

## Appendix B (continued)

### Regulations for Mine Subsidence Control, Subsidence Damage Repair and Water Supply Replacement

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**Public water supply system**—A water delivery system which does one of the following:

(i) Serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

(ii) Provides water to a public building, church, school, hospital or nursing home.

**Rebuttable presumption area**—As used in the context of water supply replacement, the area in which an operator is presumed responsible for diminishing, contaminating or interrupting a water supply. The area is defined by projecting a 35° angle from the vertical from the outside of any area where the operator has extracted coal from an underground mine.

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**Underground mining**—The extraction of coal in an underground mine.

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**Underground mining operations**—Underground construction, operation and reclamation of shafts, adits, underground support facilities, in situ processing and underground mining, hauling, storage and blasting.

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**Water supply**—An existing source of water used for domestic, commercial, industrial or recreational purposes or for agricultural uses, including use or consumption of water to maintain the health and productivity of animals used or to be used in agricultural production and the watering of lands on a periodic or permanent basis by a constructed or manufactured system in place on August 21, 1994, to provide irrigation for agricultural production of plants and crops at levels of productivity or yield historically experienced by the plants or crops within a particular geographic area, or which serves a public building or a noncommercial structure customarily used by the public including churches, schools and hospitals.

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#### Subchapter B. OPERATIONS INFORMATION REQUIREMENTS

##### § 89.33. Geology.

(a) The operation plan shall include a description of the areal and structural geology in the permit and adjacent area, including the lithology of the strata that influence the occurrence, availability, movement and quality of groundwater that may be affected by the underground mining activities.

(1) For lands within the proposed permit and adjacent areas and over the coal seam to be mined, the description shall include the results of test borings, coal samplings and the stratum immediately beneath the coal seam to be mined, and overlying strata. When an aquifer or existing deep mine below the lowest coal to be mined may be affected, the description shall also include the aquifer or existing deep mine and overlying strata. For mines not underlain by existing deep mines and greater than 200 feet (60.96 meters) below surface drainage, the description need only include the strata down to and including the stratum immediately below the coal seam to be mined. At a minimum, the description shall include:

(i) The location and quality of groundwater.

(ii) The depth, lithology and structure of overburden strata.

(iii) Coal seam thickness.

(iv) Chemical analysis for pollution-forming materials of the stratum immediately above and the stratum immediately below the coal seam to be mined.

(v) Chemical analyses for pollution-forming materials of the coal seam including the sulfur content.

(2) Additionally, for portions of a permit area in which the strata down to the coal seam to be mined will be removed, as in the face up area, test borings or core samples shall be collected and analyzed down to and including the stratum immediately below the lowest coal seam to be mined. For the purposes of this section, boreholes, drill holes, slopes and shafts do not constitute removal of overburden. The following data shall be provided:

(i) Logs of drill holes that show the lithologic characteristics, including physical characteristics and thickness of each stratum, and location and quality of groundwater.

(ii) Chemical analyses of each stratum within the overburden and the stratum immediately below the coal seam to be mined to identify those strata that contain pollution-forming or alkalinity-producing materials.

(iii) Chemical analyses for pollution-forming materials of the coal seam, including the total sulfur content.

(b) An applicant may request that the requirements of subsection (a)(2) be waived in part or in its entirety by the Department. The waiver can be granted only if the Department makes a written determination that the information required by subsection (a)(2) is unnecessary because other information having equal value or effect is available to the Department in a satisfactory form.

##### § 89.34. Hydrology.

(a) The operation plan shall contain premining or baseline hydrologic information representative of the proposed permit, adjacent and general areas.

(1) Groundwater information shall include:

(i) The results of a groundwater inventory of existing wells, springs and other groundwater resources, providing information on location, ownership, quality, quantity, depth to water and usage for the proposed permit area and adjacent area. Information on water availability, occurrence and alternative water supplies shall be emphasized and water-quality information relating to suitability for existing premining uses shall be provided. At a minimum, water quality descriptions shall include total dissolved solids or specific conductance corrected to 25°C, pH, total iron, total manganese, alkalinity, acidity and sulfates.

(ii) Other information on the baseline hydraulic and hydrogeologic properties of the groundwater system shall be included with the application. Information on indicator parameters, such as pumping test, lithologic and piezometer data or other appropriate information shall be provided in the application.

(iii) A groundwater monitoring plan under § 89.59 (relating to surface water and groundwater monitoring). The plan shall logically relate to the analysis of the baseline information and the prediction of the probable hydrologic consequences of mining and reclamation required by § 89.35 (relating to prediction of the hydrologic consequences). The plan shall identify monitoring locations and sampling frequency. Water availability, including water levels and yields, and approximate overall

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recharge protection shall be emphasized. The plan shall provide for monitoring the minimum group of parameters in § 89.59, plus additional parameters that relate to the suitability of the groundwater for current and approved postmining land uses, the protection of the hydrologic balance and locally potential problem causing conditions at or near the mine site.

(2) Surface water information shall include:

(i) A description of streams, valuable impoundments and alternative water supplies. The information shall include the name, location and qualitative and quantitative seasonal flow conditions. Water-quality descriptions, at a minimum, shall include base-line information on total suspended solids, total dissolved solids or specific conductance corrected to 25°C, pH, acidity, alkalinity, sulfates, total iron, total manganese and other locally significant water-quality characteristics. Base-line acidity information shall be provided if acid neutralization is anticipated for the proposed operation. The location of point source discharge and the name and location of the surface stream into which the point source will be discharged shall be provided. The Department may require additional hydrologic information if the predictive evaluation required by § 89.35 indicates that adverse, offsite impacts are likely to occur or, if the data are necessary to properly plan for remedial and reclamation activities.

(ii) A surface water monitoring plan under § 89.59. The plan shall logically relate to the analysis of baseline information and the prediction of the probable hydrologic consequences of mining and reclamation required by § 89.35. The plan shall identify monitoring locations and monitoring frequency. The plan shall emphasize low flows and high flows and their variable quality. The plan shall provide for monitoring the minimum group of parameters in § 89.59, plus additional parameters that relate to the suitability of the surface water for current and approved postmining land uses, the protection of the hydrologic balance and locally potential problem-causing conditions at or near the mine site. Special emphasis shall be given to accurately measuring and documenting the quality and quantity of water discharging from the permit area so that onsite damages can be minimized and offsite damages are prevented to the greatest extent possible.

(b) The Department may require hydrologic tests, including, but not limited to, drilling, infiltration, other aquifer tests and stream flow measurements. The results shall be submitted to the Department.

**§ 89.35. Prediction of the hydrologic consequences.**

The operation plan shall include a prediction of the probable hydrologic consequences of the proposed underground mining activities upon the quantity and quality of groundwater and surface water within the proposed permit, adjacent and general areas under seasonal flow conditions, and whether underground mining activities may result in contamination, diminution or interruption of any water supplies within the permit or adjacent area. The prediction shall be prepared by a qualified hydrologist or engineer. The probable hydrologic consequences determination shall emphasize the anticipated responses of groundwater and surface water flow, its rate, direction and quality and quantity to the proposed underground mining activities. The prediction shall be based on baseline data collected at the proposed mine site or data statistically representative of the site or a combination of both. The prediction required by this section may be developed using modeling techniques, but the Department may require verification of any models.

**§ 89.36. Protection of the hydrologic balance.**

(a) The operation plan shall describe, with appropriate maps and cross sections, the measures to be taken to ensure the protection of the hydrologic balance and to prevent adverse hydrologic consequences. The measures shall address:

(1) The quality and quantity of surface and groundwater within the proposed permit and adjacent areas.

(2) The rights of present users to surface and groundwater.

(3) The control of surface and groundwater drainage into, through and out of the permit area.

(4) The treatment, when required, of surface and groundwater drainage from the permit area, and proposed quantitative limits on pollutants in discharges as provided in § 89.52 (relating to water quality standards, effluent limitations and best management practices).

(b) The operation plan shall also describe how the proposed mine development plan will prevent or minimize adverse hydrologic consequences. The plan shall consider:

(1) The location of mine openings to prevent postmining discharges as required by § 89.54 (relating to preventing discharges from underground mines).

(2) Possible alterations in the mine development plan or method of mining in response to adverse impacts on the hydrologic balance as indicated by the groundwater monitoring system.

(c) The operation plan shall include a description of the measures which will be taken to replace water supplies which are contaminated, diminished or interrupted by underground mining activities. An operator is not required to provide a replacement water supply prior to mining as a condition for securing a permit.

**PERFORMANCE STANDARDS**

**§ 89.67. Support facilities.**

(a) Support facilities required for, or used incidentally to, the operation of the underground mine, including, but not limited to, mine buildings, coal loading facilities at or near the mine site, coal storage facilities, equipment storage facilities, fan buildings, hoist buildings, preparation plants, sheds, shops and other buildings, shall be designed, constructed or reconstructed, and located to prevent or control erosion and sedimentation, water pollution and damage to public or private property. Support facilities shall be designed, constructed or reconstructed, maintained and used in a manner which, using the best technology currently available prevents:

(1) Damage to fish, wildlife and related environmental values.

(2) Additional contributions of suspended solids to streamflow or runoff outside the disturbed area. Contributions may not be in excess of limitations of State or Federal law.

(b) Surface mining activities associated with an underground mine shall be conducted in a manner which minimizes damage, destruction or disruption of services provided by oil, gas and water wells; oil, gas and coal-slurry pipelines; railroads; electric and telephone lines; and water and sewage lines which pass over, under or through a permit area, unless otherwise approved by the owner of those surface facilities and the Department.



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##### Subchapter F. SUBSIDENCE CONTROL AND WATER SUPPLY REPLACEMENT

##### § 89.141. Subsidence control: application requirements.

(a) *Geology.* The application shall include a description of the geology overlying the proposed permit area, from the surface down to the first stratum below the coal seam to be mined. The description shall include geologic conditions which are relevant to the likelihood or extent of subsidence or subsidence related damage. For the same strata, a detailed description and cross-section shall be provided from available test borings and core samples. A copy of the information developed for § 89.33 (relating to geology) may be used as appropriate to meet the requirements of this section.

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(d) *Subsidence control plan.* The permit application shall include a subsidence control plan which describes the measures to be taken to control subsidence effects from the proposed underground mining. The plan shall address the area in which structures, facilities or features may be materially damaged by mine subsidence. At a minimum, the plan shall address all areas within a 30° angle of draw of underground mining which will occur during the 5-year term of the permit. The subsidence control plan shall include the following information:

\* \* \* \* \*

(2) A narrative describing whether subsidence, if it is likely to occur, could cause material damage to or diminish the value or reasonably foreseeable use of any structures or could contaminate, diminish or interrupt water supplies.

(3) For each structure and feature, or class of structures and features, described in § 89.142a(c) (relating to subsidence control: performance standards), a detailed description of the measures to be taken to ensure that subsidence will not cause material damage to, or reduce the reasonably foreseeable uses of the structures or features. The measures shall include one or more of the following:

- (i) Backfilling or backstowing of voids.
  - (ii) Leaving support pillars of coal.
  - (iii) Leaving areas in which no coal extraction will occur.
  - (iv) Taking measures on the surface to prevent material damage or reduction of the reasonably foreseeable use of the structure or feature.
  - (v) Other measures approved by the Department.
- (4) A description of the anticipated effects of planned subsidence, if any.
- (5) A description of the measures to be taken to correct any subsidence-related material damage to the surface land.
- (6) A description of the measures to be taken to prevent irreparable damage to the structures enumerated in § 89.142a(f)(1)(iii)–(v), if the structure owner does not consent to the damage.
- (7) A description of the monitoring, if any, the operator will perform to determine the occurrence and extent of subsidence so that, when appropriate, other measures can be taken to prevent or reduce or correct damage in accordance with § 89.142a(e) and (f).

(8) A description of the measures to be taken to maximize mine stability and maintain the value and reasonably foreseeable use of the surface land.

(9) A description of the measures which will be taken to maintain the value and foreseeable uses of perennial streams which may be impacted by underground mining. The description shall include a discussion of the effectiveness of the proposed measures as related to prior underground mining under similar conditions.

(10) A description of the measures to be taken to prevent material damage to perennial streams and aquifers which serve as a significant source to a public water supply system.

(11) A description of utilities including type, nature of use, composition and approximate age of pipelines, and a description of the measures to be taken to minimize damage, destruction or disruption in utility service in accordance with § 89.142a(g) (relating to protection of utilities).

(12) A description of applicable measures to be taken to control subsidence under other statutes, including:

(i) The act of December 22, 1959 (P. L. 1994, No. 729) (52 P. S. §§ 3101–3109).

(ii) The Oil and Gas Act (58 P. S. §§ 601.101–601.605).

(iii) Section 419 of the State Highway Law (36 P. S. § 670-419).

(iv) The act of June 1, 1933 (P. L. 1409, No. 296) (52 P. S. § 1501).

(13) Other information as requested in accordance with the policies and procedures of the Department.

##### § 89.142. (Reserved).

##### § 89.142a. Subsidence control: performance standards.

(a) *General requirements.* Underground mining shall be planned and conducted in accordance with the following:

(1) The subsidence control plan required by § 89.141(d) (relating to subsidence control: application requirements) and the postmining land use requirements in § 89.88 (relating to postmining land use).

(2) The performance standards in subsections (b)–(j).

(3) Underground mining will not be authorized beneath structures where the depth of overburden is less than 100 feet (30.48 meters), unless the subsidence control plan demonstrates to the Department's satisfaction that the mine workings will be stable and that overlying structures will not suffer irreparable damage.

(4) The mine operator shall adopt measures to maximize mine stability. This subsection does not prohibit planned subsidence in a predictable and controlled manner or the standard method of room and pillar mining.

(b) *Structure surveys.*

(1) The operator shall conduct premining surveys of all structures listed under subsection (f)(1). The operator is relieved of the duty to conduct a premining survey if the operator has complied with the notice procedure in paragraph (2) and the landowner denies the operator access to conduct a premining survey or the structure was constructed less than 15 days before mining will enter the area described in subparagraph (ii).

(i) The premining survey shall document the existing condition of each structure and for structures that are recognized as historically or architecturally significant,

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the presence of any architectural characteristics that will require special craftsmanship to replace.

(ii) The premining survey shall be completed prior to the time that a structure falls within a 30° angle of draw of underground mining, or a larger area as required by the Department.

(iii) The results of a premining survey shall be submitted to the landowner within 30 days of completion and to the Department upon Department request.

(iv) The operator may not provide the results of a premining survey to persons other than the structure owner and the Department without the consent of the structure owner.

(v) The operator shall store survey results in a secure location and shall limit access to the results to authorized personnel.

(2) The operator will be relieved of the duty to conduct a premining survey if the operator submits evidence to the Department that:

(i) The operator notified the owner by certified mail or personal service of the landowner's rights as set forth in sections 5.4—5.6 of The Bituminous Mine Subsidence and Land Conservation Act (52 P.S. §§ 1406.5d—1406.5f).

(ii) The operator attempted to conduct a survey.

(iii) The landowner failed to provide the operator with access to the site to conduct a survey within 10 days of receipt of the operator's notice of intent to conduct the survey.

#### (c) *Restrictions on underground mining.*

(1) Unless the subsidence control plan demonstrates that subsidence will not cause material damage to, or reduce the reasonably foreseeable use of the structures and surface features listed in subparagraph (i)—(v), no underground mining shall be conducted beneath or adjacent to:

(i) Public buildings and facilities.

(ii) Churches, schools and hospitals.

(iii) Impoundments with a storage capacity of 20 acre-feet (2.47 hectare-meters) or more.

(iv) Bodies of water with a volume of 20 acre-feet (2.47 hectare-meters) or more.

(v) Bodies of water or aquifers which serve as significant sources to public water supply systems.

(2) The measures adopted by the operator to comply with paragraph (1) shall consist of one of the following:

(i) Providing a support area beneath the structure or surface feature to be protected where coal extraction is limited to 50%, and the following:

(A) The support area shall consist of pillars of coal of a size and in a pattern which maximizes bearing strength, and which is approved by the Department.

(B) For purposes of this section, the support area shall be rectangular in shape and determined by projecting a 15° angle of draw from the surface to the coal seam beginning 15 feet (4.57 meters) from the sides of the structure. For a structure on a slope of 5% or greater, the support area on the downslope side of the structure shall be extended an additional distance determined by multiplying the thickness of the overburden by the percentage

expressed as a decimal of the surface slope. A pillar lying partially within the support area shall be considered part of the support area and shall be consistent with the other support pillars in size and pattern.

(C) The area lying between two support areas shall be treated as a support area, when the distance between the two support areas is less than the depth of the overburden.

(D) If the Department determines there is a potential for material damage or reducing the reasonably foreseeable use of a structure or feature listed in paragraph (1), the Department may limit the percentage of coal extracted under or adjacent to the structure or feature as necessary to minimize the potential for material damage or reduction in reasonably foreseeable use.

(ii) Backfilling or backstowing of voids.

(iii) Leaving areas in which no coal extraction will occur.

(iv) Taking measures on the surface to prevent material damage or reduction in the reasonably foreseeable use of the structure or feature.

(v) Demonstrating that the structure or feature will not be materially damaged through an engineering report or a report of the effects of mining under similar conditions.

(vi) Initiating a monitoring program within a specified area to detect surface movement resulting from the underground mining. The program shall entail placing monitors sufficiently in advance of the underground mining so that if excessive subsidence occurs the underground mining can be stopped before the protected structures or features are damaged. In calculating the area to be monitored, a 30° angle of draw shall be used.

(3) If the measures implemented by the operator cause material damage or reduce the reasonably foreseeable use of the structures or features listed in paragraph (1), the Department will impose additional measures to further minimize the potential for these effects.

(d) *General measures to prevent or minimize irreparable damage.* If the Department determines and so notifies a mine operator that a proposed mining technique or extraction ratio will result in irreparable damage to a structure enumerated in subsection (f)(1)(iii)—(v), the operator may not use the technique or extraction ratio unless the building owner, prior to mining, consents to the mining or the operator, prior to mining, takes measures approved by the Department to minimize or reduce impacts resulting from subsidence to these structures.

(e) *Repair of damage to surface lands.* To the extent technologically and economically feasible, the operator shall correct material damage to surface lands resulting from subsidence caused by the operator's underground mining operations.

(f) *Repair of damage to structures.*

(1) *Repair or compensation for damage to certain structures.* Whenever underground mining conducted on or after August 21, 1994, causes damage to any of the structures listed in subparagraphs (i)—(v), the operator responsible for extracting the coal shall fully rehabilitate, restore, replace or compensate the owner for material damage to the structures resulting from the subsidence unless the operator demonstrates to the Department's satisfaction that one of the provisions of § 89.144a (relating to subsidence control: relief from responsibility) relieves the operator of responsibility.