Draft Technical Guidance: Procedures for calculating mine subsidence bonds

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF MINING AND RECLAMATION

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TITLE: Procedures for calculating mine subsidence bonds

EFFECTIVE DATE: March 6, 2000

AUTHORITY: The Bituminous Mine Subsidence and Land Conservation Act.

POLICY:
The Department will require mine operators to post bonds to ensure that they fulfill their obligations to repair or compensate for subsidence damage to land and structures as required by the Bituminous Mine Subsidence and Land Conservation Act. The bond amount shall be sufficient to ensure that monies are available to compensate property owners for unresolved damage claims in the event that the operator becomes insolvent or abandons the operation or in the event that the Department finds it necessary to forfeit the bond.

PURPOSE:
This document describes the procedures the Department will follow in determining the appropriate amounts for mine subsidence bonds. It also explains the rationale behind the Department's approach to bond calculation.

APPLICABILITY:
This guidance applies to all underground bituminous coal mines that operate under current coal mining activity permits and to all new operations that are granted permits after the effective date of this guidance.

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

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

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TECHNICAL GUIDANCE

BACKGROUND

Basis for requiring mine subsidence bonds

Mine subsidence bonds are required to ensure that underground bituminous coal mine operators comply with the law, specifically sections 5, 5.4, 5.5 and 5.6 of the Subsidence Act. In addition, bonds must be sufficient to ensure that the DEP is able to address subsidence damage claims in the event that the operator becomes insolvent or abandons the operation or in the event that the Department finds it necessary to forfeit the bond. The requirement to post a subsidence bond is found in sections 5 and 6 of the Act.

According to section 6 of the Subsidence Act, the bond must address the cost of repairing subsidence damage to structures identified in section 5.4, and the cost of repairing material damage to surface lands (see section 5). The general list of structures found under section 5.4 and corresponding regulation §89.142a(f) is as follows:

- **Dwellings** used for human habitation.
- **Permanently affixed structures** appurtenant to dwellings including, but not limited to: **garages, storage sheds and barns, greenhouses and related structures, customer-owned utilities and cables, fences and other enclosures, retaining walls, paved or improved patios, walks, driveways, septic treatment facilities, in-ground swimming pools, lot drainage** and **lawn and garden irrigation systems.**
- **Improvements** (associated with dwellings) that are in place on August 21, 1994 or on the date of first publication of the permit application or a five-year renewal thereof.
- **Buildings** that are accessible to the public including, but not limited to, **commercial buildings, industrial buildings, and recreational buildings.**
- **Permanently affixed structures** appurtenant to buildings that are accessible to the public.
- **Noncommercial buildings** customarily used by the public, including, but not limited to, **schools, churches** and **hospitals.**
- **Barns** and **silos.**
- **Permanently affixed agricultural structures** of 500 or more square feet in area that are used for raising livestock, poultry or agricultural products, for storage of animal waste or for the processing or retail marketing of agricultural products produced on the farm on which such structures are located.

Basic concepts and rationale

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The basic approach to bond calculation is to determine the current value of the property at risk to mine subsidence during the succeeding five-year permit term and convert that value through a series of adjustments to a figure that represents the amount of unresolved damage that could accrue before DEP would have cause to forfeit the bond. The individual elements of this approach are described below.

Evaluation area. All properties within the boundary of the subsidence control plan will be considered potentially at risk to subsidence damage. Mining may take place anywhere within the subsidence control plan during the succeeding five-year permit term (subject to certain restrictions), so all properties are considered when calculating potential damages. The fact that individual mining plans may not pose a risk of subsidence to all overlying properties is taken into consideration through an adjustment factor applied in the calculation procedure. The current values of all properties within the subsidence control plan provide the initial basis for bond calculation.

Basis for property value determinations. In performing bond calculations, the basis for all property values will be the assessment values recorded in the county tax office. These figures are established values that can be verified by mine operators, property owners and DEP. Both land and improvement values are considered in determining the total value of individual properties.

Establishing current property values. Assessed values are related to property values; however the relationship is not typically one-to-one. It is necessary to convert them to values that approximate the actual values at the time of bond calculation. This conversion is made by multiplying the assessed value by a *real estate valuation factor* for the county in which the properties are located. The *real estate valuation factor* is a figure determined by the Pa. Department of Revenue and is derived from the "common level ratio" that is published annually by the State Tax Equalization Board. The Board's responsibility is to establish a common level ratio of assessed property value to market value for each county for the prior calendar year. The Board compiles sales data to develop this ratio and publishes it annually for each county in the Commonwealth. The *real estate valuation factor* published by the PA Department of Revenue is the mathematical reciprocal of the actual common level ratio.

Predicting the incidence of damage. Typically mining will not cause land or structure damage on all overlying properties. This consideration is taken into account by applying an *incidence of damage factor*. The factor will be determined by dividing the number or properties that experienced land or structure damage during the preceding five years by the total number of properties undermined during the same period. As an example, an operation that caused land or structure damage on 25 of 100 properties undermined during the preceding five years would have an *incidence of damage factor* of 0.25. For a new mine with no damage record, an *incidence of damage factor* would be the average for all operating mines of the same type (i.e., longwall, room-and-pillar, or room-and-pillar with retreat).

Predicting the level of damage. In order to estimate liability, it is necessary to perform a calculation that converts property value to an expected amount of damage. This conversion is based on

the dollar amounts of claims paid under DEP's mine subsidence insurance program and the calculated values of the properties at the time of damage. The level of damage is determined by dividing the cost of repair by the property value at the time of damage. For example, a property with repair costs of $60,000 and a value of $100,000 at the time of damage would have a damage level of 0.60. In determining the appropriate *damage level factor* for a given mine, DEP will use the average of the damage levels calculated for individual claims for the same mine type (longwall, room-and-pillar, or room-and-pillar with retreat) and county.

Period of claim accumulation. DEP will not allow unresolved damages to accrue over an entire five-year permit term without intervening. The law establishes specific time frames in which DEP must act after it receives a report of mine subsidence damage. It provides a six-month period for the mine operator and property owner to reach a settlement. If that process fails, the property owner may ask DEP to intervene. The Act allows DEP 30 days to investigate a claim and an additional 60 days to reach a determination and issue an order to repair or compensate for the damage. A mine operator then has 30 days to appeal DEP's order and post the escrow necessary to perfect its appeal. If the mine operator does not comply with the order or perfect its appeal, DEP would have cause to forfeit the bond at this point. Combined in sequence, these respective time intervals total ten months. DEP considers this ten-month period to be the *claim accumulation period*. This consideration is factored into the bond calculation by multiplying the predicted amount of damage times 0.167, a figure which represents 10 months divided by 60 months (i.e., the five-year term of the permit).

Periodic re-evaluation. DEP will preform subsidence damage liability calculations at each permit renewal and whenever the permit is revised to modify the area encompassed by the subsidence control plan. The bond may be adjusted upward or downward at those times based on revised damage estimates for the succeeding five-year period. During the period following active mining, the bond may be adjusted toward the $10,000 minimum as the mine operator brings claims to final settlement.

Use of alternate values. In applying this approach, DEP will consider using alternate values submitted by the mine operator in determining the *incidence of damage factor* and the *damage level factor*. To be eligible for consideration, these figures must be documented and credible. By contrast, DEP will only accept property values derived from tax assessment records in the county courthouse and *real estate valuation factors* compiled by the PA Department of Revenue.

PROCEDURES

DEP will calculate the appropriate amount of a mine subsidence using the formula and procedures described in this section. The formula includes variables that are described in the table below. The variables used in the formula reflect the considerations described in the preceding section.

Formula for calculating subsidence bonds

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$$A_{dcap} = V_{ta} * F_{rev} * T_{cap} * D_I * D_L$$

These variables in the formula are described below.

Variable	Explanation
A_{dcap}	The required bond. It is the current amount of damage expected during the *claim accumulation period*.
0.167	A factor representing the decimal fraction of the five-year period during which claims may accumulate.
V_{ta}	The total tax assessment value of all properties within the five-year mining plan. This value includes structures and land and is obtained from county tax records.
F_{rev}	*Real estate evaluation factor.* A factor used to convert assessed property values to current property values. Source: Pa. Dept of Revenue from State Tax Equalization Board data.
D_I	*Incidence of damage factor*. A factor representing the percentage of undermined properties that are likely to experience land or structure damage. Source: DEP data collected pursuant to Section 18a of Subsidence Act.
D_L	*Damage level factor*. A factor representing the extent to which a typical property is expected to be damaged as a percentage of its total value. Source: Data in DEP's MSI database.

Procedures for gather data and calculating the bond amount

1. DEP will require the mine operator to identify all properties that lie within the subsidence control plan and research their current assessed values from county tax records.

2. DEP will calculate the total assessed value of all property within the subsidence control plan, V_{ta}, by adding the individual assessed values submitted by the mine operator.

3. DEP will determine the appropriate *real estate valuation factor*, F_{rev}, for the county in which the mine is located using figures prepared by the Pa. Department of Revenue.

4. DEP will determine the appropriate *incidence of damage factor*, D_I, to reflect the value of property that is likely to experience land or structure damage. This determination will be made by dividing the number of properties that experienced land or structure damage during the preceding

five years by the total number of properties undermined during the same period. If a mine has no record of previous damage, DEP will determine the *incidence of damage factor* based on the average for other mines of the same type (longwall, room-and-pillar, or room-and-pillar with retreat). DEP may also base the *incidence of damage factor* on information provided by the mine operator if the information is documented and credible.

5. DEP will determine the appropriate *damage level factor*, D_L, using claim records in its MSI database, assessment values recorded in the county tax office, and *real estate valuation factors* applicable to the years in which damage occurred. DEP will determine individual damage levels for all cases involving the same mine type within the same county. DEP will establish the final *damage level factor* by averaging the damage levels of all applicable cases. DEP may also base the *damage level factor* on information provided by the mine operator if the information is documented and credible.

6. DEP will determine the appropriate amount of bond by entering the appropriate values into the equation at the beginning of this section.

7. DEP will request bond in the amount A_{dcap} or $10,000, whichever is greater, for the five-year term of the permit.

8. DEP will re-evaluate the amount of subsidence bond following the same procedures each time the permit is renewed or revised to modify the area encompassed by the subsidence control plan.

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PROCEDURES FOR CALCULATING MINE SUBSIDENCE BONDS

IMPACT ANALYSIS

1. Does the guidance implement laws or regulations that are more stringent than federal regulations?

No. Both state and federal programs require mine operators to post bonds to ensure the repair of subsidence damage resulting from active underground mining. The guidance was developed as a result of a decision by the Environmental Hearing Board.

2. Is the guidance prescriptive or technology specific?

No. The guidance pertains to administrative matters.

3. Describe the affected regulated community.

This guidance pertains to the regulation of underground bituminous coal mining.

4. What are the economic impacts on the regulated community?

The guidance will require some mine operators to post significantly larger bonds than they have in place at the present time. These effects will be felt primarily by those mine operators that conduct full extraction mining which results in subsidence of the overlying land surface. The amount of bond will be dependent on the value of overlying property that is susceptible to subsidence damage. It is expected that 20 to 25 operators will see significant increases in their bonding requirements. Operators of the 50 to 55 room-and-pillar mines that have few or no associated damage claims should see little or no increase in their bonding requirements.

5. What are the economic impacts on DEP?

The procedures described in the guidance will require approximately four to seven hours to complete. These procedures will only come into play during reviews of new permit applications, permit renewal applications and subsidence control plan revisions. Collectively, the additional work will require 20 to 35 man-days per year. The additional work can be absorbed by existing DEP staff.

6. Compliance assistance.

No special compliance assistance efforts will be needed to bring the regulated community into compliance with this guidance.

7. Pollution prevention.

This guidance does not pertain to pollution prevention.

8. DEP reviews and approvals.

The procedures described in this guidance will not appreciably change the time required for application review and processing.

9. Relationship to existing guidance.

This guidance is specific to the mining regulatory program and does not affect any other guidance within that program area.

10. Controversial aspects of the guidance.

This guidance may be opposed by mine operators that are required to post additional bond as a result of the calculation procedures. Grass roots citizens' organizations may oppose this guidance based on their perception that the resultant bond amounts are not high enough.