

# APPENDIX

## I. Summary of Main Requirements of Performance Standards Concerning the Control of Erosion and Sedimentation

Topic of Corrective Measure	Activity Required	Section of Regulations
Minimization of Disturbed Area	Disturb smallest practicable area at any one time.	816.45(b)(1)
	For roads, do not clear vegetation for more than necessary width.	816.153(a)(3)
	Reclaim as contemporaneously as practicable.	816.100
	Limit the topsoil removal area.	816.22(f)
	Immediately redistribute topsoil wherever practicable.	816.23(a)
	Backfill and grade within the specified period.	816.101(a)
	Seed and plant as contemporaneously as practicable.	816.113
Buffer Strips	Do not disturb land within 100 feet of a perennial stream or a stream with a "biological community."	816.57(a)
	Mark the buffer zone.	816.11(3)
	Avoid disturbance to habitats of high value for fish and wildlife.	816.97(d)(4)
Diversion of Water around Mine Area	Divert runoff away from disturbed areas.	816.45(b)(4)
	Divert shallow groundwater flow and ephemeral streams.	816.43
	Divert perennial and intermittent streams.	816.44
Internalization of Drainage	Pass all surface drainage from disturbed area through a sedimentation pond.	816.42(a)(1)
	Retain sediment within disturbed area.	816.45(b)(3)
	Use straw dikes, riprap, mulches, etc. to reduce overland flow velocity, reduce runoff volume, or trap sediment.	816.45(b)(6)
Roads (Class I)	Control or minimize erosion and siltation during all stages of operation.	816.150(a)
	Locate to minimize erosion.	816.151(a)
	Prohibit stream fords.	816.151(c)
	Provide temporary erosion-control measures on road cuts.	816.152(c)
	Provide adequate drainage.	816.153
	With all transportation facilities, have concern for control of erosion.	816.180
Sedimentation Ponds	Construct sedimentation ponds before beginning any surface mining activities in the drainage area.	816.42(a)(5)
	Design and construct to provide a minimum sediment storage volume.	816.46(b)
	Design and construct to provide the required detention time.	816.46(c)
	Remove sediment as required.	816.46(h)
	Provide discharge structure to minimize disturbance.	816.47
	Clean ditches and spillways.	816.49(g)
	Stabilize embankment and surrounding area.	816.49(e)
	Do not remove pond until area has been restored.	816.46(u)
	Rehabilitate pond before abandoning permit area.	816.56
	Stabilization of Slopes	Selectively place topsoil stockpiles to provide stability.
Do not locate diversions so as to increase the potential for land slides.		816.43(d)
During blasting, assure that no slides are imminent.		816.65(d)(1)
Locate disposal areas for excess spoil on the most moderately sloping and naturally stable areas available.		816.71(e)
Where slope exceeds 1v:2.8h, construct keyway cuts to stabilize fill.		816.71(i)
Stabilize slopes on Valley Fills.		816.72
Stabilize slopes on Head-of-Hollow Fills.		816.73
Provide an undisturbed natural barrier at the elevation of lowest coal seam to prevent slides.		816.99(a)
Prevent placement of materials on the downslope for steep slopes.		826.12(a)
Regrade or stabilize rills and gullies.		816.106
Land Forms	Shape land to minimize water pollution.	816.41(d)(2)(i)
	Eliminate all highwalls, spoil piles, and depressions.	816.101(b)
	Construct cut-and-fill terraces if approved by RA.	816.102(b)
	Perform final grading, placement of topsoil, etc. along the contour.	816.102(e)
Revegetation	Select substitutes or supplements if available topsoil is insufficient for vegetation.	816.22(e)
	Scarify regraded spoil to promote root penetration.	816.24(a)
	Apply nutrients and soil amendments as needed.	816.25
	Protect topsoil from erosion before and after it is seeded and planted.	816.24(b)
	Seed and plant to achieve a permanent vegetative cover.	816.111(b)
	Substitute introduced species for native species only if approved.	816.112
	Provide revegetation according to the standards for success.	816.116

## II. Summary of Main Requirements of Performance Standards Concerning the Minimization of Changes in Water Quantity.

Topic of Corrective Measure	Activity Required	Section of Regulations	
Runoff Volume and Velocity	Limit area of removal of vegetative cover at any one time.	816.22(f)	
	Minimize changes in water quantity (hydrologic balance).	816.41(b)	
	On steep slopes, consider effects on entire watershed.	826.15(b)	
	Provide temporary vegetation as soon as practicable.	816.41(d)(2)(iii)	
	Use straw dikes, mulches, etc. to reduce velocity and volume of runoff.	816.45(b)(6)	
	Stabilize diversions with vegetation.	816.43(b)	
	Prohibit impoundments.	816.49(a)(5)	
	Do not discharge surface water into underground mine workings.	816.55	
	Backfill and grade to conserve soil moisture.	816.102(b)	
	Locate roads to minimize flooding downstream.	816.151(d)	
	Place excess spoil so as to avoid interference with natural drainage.	816.71(f)	
	Stream Conditions	Minimize changes in location of surface water drainage channels.	816.41(b)
		When permanent diversions are constructed or stream channels restored:	
- enhance natural riparian vegetation.		816.44(d)(1)	
- restore natural meandering shape.		816.44(d)(2)	
- include aquatic habitats.		816.44(d)(3)	
Provide stream buffer zones.		816.57	
Monitor surface water to establish the quantity of runoff.	816.52(b)		
Required Design Storms	Construct permanent diversions to pass safely the peak runoff from an event with a 10-year recurrence interval.	816.43(b)	
	Construct stream channel diversions to pass safely the peak runoff of a 10 yr-24 hr event for temporary diversions, a 100 yr-24 hr even for permanent diversions.	816.44(b)(2)	
	Construct sedimentation ponds to provide detention time for runoff from a 10 yr-24 hr event.	816.46(c)	
	Provide spillways for ponds to safely discharge runoff from a 25 yr-24 hr event.	816.46(i)	
	If embankment of pond is more than 20 feet in height, provide spillway for 100 yr-24 hr event.	816.46(q)(1)	
	Divert runoff of a 100 yr-24 hr event away from Valley fills.	816.72(d)	
	Divert runoff of a 100 yr-24 hr event away from Head-of-Hollow fills.	816.73(c)	
	Provide adequate drainage structures on roads to safely pass peak runoff from a 10 yr-24 hr event.	816.153	
Groundwater Recharge Capacity	Provide a rate of recharge after mining that approximates the premining recharge rate.	816.51	
	Monitor infiltration rate.	816.52(a)	
	Conduct blasting so as to not alter the course of groundwater.	816.65(h)	
	Maintain base flow in streams to avoid adverse impact on fish.	816.97	
Water Supply	Assure that water impoundments not result in diminution of quantity of water available for surrounding population.	816.49(a)(4)	
	Maintain groundwater level.	816.52(a)	
	Replace water supply for landowner whose source has been contaminated through mining.	816.54	
	Conduct pre-blasting survey to assess the water supply.	816.62(b)	
	Do not blast within the given minimum distance from water supply wells or supply lines.	816.65(f)	
	In order to provide for postmining land use, ensure that sufficient water will be available.	816.133(c)(9)	
	Transfer a monitoring well for further use as a water supply well only with approval of RA.	816.53	

## III. Summary of Main Requirements of Performance Standards Concerning the Minimization of Changes in Water Quality.

Topic of Corrective Measure	Activity Required	Section of Regulations
Identification of Acid-Forming Overburden	During the process of preparing the surface mining permit application:	
	- collect test borings or core samples of each stratum and analyze them.	779.14(b)(1)
	- use chemical analyses to identify those horizons which contain potential acid-forming material.	779.14(b)(1)(iv)
Placement of Acid-Forming Spoil	- analyze coal seam to determine sulfur, pyrite, and marcasite content.	779.14(b)(1)(v)
	Selectively place and seal acid-forming material.	816.41(d)(2)(vii)
	Bury acid-forming spoil as soon as practicable.	816.48
	Cover acid-forming material with a minimum of 4 feet of nontoxic spoil.	816.103(a)(1)
	Place backfilled materials so as to minimize contamination of groundwater.	816.50(a)
	Place spoil in a manner to ensure that runoff will not degrade surface or groundwaters.	816.71(a)(1)
	Place backfilled materials so as to minimize adverse effects on groundwater.	816.101(b)(2)
	Do not bury acid-forming materials close to a drainage course.	816.103(a)(4)
Control Water Flow to Prevent Contact With Acid-Forming Materials	If necessary, treat these materials to neutralize toxicity.	816.103(a)(2)
	Do not use acid-forming material in road surfacing.	816.154(b)
	Use changes in flow of drainage in preference to the use of water treatment facilities.	816.41(d)(1)
	Direct overland flow from disturbed areas to prevent contact with acid-forming material.	816.43
	Use measures, as required by RA, to avoid any runoff contact with acid-forming material.	816.48(b)
	Prevent leaching of acid-forming materials into surface or groundwaters.	816.103(b)
Acid Mine Drainage	Construct an underdrain system to prevent infiltration of water into spoil.	816.71(l)
	Treat water discharged from disturbed areas to meet the required effluent limitations.	816.42(a)(7)
	Provide automatic lime feeder or other automatic neutralization process to raise pH above 6.0.	816.42(c)
	Control mine excavations to avoid harm resulting from discharge of acid mine drainage.	816.50(b)
	Monitor groundwater quality.	816.52(a)
	Monitor surface water quality.	816.52(b)
	For postmining land use, ensure that quality of impounded water shall be suitable on a permanent basis.	816.49(a)(1)

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