

IEPA Log No.: **C-0283-10**
CoE appl. #: **2010-588**

Public Notice Beginning Date: **July 28, 2011**
Public Notice Ending Date: **October 6, 2011**

Section 401 of the Federal Water Pollution Control Act
Amendments of 1972

Section 401 Water Quality Certification to Discharge into Waters of the State

Public Notice/Fact Sheet Issued By:

Illinois Environmental Protection Agency
Bureau of Water – Permit Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
217/782-3362

Name and Address of Discharger: Peabody Arclar Mining, LLC, c/o Peabody Energy, 7100 Eagle Crest Blvd., Evansville, IN 47715

Discharge Location: Sections 2, 11, and 12, T9S, R7E & Sections 7, 8, 17, T9S R8E of the 3rd P.M in Saline and Gallatin Counties near Equality

Name of Receiving Water: Cockerel Branch, Unnamed Tributaries to Cockerel Branch, Saline River and North Fork Saline River, and Unnamed Wetlands

Project Description: Wildcat Hills Mine – Cottage Grove Pits 9 & 10

The Illinois Environmental Protection Agency (IEPA) has received an application for a Section 401 water quality certification to discharge into the waters of the state associated with a Section 404 permit application received by the U.S. Army Corps of Engineers.

The attached Fact Sheet provides a description of the project and the antidegradation assessment.

The application, Public Notice/Fact Sheet, comments received, and other documents are available for inspection and may be copied at the IEPA at the address shown above between 9:30 a.m. and 3:30 p.m. Monday through Friday when scheduled by the interested person.

Please find attached or on the internet at <http://www.epa.state.il.us/public-notices/sec-401-notices.html> a notice for a public hearing regarding the application for Section 401 water quality certification to be held September 15, 2011 at approximately 7:00 pm (following the close of the 5pm NDPES hearing) at:

SIC Foundation Center
540 North Commercial Street
Harrisburg, Illinois

The Public Notice period will begin and end on the dates indicated in the heading of this Public Notice. Commenters shall provide their names and addresses along with comments on the certification application. The certification and notice number(s) must appear on each comment page. Written comments must be postmarked or e-mailed by midnight, October 6, 2011, when the hearing record closes (e-mails should specify IEPA hearing in subject line). The IEPA welcomes substantive written comments. Comments need not be notarized and should be sent to:

Hearing Officer Dean Studer
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276
Phone 217- 558-8280 TDD (hearing impaired) 217-782-9143
E-mail Dean.Studer@Illinois.gov

If a Section 401 water quality certification is issued, response to relevant comments will be provided at the time of the certification. For further information, please call Thaddeus Faught at 217/782-3362.

Fact Sheet for Antidegradation Assessment

Peabody Arclar Mining, LLC – Wildcat Hills Mine, Cottage Grove Pits 9 & 10 – Cockerel Branch, Unnamed Tributaries to Cockerel Branch, Saline River and North Fork Saline River, and Unnamed Wetlands – Saline and Gallatin Counties

IEPA Log No. C-0283-10

COE Log No. 2010-588

Contact: Brian Koch at 217/558-2012

July 28, 2011

The applicant has applied for a 401 water quality certification for impacts associated with the Wildcat Hills Mine – Cottage Grove Pit 9 & 10, Illinois Department of Natural Resources (IDNR) permit #415. The 878.5 acre site is located in portions of Saline and Gallatin Counties, approximately one mile northwest of Equality, Illinois. The temporary impacts that would be covered by this certification include coal mining activities from 2011 to 2014; however mining is dependent on market conditions. The purpose of this project is to extract bituminous coal from two separate areas, Pit 9 and Pit 10, using conventional truck shovel surface mining methods. Pit 9 is located east and north of Illinois Route 142 and Illinois Route 13, respectively, and encompasses 139.2 acres. This area would be mined as a new pit with the initial cut being made immediately south of the existing Cottage Grove coal crusher yard and advancing eastward ending in a final cut approximately 4,000 feet to the east. Pit 10 is located west of Illinois Route 142 and north of Illinois Route 13 and encompasses an area of 739.3 acres. Pit 10 would extend mining from the active Pit 8 permit (IDNR mining permit #403), advancing north and east/southeast of Pit 8 with the final cut occurring near Illinois Route 142. Two areas within the Pit 10 reserve have been previously permitted and approved for Section 404 impacts. Approximately 93.9 acres of Pit 10 were previously permitted under IDNR mining permit #359, with jurisdictional water impacts approved through Nationwide 21 404 permit LRL-2004-353-gjd. This area is being actively used as sediment control for the Willow Lake coal preparation plant, coal stockpiles, and previous mining activities. Mitigation for the Nationwide 21 permit specified that Cockerel Branch would be relocated into an area which is now comprised of the Pit 10 project area. This portion of Cockerel Branch has been constructed and is currently used as a clean water diversion ditch for the active disturbance area, but the riparian buffer has yet to be planted due to the adjacent mining activities. The second area previously permitted (IDNR mining permit #361) and approved for Section 404 impacts (Individual 404 permit LRL-2006-453-kam) covers approximately 86.1 acres in the Pit 10 area. This area is being reclaimed and is presently utilized as sediment control. No mitigation was proposed to be constructed within this area.

Maximum recovery of the coal seam would require excavation of overlying materials including existing streams and wetlands. The permit area contains 33 jurisdictional streams and six jurisdictional wetlands that are planned for disturbance and subsequent mitigation. The ephemeral and intermittent headwater streams are all unnamed with the exception of Cockerel Branch, which is a tributary of the Saline River. The remaining streams are unnamed tributaries to Cockerel Branch, Saline River, or the North Fork Saline River. Stream assessments and wetland delineations were initially performed in March 2010 but were modified to include recommendations from the United States Army Corps of Engineers (USACE) following a site visit on November 4, 2010. Streams and wetlands were grouped by land use settings (agricultural, reclaimed, or mixed) along with a separate category for impacts to Cockerel Branch. A total of 8,797 linear feet of ephemeral streams and 13,732 linear feet of intermittent

streams were assessed in the project area. The following table summarizes the breakdown of stream length and acreage in regards to land use and flow regime.

Summary of Waters within Project Area					
Setting	Ephemeral		Intermittent		Comments
	(feet)	(acre)	(feet)	(acre)	
Mixed	1,170	0.12	0	0	
Reclaimed	322	0.02	1,612	0.30	
Agriculture	7,305	0.61	8,290	0.90	
Cockerel Branch	0	0	3,830*	0.84	*includes 2,165' Cockerel Branch Mitigation
Totals:	8,797	0.75	13,732	2.04	

In response to a conference call between the applicant, USACE, and the Agency, the following table was developed by the applicant in order to provide a more detailed assessment of the types of riparian buffers currently located within the permit area. Acreages of both herbaceous riparian buffers and woody riparian buffers along with the average width are provided below for the various stream flow regimes and settings. These acreages and widths were calculated from the stream assessment worksheets. A Rosgen vegetation community identifier with a value of 9 or 10 was used to determine the woody acreage. An identifier of 9 indicates a deciduous overstory while the alphabetic descriptor denotes the density of the vegetation. An identifier of 10 indicates a deciduous overstory with a brush/grass understory. The other vegetative communities which included a 3, 6, and 7 were used to determine the herbaceous riparian buffer. These vegetative identifiers include the following communities; annual grass with forbs, low brush, and high brush, respectively. The results indicate that the majority of the streams have an herbaceous riparian buffer consisting of annual grasses to high brush. Most of the woody riparian buffer is located along the two mixed land use ephemeral streams.

Riparian Buffer Summary					
Setting and Flow Regime	Average Woody Riparian Buffer Width per Side	Woody Riparian Buffer	Average Herbaceous Riparian Buffer Width per Side	Herbaceous Riparian Buffer	Comments
	(feet)	(acre)	(feet)	(acre)	
Ephemeral					
Mixed	58	2.41	0	0	
Reclaimed	0	0	65	0.96	
Agriculture	9	0.90	17	2.85	
Subtotals:		3.31		3.81	
Intermittent					
Mixed	0	0	0	0	
Reclaimed	20*	0.09	11	0.85	*only one occurrence
Agriculture	18	1.86	11	1.95	
Cockerel Branch	0	0	5	0.88	
Subtotals:		1.95		3.68	
Totals:		5.26		7.49	

Streams were characterized using the Rosgen stream classification as well as the United States Environmental Protection Agency Rapid Bioassessment Protocol (RBP). Thirty-six percent of the streams are Rosgen “B” channel types, 42% are Rosgen “F” types, and 21% are Rosgen “G” types. A summary of the stream habitat evaluations using the RBP is provided in the table below, with streams sorted between land use settings and flow regime. Reclaimed and agricultural portions of Cockerel Branch are included within the summary.

Summary of RBP Scores					
Setting	Flow Regime	Gradient	Minimum Score	Maximum Score	Median Score
Mixed/Reclaimed	Ephemeral	Low Gradient	82	92	89
	Intermittent	Low Gradient	82	98	89
Agricultural	Ephemeral	Low Gradient	60	92	78
	Intermittent	Low Gradient	62	98	83

Wetland delineations determined that a total of 0.84 acres of emergent wetlands and 0.03 acres of forested wetlands are within the project site, as summarized in the table below. The wetlands have been grouped by land use settings along with a category for impacts to Cockerel Branch. The impacts to Cockerel Branch include a portion of the stream mitigation from the previously approved 404 permit that has been impacted by haul road culverts which were undersized and partially crushed during the construction of the haulage road. As a result, decreased flow of Cockerel Branch has promoted sediment deposition and has created a linear emergent wetland.

Summary of Wetlands Delineated within Project Area					
Setting	PFO	PSS	PEM	PUB	Comments
	(acre)	(acre)	(acre)	(acre)	
Mixed	0.03	0	0	0	
Agriculture	0	0	0.26	0	
Cockerel Branch	0	0	0.58	0	linear wetland formed in stream mitigation
Totals:	0.03	0	0.84	0	

The only open waters within the project area are located within Pit 10 and are temporary sediment basins currently employed as treatment for previous or active mining operations under NPDES permit IL0073351. These temporary open waters are not designated as open water impacts for the 401 certification of the proposed project.

Mitigation for stream and wetland impacts would follow that specified in “Section 3: Mitigation Work/Implementation Plan” and “Section 4: Success Criteria” of the narrative submitted as part of the applicant’s Section 404 Permit Mitigation Revision, dated April 29, 2011. As mining progresses, streams would be diverted around the project site or the flow would pass through sedimentation basins within the site. Mining and reclamation would occur simultaneously as pits would be backfilled and resoiled as the next cut is made. The resoiled area would be revegetated and returned to the approved post-mining land uses. Mitigation for stream impacts would be

through reconstruction of streams in reclaimed areas once mining has been completed. The stream restoration plan includes the establishment of a total of 18,131 linear feet of streams which would be constructed using: “natural design stream mitigation” for mixed and reclaimed streams, “enhanced linear stream mitigation” for agricultural streams, and “two-stage channel stream mitigation” for Cockerel Branch. Natural design stream mitigation would provide enhancements to the reconstructed streams consisting of, but not limited to, riparian buffers with predominately hard-mast producing species and persimmon for wildlife, expanded sinuosity, use of engineered structures to stabilize the streams, reduced entrenchment, replacement of Rosgen “G” or “F” channels with typically “C” channels, and adding a floodplain as post-mining land uses allow. The natural design stream mitigation would be constructed with approximately 90 percent, Rosgen “C” or “E” channel types and approximately 10 percent, Rosgen “B” or “A” channel types depending on the slope. The Rosgen “C” and “E” channels would have an enhanced floodplain constructed. Streams reconstructed using natural design stream mitigation would be required to meet minimum scores for success as measured by the RBP. Agricultural streams would be constructed using enhanced linear stream mitigation to restore the agricultural uses of the land and facilitate efficient farming. The streams would be constructed with straight channels, but entrenchment ratios would be lessened and gentler bank slopes would be employed to provide for a more stable stream with less bank erosion. The channel banks would be vegetated and grade control would be employed as necessary to curb erosion or reduce stream velocity. Impacts to Cockerel Branch, including the mitigation from the previously approved 404 permit and the existing agricultural section within this permit, would be mitigated with a two-stage channel design. The two-stage design entails designing a bankfull discharge channel inside of a larger main channel to accommodate large flows. The bankfull discharge channel provides the necessary sediment conveyance, while the larger channel provides the design flood conveyance. The north-south segment of the previously approved Cockerel Branch mitigation would not be reconstructed, but improvements would be made within the channel by creating a low flow channel within the larger trapezoidal mitigation to improve sediment conveyance and maintain stream connectivity.

In the initial Section 401 Permit Application (dated May 14, 2010) and revised Section 404 Permit Application (dated March 10, 2011), the applicant proposed to restore agricultural streams with no riparian buffer. However, due to Agency concerns over the inadequate replacement of riparian buffers currently existing onsite, the applicant has now proposed to restore all streams with riparian buffers and still proposes to mitigate the same amount of stream lengths initially proposed. The revised mitigation plan is included in the applicant’s Section 404 Permit Mitigation Revision dated April 29, 2011. The table below summarizes the mitigation lengths and total riparian buffer widths that would be incorporated in each stream type, which are separated by land use and flow regime.

Stream Mitigation					
Setting	Flow Regime	Length	Mitigation Rate	Mitigation Length	Total Riparian Buffer Width
		(feet)		(feet)	(feet)
Mixed	Ephemeral	1,170	0.5:1	585	50
Reclaimed	Ephemeral	322	0.5:1	161	50
	Intermittent	1,612	1:1	1,612	100

Natural Design Stream Mitigation				2,358	
Agriculture	Ephemeral	7,305	0.5:1	3,653	50
	Intermittent	8,290	1:1	8,290	50
Enhanced Linear Stream Mitigation				11,943	
Cockerel Branch	Intermittent	3,830	1:1	3,830	100
	Two-Stage Channel Stream Mitigation				3,830
Total Stream Mitigation				18,131	

Riparian corridors would be planted with grasses, clovers, and predominately hard mast trees. A minimum of five herbaceous species would be planted to provide ground cover and prevent erosion of the site. At the end of the five year monitoring period, 70% of ground cover would be the planted species and no single species would comprise more than 40% of that final cover. For woody plantings, no one species would make up more than 20% of initial planting and no single species would make up more than 25% of the surviving planted stock. The trees proposed for planting include yellow poplar, persimmon, red oak, white oak, hickory, and black walnut. At least 600 tree seedlings per acre would be planted and the success standard would be 80% survivability of the initial seedling plantings at the end of the five year monitoring period.

A total of 2.25 acres of palustrine broad-leaved deciduous forested wetlands would be the minimum mitigation acreage for all jurisdictional wetlands impacted by mining, as summarized in the wetland mitigation table below.

Wetland Mitigation				
Setting	Wetland Type	Acreage	Mitigation Rate	Mitigation Acreage
		(acre)		(acre)
Mixed	PFO	0.03	4:1	0.12
Agriculture	PEM	0.26	1.5:1	0.39
Cockerel Branch Mitigation	PEM	0.58	3:1	1.74
Total Wetland Mitigation				2.25 acres (PFO1)

The jurisdictional wetlands planned for disturbance would be mitigated off-site and in advance of the mining disturbance. Existing wetlands would be mitigated with temporarily flooded broad-leaved deciduous forested wetlands. The advance off-site wetland mitigation would be located on property owned by Peabody Arclar Mining, LLC and adjacent to currently monitored wetland mitigation. The mitigation site is located south of the project site in Gallatin County and

lies in Section 7, Township 10 South and Range 8 East. The site is situated along and north of Eagle Creek and is approximately one mile east of Forest Road, south of Kedron Road. The proposed mitigation site is located within the same 8-digit HUC (Saline River Watershed) as the proposed impacts. This off-site wetland restoration area has proven very successful in converting farmed areas back into wetlands as shown by the success of adjacent areas that are mitigation sites for other approved Section 404 permits. The mitigation site is presently being used for an agricultural land use (row crops) and is bordered to the south and west by approved wetland mitigation sites for previously approved ACOE permits. The eastern edge of the wetland mitigation site would adjoin an existing wooded area while the northern edge will border the remaining agricultural field. The proposed wetland mitigation site has not been mined. The soils indicate that the area is hydric and the site will receive sufficient hydrology from Eagle Creek to inundate or saturate the soils. Currently, the main lacking wetland criterion for this site is the wetland vegetation although there may be some minor impedance for sufficient hydrology to be present. Wetland mitigation areas would be planted with grasses, clovers, and hard mast trees. A minimum of five herbaceous species would be planted, with 70% of ground cover being the planted species and no one species comprising more than 40% of the final cover at the end of the five year monitoring period. For woody plantings, no one species would make up more than 20% of initial planting and no single species would make up more than 25% of the surviving planted stock. The trees proposed for planting include red oak, white oak, hickory, and pecan. At least 600 tree seedlings per acre would be planted and the success standard would be 50% survivability of the initial seedling plantings at the end of the five year monitoring period.

The proposed project would not impact open waters and does not require open water mitigation. However, an additional 55 acres of open water would be developed as the result of the final cuts. Mitigated streams would not be allowed to intersect open waters but may be adjoined with side streams constructed at an elevation above bankfull depth to allow for recharge of the open waters during significant rainfall events. The addition of open water may promote an increase in aquatic, terrestrial, and avian biological diversity for the permit area and may provide refuge for aquatic biota during drought conditions.

Identification and Characterization of the Affected Water Body.

Cockerel Branch and the unnamed tributaries of Cockerel Branch, Saline River, and the North Fork Saline River are all classified as General Use streams with zero 7Q10 flow. With the exception of Cockerel Branch at its southernmost location in the project area, the remaining streams within the permit area have fewer than five square miles of watershed. In southern Illinois, streams with five square miles of watershed or less are characterized as 7Q1.1 zero flow streams and are therefore expected to have at least seven days of continuous zero flow nine out of ten years. Aquatic life communities in these headwater streams are tolerant of the effects of drying. Depending on the rainfall received before biological surveys, either a very limited aquatic life community, or no community at all would be found. Given this flow regime, no additional biological characterization of the unnamed tributaries are required. The water bodies have not been assessed under the Agency's 305(b)/303(d) program and have not been given an integrity rating or been listed as biologically significant in the 2008 Illinois Department of Natural Resources publication *Integrating Multiple Taxa in a Biological Stream Rating System*. The water bodies are not enhanced in regards to the dissolved oxygen water quality standard.

The jurisdictional wetlands within the project site have zero 7Q10 flow and are General Use waters. The waters have not been assessed under the Agency’s 305(b)/303(d) program and have not been given an integrity rating or been listed as biologically significant in the 2008 Illinois Department of Natural Resources publication *Integrating Multiple Taxa in a Biological Stream Rating System*. The water bodies are not enhanced in regards to the dissolved oxygen water quality standard.

Downstream waters that may be impacted by drainage from the disturbance area include Saline River and North Fork Saline River. Saline River (Segment AT-05) is listed on the draft 2010 Illinois Integrated Water Quality Report and Section 303(d) List as impaired for aquatic life use with the causes listed as alteration in streamside or littoral vegetative cover (non-pollutant), loss of instream cover (non-pollutant), boron, and manganese. North Fork Saline River (Segment ATF-06) is listed on the draft 2010 Illinois Integrated Water Quality Report and Section 303(d) List as impaired for aquatic life use with the causes listed as alteration in streamside or littoral vegetative cover (non-pollutant) and loss of instream cover (non-pollutant). Neither water body is listed as a biologically significant stream in the 2008 Illinois Department of Natural Resources Publication *Integrating Multiple Taxa in a Biological Stream Rating System*, nor have they been given an integrity rating. The water bodies are not enhanced in regards to the dissolved oxygen water quality standard.

Streams were characterized using the Rosgen stream classification as well as the RBP. Thirty-six percent of the streams are Rosgen “B” channel types, 42% are Rosgen “F” types, and 21% are Rosgen “G” types. The majority of the streams in the project area have been straightened and deepened for flood control to facilitate an agricultural land use. These streams have limited natural habitats for fish and macroinvertebrates compared to naturally meandering streams. Woody detritus for habitat has also been reduced due to agricultural practices removing woody riparian buffers and leaving narrow herbaceous strips immediately adjacent to the streams. These streams currently exhibit channel characteristics consistent with moderate to high erosive potential that results in sediment transport and within-channel deposition. A summary of the stream habitat evaluations using the RBP is provided in the table below, with streams sorted between land use settings and flow regime. Reclaimed and agricultural portions of Cockerel Branch are included within the summary.

Summary of RBP Scores					
Setting	Flow Regime	Gradient	Minimum Score	Maximum Score	Median Score
Mixed/Reclaimed	Ephemeral	Low Gradient	82	92	89
	Intermittent	Low Gradient	82	98	89
Agricultural	Ephemeral	Low Gradient	60	92	78
	Intermittent	Low Gradient	62	98	83

Given that the southernmost portion of Cockerel Branch possesses 5.2 square miles of watershed and therefore has positive 7Q1.1 flow, the applicant conducted biological assessments within Cockerel Branch as well as three zero 7Q1.1 streams from different land use types and watersheds within the permit area. The biological assessments were conducted in March of 2010. Collection, processing, and analysis of fish and macroinvertebrates were conducted

following Agency procedures as best as possible. Physical habitat assessments at each site were conducted using the RBP and basic chemical measurements (temperature, conductivity, total dissolved solids (TDS), pH, and turbidity) were also conducted. As anticipated due to its larger watershed size, Cockerel Branch had the highest diversity and total number of organisms collected, and was the only site where fish were collected. However, based on the Agency's fish and macroinvertebrate Index of Biotic Integrity (IBI) metrics, each of the streams were found to contain aquatic life at assemblages lower than the thresholds required for full attainment of aquatic life use. These findings are in line with the Agency's perspective of small headwater streams in that the biological communities found in these streams are adapted to stream drying and are not expected to be comparable in quantity or diversity to biological communities found in perennially flowing waters. The Agency's fish and macroinvertebrate IBIs are appropriate for streams that, in most years, have water throughout the summer, which is not the case for these headwater streams. It should also be noted that the indices are developed for organisms that are present during summer periods (typically June through October), therefore macroinvertebrate life-stages that are typically found in the summer may not be present during the spring. Thus, the results from the March 2010 survey may not adequately represent the macroinvertebrate communities within the headwater streams. Conversely, given that these headwater streams only convey sustained flow during the spring months, fish IBI results collected during the March 2010 survey likely represent a greater assemblage of fish than what would be present during summer conditions. A review of the results from the biological assessments is provided below. In general, a macroinvertebrate IBI (mIBI) of ≥ 41.8 and a fish IBI (fIBI) of ≥ 41 are required for a stream to be fully supportive of aquatic life use.

Pits 9 & 10 Bio-Assessment Results				
Sample Point	mIBI	fIBI	RBP	TDS (mg/L)
1MS-1 (adjacent to project area)	11.63	No fish	90	397
1RS3	22.17	No fish	60	626
2AS-1	12.58	No fish	48	311
4AS-1	17.84	30	46	589

The applicant has proposed to perform yearly biological monitoring of the mitigated streams following the same protocols used in the pre-mining biological assessment described above. Sampling would begin the first full year after the riparian buffers have been planted and would be conducted in approximately the same locations as the pre-mining sampling points. Existing biological sampling points 1RS3 and 1MS-1 would be combined into one sampling point which would be located in the natural design stream mitigation area (near 1RS3). The monitoring would be used to measure the rate of species migration into the mitigated streams.

Identification of Proposed Pollutant Load Increases or Potential Impacts on Uses.

Pollutant load increases that would occur from this project include some increases in suspended solids during the reconstruction of the stream channels and during mining activities. Sediment basins and regulated NPDES discharge points would be utilized to minimize and monitor the discharge into the downstream waters. The existing headwater streams and wetlands within the permit area would be adversely impacted by this project. However, reclamation efforts would restore or potentially enhance these habitats and allow for the existing uses to be attained post-

mining. Enhanced stream heterogeneity and increased wetland and open water habitat would likely promote aquatic life diversity and allow for more permanent refuge for the establishment of species.

Fate and Effect of Parameters Proposed for Increased Loading.

The increase in suspended solids from mining activities and from the reconstruction of stream channels would be local and temporary. Erosion control measures would be utilized to minimize any increase in suspended solids and prevent further impacts. Mitigation for the stream and wetland impacts would be as previously described. Temporary adverse impacts to the aquatic environments would be offset by mitigation, which would restore and potentially enhance the aquatic ecosystem.

Purpose and Social & Economic Benefits of the Proposed Activity.

The surface mine will extract the coal resources of the site. According to information given in a document submitted on August 3, 2010 by the applicant entitled "Peabody Arclar Mining, LLC, Wildcat Hills Mine – Cottage Grove Pits 9 and 10, Analyses of Benefits and Alternatives to Lessen Water Quality Impact", significant social and economic losses will be experienced by the local economy if the mining plan does not proceed as planned. Specifically, 184 jobs with a payroll of \$15 million annually would be lost along with many other spin off jobs resulting from the proposed mining activity. The economical availability of high quality coal that is essential to the local, state and national economy could be compromised. Direct and indirect tax revenues that would have been able to help stimulate the local and state economy would be lost. The company's economic losses would be significant and substantial due to investments in land, coal reserves, equipment, etc., with no foreseeable return on investment.

Assessments of Alternatives for Less Increase in Loading or Minimal Environmental Degradation.

The applicant considered the following alternatives for the proposed mining operation: No action, project relocation, alternative mining techniques, and preferred action. A summary of each alternative is provided below.

No Action

No mining as a means to reduce pollutant loading is not a reasonable alternative due to the associated economic losses. Approximately 184 direct jobs with a payroll of approximately \$15 million annually would be lost. Many of these employees would be long term miners and are not currently trained for other employment. The mining industry is vitally important to the local economy of Gallatin and Saline Counties and the surrounding counties as well as to the region and state. Over half of the electricity produced in the United States and nearly 50 percent of the electricity produced in Illinois comes from coal-fired power plants. It is, therefore, vital to the local, state, and national economy that available high quality coal be mined to maintain a continuous supply of fuel to the coal-fired power plants. Economic losses will occur if sufficient electricity is not provided to energy consumers. The loss in tax revenue to Illinois and Gallatin and Saline Counties, both direct and indirect would be significant, particularly when a replacement industry is unknown. In addition, the Cottage Grove Pits 9 and 10 mining area has

significant resources invested in the acquisition of land, coal reserves, permitting expenses, mining equipment, and etc. The economic loss to the company, should no mining at the site occur, would be substantial because of the significant investment in land, coal reserves, permitting expenses, and mining equipment made by the company using a business plan dependent on maximizing recovery of the coal reserve.

Project Relocation

Project relocation is not a viable alternative as essentially the same or more aquatic resources would be encountered at any mining location in the Midwest. Another location would, in fact, require additional disturbance of natural areas for infrastructure construction. More importantly, the potential mining locations are dictated by the site specific geology. Unlike many other industries, coal mining cannot be relocated to more desirable areas. The mine must be located where the mine-able reserve is located.

Alternative Mining Techniques

The use of alternative mining techniques to recover the coal reserve is considered during the planning and permitting process. In most cases, a coal reserve is essentially either suitable for surface mining or underground mining. The coal reserves at Pit 9 & 10 are not conducive to underground mining due to the number of individual coal seams (4) to be mined and the thickness of the unconsolidated layer above the coal. The unconsolidated layer averages 23 feet in thickness and the average depth to the lowest coal seam is approximately 90 feet. Underground mining would only allow ~50% recovery from one of the four seams, thus leaving behind over 85% of the reserve. This significant reduction in reserve would not support the existing and future investment in the mining infrastructure.

Auger mining would require numerous pits and support areas to be excavated and would only recover less than 50% of the coal reserve from one of the four seams. Limited auger mining may occur along fringe areas where only a single seam is present, but it is not a feasible alternative to replace surface mining due to multi-seamed areas, low resource recovery, elevation changes, rolling coal seam, and general configuration of the mine plan.

Pod mining would consist of the excavation of smaller pits in between the aquatic resources. This technique would make mining economically unfeasible as mining costs would more than double while coal recovery would diminish dramatically. Furthermore, the aquatic resources are interspersed in such a fashion, that any excavated pit could not possibly avoid impacting aquatic resources. Each pit would have to be excavated to the lowest coal seam with lay backs on all sides to ensure safe operating conditions. Additional lay backs would be needed to allow for construction of separate diversions and sediment basins for each pod area. The overburden from each pit would have to be stockpiled and then redeposited into the pit after coal removal, as opposed to conventional surface mining where pits advance continuously with overburden being deposited into the previous pit. Coal recovery would be lost under each aquatic resource, the related pit and drainage control lay back areas, and the overburden stockpile areas. The extra costs associated with these factors, coupled with less recovery of the resource, eliminates pod mining as an option. This type of mining would result in an inconsistent supply of coal to processing facilities, transportation facilities and ultimately to the electric utilities.

Preferred Action

The preferred action alternative is to follow the proposed surface mining plan. Environmental degradation would be minimized by placing required sediment basins and diversions as close to the coal extraction area as possible. Best Management Practices would be utilized to reduce impacts to off-site areas. Stream and wetland mitigation would take place as quickly as practical to insure successful mitigation. There are no legitimate alternatives to the surface mining method of coal removal for the reserve. The only alternative would be to cease mining, resulting in the loss of high paying jobs, important tax revenue, ancillary economic growth, financial losses on investment to Peabody Arclar Mining, LLC and serious interruption to the coal supply necessary for basic electricity production in Illinois and surrounding states.

Summary Comments of the Illinois Department of Natural Resources, Regional Planning Commissions, Zoning Boards or Other Entities

The IDNR EcoCAT system was consulted on April 26, 2011. It was determined that no threatened or endangered species or protected natural areas are in the vicinity of the Pit 10 project area and consultation was immediately terminated. Consultation for Pit 9 determined that protected resources may be in the vicinity of the project location. IDNR has evaluated this information and has concluded that adverse effects are unlikely. Consultation was therefore terminated as stated in the May 31, 2011 letter from Pat Malone.

Agency Conclusion.

This preliminary assessment was conducted pursuant to the Illinois Pollution Control Board regulation for Antidegradation found at 35 Ill. Adm. Code 302.105 (antidegradation standard) and was based on the information available to the Agency at the time the assessment was written. We tentatively find that the proposed activity would result in the attainment of water quality standards; that all existing uses of the streams and wetlands would be maintained or mitigated; that all technically and economically reasonable measures to avoid or minimize the extent of the proposed increase in pollutant loading have been incorporated into the proposed activity; and that this activity would benefit the community at large by providing economic and employment opportunities. Comments received during the 401 Water Quality Certification public notice period will be evaluated before a final decision is made by the Agency.