

Mining coal at the Black Beauty Farmersburg Mine



III SURFACE MINE PERMIT APPLICATION REVIEW PROCESS

In Indiana, all coal mining operations are required to obtain a permit from the Department of Natural Resources / Division of Reclamation. This applies to all coal mining activities regardless of mining method or size of operation.¹

There are three major components to every permit application. They are:

- pre-mining environmental inventory
- mine operation plan
- mine reclamation plan

¹*Coal mine permit exemptions are available in very limited circumstances for the incidental mining of coal as part of an operation that primarily mines non-coal minerals.*

As part of a permit application, the coal mine operator must publish in the newspaper in the county where the mine will be located, a notice that they have applied for a mining permit and the proposed permit is available for public review. This notice must appear once a week for 4 (four) consecutive weeks. This begins the opportunity for the public to file written comments and either request an informal conference or a public hearing regarding the pending application. The public may present comments on the proposed permit and provide site-specific information, which the DOR in turn will review and consider when making a decision about the application.

Permit decisions are subject to challenge from any potentially adversely affected party, including a private citizen or the coal mine operator. This must be done by filing a petition for review with the DOR within 30 days the coal mine operator being notified that the permit was approved or denied.

Pre-Mining Inventory and Maps

A company's first step in compiling their mining permit application is to gather data and map the site in a pre-mining inventory including information on:

- subsurface land boundaries and ownership
- boundaries of the proposed mining activities
- locations of all structures
- pre-mine land use
- soils and land capability
- major plant communities and wildlife habitat
- public roads within 100 feet of the permit area
- boundaries of parks, public lands, historical, culturally significant archeological sites and cemeteries

Additional maps locate and describe:

- geological test borings and core samples
- monitoring stations for water quality
- dams, embankments, impoundments

- surface and groundwater
- coal seam depth, thickness and outcrops
- active, inactive, or abandoned underground mines and surface openings
- waste disposal areas
- pre-mining land slopes
- oil, gas, and water wells
- sequence of the land to be mined

The operator must consult with the U.S. Natural Resource Conservation Service (formerly the Soil Conservation Service; SCS) to determine if the permit contains prime farmland. If a soil survey does not exist, creating one will be necessary. In the permit application, the operator must provide for a demonstration of their technical capability to restore prime farm land to 100% of its pre-mining productivity. Non-prime agricultural land must be restored to 90% of its original productivity.

An analysis of the soils and topography will determine the capability of the land to support a variety of uses. Cropland productivity prior to mining must be measured in terms of crop yield.

Land Use

In the pre-mining inventory, the operator must include the existing land uses and a description of the condition and productivity of the land to be mined. A map of how the land is being used at the time of the permit application must be included. The operator must describe the historical uses of the land, if the use of the land has changed within five years of the proposed mining operation.

When conducting the pre-mining inventory, a post-mining land use must be considered and proposed and designed into the mine operation and reclamation plan. Typical land uses that landowners and operators work towards are cropland (prime farmland and non-prime farmland), pastureland, forest, residential, industrial or commercial, recreation, fish and wildlife habitat, and developed water resources. Permit applicants are required to seek landowner comments on any change in land use.

The Division makes an exhaustive check of the proposed permit area to see if any of it has been designated unsuitable for mining by petition or Congressional designation. Each permit application must describe and evaluate cultural and historic resources and any natural or archaeological features either within or adjacent to the proposed permit area.

Mining Prohibitions

There are certain areas where mining is not allowed, except where an operator can show a valid existing right to mine did existed before August 3, 1977 (implementation date of the Surface Mining Control and Reclamation Act). Unless such valid existing rights are established, mining is prohibited:

- within 300 feet of an occupied dwelling (unless allowed by the owner)
- within 300 feet of any public building, school, church, community or institutional building, or public park
- within 100 feet of a cemetery
- within 100 feet of a public road (except where an opportunity for a public hearing has been provided and the Division finds that the public interest will be protected)
- within the boundaries of areas designated as:
 - ▶ National Parks
 - ▶ National Recreation Areas
 - ▶ National System of Trails
 - ▶ National Wilderness Preservation System
 - ▶ National Wildlife Refuges
 - ▶ Wild and Scenic Rivers
- within the boundaries of any national forest without approval by the Secretary of the Interior
- on publicly owned parks or any place on the National Register of Historic Places that would be adversely affected, unless approved jointly by the Division and the agency with jurisdiction over the land in question

Indiana law provides for any person having an interest that is or may be adversely affected, the right to petition the DOR Director to have an area designated unsuitable for mining. A Lands Unsuitable for Mining Petition must supply facts and supporting evidence. For more information on this process, citizens can contact:

Division of Reclamation
Indiana Department of Natural Resources
RR 2, Box 129
Jasonville, IN 47438-9517
1-800-772-MINE (6463)
(Toll-Free only in Indiana)
1-812-665-2207
1-812-665-5041 FAX
www.in.gov/dnr/reclamation/

Violation Inventories

The Division reviews the compliance history of all the parties involved with the permit application by using the nationwide Applicant Violator System (AVS). A permit cannot be issued if any mining operation owned or controlled by the applicant is in violation of any state or federal surface mining laws until the violation is corrected or is in the process of being satisfactorily corrected. A permit cannot be issued to any applicant or operator that controls or has controlled mining operations with a demonstrated pattern of willful violations resulting in irreparable damage to the environment.

Mine Operations Plan

DNR must approve every aspect of the plan before mining can begin. The plan must include:

- description of the mining operation
- proposed life of the mine
- information to demonstrate that reclamation can be accomplished
- type of mining process and technique
- direction of mining
- access roads
- facilities for coal processing
- coal processing waste disposal sites
- structures
- water impoundments and land uses
- stream diversions
- water and air pollution control facilities
- overburden and topsoil handling storage areas.

Topsoil Removal and Storage

Before mining begins, operators must plan for the replacement of topsoil after the coal has been removed. Details about the removal, storage, replacement and protection of the topsoil from wind and water erosion are listed in the mine operation plan. Topsoil, which is removed in a separate layer from areas to be mined, is immediately replaced or stored at approved locations.

A topsoil substitute or supplement may be used where it is determined that selected overburden materials are equal or more suitable chemically and physically for sustaining revegetation than the existing topsoil. Examples of using a topsoil substitute would be if prior to mining the topsoil had been contaminated or if erosion had lessened the quality of the soil. Topsoil depth before mining must be determined to ensure proper replacement depth for growing row crops and other vegetation.

To comply with these requirements, operators usually operate in the following manner. Before mining begins, scrapers or other machinery remove the topsoil and directly replace it on graded overburden or stockpile it for replacement after mining. Seeding and mulching protect the topsoil from wind and water erosion. Marking stockpiles as being topsoil and protecting them with a cover of vegetation prevents the soil from mixing with any other stored material.

Careful handling of the topsoil and subsoil is crucial for reclamation because this is the medium on which the success or failure of plant growth on the reclaimed site is determined. The combined depth of replaced topsoil and subsoil on areas designated as prime farmland must be 48 inches.

Blasting

After topsoil and subsoil layers are removed, blasting may be necessary to loosen the rocky material (*overburden*) covering the coal seam. Operators drill holes in which they set explosives to fracture the overburden. The blasting agent commonly used is called ANFO, a mixture of Ammonium Nitrate (a common fertilizer) and Fuel Oil. Dynamite is not typically used to fracture the rock. After blasting, a dragline, trucks, shovels or other machinery remove the overburden and expose the coal seam. The mine operator must develop a detailed blasting plan demonstrating how blasting will be conducted to comply with Indiana regulations to prevent damage. A certified blaster must either conduct or directly supervise the loading and detonation of all surface coal mine blasts.

The operator must submit a sample blasting notice and include the blasting schedule. A description of how that blasting notice will be distributed to the public must also be included. As part of the blasting plan, operators must submit a copy of the format that will be used to notify persons living near the permit area that they can obtain either a preblast or a condition survey. These surveys are identical, but the condition survey is conducted after blasting begins.

At least 30 days before the initiation of blasting, the operator must notify in writing all residents or owners of dwellings or other structures within one-half mile of the permit area how they can request a preblast survey. The operator must notify the local public that pre-blast surveys are available to anyone who lives in or owns a dwelling or structure within 1 (one) mile of the permit area. Notice is made by publishing the announcement, at least once a week for 4 (four) consecutive weeks, in a local newspaper in the county in which blasting will occur.

Survey requests received more than 10 days before the initiation of blasting will be conducted before blasting begins. Those received less than 10 days before the initiation of blasting will be conducted within 30 days of receipt. The rules allow that the structure owner be provided an opportunity to disagree with the results of the survey. At least 3 (three) copies of the preblast survey are required, one for the homeowner, one for the operator and one for the files of the Division of Reclamation.

Blasting may take place only between sunrise and sunset. Warning and all-clear signals must be given and must be audible within one-half ($\frac{1}{2}$) mile of the blast. Access to the blasting area is restricted during blasting operations.

There are limits on the location of blasting. Blasting may not be conducted within 300 feet of a school, church or hospital. It may not be conducted within 300 feet of a dwelling unless the owner of the structure grants permission for closer blasting.

Records of all blasts, including required seismograph recordings and reports, must be maintained for a minimum of three years. These records are available for public inspection at the mine site.

Flyrock shall not be cast from the blasting site more than one-half ($\frac{1}{2}$) the distance to the nearest dwelling or other occupied structure beyond the boundary of the bonded area or beyond the area of regulated access.

Indiana is the only state coal regulatory program in the nation that has a structural engineer on staff to investigate damage caused by blasting. If a citizen believes that blasting damage has occurred to a house or other structure, they may request an investigation by the DOR structural engineer. The structural engineer will determine if the damage is blasting related. Monetary claims of damage, however, are a private matter to be settled between the coal operator and the citizen. DOR will take enforcement actions for blasting violations.

Upon request from a citizen, a seismograph, when available, will be installed on the property to monitor blast vibrations. Currently, Indiana has more seismographs than any state coal regulatory program in the nation.

If you have a complaint regarding blasting activities at a mine, write a letter stating these concerns to the Division. The letter should include the name of the mine, dates and times of the blasts in question (if possible), and your name, address and telephone number. A blasting specialist from the Division will then conduct an inspection of the blasting activities and respond to you within 10 calendar days of receipt of your letter.

Overburden Removal and Placement

After the loose soil materials and overburden are removed, the coal seam is finally exposed and ready for extraction.

The coal operator places the rocky material in the bottom of the pit once the coal has been removed. Overburden can contain layers with pyrite, which when exposed to air and water, can produce sulfuric acid. Mixing these layers and burying them with neutral materials in the pit prevents acid production by blocking exposure to oxygen.

To assure that a suitable root medium is available for cropland capability, during reclamation the subsoil layers are placed on top of the graded rocky overburden. Any toxic overburden identified in the pre-mining inventory must be treated or covered with an adequate layer of nontoxic, noncombustible earthen material.

Water

To prevent water pollution, all water affected by the mining operation must pass through approved water control structures before leaving the mine site. Any water leaving the site must be in compliance with all applicable State and federal water quality laws, including water discharge permits issued by the Indiana Department of Environmental Management. The mine operation plan must show the routing of water, location of sediment ponds, pond design, and embankment and spillway details. In order to assure plans are adequate to protect water quality, the mine operator must obtain approval for:

- design of sediment ponds
- chemical water treatment systems
- pond maintenance procedures
- water quality monitoring procedures
- water quality standards

Sediment ponds collect water from the mine site and must provide adequate sediment storage and detention time to allow the silt in the water to settle out and clarify the water to meet state and federal limits. If ponds fill with sediment during the mining process, dredging takes place.

The operator is required to furnish an alternative water supply, in conformance with Indiana water law, where an existing domestic water supply USED FOR DRINKING WATER is affected by contamination, depletion or interruption due to surface mining activities.

Coal operators maintain siltation structures on the site until permanent revegetation has been established and water quality coming into the pond meets water quality limitations. Ponds not approved for retention after mining must be removed and reclaimed.

It is the responsibility of mining operators to monitor groundwater levels and quality throughout the mining and reclamation process. The operator will furnish an alternative water supply, in conformance with Indiana water law, where an existing groundwater supply used as a drinking water source is affected by contamination, depletion or interruption due to surface mining activities.

Coal Processing Waste

The operation plan must detail where coal will be stockpiled and what type of cleaning and processing will occur. The waste produced from the coal cleaning process can be potentially acid-forming and unable to support plant life. The coal operator outlines in the plan how to dispose of the coarse coal refuse (*gob*) and the fine coal refuse (*slurry*). The material must be adequately treated or covered with an adequate layer of nontoxic, noncombustible earthen material to neutralize and prevent production of acid water. Toxic materials must be placed in areas of the mine where contact with surface and groundwater is minimized. Chemical treatment and proper handling procedures ensure the prevention of postmine water quality problems and successful reestablishment of vegetation.

Mine Reclamation Plan

Placement of overburden by a mine operation greatly determines the success of reclamation. Carefully shaping the material assures proper grade, slope and contour design. Throughout the reclamation process, coal operators must meet detailed requirements. A mine reclamation plan will show how overburden will be graded, subsoil and topsoil replaced, and revegetated postmining land uses accomplished and pre-existing streams restored.

The operator must describe in the application all postmining land uses planned for the area.

Coal operators give a timetable for the completion of each step in the reclamation process. Operators also give an estimated cost of reclamation, including a statement as to how the operator plans to comply with the requirements of the law.

Grading and Soil Replacement

Operators must plan to provide rough grading of mined overburden within 180 days of coal removal and have no more than four ungraded spoil ridges behind the active pit; unless additional time is granted for a good reason such as adverse weather conditions. The replaced overburden must be shaped to the approximate original contour of the land so that it drains properly and pre-existing drainage patterns are replaced. Operators must grade materials from the initial pit or box cut to blend with unmined land.

Operators must complete the final grading in a timely manner; usually in time for the next growing season. This includes any subsoil or topsoil replacement and installation of erosion control measures such as terraces, diversions, grass waterways and drains.

After the subsoil is replaced on prime farmland, Division reclamation specialists check for proper quality and thickness. Should the subsoil replacement be rejected, the operator must cover the deficient area with an adequate depth of new subsoil. Reclamation specialists check topsoil for depth and proper replacement.

Operators must attempt to grade replaced soil in a manner that limits compaction. Rubber-tired scraper machinery is one method used to apply the topsoil. In addition, low ground pressure bulldozers spread the topsoil. Loosening the deep subsoil, ripping it to depths as much as 48 inches alleviates compaction of the replaced subsoil. Through the root penetration of planted grasses and legumes, soil compaction is alleviated.

Post-Mining Land Use

The operator must describe all land uses planned after mining and take care to restore the land to a condition capable of supporting the uses for which it was capable of supporting prior to any mining. Where feasible and desirable, a higher and better use than previously existed may be provided.

Land use is generally determined by taking into account the pre-mined soil capability, pre-mine land use, landowner preference, and local citizen and government priorities, policies and plans for use of the land. The Division must approve any changes from the pre-mining land use prior to implementation. In the reclamation plan are comments from landowners and State and local government agencies responsible for approving or authorizing land use. Included is a discussion of the capability of the reclaimed land to support a variety of alternative uses. To change how the land will be used following mining, the operator must file an alternative land use proposal in the reclamation plan portion of the permit application.

Productivity

Reclamation plans must give details on any chemical analysis of topsoil to aid vegetation establishment. Coal operators verify soil texture with spot checks and apply fertilizer or soil amendments as needed.

Most plans provide for a crop of wheat or oats followed by a grass-legume mix for several years on reclaimed land to prevent soil erosion and to restore soil structure. After this period and before their reclamation responsibility ends, vegetation is established that is consistent with the postmining land use plan. For prime farmland, operators must establish row crop production.

Field test plots are the most common method used to verify vegetative growth. A count of vegetation covering the ground is used on land uses other than row cropland.

A five to ten year vegetation liability period begins when all grading is completed and the land is planted to a crop capable of supporting the postmining land use. For prime farmland, the operator must show full restoration of 100% of the original unmined land productivity using typical crops (e.g. corn, soybeans, wheat) for three crop years before final release of reclamation responsibility. Forestland use must show growth of 450 trees per acre for a three year period.

Coal operators may construct permanent water impoundments from the final pit of the mined area or a sediment pond, if the alternative land use proposal has been approved or if a water land use existed prior to mining.