KPDES FORM SDAA

Kentucky Pollutant Discharge Elimination System (KPDES)

Socioeconomic Demonstration and Alternatives Analysis

The Antidegradation Implementation Procedure found in 401 KAR 10:030, Section 1(3)(b)3 requires KPDES permit applications for new or expanded discharges to waters categorized as "Exceptional or High Quality Waters" to conduct a socioeconomic demonstration and alternatives analysis to justify the necessity of lowering local water quality to accommodate important economic or social development in the area in which the water is located. This demonstration shall include this completed form and copies of any engineering reports, economic feasibility studies, or other supporting documentation

I. Project Information

Facility Name: Sandlick Coal Company, LLC – Preparation Plan #848-9026, KY0108723

Location: South of Coldiron, KY	**County:Harlan**

Receiving Waters Impacted: Foresters Creek

II. Socioeconomic Demonstration

1. **Define the boundaries of the affected community:**
(Specify the geographic region the proposed project is expected to affect. Include name all cities, towns, and counties. This geographic region must include the proposed receiving water.)

See Attachment II.1.A

2. **The effect on employment in the affected community:**
(Compare current unemployment rates in the affected community to current state and national unemployment rates. Discuss how the proposed project will positively or negatively impact those rates, including quantifying the number of jobs created and/or continued and the quality of those jobs.)

See Attachment II.2.A

II. Socioeconomic Demonstration- continued

3. The effect on median household income levels in the affected community:
(Compare current median household income levels with projected median household income levels. Discuss how proposed project will positively or negatively impact the median household income in the affected community including the number of households expected to be impacted within the affected community.)

See Attachment II.3.A

4. The effect on tax revenues of the affected community:
(Compare current tax revenues of the affected community with the projected increase in tax revenues generated by the proposed project. Discuss the positive and negative social and economic impacts on the affected community by the projected increase.)

See Attachment II.4.A

II. Socioeconomic Demonstration- continued

5. The effect on an existing environmental or public health in affected community:
(Discuss how the proposed project will have a positive or negative impact on an existing environmental or public health.)

See Attachment II.5.A

6. Discuss any other economic or social benefit to the affected community:
(Discuss any positive or negative impact on the economy of the affected community including direct and or indirect benefits that could occur as a result of the project. Discuss any positive or negative impact on the social benefits to the community including direct and indirect benefits that could occur as a result of the project.)

See Attachment II.6.A

III. Alternative Analysis

1. Pollution prevention measures:
(Discuss the pollution prevention measures evaluated including the feasibility of those measures and the cost. Measures to be addressed include but are not limited to changes in processes, source reductions or substitution with less toxic substances. Indicate which measures are to be implemented.)

See Attachment III.1.A

2. The use of best management practices to minimize impacts:
(Discuss the consideration and use of best management practices that will assist in minimizing impacts to water quality from the proposed permitted activity.)

See Attachment III.2.A

3. Recycle or reuse of wastewater, waste by-products, or production materials and fluids:
(Discuss the potential recycle or reuse opportunities evaluated including the feasibility of implementation and the costs. Indicate which of these opportunities are to be implemented)

See Attachment III.3.A

III. Alternative Analysis - continued

4. Application of water conversation methods:
(Discuss the potential water conservation opportunities evaluated including the feasibility of implementation and the costs. Indicate which of, of these opportunities are to be implemented)

See Attachment III.4.A

5 Alternative or enhanced treatment technology:
(Compare feasibility and costs of proposed treatment with the feasibility and costs of alternative or enhanced treatment technologies that may result in more complete pollutant removal. Describe each candidate technology including the efficiency and reliability in pollutant removal and the capital and operational costs to implement those candidate technologies. Justify the selection of the proposed treatment technology.)

See Attachment III.5.A

III. Alternative Analysis - continued

6. Improved operation and maintenance of existing treatment systems:
(Discuss improvements in the operation and maintenance of any available existing treatment system that could accept the wastewater. Compare the feasibility and costs of improving an existing system with the feasibility and cost of the proposed treatment system.)

See Attachment III.6.A

7. Seasonal or controlled discharge options:
(Discuss the potential of retaining generated wastewaters for controlled releases under optimal conditions, i.e. during periods when the receiving water has greater assimilative capacity. Compare the feasibility and cost of such a management technique with the feasibility and cost of the proposed treatment system.)

See Attachment III.7.A

III. Alternative Analysis - continued

8 Land application or infiltration or disposal via an Underground Injection Control Well

(Discuss the potential of utilizing a spray field or an Underground Injection Control Well for shallow or deep well disposal. Compare the feasibility and costs of such treatment techniques with the feasibility and costs of .proposed treatment system.)

See Attachment III.8.A

9 Discharge to other treatment systems

(Discuss the availability of either public or private treatments systems with sufficient hydrologic capacity and sophistication to treat the wastewaters generated by this project. Compare the feasibility and costs of such options with the feasibility and costs of the proposed treatment system.)

See Attachment III.9.A

IV Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Title:	**Malcolm R. Thomas, President**	**Telephone No.:**	(606)664-7707
Signature:	Malcolm R. Thomas	**Date:**	5/18/2011

Sandlick Coal Company, LLC

KPDES Coal General Permit SDAA Application Attachments for KDNR #848-9026, Preparation Plant

Attachment II.1.A: Location

The proposed operation is located in the southwestern portion of Harlan County, Kentucky and is within the watershed of Foresters Creek. The proposed operation located approximately 2 miles south of the community of Coldiron. The proposed operation is approximately 1.9 miles south of KY 3449's junction with KY 2007. The proposed operation is a coal preparation plant with related facilities. No coal is mined on this permit and the only discharge is from storm runoff. The water used to clean the coal is part of a closed circuit and is not discharged.

Attachment II.2.A: Employment

Approximately 200 people will be directly employed by this project and another 600 are estimated to be indirectly employed. Approximately 90% will be residents of Kentucky. U.S. Bureau of Labor statistics indicate that Harlan County, Kentucky had an unemployment rate of 11.9% in Nov. of 2009 compared to 10.4 percent for the Commonwealth of Kentucky in Dec. of 2009. The number of persons below the poverty level in Harlan County, as reported by the U.S. Census Bureau in 2007, was 29.3% as compared to 17.2% for the Commonwealth of Kentucky. According to www.coaleducation.org, direct mining employment for Harlan County in 2006 was 1,318 and the miners as a percent of total employment in the county is 14. The mining wages paid in Harlan County for 2006 was over $80 million. Mining wages accounted for 30.9% of the total wages in Harlan County in 2006 compared to 14% of the total employment, meaning that the mining wages are much higher than the average wages for the county. The 800 direct and indirect employment by this project will maintain the current unemployment rate, but loss of these jobs would increase the unemployment rate to 36.24%.

Attachment II.3.A: Median Household Income

According to the U.S. Census Bureau for 2007 census, the median income for a household in Harlan County was $25,939 compared to $40,299 for the Commonwealth of Kentucky. The per capita income for Harlan County was $11,585, compared to $18,093 for the Commonwealth of Kentucky. The average annual salary per employee for this project is over $51,363.00, which is 1.98 times the median household annual income and 4.43 times the per capita income for Harlan County. Therefore, this project will have a net positive impact on the median household income for this county.

Attachment II.4.A: Tax Revenues

This operation is estimated to produce approximately 70,000 clean tons per month for 120 months. At a current average sales price of $75/ton, the total revenue generated from this operation is estimated to be over $630 million. The severance tax rate for coal companies is approximately 4.5 percent and it is estimated that this project area will generate approximately $28.35 million in severance taxes for the Commonwealth of Kentucky. The post-mining land use will also increase the property values by improving accessibility and usable land after mining.

Attachment II.5.A: Environmental and Public Health

Positive and beneficial effects of this facility on the existing environment and public health include:

A. An increase in employment in Harlan County, Kentucky.
B. An increase in tax revenues.
C. Reclamation of previous disturbances. The proposed project area has been disturbed by numerous previous disturbances including pre-law mining on the preparation plant site estimated to be approximately 86.44, which also includes existing access roads within the permit boundary of the proposed project area. Additionally, there are extensive previous logging, pre-law mining, exploration, powerlines, and oil/gas disturbances, in these watersheds estimated to be over 75 acres, for a total estimated disturbed area of over 161 acres. Runoff from these existing disturbances is currently entering the receiving streams mostly unabated, unregulated and is not being monitored. This project will treat surface runoff from all of these existing disturbances and the post mining land use will result in a decrease in uncontrolled surface runoff and an increase in forested lands. As the result of this project all of the runoff from disturbances in this watershed will be treated and monitored.
D. This project will eliminate substandard discharge from over 161 acres of previously disturbed, pre-law mining areas located on the existing mine benches. These disturbances were mined pre-law with little to no reclamation. Natural vegetation has partially reclaimed these areas. The proposed project will involve reclaiming these areas to current regulatory standards with very little erosion or substandard water quality runoff. Existing logging operations, powerlines above the preparation plant site, have also created erosion which will be better managed by treating the runoff.

Negative effects to the environment and public health include:

A. Temporary increase in traffic locally.
B. Temporary aesthetic impacts due to removal of vegetation, excavation and backfilling.
C. Temporary minor ground vibrations and air blast due to blasting.
D. Temporary increase in fugitive dust and noise.

Attachment II.6.A: Other Economic/Social Impacts

Operation of this preparation plant will allow local residents (90% of the 200 direct and 80% of the 600 indirect) to remain employed in their home county, thus maintaining their cultural heritage and reduce travel costs. Increases and continuation of community services will also be a benefit of the project due to increases and continuation of severance tax payments, employment of local citizens of Harlan County. Total revenue from this operation is estimated to be $620 million and the estimated wages from the direct employment of 200 people is estimated to be over $10.27 million annually. The estimated annual wages for the 600 indirect employees is estimated to be almost $24 million. This $34 million in annual payroll will have a net positive impact on the local economy by providing disposable income to be used for necessary expenses such as home mortgages, rent, medical needs, taxes, retail clothing, food, energy, transportation and utilities. This $34 million in annual payroll will also benefit the local economy through discretionary spending such as secondary education, entertainment, recreation, tourism, and dining out. Benevolence and charitable giving will also benefit from this increase in annual payroll. These economic benefits will result in an overall improvement of the social and economic structure of the local area by improving education and providing more opportunity to improve the standard of living and decrease the poverty levels. Social benefits include local residents being able to stay in the home community to earn a living thus preserving their culture and heritage. Extended families will have the opportunity to stay in closer proximity to provide support of the family structure

beyond the nuclear family such as child care, sharing transportation, and nurturing of children. Of the $2.84 million in annual coal severance taxes generated by this operation approximately half should be returned to the area, including Harlan County. These coal severance taxes could be used to subsidize and provide funding for important public services in this rural area such as ambulance service, fire protection, police protection, water and sewer projects and educational needs. The increases in the local economy, and improvement of social structure will result in a decrease of depression, drug or alcohol abuse, crime.

- Remediating existing sources of pollution,
- Implementing best management practices,
- Minimizing disturbances during mining phases,
- Adhering to the contemporaneous reclamation requirements,
- Providing a higher and better post-mining land use,
- Increase wildlife habitat,
- Mitigating existing poor quality streams,
- Increasing revenues for the Commonwealth of Kentucky,
- Increasing revenues for Harlan County,
- Decreasing unemployment in Harlan County,
- Reduce the loss of population and maintaining of cultural heritage in Harlan County,
- Providing higher standard of living in Harlan County through better ambulance, police, fire protection, education, transportation, utilities and increased wages.
- Improve the social structure of Harlan County,
- Providing infrastructure for Harlan County and surrounding area,
- Increasing domestic energy production for the Commonwealth of Kentucky and the US,
- Decreasing utility costs, and
- Increasing consumer confidence in Harlan County.

Attachment III.1.A: Pollution Prevention Measures

Other alternatives to lowering water quality were evaluated and included a no-action alternative. When evaluating the alternatives considered, versus the projected amount of lowering in water quality, no other cost effective alternative could be found to construction of ponds and acceptance of the proposed water quality limits. The no action alternative was considered and given the impacts to the local economy of Harlan County, loss of 800 local jobs and over $1.4 million in annual severance taxes returned to Harlan County.

Attachment III.2.A: Use of BMPs

The applicant has a Best Management Practices Plan in effect for all of their operations. It is the policy of Sandlick Coal Company, LLC to operate its facilities in an environmentally responsible manner minimizing the potential for release of pollutants to the environment from ancillary activities, to immediately respond and provide sufficient resources for the mitigation of any environmental incident that may originate from its facilities. Specifically, the referenced certified BMP addresses: BMP Committee, Risk Identification and Assessment, Reporting of BMP Incidents, Materials Compatibility, Good Housekeeping, Preventive Maintenance, Inspections and Records, Security, Employee Training, and Uncontrolled Surface Runoff.

Attachment III.3.A: Recycling and Reuse

Sandlick Coal Company, LLC will reuse approximately 10k gallons per day of disturbed surface water runoff from the ponds for fugitive dust control. Make-up water in the amount of 25k for coal preparation also comes from sediment control pond #4 on this permit which reduces the overall discharge from the operation. With an estimated combined peak discharge during a 25 year/24 hour storm of over 645.87 cfs (417 million gallons per day) from the 4 discharging dugout ponds, it can be concluded that the peak discharge from these outfall locations would far exceed the combined maximum of 35k gallons per day that can be reused, thus necessitating discharge.

Attachment III.4.A: Water Conservation Methods

Water conservation methods will include:

A. Hydroseeding during optimum weather and soil conditions to reduce water use, decrease evaporation and increase survivability.

B. Implementing fugitive dust control measures at strategic locations and optimal times.

C. Constructing sediment ponds adequately to prevent leakage.

D. Diverting any ground water encountered during mining into sediment control structures.

E. Pumping of storm runoff water from active pit areas into sediment control structures.

F. Increase in bedrock fracturing during mining to increase recharge capacity of ground water resources.

Attachment III.5.A: Alternative/Enhanced Treatment Technologies

Alternative processes and treatment options considered include clarifiers, filters, anoxic limestone drains, successive alkalinity-producing systems, limestone sand dosing, limestone channels, limestone diversion wells, package treatment plant and constructed wetlands. Clarifiers and filters were eliminated due to construction, operations and maintenance costs , estimated to be 3 to 4.5 million dollars for construction and 0.75 to 1.5 million dollars per year for operations and maintenance, far exceeding pond construction and maintenance costs. Also, neither of these processes performs the flood prevention function of the pond. ALDs, SAPs, limestone sand dosing, limestone channels, limestone diversion wells are designed for Acid Mine Drainage treatment only, and do not perform the functions of the drainage ponds, which are sediment retention and flood prevention. Also, the cost of construction, estimated to be $250,000 each and maintenance costs of $100,000 per year, far exceed the cost of construction and maintenance of pond. A small package treatment plant was considered, but at an estimated cost of construction of approximately $6 million with operations and maintenance costs of $1.5 million to $2.25 million, was eliminated due to excessive cost. Constructed wetlands were considered, but eliminated due to topography and inability to perform the functions of the drainage ponds. The cost to construct wetlands would exceed $1.5 million dollars and operations and maintenance costs are estimated to be $300,000 to $600,000 per year, exceeding the cost of pond construction and maintenance. The 4 ponds are existing so there is no construction cost. Maintenance costs are estimated to be $16,000/year for the 4 dugout ponds.

Attachment III.6.A: Improved Operation and Maintenance of Existing Treatment Systems

Other discharge locations were considered for this operation. Other discharge locations considered were pumping into the nearest adjacent watersheds of Wallins Creek or Puckett Creek. Wallins Creek, Puckett Creek, nor Foresters Creek, are considered Special Use Waters by KDOW. Most of the named waters are listed as 303(d) impaired waters for either fecal coliform or sediment/siltation. There is no measured benefit of discharging into Wallins Creek or Puckett Creek, and to do so could cause further impairment.

Pumping systems necessary to pump the effluent to these other watersheds for the given peak discharge volume of 289,886 gpm would involve constructing a pumping station for each 200 gpm of flow in addition to over 9,000 feet of large diameter gravity collection lines and over 40,000 feet of forced main. Given this steep topography, it is estimated that each pumping station would cost $54,000 and gravity collection piping would cost $150/foot and force main would cost $60/foot. With the given peak discharge, the number of pumping stations, at 200 gpm each, would exceed 1,449 or $78 million. The gravity collection system would cost over $1.35 million and the forced main would cost over $2,400,000. The total cost for this type of pumping system would be over $81.75 million. Topography and soil conditions also limit the locations of pond construction.

Attachment III.7.A: Seasonal or Controlled Discharge Options

Seasonal or controlled discharge options were considered as part of this project. Due to the characteristics of the runoff from the proposed project, over 645.87 c.f.s. during a peak storm of 25 year/24 hour frequency, seasonal discharge is not considered to be a reasonable alternative. The ninety-two dugout ponds and four earthdam ponds are designed for controlled discharge. The peak effluent during a 25 year/24 hour storm is designed not to exceed 10% over the pre-mining peak effluent.

Attachment III.8.A: Land Application or Infiltration or Disposal via an Underground Injection Control Well

Both on-site disposal into the soil and subsurface disposal into subsurface geologic formations and abandoned underground mines were evaluated. Soil information from the USDA was evaluated to determine if any soils in the area were suitable for waste water disposal in accordance with Kentucky Health Department standards. No soils in the area were suitable for waste water disposal. The Wallins Creek, USGS Quadrangles were investigated for potential geologic formations suitable for subsurface injection. No formations with suitable porosity and permeability were indicated. Also, the fresh water zone is approximately 800 feet deep in valley floor areas with most residents in the area utilizing the stress-relief fracture aquifer system. Injection of waste water into this zone would adversely impact the health of local residents and would not be in accordance with EPA injection wells regulations. Other alternatives not previously discussed but evaluated, included a no-action alternative, commercial marketing of wastewater, natural evaporation, land application, and incineration. Given the abundance of water sources in this area, the annual rainfall rates of 40-50 inches per year and no known demand for this type of wastewater, this alternative was not considered reasonable for the amount of wastewater with these characteristics. With annual rainfall rate of 40-50 inches per year and a evaporation rate of approximately 30-36 inches per year for this region, natural evaporation would result in a natural surplus of water. Also, the topography of the area is not suitable for large enough evaporation ponds to increase evaporation rates. A land application alternative was evaluated, but considered to be an unpractical alternative due to the annual rainfall rate and evapotranspiration rate of

vegetation in the region. The incineration alternative was considered. Incineration would involve vaporizing the wastewater through introduction of heat energy. Given that it takes 960 Btu of energy to turn 1 pound of water into steam and there are 8.84 lbs of in each gallon of water. With a peak discharge of over 417 million gallons per day, it would take an estimated 3.54×10^{12} Btu to incinerate the wastewater. Given an energy cost of approximately $15/mbtu, the necessary energy would cost over $53 million per day, which is far greater than the cost to construct sediment ponds.

Attachment III.9.A: Discharge to Other Treatment Systems

Existing treatment facilities, such as existing ponds and municipal systems, were considered. Since all of the ponds are existing, no new discharges are proposed. Pumping and/or trucking the effluent to a municipal treatment system were considered. The nearest public WWTP is the Harlan Regional Sewer Plant. The nearest connection to this system is near Dayhoit at the treatment plant site, approximately 15 miles away. At an estimated cost of $500/ft. including pumping stations, the cost to pump the effluent to this WWTP system would be over $39 million. With a combined peak discharge during a 25 year/24 hour storm of over 645.870 cfs from the discharging ponds, trucking the peak effluent from the dugout ponds to the nearest WWTP would take 36 trucks per minute hauling 8,000 gallons per load. With a cycle time estimated at 2.0 hour, the number of trucks required during peak discharge would exceed 4,348. The transportation infrastructure of KY 3449 and KY 2007, cannot sustain this volume of truck traffic. Additionally, this volume of truck traffic in this rural area with dwellings located near KY 3449 and KY 2007 would most likely result in a significant increase in traffic fatalities and pose a health and safety problem for the local residents. Maintenance costs estimated for the 4 discharging ponds on this operation is $16,000 annnually. Also, the Harlan Regional WWTP is not designed to treat sediment laden effluent.