Prairie Coal Company, L.L.C.
Lost Prairie Mine

National Pollutant Discharge Elimination System (NPDES) Permit

Responsiveness Summary

Regarding

March 21, 2012 Public Hearing

Illinois Environmental Protection Agency
Office of Community Relations
August 2012

Prairie Coal Company, L.L.C.

Lost Prairie Mine

National Pollutant Discharge Elimination System (NPDES) Permit Responsiveness Summary

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

Prairie Coal Company, L.L.C.
Lost Prairie Mine
New NPDES Permit
Permit Number IL0079391

AGENCY PERMIT DECISION

On September 17, 2012, the Illinois Environmental Protection Agency approved a new NPDES permit for Prairie Coal Company, L.L.C.

PRE-HEARING PUBLIC OUTREACH

The notice of the NPDES permit public hearing was published in the *Pinckneyville Press* on February 15, February 22, and February 29, 2012.

The hearing notice was mailed or e-mailed to:

a) adjacent land owners;
b) Perry county officials;
c) municipal officials in: Pinckneyville as well as state and federal representatives;
d) Corps of Engineers, the IDNR Office of Mines & Minerals, and the Illinois' Attorney General; and
e) Illinois Chapter of the Sierra Club, Prairie Rivers Network and the Environmental Law and Policy Center (hearing requestors).

The hearing notice was posted on the Illinois EPA website:
http://www.epa.state.il.us/public-notices/2011/lost-prairie-mine/index.pdf

Hearing notices were posted at the Illinois EPA headquarters in Springfield and in the Marion Regional Office.

March 21, 2012 PUBLIC HEARING

Hearing Officer Dean Studer opened the hearing March 21, 2012, at 5:00 p.m. at the Pinckneyville Junior High School, State Route 154, Pinckneyville, Illinois.

Prairie Coal Company, L.L.C. Presentation:

Mr. James Kliche opening statement

Illinois EPA Hearing Participants:

Stefanie Diers, Assistant Counsel, Bureau of Water
Scott Twait, Standards Section, Bureau of Water
Lynn Dunaway, Groundwater Section, Bureau of Water
Larry D. Crislip, Permit Section Manager, Mine Program, Bureau of Water

Comments and questions were received from the audience.

Hearing Officer Dean Studer closed the hearing at 6:00p.m. on March 21, 2012.

Illinois EPA personnel were available before, during and after the hearing to meet with elected officials, news media and concerned citizens.

Approximately 15 persons representing neighbors, local government, businesses, miners, elected officials, environmental groups, interested citizens, and Prairie Coal Company L.L.C., participated at and/or attended the hearing. A court reporter prepared a transcript of the public hearing which was posted on the Illinois EPA website http://www.epa.state.il.us/public-notices/2011/lost-prairie-mine/hearing-transcript.pdf

The hearing record remained open through April 20, 2012.

BACKGROUND OF Prairie Coal Company, L.L.C.
Lost Prairie Mine

The Illinois EPA Bureau of Water has prepared a draft new National Pollutant Discharge Elimination System (NPDES) permit for Prairie Coal Company, L.L.C. for Lost Prairie Mine. The address of the discharger is Prairie Coal Company, L.L.C., City Place One, Suite 300, St. Louis, Mo. The facility is located in Perry County, 6.6 miles northwest of Pinckneyville, Illinois.

The subject facility has applied for an NPDES permit for the above ground facilities for a new underground mine. The facility will contain a processing plant, coal stockpiles, refuse disposal areas, railroad loop, and support areas. The permitted area of the above ground facilities will be 848.0 acres of which 399.3 will be disturbed and 448.7 will remain undisturbed. The proposed discharge is to an unnamed tributary of Wolf Creek. The Prep Plant Rejects Pond is not designed to discharge; it will be operated as part of a closed circuit system. If there is a discharge, it will report to the sediment pond. The prep plant uses water and the source of water will be the Prep Plant Rejects Pond and the sediment pond. Approximately 1,200 gpm of water from the sedimentation pond will be used at the facility. Mine pumpage with a maximum pumpage rate of 500 gpm will be pumped to the sedimentation pond. The information in this antidegradation assessment came from the Application for OMM Permit No. 412, responses to the review letter and the OMM's modification letter and the July 8, 2011, letter with the alternatives and economic benefits analysis prepared by Midwest Reclamation Resources, Inc.

The subject facility proposes to discharge to an unnamed tributary of Wolf Creek at a point where 0 cfs of flow exists upstream of the outfall during critical 7Q10 low-flow conditions. The unnamed tributary of Wolf Creek is classified as a General Use Water. The unnamed tributary of Wolf Creek is not 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 is it given an integrity rating in that document. The unnamed tributary of Wolf Creek, tributary to Waterbody Segment, NCK-01, is not listed on the draft 2010 Illinois Integrated Water Quality Report and Section 303(d) List since it has not been assessed. The unnamed tributary of Wolf Creek is not subject to enhanced dissolved oxygen standards.

The USGS Illinois Streamstats basin characteristics program gives a watershed size of 0.91 square miles at the discharge location. According to the Illinois State Water Survey, the unnamed tributary of Wolf Creek in the area of the proposed mine discharge is likely to be a 7Q1.1 zero flow stream. In this region of Illinois, 7Q1.1 zero flow streams are streams with a watershed area of 5 square miles or less. These streams will exhibit no flow for at least a continuous seven day period nine out of ten years. Aquatic life communities are poorly developed in these types of streams due to lack of water during dry periods during most years. Given this flow regime, no additional biological characterization was required of the applicant. Prairie Coal Company

collected water quality data in Wolf Creek from January 2008 to December 2010. Sulfate averaged 235 mg/L; Chloride averaged 13 mg/L; and Hardness averaged 333 mg/L.

Responses to Comments, Questions and Concerns

Comments, Questions and Concerns in regular text
Agency responses in bold text

NPDES Permit

1. The draft permit as it is, states that the slurry impoundment will be a closed loop system. How will the permit address any additional pollutant loading that is being bled off through the sedimentation pond and beneath the slurry impoundment?

   After filling of the fine refuse facility with 5-6 feet of slurry fines, the valve from the underdrain pipes would be opened to help reduce potential water infiltration into the clay liner. It is anticipated that flows will be very minimal or non-existent from the underdrains because of the particle size involved with the slurry mixture. Over time the small particles will bond together and seal the lower levels of the facility. It is anticipated that any discharges after several months of use will be very minimal or non-existent.

   The coarse refuse material will be compacted and also bond and seal the lower levels of the facility, although this process likely will require a longer time frame. Minimal discharge may occur after precipitation events.

   The Agency believes that any discharge from the underdrain will be minimal or non-existent and will not impact the ability of the sedimentation pond to meet water quality standards.

Antidegradation Assessment

2. The Agency has failed to demonstrate existing uses will be fully protected in accordance with 35 IAC 302.105. The Illinois EPA has not identified and characterized the conditions and existing uses of the stream receiving new mine and stormwater discharges from Outfall 001 in violation of Illinois antidegradation regulations. Under Illinois' antidegradation rule, applicants are required to include a characterization of the impacted body of water in their permit application: "Identification and characterization of the water body affected by the proposed load increase or proposed activity and the existing water body's uses.

   Illinois EPA believes that headwater streams such as those receiving wastewater from the Prairie Coal Company, Lost Prairie Mine are valuable parts of the aquatic ecosystem. Regulations recognize this in that all water

quality standards fully apply to headwater streams no matter how small and ephemeral they may be. Aquatic communities found in these streams are highly variable depending on the water regime present in the months prior to a survey. Surveys conducted during or soon after a drought would find no aquatic life present while surveys conducted after long periods of relatively wet conditions would find several species of fish and macroinvertebrates that are adapted to the temporary presence of water. Application of the water quality standards to such streams would ensure protection of these species. Illinois headwaters that are not spring fed or have some other rare condition would not be expected to harbor communities that contain mixtures of unique endemics. Given the watershed size and topography present at this site (no springs or other constant water sources present), Illinois EPA can predict what aquatic life communities will occur during non-drought conditions. Further, the Illinois Department of Natural Resources ("IDNR") was consulted, via the EcoCAT system, for the presence of threatened and endangered species at the mine site. IDNR terminated consultation as there were no threatened or endangered species found in their system concerning this site. Therefore, the Agency determined that no biological survey was necessary to characterize these receiving streams based on the information the Agency had in consultation with IDNR.

However, Third Rock Consultants submitted an Aquatic Resources Report for the Lost Prairie Mine Site dated July 20, 2010. The report used the USEPA's Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Habitat Assessment Field Data Sheet (RBP) for high gradient streams. Ten parameters were evaluated and rated on a numerical scale of 0 to 20 (highest) for each reach. Overall, the streams within the project area had moderate RBP scores, mostly attributable to little human disturbance and wide riparian corridors.

3. The Agency has failed to fully identify and quantify proposed pollutant load increases and the potential impacts of those load increases on the affected waters and share the findings with the public as required by 35 IAC 302.105 c) 2),f) 1) B) and f)3). Materials reviewed as part of a FOIA file review referred to an underdrain system beneath the preparation plant rejects pond and refuse disposal areas. The destination for the leachate collected by such a system is not discussed in the permit or antidegradation assessment. At the public hearing held on March 21, 2012, a gentleman from Midwest Reclamation Resources contracting with Prairie Coal Company, shared that the leachate collected by the underdrain system will be slowly bled into Sedimentation Pond #1. Though some of the water from the Sedimentation Pond #1 will be pumped back to the processing plant, discharges from this pond are also permitted to be discharged to Wolf Creek via Outfall 001. To our knowledge, this source of additional pollutant loading was not considered in the permit review process as no estimates on leachate volume or concentration were quantified and a

reasonable potential analysis was not completed. In fact, the publicly noticed materials state that the slurry impoundment will be a closed loop system. It does not appear from the draft fact sheet, antidegradation assessment and draft permit that a complete characterization of the proposed pollutant load to the receiving waterbodies has been conducted.

The Agency has required an underdrain system for this facility. There are at least two other facilities that have an underdrain system. However, these facilities are not operational and therefore, there are no estimates for the quantity or quality of the discharge of the underdrain system. However, due to the reasons listed below, the Agency expects that the flow will be minimal or non-existent and not impact the ability of the sedimentation pond to achieve water quality standards. Since there is no comparable system in operation, the Agency is requiring monitoring of internal outfall to obtain data for future systems of this type.

The drainage system underdrain will be constructed on top of the clay liner to control the hydrostatic head on the liner. The drainage system will consist of filter aggregate around slotted PVC drain pipe. A geotextile fabric will be installed around the drain pipe to ensure fine refuse will not be transported with the drainage.

The drainage system will collect water and convey it out of the structure to a drop inlet structure, where it will then report to the sedimentation pond. A valve will be installed on the discharge pipe before the drop inlet. This valve will be closed until the hydrostatic head reaches five to six feet in the prep plant rejects pond. This will allow the slurry fines to settle, further ensuring that only water, not the fines, will be discharged. Once the hydraulic head of five to six feet is obtained, the valve will be opened to help prevent possible water infiltration into the compacted clay liner.

Perhaps the most significant design detail of the sedimentation pond is that it will not have a significant discharge. This is because the mining operation will use the water in the pond for processing. Water will continually be pumped to the preparation plant to be used for coal processing and cleaning. The excess water from the preparation process will be pumped to the prep plant rejects pond. Any underdrain discharges will be collected in the sedimentation pond for treatment.

After filling of the fine refuse facility with 5-6 feet of slurry fines, the valve from the under-drain pipes would be opened to help reduce potential water infiltration into the clay liner. It is anticipated that flows will be very minimal or non-existent from the underdrains because of the particle size involved with the slurry mixture. Over time the small particles will bond together and seal the lower levels of the facility. It is anticipated that any discharges after several months of use will be very minimal or non-existent.

The coarse refuse material will be compacted and also bond and seal the lower levels of the facility, although this process likely will require a longer time frame. Minimal discharge may occur after precipitation events.

Any discharge from the underdrain will be minimal or non-existent and will not impact the ability of the sedimentation pond to meet water quality standards.

4. Illinois Antidegradation Rule, 35 Ill. Adm. Code 302.105 (c)(B)(iii) has also not been satisfactory addressed in that alternatives for minimizing increases in pollutant loadings (sulfate, chloride, iron, manganese, etc) have not been fully explored**.** The proposed mining facility has failed to satisfy antidegradation regulations. The state antidegradation regulations at 35 IAC 302.105(c) (2) require that all reasonable measures be taken to avoid or minimize increased pollutant loading. The applicant has not considered alternatives to the use of sedimentation ponds for treating runoff from raw and clean coal storage areas as well as other areas on the mine site, including a coal refuse storage area.

The applicant has evaluated using a filter press and wetland treatment of sulfates at this facility.

A filter press would be inefficient and costly at this facility. Underground mines must over cut the coal seam in order to obtain the working height necessary of mine activities and recover the maximum amount of coal. This over-cutting is very variable and produces an inconsistent slurry mixture when clay or shale are in the plant feed. The inconsistent mixture creates different loading on the filter press so that a backup of slurry will occur and create a situation where the coal processing facility must shut down and let the filter "catch up". Operational and clay layers near the seam make the use of a filter press at this site impractical. The operator has determined that use of a filter press is not a viable alternative for the Prairie Coal Company coal preparation plant.

The facility has evaluated wetland treatment of sulfates; the following is an excerpt from the Illinois Network for Acid Prevention report:

"Constructed wetlands and alkalinity producing systems are the least efficient sulfate removal processes. Whereas it is questionable as to whether any substantial sulfate reduction occurs in alkalinity producing systems, the contribution of reduction to the sulfate removal in constructed wetlands appears to be limited; the contribution of mineral precipitation (gypsum) in wetlands appears to be more important. The limited extent of sulfate reduction in constructed wetlands may be related to their design, originally based on the removal of other dissolved elements (e.g. Fe, Mn). Hence, new

designs may have to be developed if constructed wetlands are to be used specifically for sulfate removal by sulfate reduction."

Based on the conclusions reached in the Illinois Network for Acid Prevention study, constructed wetlands are not considered a viable solution for reduction of sulfur in Illinois coal mine discharges. Success of the wetland is contingent upon a constant supply of water for the plants and bacteria to prosper. A consistent flow of water is not available at the Lost Prairie Mine, which also makes this an impractical method for sulfate removal.

5. Will additional metals monitoring be completed as a result of the underdrain operating and the water being discharged that is in contact with coal waste?

The draft permit has been revised based on comments received to include reference in the Construction Authorization to the underdrain systems beneath the Rejects Pond and the Coarse Refuse Disposal Pile as well as incorporating permit conditions requiring monitoring of discharges (seepage) from these underdrain systems prior to such flow entering the sedimentation basin. Please refer to the final issued Permit for the monitoring requirements applicable to the flow from the underdrain systems. These permit requirements are for monitoring only of the underdrain flow with no applicable limits as these flows are not offsite discharges to waters of the state.

Water Quality Standards

6. IEPA has not demonstrated that the proposed discharge will not cause or contribute to the violation of water quality standards in the tributary to Wolf Creek. IEPA has not demonstrated that the Outfall 001 discharge will ensure water quality standards to be met in the tributary of Wolf Creek. Because of the inadequate characterization of proposed pollutant load increases mentioned previously in this letter, it follows that reasonable potential analyses for pollutants of concern were not completed. The IEPA must include limitations in the permit necessary to achieve water quality standards.

The NPDES permit includes sulfate, chloride, and manganese limits at the water quality standard with no dilution. The NPDES permit also includes monitoring for mercury. Since the permit limits are set equal to the applicable water quality standards, this discharge will not cause or contribute to water quality standard violations in the receiving stream.

Groundwater Issues

7. How can we be assured that the 19 private wells in Perry County are being protected?

   All areas where waste is to be disposed, in addition to ditches and ponds that will carry water that may have been in contact with waste will be lined with 4 feet of clay compacted to 1x 10^{-7} centimeters per second. The applicant may substitute a synthetic liner that provides equivalent protection. The applicant has included in their submission an acceptable quality control program to assure proper and consistent liner construction. Waste disposal areas will have internal drainage to limit the build-up of hydrostatic pressure, which will increase liner effectiveness. To assure that these protective measures are functioning as planned, a series of monitoring wells have been placed proximate to disposal areas and impoundments to detect leakage, if it were to occur.

8. We are concerned with additional stress being put on already impaired groundwater resources in this area.

   The groundwater quality standards are applicable except due to natural causes. As the elevated concentrations of some chemicals have been detected prior to initiation of any mining activity by the applicant, these concentrations are considered to be naturally occurring or existing concentrations that are not the responsibility of the applicant. The applicant is required to establish a statistical representation of groundwater quality prior to initiating mining activities. For those chemicals with existing elevated concentrations, a site specific standard is applicable. The applicant will be limited to not having statistically significant increases above those concentrations. For those chemicals that meet the numeric groundwater quality standards, the numeric standard will be the concentration to meet for compliance.

9. Why does the permit only require a 4-foot synthetic liner and not require the applicant to investigate the cost of a composite liner?

   Title 35 Ill. Adm. Code 370.930 provides construction standards for waste stabilization lagoons at sewage treatment works. These impoundments are similar to the impoundments used at mines because the wastes contain similar inorganic contaminants (e.g. sulfate, chloride, TDS, metals). Though the rules are not directly applicable, they can be used as a general guide. Part 370 requires that waste stabilization lagoons have a minimum

of two feet of clay compacted to $1x10^{-7}$ centimeters per second or an equivalent synthetic liner. Since the Illinois Pollution Control Board has found that two feet of compacted clay is adequate to protect groundwater from inorganic contaminants in sewage, doubling that thickness provides an additional measure of protection. Where there is an appreciable groundwater resource, such as this location, the Illinois EPA requires operators to take additional steps (such as hydrostatic head control) to protect groundwater resources. Since there is not a regulation that requires the use of liners in mine disposal areas, there is no requirement that cost/benefit analyses be conducted on various liner configurations. An operator may at their discretion propose the use of a composite liner.

There is not a regulation that specifically mandates the use or design of liners in mine disposal areas. Compliance with the applicable groundwater quality standards becomes the objective for groundwater protection measures in the permit. Only the function, not the cost of facilities and equipment used to protect groundwater is taken into consideration. An operator may at their discretion propose the use of a composite liner.

Enforcement/Compliance Issues

10. Issuance of this permit perpetuates the illegal permitting of permanent coal waste impoundments prohibited per 62 IAC 1817.84(b) (1) and 62 1817.83(c) (3). The draft permit proposes a slurry impoundment for storage of coal slurry created as part of the coal washing process. Permanent impoundments of coal waste are prohibited per 62 Ill. Adm. Code 1817.84(b) (1): "Each impounding structure constructed of coal mine waste or intended to impound coal mine waste... may not be retained permanently as part of the approved post-mining land use." and per 62 Ill. Adm. Code 18l7.83(c) (3): "No permanent impoundments shall be allowed on the completed refuse pile."

According to IDNR/OMM Land Reclamation Division, development of the permanent impoundment (Slurry Impoundment) is addressed under the mining regulations at 62 Ill. Adm. Code 1817.84 which states, "Each impounding structure constructed of coal mine waste or intended to impound coal mine waste shall be designed, constructed and maintained in accordance with Section 1817.49(a) and (c). Such structures may not be retained permanently as part of the approved post-mining land use."

According to IDNR/OMM Land Reclamation Division this regulation is quite often misunderstood in that this regulation deals only with the post-mining land use of the area in which the impoundment is located. To insure compliance with 62 Ill. Adm. Code 1817.83(c)(3), impoundments such as the slurry impoundment proposed at this facility are normally reclaimed to

another land use. In this case, the proposed post-mining land use is designated as "herbaceous wildlife". The cited SMCRA regulation indicates simply that the mining company is not allowed to leave the impoundment as un-reclaimed structure; basically the structure cannot remain permanently as an open impoundment. Therefore, the issuance of this NPDES permit will not be in violation of 35 Ill. Adm. Code 405.102.

Acronyms and Initials

CFR	Code of Federal Regulations
COE	Core of Engineers
CWA	Clean Water Act
DMR	Discharge Monitoring Report
HUC	Hydrologic unit code
IDNR	Illinois Department of Natural Resources
IDPH	Illinois Department of Public Health
IEMA	Illinois Emergency Management Agency
IEPA	Illinois Environmental Protection Agency
ILCS	Illinois Complied Statutes
Ill. Adm. Code	Illinois Administrative Code
mg/L	Milligrams per liter
NPDES	National Pollutant Discharge Elimination System
OMM	Office of Mines and Minerals
pH	A Measure of Acidity or Alkalinity of a Solution
SMCRA	Surface Mining Control and Reclamation Act of 1977 (federal)
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
USGS	Untied States Geological Service

DISTRIBUTION OF RESPONSIVENESS SUMMARY

An announcement, that the NPDES permit decision and accompanying responsiveness summary is available on the Agency website, was mailed to all who registered at the hearing and to all who sent in written comments. Printed copies of this responsiveness summary are available from Larry Crislip, Illinois EPA Marion Office, 618-993-7200, e-mail: Larry.Crislip@illinois.gov.

WHO CAN ANSWER YOUR QUESTIONS

Illinois EPA NPDES Permit:

Illinois EPA NPDES technical decisions:	Larry Crislip	618-993-7200
	or Iwona Ward……	618-993-7200
Legal questions	Stefanie Diers	217-782-5544
Water quality issues	Scott Twait	217-558-2012
Groundwater issues	Lynn Dunaway	217-785-2762
Public hearing of March 21, 2012	Dean Studer	217-558-8280

The public hearing notice, the hearing transcript, the NPDES permit and the responsiveness summary are available on the Illinois EPA website:

http://www.epa.state.il.us/public-notices/2011/npdes-notices.html#lost-prairie-mine