

THE SURFACE MINING CONTROL AND RECLAMATION ACT OF 1977 AND POTENTIAL IMPACTS ON FISH AND WILDLIFE

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Abstract: The Surface Mining Control and Reclamation Act of 1977 was enacted into law on 3 August 1977. Successful implementation and enforcement of the environmental performance standards of the Act will reduce or eliminate many of the previously recognized environmental perturbations of surface mining, and will result in numerous positive benefits for fish and wildlife. However, fish and wildlife will continue to be adversely affected by surface mining due to losses of specific habitat types and reclamations which result in postmining changes in habitat type and interspersions of habitats. The proposed program for reclaiming abandoned mine lands has great potential for benefiting fish and wildlife, but the actual benefit or loss will depend upon the conditions of each mine site and the site-specific reclamation plan authorized. Knowledgeable personnel within fish and wildlife management agencies will be charged with most of the responsibility for ensuring protection and equal consideration for the needs of fish and wildlife in proposed reclamation plans.

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Following 6 years of Congressional battling and 3 Presidential vetoes, the Surface Mining Control and Reclamation Act of 1977 was enacted into law on 3 August 1977 (U.S. Congress 1977). The Act and its reclamation and enforcement provisions have provided the legal basis and established initial environmental performance standards for achieving acceptable mining and reclamation. The Act also provided a mechanism for funding the program, established initial criteria for reclaiming the nation's previously affected abandoned mine lands, and created the new Office of Surface Mining (OSM) within the U.S. Department of the Interior to implement and carry out the requirements of the Act. States wishing to administer their own programs are required to have them approved by the OSM. Interim regulations, which were released in the Federal Register on 13 December 1977, have implemented portions of the Act (U.S. Department of the Interior 1977). These regulations will be in effect until the final regulations are issued. Proposed rules for the permanent regulatory program were released in the Federal Register for comment on 18 September 1978. (U.S. Department of the Interior 1978a). However, the final regulatory program, which will include regulations for the surface effects of underground mining and other regulations not included in the interim program, is not expected to be published until 15 December 1978 (Coal Daily 1978). Proposed policy and provisions of the abandoned mine land reclamation program were published in the Federal Register on 11 and 26 April 1978. Following evaluation and response to comments, final provisions will be forthcoming (U.S. Department of Agriculture 1978 and U.S. Department of the Interior 1978b, respectively). The objective of this paper is to explore and discuss some aspects of the Act and proposed regulations that may conflict with fish and wildlife needs.

POSTMINING LAND USE AND POTENTIAL IMPACTS ON FISH AND WILDLIFE

Section 715.13 of the interim regulations defines the postmining land-use requirements (U.S. Department of the Interior 1977). In general, operators must submit a postmining reclamation plan and feasibility analysis as part of their initial permit application. Following consultation with the landowner or appropriate land-management agency, all plans must be approved by the regulatory authority (State or Federal) prior to the start of mining operations. All lands affected by new mining operations must be restored in a timely manner to conditions that are capable of supporting premining uses, unless the affected lands had been previously mined or had not been properly managed. New postmining land uses are allowed if they are compatible with adjacent land use and State or Federal land-use policies and plans, and if the proposed postmining use will result in "higher" or "better" land uses according to the criteria and procedures defined in Section

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715.13(d). Postmining land use must fit into one of the 11 land-use categories listed in Table 1 (U.S. Department of the Interior 1977).

The higher and better use concept of Section 715.13, and related requirements for compatibility with adjacent land use and local and regional land-use policies and plans, is democratic in content. However, such regulations provide little incentive for protecting valuable habitats, and they may be counterproductive to the needs of fish and wildlife. The potential impact on biota due to these regulations is directly related to several fundamental questions. Will or can the approved postmining land uses provide a mosaic of habitat types at least nearly equal to those which existed prior to mining? Will postmining land uses represent a significant gain or loss of specific habitat types and their interspersions as compared with premining conditions? Wildlife are not only dependent on the habitat types themselves, but the interspersions of these types is equally important. As stated by Leopold (1933):

“. . . game is a phenomenon of edges. It occurs where the types of food and cover which it needs come together, i.e., where their edges meet.”

“An acre of fencerow or hedge, consisting, so to speak, entirely of edges, usually has more game (and songbirds also) than many acres of unbroken woods, or wheat, or corn.”

Table 1. Acceptable land-use categories as defined in the interim regulations of the Surface Mining Control and Reclamation Act of 1977 [Source: U.S. Department of the Interior 1977, Section 715.13(c)].

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1. *Heavy industry*—manufacturing facilities, powerplants, airports, etc.
 2. *Light industry and commercial services*—office buildings, stores, parking facilities, apartment houses, motels, hotels, etc.
 3. *Public services*—schools, hospitals, churches, libraries, water-treatment facilities, waste-disposal facilities, public parks and recreation facilities, transmission lines and pipelines, highways, etc.
 4. *Residential*—housing (other than apartment houses) and necessary support facilities [e.g., vehicle parking and recreation facilities.
 5. *Cropland*—land used primarily for growing crops, including land used in support of farming operations.
 6. *Rangeland*—land use for grazing, including forest lands with an understory vegetation suitable for grazing or browsing use.
 7. *Hayland or pasture*—land used primarily for hay production, grazing of livestock, or production of livestock feed.
 8. *Forest land*—exhibits at least a 25% tree canopy or is at least 10% stocked by trees of any size, including land formerly exhibiting such tree cover and that will be naturally or artificially reforested.
 9. *Impoundments of water*—includes all impoundments for beneficial uses such as stock ponds, irrigation, fire protection, recreation or water supply.
 10. *Fish and wildlife habitat and recreation lands*—includes wetlands, and all other habitats managed primarily for fish and wildlife or recreation.
 11. *Combines uses*—any approved combination of land uses, but, one land use must be designated as the primary land use, and one or more other land uses are designated as secondary.
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It becomes apparent that the methods for designating and interpreting the extent and distribution of premining land use and cover, and the use of this information in developing postmining reclamation plans, are very important considerations for wildlife needs. For example, suppose that a large area subject to future surface mining is located in a major agricultural region and has soil types and other features which make the entire area suitable for row-crop production. However, an actual inventory of the site reveals that only 90% of the premining land use is for crop production, with 5% in several small patches of lowland woodland and another 5% is in fencerows, hedgerows, roadside rights-of-way, and other small habitats. The landowner and the local land-use council decide that the premining land use of the entire area should be cropland, thereby ignoring the relatively small amount of wildlife habitat that is considered by the landowner to be nonproductive land. The postmining reclamation plan is prepared, and the

entire area is designated to be returned to cropland. In this case, both the landowner and land-use council do not consider the postmining land use to be different from the premining land use, since they failed to recognize the minority land-cover types. During the evaluation and approval process, a wildlife biologist recognizes the potential loss of habitat and determines that the proposed postmining land-use plan represents a change from premining land use. He recommends that at least 10% of the affected area be restored to wildlife habitat which will exhibit a quality that is equal to or greater than premining conditions. The landowner and land-use council challenge this recommendation and demand that the entire area be approved for cropland, based on their interpretation of the higher and better use concept and the fact that reclamation to cropland would be compatible with adjacent land-use policy. They resubmit their land-use plan, giving recognition to the minority habitat types, but also request that the postmining land use for these "minor" types be changed to cropland, since they are unwilling to commit any land to wildlife habitat. The request is evaluated by the State regulatory authority; numerous economic, political, and social factors are determined to outweigh the loss of wildlife habitat; and the plan is approved.

This hypothetical example represents but one of the many potential conflict situations (i.e., agriculture versus wildlife use). Others can be envisioned from a review of the 11 land-use categories in Table 1. Changes in premining land use from categories 6 through 10 to categories 1 through 5 represent the most obvious potential conflicts for wildlife, but any land-use change which reduces habitat diversity and interspersions will be detrimental to the species diversity of the affected area. Such potential conflicts raise several additional questions. Does a higher and better use for alternate postmining land use equal agricultural or other more economically oriented uses at the expense of wildlife habitat or other less economically oriented values? How flexible are the requirements that postmining land use be compatible with adjacent land use and local land-use policy? Will or can fish and wildlife agency personnel ensure the protection of fish and wildlife values?

Obviously, fish and wildlife needs can be included in any reclamation plan if the landowner is willing or is induced to devote some portion of his land for such use (Rosso and Wolcott 1977, Leopold 1933). However, today's emphasis on agriculture often creates an imbalance between agricultural and environmental values. Significant losses of wildlife habitat in prime farming areas are well known (Korte and Fredrickson 1977, Vance 1976, Holder 1971). Intensive farming practices often leave little, if any, idle land; employ highly efficient farming methods; and sometimes produce large, continuous areas of a single crop (monoagriculture). Such practices are detrimental to wildlife needs.

Before deciding what is a higher and better postmining land use, and when assessing the compatibility of minority types with adjacent land use and land-use policy, it becomes very important to wildlife to determine the commonness or rareness of specific habitat types. Except for existing public wildlife management areas and refuges, intensively farmed areas may exhibit few remaining woodlands, riparian areas, hedgerows, and other such habitats. The importance of such possibly rare habitats to wildlife should not be overlooked, since they may provide wildlife with their only refuge. Additionally, rare habitats may be critical to the continued survival of one or more species (Klimstra et al. 1977, Orr 1977, Hardin et al. 1976, Vance 1976, Leopold 1933). On the other hand, in some Appalachian coal-reserve areas that are heavily (75-100%) forested and not suited for intensive cropland farming (Averitt 1974, U.S. Department of Agriculture 1969) some species of wildlife would be expected to benefit from increased habitat diversity and interspersions of habitats resulting from surface mining and subsequent reclamations to early forest-successional stages or to alternate agricultural land uses (Gullion 1977, Kirkland 1977, Siderits and Radtke 1977, Odum 1971, Leopold 1933). Reclamations in such areas have usually emphasized return to forest, pasture, or forage lands with considerable interest in wildlife management (e.g., Fowler and Peery 1973; Holland 1973; Tennessee Valley Authority 1970, 1969).

Another important consideration for wildlife is whether or not certain land cover or habitat types can actually be restored to their premining condition within some reasonable period of time. Can we restore a swamp, a wetland, or a lowland or upland forest typical of a region? Although information concerning successional trends on abandoned and other mined lands are available for consideration (e.g., Ashby and Kolar 1977, Riley 1975, Leftwich 1974, Byrnes and Miller 1973, Geyer and Rogers 1972, Hart and Byrnes 1960, Limstrom 1960, Boyce and Neebe 1959, Brewer and Triner 1956), sufficient data are not available to assess successional stages on lands mined according to the reclamation

procedures of the new Act. The positive or negative effects of replacement of topsoil and return of land to its original contour have not been assessed for reforestation or afforestation. We may know how to create several components of a woodland, but we do not know the best procedures or how long it may take, if at all possible, to restore a climax forest type that exhibits a species diversity and productivity equal to or greater than that which existed prior to mining. Data concerning the restoration of swamps and wetlands are especially lacking, since these lands have usually been considered non-productive, and their elimination has often been viewed as reclamation. If strippable coal reserves occur under such habitat types, we must either accept their potential irreversible loss, or we must designate specific ecological study areas and conduct the necessary research prior to approving mining operations.

The interim regulations may be somewhat weak with regard to requirements and inducements to landowners for protecting or restoring wildlife habitat. However, the interim regulations and the proposed regulations for the final regulatory program do provide the opportunity for equal consideration of fish and wildlife needs by requiring the approval of fish and wildlife protection and mitigation measures from the regulatory authority and the appropriate State and Federal fish and wildlife management agencies [U.S. Department of the Interior 1978a, Sections 779.20, 780.15, 784.20, 816.97, and 817.97; 1977, Sections 715.13 (d-8) and 715.17 (d-iii)]. Also, regulations for the protection of hydrologic systems, revegetation, alluvial valley mining, steep-slope mining, mountain top removal, and other environmental protection measures should be beneficial to fish and wildlife. Furthermore, the Act gives States the power to ban mining in areas designated as unsuitable based on certain criteria (U.S. Congress 1977, Section 522; and U.S. Department of the Interior 1978a, Subchapter F). Regulations specifically prohibit mining within (1) 100 feet of an intermittent or perennial stream, *unless the regulatory authority specifically authorizes the mining and reclamation of such a stream*; (2) 100 feet of the outside right-of-way of any public road, *except where mine access or haulage roads may join the right-of-way, or if exempted by the regulatory authority*; and (3) national parks, wildlife refuges, national trail systems, wilderness preservation areas, or any national forest, *unless exempted by the U.S. Department of the Interior* (U.S. Congress 1977, U.S. Department of the Interior 1977).

The degree to which fish and wildlife will be affected by surface mining will depend greatly on the ability and desire of fish and wildlife agency personnel to interpret the requirements of the Act and to develop, demand, and implement site-specific protection and mitigation measures. In order to properly carry out their mission, it is essential that sufficient baseline data be provided to the appropriate agencies for their independent evaluation. Such data should not be provided and evaluated piecemeal, but as part of a comprehensive environmental report of premining conditions, potential impacts, and alternatives for each proposed mining area.

ABANDONED MINE LANDS

One of the significant achievements of the Surface Mining Control and Reclamation Act of 1977 is the enactment of provisions for a funded program for the reclamation of abandoned mine lands. Abandoned mine lands are defined as unreclaimed coal-mine lands that existed prior to 3 August 1977 and for which legal reclamation responsibility does not exist. The proposed rules and regulations for implementing and administering the program have been published in the Federal Register. Final regulations will be released following the review and response to comments (U.S. Department of the Interior 1978b, U.S. Department of Agriculture 1978).

The site-by-site condition of all abandoned coal-mine lands in the United States has not yet been determined. Using somewhat different approaches and assessment criteria, several state inventories have been conducted and have demonstrated the diversity of conditions associated with these lands. For example, in Illinois about 11% of all lands affected by coal mining (both surface and underground mining) were identified as problem areas in need of immediate reclamation (Haynes and Klimstra 1975a, 1975b, Nawrot et al. 1977). In Ohio and Tennessee about 52 and 43%, respectively, of the total abandoned surface-mine lands were identified as needing a major reclamation effort (Board on Unreclaimed Strip Mined Lands and Department of Natural Resources, State of Ohio 1974, Tennessee Valley Authority et al. 1975). Each of these studies revealed that there were thousands of acres in need of immediate and major reclamation based on such criteria as barren and toxic spoilbank and refuse materials; toxic waters; and abandoned roads, structures, and other debris. However, many areas were determined to be

either adequately reclaimed or in need of only minor reclamation or development effort. These lands included forests, organized recreation areas and fish and wildlife management areas, pasture and forage areas, etc. Also, numerous lakes and small ponds created by surface mining provided, or had the potential for providing, waters suitable for recreational use, fisheries and wildlife management, and/or consumption by humans or livestock. Additional abandoned lands, often considered as nonproductive or idle, had become well vegetated through natural succession of vegetation and provided diversity and interspersed of land-cover types suitable for many species of wildlife. The existing or potential value of such lands for organized recreational use and fish and wildlife habitat is well documented (e.g., Sly 1976; Riley 1975, 1963; Karr 1968; Myers and Klimstra 1963; Klimstra 1959; Brewer 1958; Verts 1959; Yeager 1942, 1941). An important goal of each State program should be to assess the value of abandoned mine lands for possible development of recreational and fish and wildlife uses. In many cases, it appears that relatively little modification of already existing conditions would be required for development of these uses.

Regarding the value of abandoned mine lands for recreational and fish and wildlife uses, one should view with caution proposed reclamation plans that ignore the existing conditions of these lands and promote such activities as the grading of spoilbanks to original contour, replacement of topsoil, and/or the development of land uses which fail to give equal consideration to fish and wildlife needs. One should be aware that grading can destroy years of natural succession of vegetation, previous reclamation efforts, and fish and wildlife habitat. Past methods of mining and deposition of overburden have created spoilbanks within the same coal field that exhibit extreme variability of site factors (Limstrom 1960). The chemical and physical properties of spoil materials several decimeters below the surface are likely to be unknown and highly variable. The indiscriminate use of the bulldozer could create additional environmental problems by possibly exposing toxic materials lying under the surface layers of spoilbank material and by destroying an acceptable plant-growth medium (Klimstra and Jewell 1974, Haynes and Klimstra 1975b). For proposed topsoiling operations, one should ask where the topsoil will be obtained. The potential environmental impacts of indiscriminate reclamation strategies may outweigh significantly the value of the proposed reclamation. Fortunately, the proposed rules and regulations for reclaiming abandoned mine lands generally address these potential problems by establishing specific criteria for selecting, assigning priorities to, and evaluating all proposed reclamation projects. Also, it appears that regional analyses and the preparation of environmental impact assessments or statements will be developed under the supervision of the U.S. Department of the Interior, Division of Reclamation Planning and Standards, Abandoned Mine Land Program (U.S. Department of the Interior 1978b), and by the U.S. Soil Conservation Service (U.S. Department of Agriculture 1978). Hopefully, fish and wildlife needs will receive equal consideration in evaluation processes which stress preplanning, consider all phases of the mining process, and use the best available technology to achieve acceptable reclamations.

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