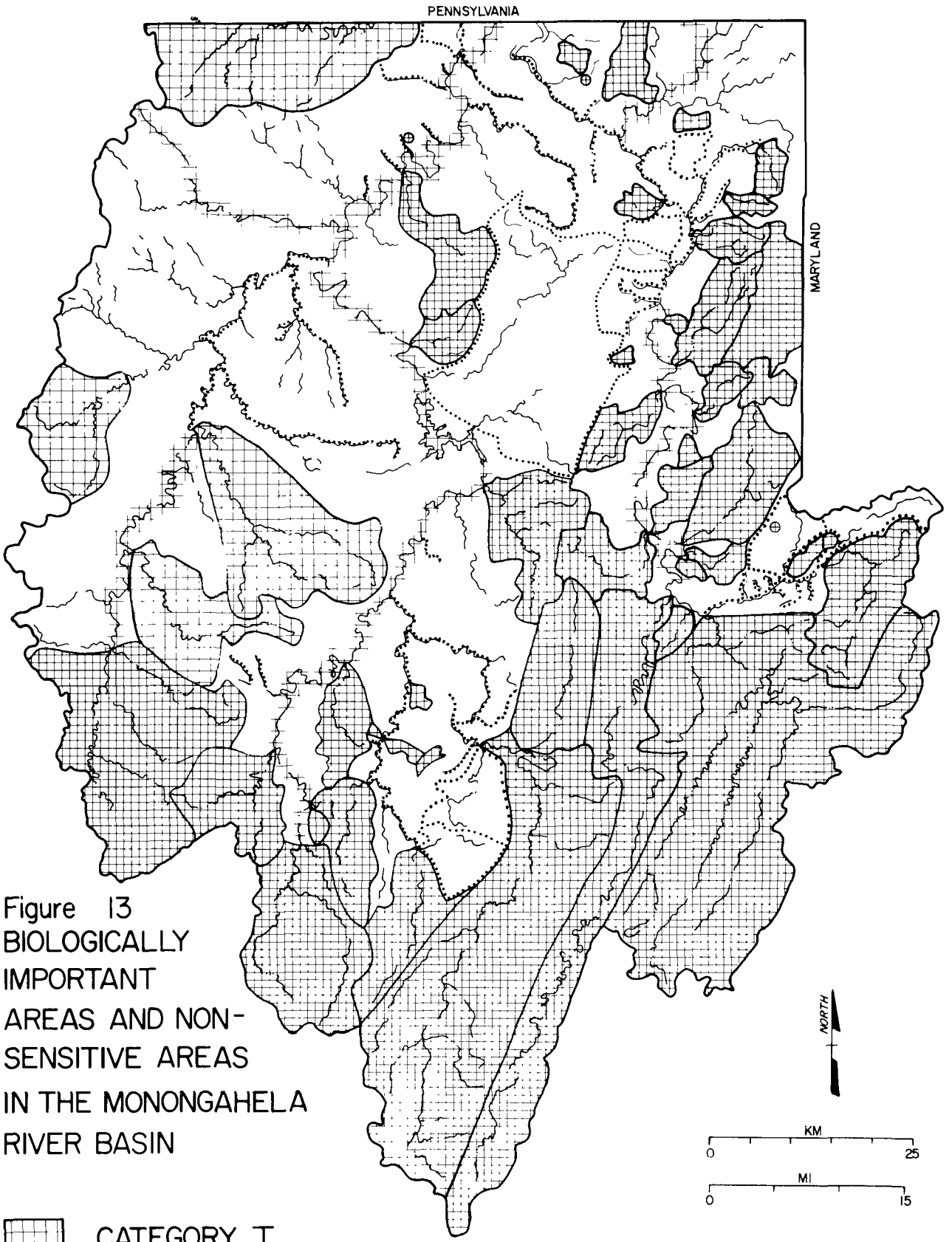


Figure 13
BIOLOGICALLY IMPORTANT AREAS AND NON-SENSITIVE AREAS IN THE MONONGAHELA RIVER BASIN

CATEGORY I

CATEGORY II

NON-SENSITIVE AREAS

Table 7. Summary of major aquatic and water resources in the Monongahela River Basin, West Virginia. Waters include all watersheds unless specified as mainstem only. Lakes include a generalized buffer zone around the waterbody, encompassing all areas (potential mine sites) which would discharge directly into the lake.

BIA Category I	County	Reason for Designation
Monongahela River Mainstem	Marion, Monongalia	Important sport fishery
Dunkard Creek	Monongalia	Important sport fishery High diversity, high equitability
Westover Park Lake	Monongalia	Trout lake Important recreational fishery
Buffalo Creek	Marion	Important recreational fishery
West Fork Mainstem (Clarksburg to Weston)	Harrison, Lewis	Important recreational fishery
Tenmile Creek (above Rockcamp Run)	Harrison	Important recreational fishery
Elk Creek	Barbour, Harrison	Important recreational fishery High equitability
Hackers Creek	Upshur, Lewis, Harrison	High equitability Important recreational fishery
Tygart Valley River Mainstem (including Tygart Lake)	Marion, Taylor, Barbour	Important recreational fishery
Buchannon River (from Panther Fork to mouth)	Upshur, Barbour	Important recreational fishery
Coopers Rock Lake	Monongalia	Trout lake Important recreational fishery Macroinvertebrate sample composed of at least 10 taxa and at least 50% sensitive individuals
Big Sandy Creek	Monongalia	High diversity, high equitability
Cheat River Mainstem (upstream from Pringle Run)	Preston, Tucker	High equitability, high diversity (macroinvertebrates) Important recreational fishery
Thomas Park Lake	Tucker	Trout lake and important recreational fishery
BIA Category II	**County**	**Reason for Designation**
Whiteday Creek (above Smithtown)	Marion, Monongalia	Trout stream High equitability

Table 7. Summary of major aquatic and water resources in the Monongahela River Basin, West Virginia (continued).

BIA Category II	County	Reason for Designation
West Fork River (upstream from Weston, including Stonecoal Creek)	Lewis	High diversity, high equitability Recreational fishery (Stonecoal Lake) Trout lake (Stonecoal Lake) High diversity (macroinvertebrates)
Wickwire Run	Taylor	High equitability
Frog Run	Preston	Trout stream
Teter Creek	Barbour	Trout stream, Trout lake
Brushy Fork	Barbour	Trout stream, Trout lake High equitability
Little Laurel Run	Randolph	Trout stream
Tygart Valley River (above Roaring Creek)	Randolph	Headwaters and numerous tributaries are trout streams High equitability, Recreational fishery Two or more intolerant macroinvertebrates Ten or more macroinvertebrate taxa and senstitive species making up at least 50% of the individuals
Sand Run	Upshur	High equitability, high density
French Creek	Upshur	Trout stream
Right Fork (of Tenmile Creek)	Upshur	Trout stream
Buckhannon River (upstream from and including Panther Fork)	Uphur	Headwaters of the Buckhannon and many Buckhannon tributaries are trout streams High equitability, high diversity Macroinvertebrate sample comprised of at least 10 taxa and at least 50% sensitive individuals
Hanging Run	Barbour	Trout stream
Service Run	Upshur	Trout stream
Hell Run	Randolph	Trout stream
Right Fork of Tygart Valley	Upshur	Trout stream High equitability
Middle Fork River (above Cassity Fork)	Randolph	High equitability Mainstem and many tributaries are trout streams
Blaney Hollow	Monongalia	Trout stream
Laurel Creek (of Sandy Creek)	Preston	Trout stream

Table 7. Summary of major aquatic and water resources in the Monongahela River Basin, West Virginia (continued).

BIA Category II	County	Reason for Designation
Webster Run (of L. Sandy Creek)	Preston	Trout stream
Laurel Run	Preston	Trout stream
Muddy Creek (above Jump Rock Fork)	Preston	Trout stream
Roaring Creek (above Lick Run)	Preston	Trout stream
Daugherty Run	Preston	Trout stream
Elsey Run	Preston	Trout stream
Bearwallow Run	Preston	Trout stream
Saltlick Run	Preston	Trout stream High equitability
Buffalo Creek	Preston	Mainstem and two other streams in watershed are trout streams
Wolf Creek	Preston	Wolf and Little Wolf Creeks are trout streams
Panther Run	Preston, Tucker	Trout stream
Clover Run	Tucker	Trout stream High equitability
Minear Run	Tucker	Trout stream
Horseshoe Run	Tucker, Preston	Mainstem and many of its tributaries are trout streams
Slip Hill Mill Run	Tucker	Trout stream
Wolf Run	Tucker	Trout stream
Elklick Run	Tucker	Trout stream
Pendleton Creek	Tucker	Trout stream
Chaffey Creek of Beaver Creek	Tucker	Trout stream
Blackwater River (above Beaver Creek)	Tucker	Mainstem and several tributaries are trout streams High diversity (macroinvertebrates)

Table 7. Summary of major aquatic and water resources in the Monongahela River Basin, West Virginia (continued).

BIA Category II	County	Reason for Designation
Shavers Fork	Tucker, Randolph	Numerous trout streams in watershed Two or more intolerant macroinvertebrate taxa Macroinvertebrate sample composed of at least 10 taxa and at least 50% sensitive individuals High diversity (macroinvertebrates) High equitability Important recreational fishery
Dry Fork	Tucker, Randolph	Numerous trout streams in watershed Two or more intolerant macroinvertebrate taxa Macroinvertebrate sample composed of at least 10 taxa and at least 50% sensitive individuals High diversity (fish & macroinvertebrates) High equitability
Snowy Creek	Preston	Trout stream
Rhine Creek	Preston	Trout stream
Non-Sensitive Areas	**County**	
Robinson Run (watershed)	Monongalia	
West Run	Monongalia	
Courtney Run	Monongalia	
Scott's Run	Monongalia	
Decker's Creek	Monongalia	
Brand Run	Monongalia	
Flaggy Meadow Run	Monongalia	
Birchfield Run	Monongalia	
Parker Run	Marion	
West Fork Mainstem (Clarksburg to mouth)	Marion, Harrison	
Horner's Run (of Booths Creek)	Marion	
Purdy Run	Marion, Harrison	
Mudlick Run	Harrison	
Simpson Creek	Harrison, Tyler, Barbour	
Threefork Creek (watershed)	Taylor, Preston	
Sandy Creek (watershed)	Taylor, Barbour, Preston	
Ford Run	Barbour	
Tygart Valley River (from confluence with Roaring Creek to confluence with Buckhannon River	Barbour, Randolph	

Table 7. Summary of major aquatic and water resources in the Monongahela River Basin, West Virginia (concluded).

Non-Sensitive Areas	County
Mud Lick Run (of Fink Run)	Upshur
Bridge Run (of Fink Run)	Upshur
Middle Fork River (from Cassity Fork to mouth)	Barbour, Upshur, Randolph
Whiteoak Run	Upshur
Cassity Fork (watershed)	Randolph
Island Creek	Barbour
Beaver Creek	Barbour, Randolph
Grassy Run	Randolph
Roaring Creek (watershed)	Randolph
Cheat River (from Pringle Run downstream)	Monongalia, Preston
Scott Run	Preston
Bull Run	Preston
Conner Run	Preston
Greens Run (watershed)	Preston
Muddy Creek (below Jump Rock Run)	Preston
Martin Creek (watershed)	Preston
Jump Rock Run	Preston
Roaring Creek (below confluence with Lick Run)	Preston
Morgan Run (watershed)	Preston
Heather Run	Preston
Lick Run	Preston
Pringle Run	Preston
Blackwater River (below confluence with Beaver Creek)	Tucker
Big Run	Tucker
Tub Run	Tucker
Lindy Run	Tucker
Finley Run	Tucker
North Fork (watershed)	Tucker
Shays Run	Tucker
Engine Run	Tucker
Beaver Creek (watershed except for Chaffey Creek)	Tucker

The Ohio/Little Kanawha River Basin

All PSIA designations in the Ohio/Little Kanawha Basin resulted from identification of significant and sensitive aquatic resources (Figure 14 and 15 and Table 8). PSIA's in this Basin, when contrasted with the other major river basins in West Virginia, are not extensive. These areas are clustered in the extreme southern and eastern sections of the Basin, particularly in the upper reaches of the Little Kanawha River watershed, where trout and other noteworthy species in sizable populations have been collected. PSIA locations are as follows:

- North Fork Fishing Creek: in Wetzel County, this PSIA includes the entire watershed
- South Fork Fishing Creek: in Wetzel County, the entire watershed
- McElroy Creek: in Tyler and Doddridge Counties, the entire watershed
- Little Kanawha River: in Braxton, Lewis, Upshur, and Webster Counties, the entire watershed of the Little Kanawha River from its confluence with Saltlick Creek to its headwaters; this PSIA includes major streams such as Saltlick Creek, Knawls Creek, Falls Creek, Crooked Run, and the Right and Left Forks of Little Kanawha River
- Little Kanawha River Mainstem: in Braxton, Calhoun, and Gilmer Counties, this PSIA includes only the mainstem corridor of the River from its confluence with Saltlick Creek downstream to the western Basin border near Annamoriah.

In the Ohio/Little Kanawha River Basin, several watersheds and stream corridors have been identified as BIA Category I's, where special mitigative measures will be required by EPA to protect aquatic and water resources. Non-sensitive areas could be designated on the basis of the existing aquatic resource data.

Figure 14

POTENTIALLY SIGNIFICANT IMPACT AREAS IN THE OHIO RIVER BASIN

WATERSHEDS THAT ARE PSIA's

RIVERS THAT ARE PSIA's

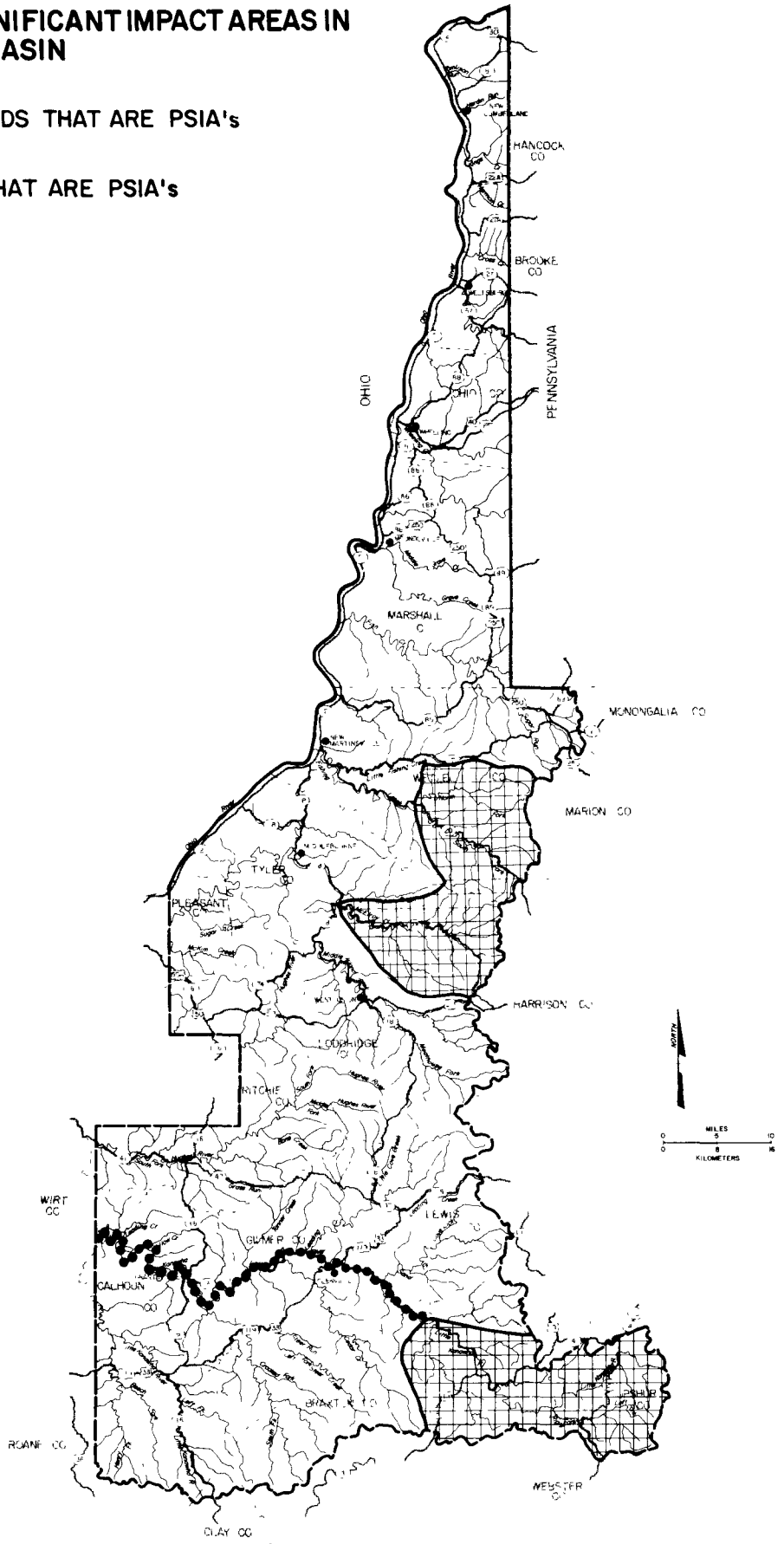


Figure 15

BIOLOGICALLY IMPORTANT AREAS AND NONSENSITIVE AREAS IN THE OHIO RIVER BASIN

CATEGORY I

CATEGORY II

UNCLASSIFIED AREAS

NONSENSITIVE AREAS

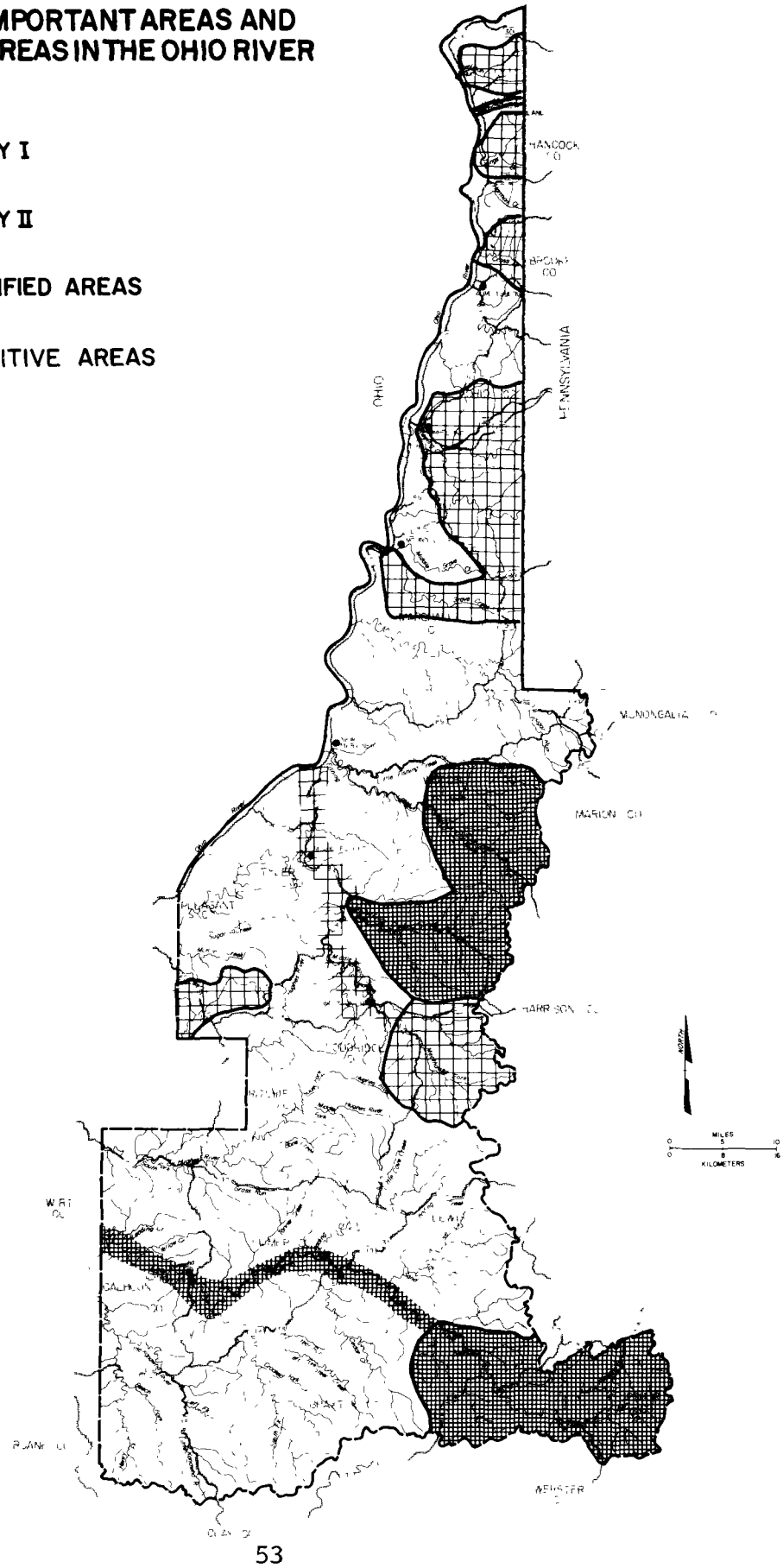


Table 8. Summary of major aquatic and water resources in the Ohio/Little Kanawha River Basin, West Virginia. Waters include all watersheds unless specified as mainstem only. Lakes include a generalized buffer zone around the waterbody, encompassing all areas (potential mine sites) which would discharge directly into the lake.

BIA Category I	County	Reason for Designation
Tomlinson Run	Hancock	Trout stream High diversity, high equitability Macroinvertebrate indicator species
Hardin Run (Mainstem)	Hancock	Macroinvertebrate indicator species
Kings Creek	Hancock	Trout stream
Cross Creek	Brooke	Trout stream
Castleman's Run Lake	Brooke	Trout lake
Bear Rock Lakes	Ohio	Trout lake
Wheeling	Ohio, Marshall	Trout stream
Burches Run Lake	Marshall	Trout lake
Grave Creek	Marshall	Trout lake High equitability
Coon Run Embayment*	Marshall	High diversity WVDNR-HTP Species: *Notropis buchanani* *Hybopsis storeriana*
Ohio River* (Hannibal Lock and Dam)	Wetzel	WVDNR-HTP Species: *Hybobsis storeriana* *Notropis buchanani* *Percina copelandi*
Sugar Creek	Pleasant, Tyler	High equitability
Point Pleasant Creek	Tyler	High equitability
Middle Island Creek (Mainstem)	Tyler	WVDNR-HTP Species: Mooneye Recreational fishery
Indian Creek	Tyler	High equitability
Conaway Run Lake	Tyler	Trout lake
Buckeye Creek	Doddridge	High equitability
Meathouse Fork	Doddridge	WVDNR-HTP Species: *Notropis dorsalis*

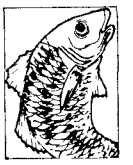
*Although these areas qualify as a Category I BIA, the size of flow and extent of dilution in the Ohio River is such that these identified biota are not expected to be affected by New Source coal mines, as regulated. Special protection beyond the New Source effluent limitations, therefore, is not required.

Table 8. Summary of major aquatic and water resources in the Ohio/Little Kanawha River Basin, West Virginia (continued).

BIA Category I	County	Reason for Designation
Arnold Creek (Mainstem)	Doddridge	Macroinvertebrate indicator species
Bonds Creek	Ritchie	High diversity
Pennsboro Water Supply Reservoir	Ritchie	Trout lake
Sand Fork (Mainstem)	Gilmer	Macroinvertebrate indicator species
Oil Creek	Braxton	Macroinvertebrate indicator species
BIA Category II	**County**	**Reason for Designation**
North Fork Fishing Creek and tributaries	Wetzel	Trout stream High diversity, high equitability WVDNR-HTP Species: *Phoxinum erythrogaster*
South Fork Fishing Creek and tributaries	Wetzel	Trout stream High equitability
McElroy Creek and tributaries	Tyler, Doddridge	High diversity and high equitability
Little Kanawha River (Mainstem below confluence with Saltlick Fork)	Braxton, Calhoun, Gilmer	High diversity WVDNR-HTP Species: *Ammocrypta pellucida*, *Etheostoma tippecanoe*, *Polyodon spathula*, *Clinostomus elongatus*
Little Kanawha River watershed (from confluence with Saltlick Creek upstream--see below)	Braxton, Lewis, Upshur, Webster	
Saltlick Creek	Braxton	High diversity, high equitability
Knawls Creek	Braxton	High diversity, high equitability
Falls Creek	Braxton	Macroinvertebrate indicator species
Little Kanawha River	Braxton	High diversity
Crooked Run	Lewis	Macroinvertebrate indicator species
Little Kanawha River	Lewis	Trout stream
Right Fork of Little Kanawha River	Lewis	Trout stream

Table 8. Summary of major aquatic and water resources in the Ohio/Little Kanawha River Basin, West Virginia (concluded).

BIA Category II		Reason for Designation
Right Fork of Little Kanawha River	Webster	Trout stream
Left Fork of Little Kanawha River	Upshur	Trout stream High equitability
Little Kanawha River	Upshur	Trout stream
Non-Sensitive Areas	**County**	
None		



The North Branch Potomac River Basin

PSIA designations in the North Branch Potomac River Basin coincide exactly with BIA Category II areas (Figure 16 and Table 9). In all cases, these areas are trout stream watersheds. In the case of New Creek, one species of special interest (the Potomac sculpin) as listed by the WVDNR-Heritage Trust Program also has been identified. Specific PSIA locations are as follows:

- o Fairfax Run: in Grant County, the entire watershed
- o Wilsonia Run: in Grant County, the entire watershed
- o Elk Run: in Grant County, the entire watershed
- o Dobbin Ridge Run: in Grant County, the entire watershed
- o Red Oak Creek: in Grant County, the entire watershed
- o Buffalo Creek: in Grant County, the entire watershed upstream from the confluence with Little Buffalo Creek
- o Difficult Creek: in Grant County, the entire watershed
- o Unnamed Stony River Tributaries: in Grant County, these watershed areas extend upstream from the extreme southernmost reach of Stony River Reservoir and are bounded on the west and south by the Grant-Tucker County border.
- o Wymer Run: in Grant County, the watershed
- o Wycroff Run: in Grant County, the watershed
- o Johnnycake Run: in Grant County, the watershed
- o New Creek: in Grant and Mineral Counties, the watershed
- o Howell Run: in Mineral County, the watershed.

No BIA Category I areas were identified, and no non-sensitive streams could be determined from existing data.

Figure 16

POTENTIALLY SIGNIFICANT IMPACT AREAS IN THE NORTH BRANCH POTOMAC RIVER BASIN, WEST VIRGINIA. These areas are the watersheds of Category II Biologically Important Areas.

Table 9. Summary of major aquatic and water resources in the North Branch Potomac River Basin, West Virginia. Waters include all watersheds unless specified as mainstem only. Lakes include a generalized buffer zone around the waterbody, encompassing all areas (potential mine sites) which would discharge directly into the lake.

BIA Category I	County	Reason for Designation
None		

BIA Category II	County	Reason for Designation
Fairfax Run	Grant	Trout stream
Wilsonia Run	Grant	Trout stream
Elk Run	Grant	Trout stream
Dobbin Ridge Run	Grant	Trout stream
Red Oak Creek	Grant	Trout stream
Buffalo Creek (above confluence with Little Buffalo Creek)	Grant	Trout stream
Difficult Creek	Grant	Trout stream
Un-named Stony River Tributary	Grant	Trout stream
Un-named Stony River Tributary	Grant	Trout stream
Un-named Stony River Tributary	Grant	Trout stream
Un-named Stony River Tributary	Grant	Trout stream
Un-named Stony River Tributary	Grant	Trout stream
Wymer Run	Grant	Trout stream
Wycroff Run	Grant	Trout stream
Johnnycake Run	Grant	Trout stream
New Creek Dam #14	Mineral	Trout stream
Howell Run	Mineral	Trout stream
New Creek	Mineral, Grant	Trout stream WVDNR-HTP Species: Potomac sculpin

Non-Sensitive Areas	County
Buffalo Creek (below confluence with Little Buffalo Creek)	Grant
Glade Run	Grant
Little Buffalo Creek	Grant

Table 9. Summary of major aquatic and water resources in the North Branch Potomac River Basin, West Virginia (concluded).

Non-Sensitive Areas	County
Little Creek	Grant
Stony River (below US Rt. 50)	Grant
Abram Creek	Grant, Mineral
North Branch of Potomac (headwaters to Luke MD)	Grant, Mineral
Emory Creek	Mineral
Lynwood Run	Mineral
Montgomery Run	Mineral
Piney Swamp Run	Mineral
Slaughterhouse Run	Mineral

APPENDIX

Ray George
Environmental Protection Agency
Wheeling Field Office
303 Methodist Building
11th and Chapline Streets
Wheeling, West Virginia 26003

Mr. Stephen Crowley
Morgantown Public Library
373 Spruce Street
Morgantown, West Virginia 26505

Mrs. Ellen Ontko
Clarksburg - Harrison Public Library
404 West Pike Street
Clarksburg, West Virginia 26301

Ms. Catherine Wilson
Gibson Public Library
Buckhannon, West Virginia 26201

Ms. Helen W. Feaster Librarian
Elkins - Randolph County Public Library
416 Davis Avenue
Elkins, West Virginia 26241

BCR, Inc.
Library
350 Hockberg Road
Monroeville, PA 15146

Cross Lanes Branch Library
5451 Big Tyler Road
Nitro, West Virginia

Southern Area Library
Lost Creek
West Milford, West Virginia

Elizabeth Stevenson Memorial Library
400 North Broad Street
Summersville, West Virginia 26651

Clendenin Public Library
104 Cardinal Street
Elkview, West Virginia

Kanawha County of Public Library
123 Capitol Street
Charleston, West Virginia

So. Chas. Public Library
312 4th Avenue
South Charleston, West Virginia

Belaire Public Library
32nd and Guernsey
Bellaire, Ohio

Bridgeport Public Library
334 Main Street
Bridgeport, Ohio

City-County Public Library
700 5th Street
Moundsville, West Virginia

Martins Ferry Public Library
20 South 5th Street
Martins Ferry, Ohio

McMechen Public Library
23 8th Street
Wheeling, West Virginia

Miracle Valley Regional Library
700 5th Avenue
Moundsville, West Virginia

Ohio County Public Library
52 16th Street
Wheeling, West Virginia

Coal Mining *and* a Clean Environment: The Time is Now . . .