

**Appendix C: Interstate Mining Compact Commission  
Solicitation Sheet Response Summary**



## **Interstate Mining Compact Commission Solicitation Sheet**

### **Summary of Responses Received from 20 States**

Prepared by DynCorp, I & ET

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On September 3, 1998, the Interstate Mining Compact Commission distributed a Solicitation Sheet to member states in support of continuing efforts to collect data and information required for proposal of a remining subcategory under 40 CFR 434. The Solicitation Sheet was intended to gather information required to assess current industry remining activity and potential. The Solicitation also was intended to target sources of data and information available for the development of BMP guidance.

Twenty-two responses from twenty states have been received, and are summarized in the tables included in this Appendix. The information has been used to develop a profile of the remining industry, determine the potential for remining activity, and provide an indication of the types and efficiencies of BMPs currently being implemented during remining operations.

Specific questions that were included in the solicitation are outlined below:

- 1) Types of remining permits issued: Number of traditional Rahall permits
  - Number of non-Rahall remining permits
  - Other remining-type projects
  - % total permits characterized as remining
  - State's definition of "Remining"
  - State's interpretation of "Pre-existing discharge"

2) Characteristics of remining operations:

Coal refuse piles, surface mines, underground mines  
Permits with discharges not meeting BAT standards  
Geographic distribution of remining sites  
Recent remining permit issuance (12 months)

3) Characteristics of potential remining operations: coal refuse piles, surface mines, underground mines, discharges

4) Range of BMPs used in remining operations

5) Indication of available data or information regarding implementation of BMPs

6) Indication of state's experience with BMPs in terms of success or failure

7) Stream miles impacted by abandoned mine drainage

8) Industry profile of remining operations: mining companies, employees, annual production, potential coal reserves for remining

**Question 1. What type of remining permits have been approved in your state?**

Question	Responses by State														Totals 20 States									
	AK	AL	CO	IL	IN	KY(1) (SMRE)	KY(2) (CWA)	MD	MO	MS(1) (CWA)	MS(2) (SMCRA)	MT	ND	NM		OH	PA	TN	TX	UT	VA	WV	WY	
1a. Number of traditional Rehall (Sec. 301(p) of CWA) permits issued.	0	71	0	0	0	4	4	2	0	0	0	0	--	0	3	300	0	0	0	0	3	8	--	391
1b. Number of non-Rehall (i.e. those that pre-date Rehall or those where the operator accepts liability for discharges and is meeting BAT) remining permits issued.	0	?	0	41	1	N/A	?	21	20	0	0	0	--	--	?	40	350-450	0	0	0	158	--	--	631-731
1c. Other remining-type projects (e.g. AML) or permits issued. Please specify the nature of these "other" projects or permits:	0	1	15	0	1	1	1	0	0	0	0	14	--	--	100M	3	0	0	0	0	501	1	--	638
1d. What percentage of your total permits/inspectable units would be characterized as "remining permits."	0	?	0	0	1	40	?	30	15(1)	0	0	0	--	0	60-70	95/50	60	0	0	75-80	0.4	--	--	

Information reported as submitted by State.

See additional footnotes (attached).

N/A = Not applicable.

? = Unknown

--- = No response.

**Footnotes for Question 1 Summary Table:**

<b>Question 1c. Additional Footnotes</b>	
(a)	AL Blue Creek Project (North Johns Area)
(b)	CO Coal refuse pile stabilization - 1983 - present; Surface mined areas- Overburden/Highwalls
(c)	IN The one accepting liability and maintaining compliance in affected area , runoff is carbon extraction from a pre-SMCRA slurry pond. The other is remining an area of abandoned and forfeited interim permits for deeper coal seams.
(d)	KY An AML project for the re-processing and reclamation of a 200 acre coal waste disposal site.
(e)	KY An AML project for the reclamation of a 200 acre coal waste disposal site.
(f)	MT (1) coal mining permits and (3) bond forfeiture permits. 100 - 75 no cost contracts, 25 direct negotiated contracts with states. 1 - FGD-by-product application at an abandoned coal mine in Cosocon County where an underground mine seal was installed.
(g)	OH
(h)	PA No cost contract (1); Mine fires (2).
(i)	TN All remining operations have been SMCRA permits.
(j)	VA Underground, Loading facilities, AML Projects, Refuse Piles
(k)	WV Unencountered discharge. Company dewatering a mine pool, that has a pre-existing discharge, to access their mine reserves.
<b>Question 1d. Additional Footnotes</b>	
(l)	MO Of the 55 permits which still retain some level of reclamation liability in Missouri, approximately 15% could be characterized as "remining permits" as per our earlier definition.  <i>Earlier definition: "remining permit" as any surface mining permit which includes at least some "previously mined areas" within the permit boundaries, regardless of whether or not the permittee intends to extract coal from those previously mined areas.</i>
(m)	PA Anthracite 95%; Bituminous 50%.

**Question 1e. Does your definition of remining differ from that set forth in the cover memo to the solicitation? If so, please explain. (See cover memo definition below).**

State	Response
AK	No.
AL	Unknown.
CO	No response.
IL	Illinois deals with "remining" by including all previously disturbed areas into our Title V program. Permits that include previously disturbed areas must meet all applicable performance standards.
IN	We concur with the definitions presented but would also include remining of SMCRA regulated sites that had been abandoned prior to completion of reclamation obligations.
KY(1)	The DSMRE remining definition mirrors the Federal definition. For KY Pollutant and Discharge Elimination System (KPDES) issuance, the definition is the same as the Rahall Amendment definition.
KY(2)	For purposes of KPDES permit issuance, the definition of remining is the Rahall Amendment definition.
MD	No.
MO	Land Reclamation Program will define "remining permit" as any surface mining permit which includes at least some "previously mined areas" within the permit boundaries, regardless of whether or not the permittee intends to extract coal from those previously mined areas.
MS(1)	MS currently does not have a definition for "remining."
MS(2)	No.
MT	"Remining" means conducting surface coal mining and reclamation operations that affect previously mined areas (for example, the recovery of additional mineral from existing gob or tailings piles)
ND	No Response.
NM	None.
OH	It includes mining and reclamation.
PA	No.
TN	No.
TX	No.
UT	Zero.
VA	No.
WV	NPDES Program uses the Rahall Amendment.
WY	No Response.

Information reported as submitted by State.

Cover memo definition:

*The remining regulations promulgated by OSM define remining as "conducting surface coal mining and reclamation operations which affect previously mined areas." (30CFR 701.5) "previously mined area, in turn, is defined as "land previously mined on which there no surface coal mining operations subject to the standards of the [Surface Mining Control and Reclamation] Act." Remining as defined in the 1987 Rahall Amendment to the Clean Water Act refers to "a coal mining operation which begins after the enactment of [Rahall Amendment], at a site on which coal mining was conducted before the effective date of the Surface Mining Control and Reclamation Act of 1977."*

*Remining can also be defined specifically as the surface mining of abandoned surface and/or underground mines that originally created and continue to discharge waters that fail to meet the applicable effluent standards. Remining permits integrate pollution abatement procedures within the operation plans and operations are designed and conducted to preclude further water quality degradation, with the intent to improve the pre-existing water quality. Alternate effluent limits for pre-existing discharge, based primarily on background water quality and quantity, are established for monitoring operations. Remining should result in an improvement in water quality operations and the inherent abatement programs.*



**Question 1f. How does your state interpret the term "pre-existing discharge"? (See cover memo definition below).**

State	Response
AK	None.
AL	No response.
CO	No response.
IL	There are no variances granted because of pre-existing non-complying discharges.
IN	Any non-complying discharge from coal mine areas, mined before Aug 2, 1977, for which there is no continuing legal responsibility under Indiana Coal regulatory programs.
KY(1)	For KPDES permit issuance, pre-existing discharges are those discharges emanating from a potential remining site prior to any disturbance. For DSMRE permit issuance, the term is interpreted the same as the definition of remining.
KY(2)	Pre-existing discharges are those discharges coming from a potential remining site prior to any disturbance.
MD	Same as Rahall Amendment
MO	Neither the Land Reclamation Program (LRP) nor the Water Pollution Control Program (WPCP) of Missouri's DNR have a specific definition for the term "pre-existing discharge" in their rules or statutes.
MS(1)	There is no interpretation of "pre-existing discharge."
MS(2)	No response.
MT	No definition.
ND	No response.
NM	None.
OH	Means a discharge from surface or subsurface water which is located on previously mined areas prior to B-3-77.
PA	Discharge from abandoned mine lands having the chemical characteristics of mine drainage, which does not meet BAT effluent limits and will be affected by new mining operation.
TN	Any discharge prior to permit application.
TX	No remining applications have been filed, therefore the Railroad Commission has not had the opportunity to interpret the term "pre-existing discharge."
UT	None.
VA	A discharge that was created by mining prior to August 3, 1977.
WV	Means any discharge the time of permit application under this subsection 301 (p) of the Federal Clean Water Act. A pre-existing discharge may originate from within the coal remining operation or from outside the coal remining operation provided there is a demonstration of hydrological connection between the coal remining operation and the pre-existing discharge.
WY	No response.

Information reported as submitted by State.

Cover memo definition:

*"Pre-existing discharges" as defined in the Rahall Amendment refers to any "discharge at the time of permit application under [the Rahall Amendment]." Alternatively, pre-existing discharges may be defined as pollutional discharges resulting from previous mining and not encountered during active mining operations.*



**Question 2a. With regard to the permits identified in question 1, what are the characteristics of your state's existing remining operations? If exact numbers are unknown, please provide estimates.**

State	Number of coal refuse piles		Number of surface mined sites		Number of underground mined sites		Number of remaining permits that involve discharges not meeting BAT standards	
	Active Mines Under Permit	AML Projects	Active Mines Under Permit	AML Projects	Active Mines Under Permit	AML Projects	Active Mines Under Permit	AML Projects
AK	0	0	0	0	0	0	0	0
AL	4	1	54	--	13	--	?	1
CO	0	4	0	12	0	2	0	0
IL	40	0	1	0	0	0	0	0
IN	1	0	34	--	2	--	0	--
KY(1-SMRE)	--	--	--	--	--	--	--	--
KY(2-CWA)	3	1	1	--	2	--	5	--
MD	0	--	17	--	21	--	2	--
MO	0	0	2	0	0	0	0	0
MS(1-CWA)	0	0	1	0	0	0	0	0
MS(2-SMCRA)	0	0	0	0	0	0	0	0
MT	1	--	11	--	1	--	0	--
ND	--	--	--	--	--	--	--	--
NM	0	0	0	0	0	0	0	0
OH	0	--	2	1	1	--	0	--
PA	173	0	1278*	0	655	2	616	0
TN	5 to 10	0	135 - 180	0	210 - 260	0	0	0
TX	0	0	0	0	0	0	0	0
UT	5	0	2	0	32	N/A	0	N/A
VA	33	38	77	117	107	104	0	2
WV	1	--	7	--	1	--	9	--
WY	--	--	--	--	--	--	--	--
<b>Totals</b>	<b>266 - 271</b>	<b>44</b>	<b>1622 - 1667</b>	<b>130</b>	<b>1045 - 1095</b>	<b>108</b>	<b>632</b>	<b>3</b>

Information reported as submitted by State.

? = Unknown.

-- = No response.

N/A = Not Applicable.

\* With remining.

Question 2b and 2c.

State	2b. How are your remining sites distributed geographically throughout your state (by region, coalfield, etc.)?	2c. How many active remining sites have been permitted in the last 12 months (if available)?
AK	N/A	0
AL	Both	8
CO	All coal fields are affected.	0
IL	70% in Southern IL.	1
IN	SW part of state is coal region.	0
KY(1-SMRE)	There are 2 coalfields in KY; Eastern & Western. Remining occurs in both regions, extensively in Eastern.	--
KY(2-CWA)	All are in the Hopkins & Webster Counties in the Western KY coalfields.	1
MD	Majority located in Allegany Co., Georges Creek area.	2
MO	Historically, sites were located in the North Central and Southwest parts of MO. All remining "active" sites are in Southwest MO.	1
MS(1-CWA)	This issue is not addressed. MS might list sites by county or region.	0
MS(2-SMCRA)	No previously mined sites exist.	0
MT	Region.	0
ND	No response.	--
NM	No remining sites in NM.	N/A
OH	Eastern 1/3 of Ohio affected.	0
PA	See attached map for distribution of "Rahall" sites.	--
TN	Non-Rahall remining sites are distributed evenly throughout the TN coalfield (Cumberland Plateau).	4
TX	No remining sites currently identified.	0
UT	Utah mines sites are located in two major coalfields; the Book Cliffs and Wasatch.	0
VA	All (3 Rahall) are located within one area of the coalfields (Wise County).	16
WV	Northern coalfields.	3
WY	N/A	--
<b>Total</b>		<b>36</b>

Information reported as submitted by State.  
N/A = Not Applicable.

**Question 3. What are the characteristics of your state's potential remining operations?  
If exact numbers are unknown, please provide best estimates. Numbers  
can be drawn from AMLIS or other sources.**

State	Number of coal refuse piles	Number of surface mined sites	Number of underground mined sites	Number of Permits that involve discharges not meeting BAT
AK	3	5	1	1
AL	1	--	--	1
CO	400	50	850	<5
IL	30	10	12	0
IN	150	453	615	0
KY(1-SMRE)	200	400-600	800-1000	--
KY(2-CWA)	?	?	?	?
MD	10	75	75	50
MO	0	0	0	0
MS(1-CWA)	0	1	0	0
MS(2-SMCRA)	0	0	0	0
MT	1	11	1	0
ND	--	--	--	--
NM	N/A	N/A	N/A	N/A
OH	1,095 acres	23,000 acres	4,000	0
PA	858	19,128 (a)	8,683 (b)	230
TN	182 acres	46,000 acres	800	?
TX	0	0	0	0
UT	5	2	32	0
VA	400-450	750	800	0
WV	--	3	--	All
WY	0	0	0	?
<b>Totals</b>	<b>2,058-2,108 and 1,277 Acres</b>	<b>1,760-1,960 and 227,960 Acres</b>	<b>7,986-8,186 and 31,587 Acres</b>	<b>287</b>

Information reported as submitted by State.

-- = No Response.

N/A = Not Applicable.

? = Unknown.

(a) 19,128 Features (158,960 Acres).

(b) 8,683 Features ( 31,587 Acres).



**Question 4.** Using the following list and chart, please indicate the range of best management practices that have been employed in remining permits or in other mining applications in your state. Also, if available, please provide the number of BMPs employed, indicating the number used at active remining sites, those used in other mining applications (e.g., AML projects).

	4a. Whether Employed																Totals (Y/N)							
	AK	AL	CO	IL	IN	SMRE) (KY(1)	(CWA) (KY(2)	MD	MO (CWA)	MS(1) (CWA)	MS(2) (SMCRA)	MT	ND	NM	OH	PA		TN	TX	UT	VA	WV	WY	
<b>I. Hydrologic BMP's</b>																								
A. Exclusion of Infiltrating Surface Water																								
1. Diversion Ditches																								
a. Above highwell	Y	Y	--	Y	Y	Y	Y	--	N	Y	N/A	Y	--	N	Y	Y	--	Y	Y	Y	Y	Y	N/A	6/1
b. On the spoil	Y	Y	Y	Y	Y	Y	Y	--	N	N	N/A	N	--	N	Y	Y	Y	--	Y	Y	Y	Y	N/A	11/3
2. Regrading of dead spoils																								
a. Elimination of closed contour depressions & pits	Y	Y	Y	Y	Y	Y	Y	--	N	Y	N/A	N	--	N	Y	Y	Y	--	Y	Y	Y	Y	N/A	10/4
b. Creation of sufficient slopes to aid runoff of precip.	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9/1
3. Lowperm seability caps																								
a. Clays & other natural materials	--	Y	--	--	Y	Y	Y	--	N	Y	N/A	N	--	N	Y	Y	Y	--	Y	Y	Y	Y	N/A	11/4
b. Coal combustion wastes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4/6
c. Cement, bentonite & sim. materials	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7/5
d. Geotextiles	Y	--	N	Y	N	Y	N	--	N	N	N/A	Y	--	N	Y	Y	Y	--	Y	Y	Y	Y	N/A	6/5
B. Exclusion of Infiltrating Ground Water																								
1. Grout Curtains																								
a. Above the highwell	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2/1
b. At the highwell	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2/1
i. Synreclamation	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0/6
ii. Post reclamation	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0/7
2. Diversion Wells																								
a. Above the highwell	Y	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1/8
b. At the highwell	Y	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3/7
c. Horizontal wells	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0/9
3. Highwell Drains																								
a. Horizontal	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4/6
b. Chimney drains	Y	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3/7
4. Pit floor drains																								
a. Linear (directly down dip)	Y	--	Y	N	N	N	N	--	N	N	N/A	Y	--	N	Y	Y	Y	--	Y	Y	Y	Y	N/A	4/6
b. Forked or dendritic	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1/8
5. Daylighting (surf. mining of aband. undergr. mine work)																								
6. Redirecting water from aband. undergr. mine workings																								
a. Sealing underground workings	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4/6
b. Installation of drains directly from underground mines	--	Y	N	Y	N	Y	Y	--	N	N/A	N/A	N	--	N	Y	Y	Y	--	Y	Y	Y	Y	N/A	7/5
c. Sealing of auger holes	--	Y	N	Y	N	Y	Y	--	N	N/A	N/A	N	--	N	Y	Y	Y	--	Y	Y	Y	Y	N/A	7/4

4a. Whether Employed

	AK	AL	CO	IL	IN	KY (1) (SMRE)	KY (2) (CWA)	MD	MO	NC	ND	NM	OH	PA	TN	TX	UT	VA	WV	WY	Totals (Y/N)
7. Sealing of underground in line entries (via flooding)	--	Y	N	Y	N	N	--	N	N	N/A	N/A	ftbd	--	N	Y	N	--	Y	N	N/A	4/8
8. Hydrologic routing of ground water	--	N	--	--	N	Y	--	N	N	--	N/A	N	--	N	--	--	--	Y	Y	N/A	3/6
a. Crusting	--	--	N	N	N	N	--	--	N	N/A	N	--	--	N	N	--	--	Y	Y	N/A	1/10
b. Limestone Drains	--	Y	N	N	N	Y	--	N	N	N/A	N	--	--	Y	Y	--	--	Y	Y	N/A	6/5
c. Pit floor sealing	--	--	N	N	N	N	--	--	N	N/A	N	--	--	Y	N	--	--	--	Y	N/A	2/8
9. Construction of high-water retention soils	--	N	N	N	N	N	--	N	N	N/A	N	--	N	?	N	--	--	--	N	N/A	0/12
C. Other	--	--	Y	--	--	N	--	--	N	N/A	--	--	--	--	N	--	--	--	N	N/A	1/4
<b>II. Geotechnical</b>																					
A. Alkaline addition-strategic placement	--	Y	--	--	Y	Y	--	--	N	N/A	N	--	Y	--	--	--	--	--	Y	N/A	5/2
1. Limestone or calcareous shales	--	Y	Y	Y	Y	Y	--	N	N	N/A	N	--	--	Y	Y	--	--	--	Y	N/A	9/3
2. Coal combustion wastes	--	--	N	Y	Y	N	--	Y	N	N/A	N	--	Y	Y	Y	--	--	--	Y	N/A	7/5
3. Others	--	--	--	--	--	N	--	--	N	N/A	N	--	--	--	N	--	--	--	Y	N/A	0/4
B. Induced Alkaline recharge	--	--	--	--	N	N	--	--	N	N/A	N	--	N	--	--	--	--	--	Y	N/A	1/5
1. Trenches	--	--	N	Y	N	--	--	--	N	N/A	N	--	--	Y	Y	--	--	--	N	N/A	3/6
2. Camouflage funnels	--	--	N	N	N	--	--	--	N	N/A	N	--	--	N	N	--	--	--	Y	N/A	0/9
C. Special handling of AFMs	--	Y	--	--	Y	Y	--	--	N	N/A	N	--	N	--	N	--	--	--	Y	N/A	6/3
1. Above postmining water table	--	N	Y	Y	Y	Y	--	Y	N	N/A	N	--	--	Y	Y	--	--	Y	Y	N/A	9/3
2. Removed from potential ground water flowpath	--	Y	N	Y	Y	Y	--	N	N	N/A	N	--	--	N	Y	--	--	Y	Y	N/A	8/5
D. Anionic Surfactants	--	Y	N	--	N	N	--	N	N	N/A	N	--	--	N	Y	--	--	Y	N	N/A	3/9
E. Other	--	--	--	--	--	--	--	--	N	N/A	--	--	--	--	N	--	--	Y	N	N/A	1/3
<b>III. Revegetation</b>																					
A. Runoff promoting plants	--	--	N	--	N	N	--	N	Y	N/A	N	--	--	N	N	--	--	N	N/A	N/A	2/10
B. High water-use plants	Y	--	N	--	N	N	--	N	Y	N/A	N	--	--	Y	N	--	--	--	N	N/A	3/8
C. Use of biosolids	--	--	N	--	Y	Y	--	N	N	N/A	Y	--	--	Y	Y	--	--	--	N	N/A	5/5
D. Other	--	--	--	--	--	N	--	--	N	N/A	--	--	Y	--	N	--	--	--	N	N/A	1/5
<b>IV. Passive Treatment</b>																					
A. Anoxic limestone drains installed in backfill	--	Y	N	Y	Y	Y	--	N	N	N/A	N	--	--	N	Y	Y	--	Y	Y	N/A	8/6
B. Constructed wetlands	--	Y	Y	Y	Y	Y	--	--	Y	N/A	N	--	--	N	Y	Y	--	Y	N	N/A	10/3
C. SAPS	--	--	--	--	N	N	--	N	?	N/A	?	--	--	N	Y	Y	--	--	N	N/A	2/6
D. Open limestone trenches	--	Y	N	N	N	Y	--	N	Y	N/A	N	--	--	Y	Y	--	--	Y	N	N/A	7/7
E. Yall's manganese oxide system	--	--	N	N	N	N	--	Y	N	N/A	?	--	--	Y	Y	--	--	--	N	N/A	3/8
F. Other	--	--	N	--	--	N	--	--	N	N/A	--	--	--	Y	N	--	--	--	N	N/A	1/6
<b>V. Geotechnical</b>																					
A. Elimination of landslides	--	--	--	--	--	--	--	--	N	N/A	--	--	--	--	--	--	--	--	Y	N/A	1/1
1. Regrading for slope stabilization	Y	--	--	--	N	Y	--	Y	N	N/A	N	--	--	N	Y	--	--	Y	Y	N/A	5/5
2. Installation of key ways	Y	--	Y	Y	N	Y	--	Y	N	N/A	Y	--	--	Y	Y	--	--	Y	Y	N/A	11/3
B. Other	--	--	--	--	--	R	--	--	N	N/A	--	--	--	--	N	--	--	--	N	N/A	7/6
C. Other	--	--	--	--	--	--	--	--	N	N/A	--	--	--	--	N	--	--	--	N	N/A	0/3

Information reported as submitted by State.  
 -- = No Response  
 ftbd = To be done.  
 N/A = Not Applicable.  
 R = Retaining Walls.

4b. Number of (Active) Remaining Sites

	AK	AL	CO	IL	IN	IA	KS	MO	ND	OH	PA	TN	TX	UT	VA	WV	WY	Totals	
<b>I. Hydrologic BMPs</b>																			
A. Exclusion of Infiltrating Surface Water																			
1. Diversion Ditches	--	71	0	0	2	--	--	0	N/A	N/A	--	--	Unk.	--	0	Y	3	0	5
a. Above highwell	--	--	0	0	2	--	--	0	N/A	N/A	--	--	Unk.	--	0	33	3	0	109
b. On the spoil	--	--	0	0	--	--	4	0	N/A	N/A	--	--	Unk.	--	0	21	2	0	27
2. Regrading of dead spoils	--	6	0	--	1	--	--	0	N/A	N/A	--	--	Unk.	--	0	28	0	0	28
a. Elimination of closed contour depressions & pits	--	8	0	--	--	--	10	0	N/A	N/A	--	--	Unk.	--	0	6	7	0	30
b. Creation of sufficient slopes to aid runoff of precip.	--	--	0	0	--	--	3	0	N/A	N/A	--	--	Unk.	--	0	1	7	0	26
3. Lowpermability caps	--	2	0	--	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	Y	1	0	3
a. Clays & other natural materials	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	3	--	0	3
b. Coal combustion wastes	--	--	0	0	--	--	2	0	N/A	N/A	--	--	Unk.	--	0	1	0	0	3
c. Cement, bentonite & sim. materials	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
d. Geotextiles	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
B. Exclusion of Infiltrating Ground Water																			
1. Grout Curtains	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
a. Above the highwell	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	2	0	0	2
b. At the highwell	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	2	0	0	2
i. Synreclamation	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
ii. Post reclamation	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
2. Diversion Wells	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
a. Above the highwell	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	2	0	0	2
b. At the highwell	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	2	0	0	2
c. Horizontal wells	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
3. Highwell Drains	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
a. Horizontal	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
b. Chimney drains	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
4. Pit floor drains	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	Y	1	0	1
a. Linear (directly down dip)	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	4	1	0	5
b. Forked or denuditic	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
5. Daylighting (surf. mining of aband. undergr. mine workin	--	13	0	0	--	--	--	2	0	N/A	N/A	--	Unk.	--	0	20	4	0	39
6. Redirecting water from aband. undergr. mine workings	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	16	--	0	16
a. Sealing underground workings	--	13	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	1	0	14	
b. Installation of drains directly from underground mines	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	31	1	0	32
c. Sealing of auger holes	--	2	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	23	1	0	26
7. Sealing of underground mine entries (via flooding)	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	4	--	0	4
8. Hydrologic routing of ground water	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	23	7	0	30
a. Grouting	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	13	--	0	13
b. Limestone Drains	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	6	1	0	7
c. Pit floor sealing	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	7	0	0	7
9. Construction of high-water retention soils	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
C. Other	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
<b>II. Geochemical</b>																			
A. Alkaline addition-strategic placement																			
1. Limestone or calcareous shales	--	3	0	--	1	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	8	0	11
2. Coal combustion wastes	--	--	0	0	--	--	2	0	N/A	N/A	--	--	Unk.	--	0	--	3	0	5
3. Others	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	0	0	0
B. Induced Alkaline recharge																			
1. Trenches	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	1	0	1
2. Carrucio-like tunnels	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	--	--	0	0
C. Special handling of AFMs																			
1. Above postmining water table	--	5	0	--	--	--	12	0	N/A	N/A	--	--	Unk.	--	0	Y	7	0	12
	--	--	0	0	--	--	--	0	N/A	N/A	--	--	Unk.	--	0	7	7	0	26

4b. Number of (Active) Remining Sites

	AK	AL	CO	IL	IN	IA	KS	LA	MD	MO	MS(1) (CWA)	MS(2) (SMCRA)	MT	ND	NM	OH	PA	TN	TX	UT	VA	WV	WY	Totals
2. Removed from potential ground water flowpath	--	5	0	0	--	--	--	--	0	0	N/A	N/A	--	--	--	--	0	Unk.	--	0	16	7	0	28
D. Anionic Surfactants	--	1	0	--	--	--	--	--	0	0	N/A	N/A	--	--	--	--	0	Unk.	--	0	--	--	0	1
E. Other	--	--	0	--	--	--	--	--	0	0	N/A	N/A	--	--	--	--	--	Unk.	--	0	7	--	0	7
<b>III. Revegetation</b>																								
A. Runoff promoting plants	--	--	0	--	--	--	--	--	0	0	N/A	N/A	--	--	--	--	--	Unk.	--	0	--	8	0	8
B. High water-use plants	--	--	0	--	--	--	--	--	0	0	N/A	N/A	--	--	--	--	0	Unk.	--	0	3	--	0	3
C. Use of biosolids	--	--	0	--	--	--	--	--	0	0	N/A	N/A	--	--	--	--	0	Unk.	--	0	--	--	0	0
D. Other	--	--	0	--	--	--	--	--	0	0	N/A	N/A	--	--	--	--	Some	Unk.	--	0	--	--	0	0
<b>IV. Passive Treatment</b>																								
A. Anoxic limestone drains installed in back fill	--	--	0	--	--	--	--	--	0	0	N/A	N/A	--	--	--	--	--	Unk.	--	0	Y	1	0	1
B. Constructed wetlands	--	1	0	0	--	--	--	--	0	0	N/A	N/A	--	--	--	--	Few	Unk.	--	0	3	1	0	5
C. SAPS	--	2	0	0	--	--	--	--	0	0	N/A	N/A	--	--	--	--	Some	Unk.	--	0	2	--	0	4
D. Open limestone trenches	--	--	0	--	--	--	--	--	0	0	N/A	N/A	--	--	--	--	Few	Unk.	--	0	7	--	0	9
E. Val's manganese oxide system	--	--	0	0	--	--	--	1	0	0	N/A	N/A	--	--	--	--	Few	Unk.	--	0	--	--	0	1
F. Other	--	--	0	0	--	--	--	--	0	0	N/A	N/A	--	--	--	--	Few	Unk.	--	0	--	--	0	0
<b>V. Geotechnical</b>																								
A. Elimination of landslides	--	--	0	--	--	--	--	2	0	0	N/A	N/A	--	--	--	--	0	Unk.	--	0	15	8	0	25
1. Regrading for slope stabilization	--	--	0	0	--	--	--	15	0	0	N/A	N/A	--	--	--	--	0	Unk.	--	0	15	8	0	38
2. Installation of key ways	--	--	0	0	--	--	--	1	0	0	N/A	N/A	--	--	--	--	0	Unk.	--	0	9	--	0	10
B. Other	--	--	0	--	--	--	--	--	0	0	N/A	N/A	--	--	--	--	--	Unk.	--	0	--	--	0	0

Information reported as submitted by State.

N/A = Not Applicable.

Unk = Unknown.

-- = No Response.

	4c. Number of other Mining Applications																	Totals						
	AK	AL	CO	IL	IN	KY (1) (SMRE)	KY (2) (CWA)	MD	MO	MS(1) (CWA)	MS(2) (SMCRA)	MT	ND	NM	OH	PA	TN		TX	UT	VA	WV	WY	
I. Hydrologic BMPs																								
A. Exclusion of Infiltrating Surface Water																								
1. Diversion Ditches																								
a. Above highwall				A																				
b. On the spoil			5	A	2-5																			
2. Regrading of dead spoils																								
a. Elimination of closed contour depressions & pits																								
b. Creation of sufficient slopes to aid runoff of precip.																								
3. Low-permeability caps																								
a. Clays & other natural materials																								
b. Coal combustion wastes																								
c. Cement, bentonite & sim. materials																								
d. Geotextiles																								
B. Exclusion of Infiltrating Ground Water																								
1. Grout Curtains																								
a. Above the highwall																								
b. At the highwall																								
i. Syn-reclamation																								
ii. Post-reclamation																								
2. Diversion Wells																								
a. Above the highwall																								
b. At the highwall																								
c. Horizontal wells																								
3. Highwall Drains																								
a. Horizontal																								
b. Chimney drains																								
4. Pit floor drains																								
a. Linear (directly down dip)																								
b. Forked or dendritic																								
5. Daylighting (surf. mining of aband. undergr. mine workings)																								
6. Redirecting water from aband. undergr. mine workings																								
a. Sealing underground workings																								
b. Installation of drains directly from underground mines																								
c. Sealing of auger holes																								
7. Sealing of underground mine entries (via flooding)																								
8. Hydrologic routing of ground water																								
a. Grouting																								
b. Limestone Drains																								
c. Pit floor sealing																								
9. Construction of high-water retention soils																								
C. Other																								
II. Geochemical																								
A. Alkaline addition-strategic placement																								



**Question 5. Do you have the following data and information on the above described (remining) permits:**

	Response by State (Y = Yes, N = No)																		
	AK	AL	CO	IL	IN	IA	KS	MO	ND	NE	OH	PA	TN	TX	UT	VA	WV	WY	
BMP Performance Information (Successful failures)	N	N	Y	N	N	Y*	N	N	N	N/A	N	--	--	Y	Y	N	N	N	N/A
Description of BMP	N	Y	Y	N	N	Y*	N	N	N	Y	N/A	N	--	--	Y	Y	N	N	N/A
BMP Abatement plan info.	N	Y	Y	N	N	N	N	N	N	N/A	N	--	--	Y	Y	N	N	N	N/A
BMP Cost Information	N	N	Y	N	Y*	Y*	N	N	N	N/A	N	--	--	Y	Y	N	N	N	N/A
Geologic information	N	Y	Y	Y	Y*	Y*	N	Y	N	Y	N/A	Y	--	--	Y	Y	--	Y	N/A
Hydrologic information	N	--	Y	Y	Y	Y	Y	Y	Y	Y	N/A	Y	--	--	Y	Y	--	Y	N/A
Background monitoring reports	N	--	Y	Y	Y	Y	Y	Y	Y	Y	N/A	Y	--	--	Y	Y	--	Y	N/A
Chemical analysis	N	--	Y	Y	Y	Y	Y	Y	Y	Y	N/A	Y	--	--	Y	Y	--	Y	N/A
Ground water info.	N	--	N	Y	Y	Y	N	Y	N	Y	N/A	Y	--	--	Y	Y	--	Y	N/A
Surface water info.	N	--	S	Y	Y	Y	Y	Y	Y	Y	N/A	Y	--	--	Y	Y	--	Y	N/A
Public water supply info.	N	--	N	Y	N	P*	Y	Y	N	Y	N/A	Y	--	--	N	Y	--	Y	N/A
Hydrologic assessment	N	--	Y	Y	N	Y	Y	N	Y	N	N/A	Y	--	--	Y	Y	--	Y	N/A
Baseline pollution load analysis & data	N	Y	N	Y	N	Y	Y	Y	N	N	N/A	Y	--	--	N	Y	--	Y	N/A
Impact statistics (acres affected, reclaimed, etc.)	N	--	Y	Y	N	Y*	N	Y	Y	Y	N/A	Y	--	--	N	Y	--	Y	N/A
Environmental assessment	N	--	S	Y	N	Y	N	Y	N	Y	N/A	Y	--	--	N	Y	--	Y	N/A
Operational info. (Reclamation/Operation descript.)	N	Y	S	Y	Y	Y	N	Y	N	Y	N/A	Y	--	--	N	Y	--	Y	N/A
Revegetation info. (Temporary & Permanent cover)	N	Y	S	Y	Y	Y	N	Y	Y	Y	N/A	Y	--	--	N	Y	--	Y	N/A
Topographic maps	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N/A	Y	--	--	Y	Y	--	Y	N/A
Program guidance regarding remaining and or implementation	N	--	Unk.	N	N	Y	N	N	N	Y	N/A	N	--	--	N	Y	--	N	N/A
BMP inspection information	N	--	Y	N	N	Y	N	N	N	Y	N/A	N	--	--	N	S	Y	--	N
Verification of BMP implementation info.	N	--	Unk.	N	Y	--	N	N	N	Y	N/A	N	--	--	N	S	Y	--	N

Information reported as submitted by State.

Y\* = AML only

P\* = Partial (AML only)

S = Some

D = Drainage proposal maps

C = Comprehensive Hydrologic Impact Assessment (CHIA).

N/A = Not Applicable

-- = No Response

Unk = Unknown



Question 6: What has your state's experience been with these BMPs in terms of their success or failure of implementation?

State	Response
Alaska	None.
Alabama	No response.
Colorado	Generally successful. Failures have been in some of the details which were corrected with one-time maintenance. Water treatment projects have shown limited success.
Illinois	No response.
Indiana	While several BMPs have been employed effectively they have not been allowed as an exception to normal NPDES limitations as provided by Rahall Amendment. Majority of applications have been in true AML projects and not "remining" scenarios.
Kentucky (1) - (SMRE)	Success or failure of BMPs for both Title IV and V programs is indirectly reflected in the "closure" of AML projects & the approval of complete bond releases in this state. These final actions would not occur if the above-utilized BMPs were unsuccessful.
Kentucky (2) - (CWA)	The issuance of a KPDES permit does not require specific knowledge of the types and number of these defined BMPs. Therefore, the division of Water cannot provide non quality related data.
Maryland	Just beginning to implement.
Missouri	To date the constructed wetlands have not obtained the desired water quality.
Mississippi (1) - (CWA)	Fair to good & site specific results.
Mississippi (2)	No response.
Montana	Silt fencing, bales, matting has worked well.
North Dakota	No response.
New Mexico	No response.
Ohio	Application of PFBC by-product during reclamation has proven successful. We applied 125 tons/acre of by-product, plus 50 tons/acre of yard-waste compost to the mine site. Vegetation has been established. pH of interstitial pore waters is near neutral (6.5-7.0). No elevated concentration of As, Se, Hg, or Pb were detected. However SO <sup>4</sup> + B concentration have risen, which may be of concern. (Same as Pennsylvania)
Pennsylvania	<u>Regrading of old spoils</u> : highly successful. Often will promote runoff and reduce infiltration. <u>Daylighting of deep mines</u> : successful when alkaline overburden is encountered in daylighting or surface runoff is restored. <u>Alkaline addition</u> : a mixed bag. Can work, but often there is not enough alkaline material added to be effective. <u>Special Handling</u> : can reduce acidity, but cannot produce alkaline water in the absence of calcareous materials. <u>Revegetation</u> : an unqualified success. <u>Biosolids</u> : very successful in promoting vegetation. <u>Hydrogeologic controls</u> : jury still out. We're looking at it.
Tennessee	The most successful BMPs implemented in TN are: limestone drains; surface diversions; geochemical amendments; and special handling of acid forming materials.
Texas	No response.
Utah	No response.
Virginia	Generally, when BMPs are used, we see an improvement in water quality. This can be documented through water monitoring reports that are submitted to the Division on a quarterly basis and then compared to baseline data. Only in a couple of instances did we observe no change in water quality.
West Virginia	Too early to tell.
Wyoming	BMPs have been successfully implemented. In Wyoming the primary water quality concern is with sediment. AMD problems associated with coal mining are virtually non-existent.

Information reported as submitted by State.



Question 7. Does your state maintain a listing or inventory of the number of stream miles impacted by AMD. (i.e., EPA 303(d) listing)? If available, please provide mileage.

State	Stream Miles
AK	0
AL	65
CO	Yes
IL	NA
IN	No
KY(1-SMRE)	600
KY(2-CWA)	600
MD	430
MO	52 miles classified, 87 miles unclassified
MS(1-CWA)	No
MS(2-SMCRA)	0
MT	--
ND	--
NM	0
OH	1,500
PA	3,000
TN	1,750
TX	0
UT	0
VA	No
WV	2,225
WY	0
<b>Total</b>	<b>9,709</b>

Information reported as submitted by State.

NA = Not Available.

-- = No Response.



Question 8. What is the industrial profile of your state's remining operations?  
If exact numbers are unknown, please provide estimates.

State	Number of mining companies with remining permits	Total employment at remining operations (number of employees)	Annual coal production from remining sites (tons)	Estimated coal reserves that could be remined (tons)
AK	0	0	0	0
AL	20	Unk	Unk	Unk
CO	0	0	0	Unk
IL	35	70	200,000	10,000,000
IN	2	N/A	720,000	N/A
KY(1-SMRE)	---	---	---	---
KY(2-CWA)	4	Unk	Unk	Unk
MD	13	150	650,000	Unk
MO	2	0	0	Unk
MS(1-CWA)	0	0	0	Unk
MS(2-SMCRA)	0	0	0	0
MT	0	---	---	---
ND	---	---	---	---
NM	0	0	0	0
OH	3	Unk	Unk	Unk
PA	50	2,345	17,530,000	100,000,000 +
TN	10	75 - 100	3,000,000	50,000,000
TX	0	0	0	0
UT	0	0	0	Unk
VA	3	300	3,000,000 +	Unk
WV	8	Unk	Unk	Unk
WY	0	0	0	Unk
<b>Totals</b>	<b>150</b>	<b>2,940 - 2,965</b>	<b>25,100,000</b>	<b>160,000,000</b>

Information reported as submitted by State.

Unk = Unknown.

N/A = Not Applicable.

--- = No Response.

