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: Buckeye Creek Mine #68. Leeco, Inc. Permit # 897-0287

Location: 1.25 miles north from KY 942's junction with KY 15 and located 0.5 miles north of Carr Fork's junction with the North Fork of the Kentucky River.	**County:** Perry

Receiving Waters Impacted: Buckeye 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.)

   The proposed project is expected to affect the Eastern Coal Field region within the Central Appalachian Ecological region including Buckeye Creek. Also affected indirectly by this project are the communities of Glomawr, Jeff, Hazard, Vicco, and Sassafras. This impoundment would facilitate the following KPDES permits: 897-5106, 897-0480, 860-0478, 897-0486. Permit numbers 897-0486 and 897-0480 are not yet active but will be in the future.

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.)

Unemployment in Perry County, KY has increased from 6.8% in 2000 to 10.9% in 2009 as compared to the entire state, which has varied from 4.2% to 10.5% for the same period. The United States as a whole has varied from 4% to 9.3% for this period.[1]

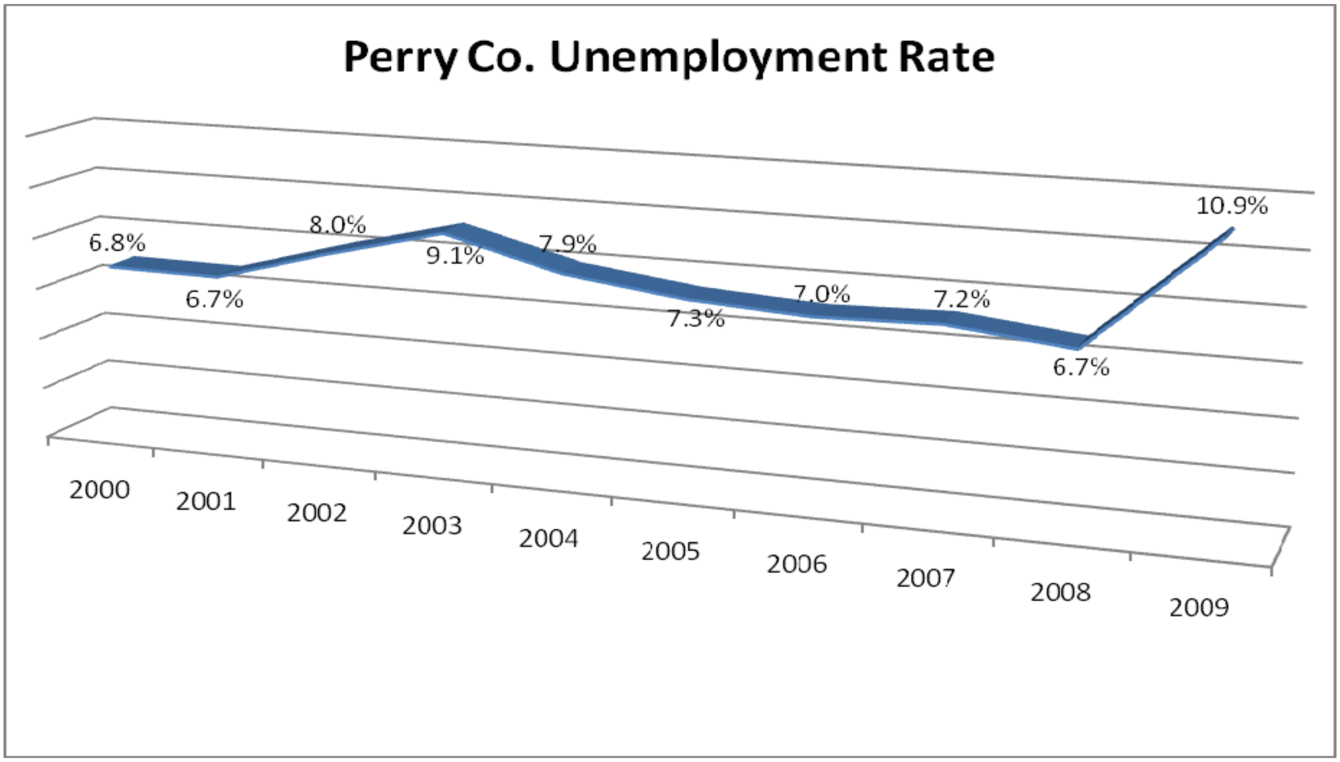

Table 1: Perry County Unemployment Rate[1]

The existing processing and loading facility indirectly facilitates the employment of 200 people. In 2009, there were 11,887 people in the Perry County workforce with 1,296 unemployed, yielding a 10.9% unemployment rate.[1] In the same year there were 154,142,000 people in the US workforce with 14,265,000 unemployed, yeilding a rate of 9.25% unemployment.[1] Using these figures the unemployment rate for Perry County would rise to 12.59% without the jobs maintained and created by this facility. Additionally, the unemployment rate for Kentucky would rise slight from 10.46% to 10.47%. The unemployment rate for the US however, would remain unchanged by the proposed project.

The 200 jobs maintained and created by the existing operation garner approximately $11,000,000 in annual wages for existing employees, averaging $55,000 annually per employee. These jobs are considered high quality and permanent in nature. A continuation of permitting approval would provide a source of sustained income for existing employees. In addition to boosting the per capita income for the surrounding communities and the state as a whole, the existing project provides its workers with an attractive benefits package including, but not limited to health, dental, disability insurance and retirement plans. It is also estimated that seasonal employees will continue to be added to the workforce (on an as need basis) during the summer months and holidays to supplement potential

1 Workforce Kentucky. "Labor Force Statistics (LAUS - Unemployment Rates)." 10 Jan. 2011 <http://www.workforcekentucky.ky.gov/cgi/dataanalysis /AreaSelection.asp?tableName=Labforce>.

production loss from employee vacation and personal time off (vacation/sick leave). According to 2008 estimates, average per-capita income for all citizens in Perry County's workforce amounted to approximately $28,023.[2] Without the continuation of this facility, Perry County would not benefit from at least 200 jobs and $11,000,000 in total wages. Utilizing the 3:1 ratio of direct and indirect jobs created by the Kentucky coal industry, this project has/will create/continue 800 jobs that are permanent in nature including engineering services, equipment supply and maintenance, fuel and lubricant suppliers, and non-mining related suppliers of items such as food services, real estate, and education. During the 2006-2007 fiscal year, coal mining in Perry County generated approximately $21,418,788 in coal severance tax dollars. The proposed project will produce approximately $167,764,500 in tax dollars at current coal spot market prices.

2 Workforce Kentucky. "Income." 10 Jan. 2011 < http://www.workforcekentucky.ky.gov/cgi/dataanalysis/incomeReport.asp?menuchoice=income >.

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.)

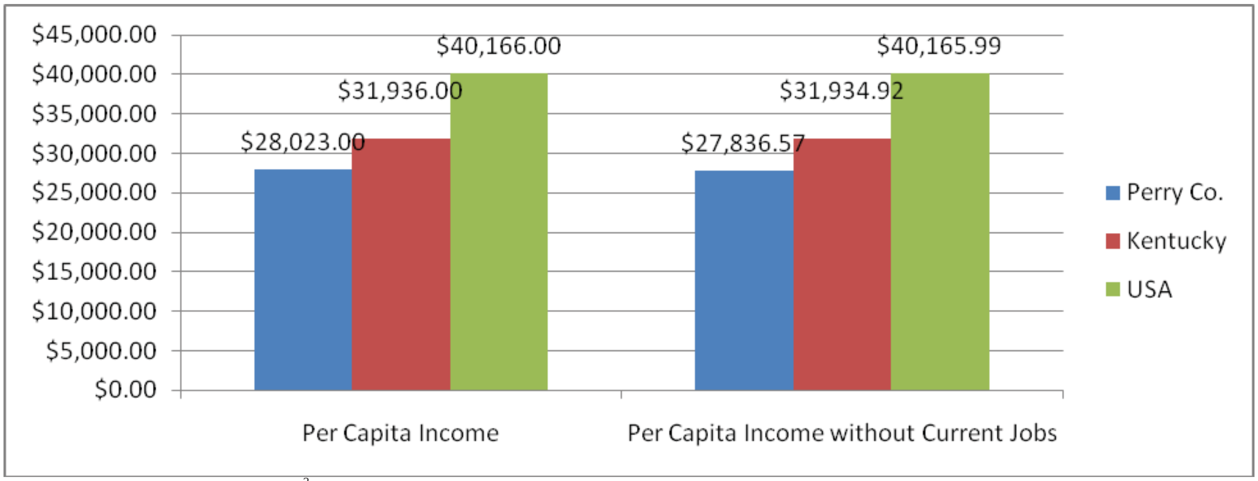

Table 2: Income level comparisons[2]

The absence of the mining associated with the ongoing surface mining project would slightly change the per-capita household income in Perry County. Effects at the state and country level would most likely be neutral.

The market value of taxable property in the county also benefits through the increased wages and additional disposable income made available to country residents both directly and indirectly. The proposed project has positively affected the surrounding communities by being directly responsible for the continuation of 200 jobs and indirectly responsible for the creation or continuation of an estimated 800 jobs in fields that provide services to the mining industry. The company will also provide an attractive benefits package to its employees that will include items such as health insurance, retirement plans, and dental and disability insurance. This will allow for households in the area to improve their living conditions through home improvement, new home construction, better access to medical care, and the creation of generation wealth through company backed savings and retirement plans. Social gains will also be made to the area through education opportunities created through the increase in household income.

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.)

During the 2006-07 fiscal years, coal mining in Perry County generated approximately $21,418,788 in coal severance tax dollars.[3] This vital facility is expected to facilitate approximately 51,600,000 tons of coal. Current coal spot market prices as of December 2010 have been estimated at $72.75.[4] The severance tax rate for coal in Kentucky is 4.5% of the gross market value. The existing project will facilitate indirectly approximately $167,764,500 in tax dollars at current coal spot market prices over the life of the mine (51,600,000*72.75*0.045). This project provides socio-economic benefits to the local communities through an overall increase in per capita income and an attractive benefits package to new workers allowing local households to benefit from enhanced living conditions through home improvement, new home construction, better access to medical care, the creation of generational wealth through company backed savings and retirement plans, and increased educational opportunities.

[3] Coal Education. "Severance Tax by County." 2008 <http://www.coaleducation.org/ky_coal_facts/economy/severance_tax.htm>.

[4] US Energy Information Administration. "Average Weekly Coal Commodity Spot Prices." 31 December 2010 <http://www.eia.doe.gov/cneaf/coal/page/coalnews/coalmar.html>

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.)

Previous logging and mining operations have affected the immediate watershed and surrounding communities through the introduction of sediment-laden water to the local and regional watersheds. To ameloriate these problems and prevent further influx of sediment-laden water into local and regional watersheds, the existing facility and proposed mining has large pond structures to capture and improve the quality of discharged water. These structures will provide sediment control until Phase II bond release and subsequent pond structure removal, reclamation, and restoration. Once area projects are completed the site will be reclaimed to approximate original contour and planted with trees and grasses thus creating a more balanced ecological environment. On-site trash collection and reclamation activities such as replacing topsoil and hydroseeding will help ameliorate the impacts to immediate and surrounding communities. The existing processing facility and the associated mining projects will provide jobs that have benefits such as health insurance for the workers and their families. This insurance will help to improve the public health of the communities where the mining is proposed.

Conversely, with regards to public health, an existing study from West Virginia has linked past coal production methods with elevated risks for certain health problems in the surrounding communities (e.g. kidney disease, lung and cardiovascular diseases).[5] Though the reasons for the elevated risks are currently only speculation, the pattern observed is believed to be a result of exposure to coal dust and water released from coal washing. It should be noted that management practices are now utilized to reduce dust problems surrounding mine sites including the watering of haul roads and enhanced ventiliation systems in underground mines.

[5] Hendryx, Michael and Ahern, Melissa M. April 2008. Relations Between Health Indicators and Residential Proximity to Coal Mining in West Virginia. American Journal of Public Health. Vol 98, No. 4:669-671.

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.)

The existing facility and proposed mining will continue to provide additional socio-economic benefits to the surrounding communities through infrastructure development. Creating additional access roads in remote areas of the existing project area provides local residents with the opportunity for future development in areas that could not have previously supported such improvements. The exisitng facility along with access roads provide available fire control to once remote areas primed for future development. The local highway system will also continue to benefit from the existing project through tax revenues anticipated to provide local and regional roadway improvements.

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.)

The proposed project did not have the traditional SEDCAD computer model for a 25 year/24 hour storm due to the age of the permit. An estimate was made of runoff by using the maximum known storm for Perry County (5" for a 25 year/24 hour storm) combined with the total permit area (453.17 acres). A complete runoff assumption was made. This model resulted in a calculation of 61,523,266 potential gallons of runoff in one rainfall event (with an assumption of no infiltration or plant uptake). This excess of on-site water can be stored in two ways, underground or above ground. Underground options include underground mine injection and storage in cisterns. Aboveground storage can be obtained by the use of bench ponds or in-stream ponds. Once in ponds, it is possible for the water to be reused on-site, chemically treated, or transported to the nearest wastewater treatment plant.

Injection into underground mines was considered as an alternative method of underground storage. Of the existing underground mines in the vicinity of the proposed permit, most are still active and present a high-risk level for areas of possible excess water discharge storage. In order to provide a safe alternative for subsurface disposal and/or storage of excess water discharge, the abandoned underground mines must provide an impermeable medium. To provide an impermeable medium, the underground mine must have seals in place at each opening or entrance, must be absent from any bedrock fractures to prevent re-entrance into the groundwater and surface water systems, and must have enough storage volume to accommodate potentially 61,523,266 gallons of water. The underground mines in the vicinity of the proposed permit area also pose water quality concerns due to unknown amounts of water and the possibility of compromised quality of water currently being stored by the mine. The many levels of risk associated with injecting excess water discharge from the proposed surface mining operations into abandoned underground mines create a dubious option for water storage. The next option considered for underground storage was containing the discharge in septic systems, or cisterns. Septic systems are not designed to handle water of this type; they are intended to breakdown organic and biodegradable materials. Use of such a system would essentially serve the same purpose as a sediment pond. Cistern use for storing the excess water is available for $65,000 per 75,000-gallon cistern, thus bringing an additional $53,241,614 to the cost of excess water storage for the proposed project. Injection into underground mines or into a septic system could adversely affect the local groundwater supply by displacing any water in the area and creating a superfluous pressure-head. Such an increase in pressure-head will create the possibility for additional discharge from these areas and increase the chances for blowouts, which could ultimately prove to be a safety hazard for the community as well as the miners in the adjacent active mines. For these listed reasons, the underground storage method was dismissed from further analysis.

An alternative considered for use of aboveground stored water would be redistribution over the mine site. On-site water redistribution is maximized through the watering of haul roads for dust suppression, hydroseeding for reclamation, and watering of reclaimed areas. Typically, water redistribution of this type is limited to 1000 gallons/day/acre on slopes of 6% or less. However, since the terrain of the proposed project area contains slopes of approximately 30% and a possible runoff produced by a 25-year/24-hour storm in excess of 61,523,266 gallons, on-site redistribution would not be feasible. With 453.17 acres of proposed surface disturbances and slopes of approximately 30% on-site, approximately 200 gallons/acre, or 90,634 gallons, of runoff could be reused on the total proposed project area. This leaves an excess of 61,432,362 gallons of water. Collecting and recycling the runoff on-site would require the installation and maintenance of piping, pump stations, and cisterns for an estimated $53,241,614. This cost estimate does not include the removal of said piping, pump stations, and cisterns, which could more than double the on-site storage cost totals (approximately $65,000,000 bringing the total cost to $108,137,726). Due to the economic and feasibility constraints associated with the containment of on-site water via piping and cisterns, excess water storage will not be performed on site.

Chemical treatment options at the public water supply were also considered for the proposed project site. Chemical treatment costs can range from $0.50/gallon to $4/gallon and are dependent upon the wastewater constituents. Assuming 61,523,266 gallons of water generated from the 25-year/24-hour storm model and an average cost of approximately $2.25/gallon for the use of necessary chemicals will cost approximately $138,427,348 to chemically treat the discharge from the proposed site. Hazard WTP is equipped to handle 3,000,000 gals/day. Considering the available options to upgrade a wastewater treatment facility, costs to upgrade this wastewater treatment facility for an additional 61,523,266 gallons of wastewater would be an estimated $276,446,842. Due to such a large economical vow, this option is not feasible.

Finally, there are three potential methods of transporting water to a wastewater treatment plant, piping via gravity flow or straight-line method, or hauling via tanker trucks. The nearest water treatment plant to the proposed project is located approximately 10 river/road miles away (Hazard Wastewater Treatment Plant) with a straight-line distance of three miles. To move water using gravity via existing road right-of-way, 52,083 feet of pipe, at $60/foot of pipe, and three pumping stations, at an average of $97,500 apiece, will be needed. This would generate a cost of $279,343,486 (including facility upgrades). For the straight-line option, 18,119 feet of pipe costing $905,945 with 10 pump stations would cost an estimated $278,327,787. The next option for moving the water from the proposed project area to the treatment facility would be the use of 4,000-gallon capacity tanker trucks at approximately $63,000 per truck. To move the 61,523,266 gallons of excess water and assuming a minimum number of trucks to maximize water transportation efficiency, the cost to transport water by tanker truck will be approximately $186,065,153 for one storm event. The addition of another 61,523,266 gallons of water would only add to the untreated water being discharged to the river unless the treatment facility was upgraded to process additional water. These types of additions to the mining and wastewater control plans will cause unnecessary delays and excessive costs to the proposed project while also contributing to preventable environmental impacts.

Other alternative treatments were considered for the site such as the use of silt fences and straw bales but were deemed inadequate for the scale of the proposed site alone. However, these methods will be used in conjunction with the proposed water treatment plan.

After exhausting all other alternatives considered above, the proposed pollution prevention measures for the project consists of the use of on-site sediment control structures, or ponds. These ponds will be utilized on the bench of the active mining area and as in-stream structures placed beneath the hollow fill toe as wastewater treatment measures to ensure proper particle settling of on-site water resources prior to off-site discharge. The ponds will be constructed incrementally in conjunction with the proposed mining plan to ensure proper containment and treatment of on-site wastewater. The construction and maintenance of the pond structure associated with the proposed project will cost approximately $45,000 for the life of the mine (# of ponds x cost of pond construction + acre feet of ponds x acres of land required). The current wastewater containment and drainage control plan for the proposed project are the measures to be implemented.

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.)

Best Management Practices (BMPs) will be utilized by the existing and proposed project anticipating minimal disturbances in the maintenance of the pond structure designed to contain all water collected onsite. BMPs proposed for this application include minimizing surface disturbances, land grading, rip-rap placement where deemed necessary, progressive revegetation, mulching, temporary silt control where practical, and rock check dams to aid in wastewater particulate settling. All facilities and structures were appropriately designed to meet the established settleable solids limitations set forth by SMCRA regulations.

By following the mining and reclamation plan for the existing and proposed project, no short-term acidity problems are anticipated. Within the neutral or slightly acidic pH range, iron and manganese are not highly soluble. Baseline water quality data from the drainage area indicated that the natural waters of the area are neutral to slightly acidic and generally exhibit low concentrations of metals. As long as the pH of surface water runoff from the existing facility and proposed mine area remains in the neutral range, high concentrations of iron and manganese are not anticipated.

The existing facility and proposed mining will utilize proposed mining and reclamation practices to prevent or minimize pollutants in the collection of on-site wastewater. Practices which may be utilized to minimize water pollutants include, but are not limited to, the following: land shaping to improve stabilization; diverting runoff to appropriate ponds for storage; quickly germinating and growing stands of temporary vegetation to prevent further sedimentation problems; regulating channel velocity of water; lining drainage channels with rock or vegetation; and mulching.

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, of these opportunities are to be implemented)

The only significant reuses of water for the proposed permit operation would be redistribution over the mine area. On-site water redistribution is limited to watering haul roads for dust suppression, hydroseeding for reclamation, and watering of reclaimed areas. Typically, water redistribution of this type is limited to 1000 gallons/day/acre on slopes of 6% or less. However, the terrain of the proposed project area contains slopes of approximately 30% and a possible runoff produced by a 25-year/24-hour storm in excess of 61,523,266 gallons, on-site redistribution would not be feasible. With 453.17 acres of existing and proposed surface disturbances and slopes of approximately 30% on-site, approximately 200 gallons/acre, or 90,634 gallons, of runoff could potentially be reused on the total project area. This leaves an excess of 61,432,631 gallons of water. Cistern use for storing the excess water is available for $65,000 per 75,000-gallon cistern, thus bringing an additional $53,241,614 to the cost of excess water storage for the proposed project. The estimated price includes the cost of purchasing the cistern, installation, and subsequent removal after the project is finished. Due to the economic and feasibility constraints associated with the containment of on-site water via piping and cisterns, water reuse will consist of on-site redistribution, containment within pond structures, and reuse in the processing plant.

III. Alternative Analysis - continued

4. Application of water conservation 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)

Water conservation opportunities exist for the proposed project. One such water conservation technique is on-site water redistribution, which is limited to watering haul roads for dust suppression, hydroseeding for reclamation, and watering of reclaimed areas. The aforementioned water re-use techniques will come at a cost of approximately $40,000 annually. This cost is an estimate of the labor it takes to drive the truck, the fuel used in the truck, and the energy used to power the pump to extract the water from the holding areas. These methods for on-site water redistribution will be implemented. Another conservation method is the use of fire prevention and suppression throughout the proposed project area for the surrounding communities through the use of available water stored within on-site ponds.

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.)

On-site water re-use is limited by local topography and designed pond structure storage capacity. The existing and proposed project can produce approximately 61,523,266 gallons of water assuming a 25-year/24-hour storm model. With 453.17 acres of proposed surface disturbances and slopes of approximately 30% on-site, approximately 200 gallons/acre, or 90,634 gallons, of runoff could be reused on the total proposed project area. This leaves an excess of 61,432,631 gallons of wastewater requiring treatment.

One such treatment method is the use of an existing wastewater treatment facility. The nearest downstream wastewater treatment facility is located in Hazard, KY approximately 10 miles away from the proposed project and has a daily treatment capacity of 3,000,000 gallons of wastewater. The treatment options currently available at the existing wastewater treatment facility are limited with respect to sedimentation and one can expect significant upgrade costs to accommodate removal of said pollutant. Costs to upgrade a wastewater treatment facility for an additional 61,432,631 gallons of wastewater can range. The information required to determine the cost can include but are not limited to location, geology, and pollutants to be removed. Conservative estimates to upgrade water plants can range from $0.50 to $4.00 per gallon of water to be treated. This cost does not include the installation of piping to get the water to the treatment plant. The cost of gravity flow sewer pipe installation in the Eastern Kentucky region varies with the geology and depth of the sewer line to be installed. Recent projects have been awarded from $45 a foot to $65 a foot for installation into areas with rock, and for installation into areas with soil it ranges from $35 to $55 a foot. The variations in the estimates are influenced by depth. The project would require approximately 10 miles of sewer line to transport the excess water to the treatment plant. The average cost based on the estimates would be $60 a foot. That would bring the total to $2,604,144.90 to install piping to the closest downstream water treatment plant. There would also need to be an estimated three (3) lift stations to facilitate the gravity flow of the wastewater. The cost for a single lift station ranges from $45,000 to over $150,000 depending on the amount of lift needed. An average cost for the lift stations is estimated at $97,500. The three (5) estimated lift stations would cost an estimated $292,500. The total cost for the proposed project could conservatively cost an estimated $2,896,615 (not including upgrades to treatment facility).

Another option for moving the water from the proposed project area to the treatment facility would be the use of 4,000 gallon capacity tanker trucks at approximately $130,000 per truck (average cost to buy a Semi and a tanker trailer). To move the 61,432,631 gallons of excess water by truck one needs to minimize the number of trucks used and maximize water transportation efficiency in order to efficiently transport the water off site. In order to do this the number of trips made in the 24 hours of the storm event need to be maximized for the minimum amount of trucks needed. This is accomplished by calculating the round trip time for the truck to haul the water to the treatment plant, including loading and unloading time and the number of trips it takes to remove the excess water in 4,000 gallon tanker trucks. It will take 15,381 trips to haul the excess water from the site. The closest treatment plant is 37 minutes by truck, 72 minutes round trip. Assuming an hour to load and unload the water the total time of transport is over two hours. Since there are 1,440 minutes in a day then approximately ten (10) trips can be made in a day. To remove all the water from the storm event approximately 1,431 trucks are needed to transport the water. The total cost to transport water by tanker truck would be approximately $186,065,153 for one storm event. This does not include the cost of fuel and driver salary.

The pollution prevention measures for the proposed project include the use of on-site sediment control structures, or ponds. These ponds will be utilized on the bench of the active mining area and as in-stream structures placed beneath the hollow fill toe as wastewater treatment measures to ensure proper particle settling of on-site water resources prior to off-site discharge. Ten ponds will be constructed incrementally in conjunction with the proposed mining plan to ensure proper containment and treatment of on-site wastewater. The construction and maintenance of the pond structures associated with the proposed project will cost approximately $45,000 for the life of the mine. This is a combination of approximately $45,000 for the installation and maintenance of either a controlled release pond or a sediment structure plus the cost of land required (average $3,000/pond). Estimates are made from recent pond construction and installation in the area. The current wastewater containment and drainage control plan for the proposed project are the measures to be implemented.

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.)

One such treatment method is the use of an existing wastewater treatment facility. The nearest downstream wastewater treatment facility is located in Hazard, KY approximately 10 miles away from the proposed project and has a daily treatment capacity of 3,000,000 gallons of wastewater. The treatment options currently available at the existing wastewater treatment facility are limited with respect to sedimentation and one can expect significant upgrade costs to accommodate removal of said pollutant. Costs to upgrade a wastewater treatment facility for an additional 61,432,631 gallons of wastewater can range. The information required to determine the cost can include but are not limited to location, geology, and pollutants to be removed. Conservative estimates to upgrade water plants can range from $0.50 to $4.00 per gallon of water to be treated. This cost does not include the installation of piping to get the water to the treatment plant. The cost of gravity flow sewer pipe installation in the Eastern Kentucky region varies with the geology and depth of the sewer line to be installed. Recent projects have been awarded from $45 a foot to $65 a foot for installation into areas with rock, and for installation into areas with soil it ranges from $35 to $55 a foot. The variations in the estimates are influenced by depth. The project would require approximately 28 miles of sewer line to transport the excess water to the treatment plant. The average cost based on the estimates would be $60 a foot. That would bring the total to $2,604,144.90 to install piping to the closest downstream water treatment plant. There would also need to be an estimated three (3) lift stations to facilitate the gravity flow of the wastewater. The cost for a single lift station ranges from $45,000 to over $150,000 depending on the amount of lift needed. An average cost for the lift stations is estimated at $97,500. The three (3) estimated lift stations would cost an estimated $292,500. The total cost for the proposed project could conservatively cost an estimated $2,896,615 (not including upgrades to treatment facility).

Chemical treatment options at the public water supply were also considered for the proposed project site. Chemical treatment costs can range from $0.50/gallon to $4/gallon and are dependent upon the wastewater constituents. Assuming 61,523,266 gallons of water generated from the 25-year/24-hour storm model and an average cost of approximately $2.25/gallon for the use of necessary chemicals will cost approximately $138,427,348 to chemically treat the discharge from the proposed site. Hazard WTP is equipped to handle 3,000,000 gals/day. Considering the available options to upgrade a wastewater treatment facility, costs to upgrade this wastewater treatment facility for an additional 61,523,266 gallons of wastewater would be an estimated $276,446,842.

The pollution prevention measures for the proposed project include the use of on-site sediment control structures, or ponds. These ponds will be utilized on the bench of the active mining area and as in-stream structures placed beneath the hollow fill toe as wastewater treatment measures to ensure proper particle settling of on-site water resources prior to off-site discharge. The ponds will be constructed incrementally in conjunction with the proposed mining plan to ensure proper containment and treatment of on-site wastewater. The construction and maintenance of the pond structure associated with the proposed project will cost approximately $45,000 or the life of the mine. This is a combination of approximately $45,000 for the installation and maintenance of in-stream ponds and $20,000 for the installation and maintenance of bench ponds plus an estimate of land acquiring costs. Estimates are made from recent pond construction and installation in the area. The current wastewater containment and drainage control plan for the proposed project are the measures to be implemented.

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.)

Seasonal or controlled discharge of the approximately 61,432,631 gallons of excess water generated on-site during a 25-year/24-hour storm is best achieved through controlled release of storage pond structures. After on-site water recycling is achieved, a surplus of approximately 188.81 acre-feet of excess water would require the use of additional pond structures at the existing and proposed project. The landscape in Eastern Kentucky is not conducive of constructing large surface area ponds. With that assumption, it will require sixty-nine (69), 897,662 gallon ponds to accommodate the large volume of water generated from the 25 year storm. Assuming approximately $3,000 an acre for land adequate to construct ponds, and approximately $45,000 per in-stream pond construction and maintenance, an estimated $3,289,787 ((55*$45,000) +(55*$3000)) will be needed to acquire the land, permits, and construct the ponds necessary to store the excess water for one potential storm event. Storing the excess water in this manner will allow for a controlled or seasonal discharge at the discretion of the operator of the existing and proposed project but at a more significant cost than the proposed treatment options. This option does not treat the water any different than the proposed pollution prevention measures. The proposed sediment control structures are designed to meet effluent requirements for sediment control.

The pollution prevention measures for the existing and proposed project include the use of on-site sediment control structures, or ponds. These ponds will be utilized on the bench of the active mining area and as in-stream structures placed beneath the hollow fill toe as wastewater treatment measures to ensure proper particle settling of on-site water resources prior to off-site discharge. The ponds will be constructed incrementally in conjunction with the proposed mining plan to ensure proper containment and treatment of on-site wastewater. The construction and maintenance of the pond structure associated with the proposed project will cost approximately $45,000 for the life of the mine. This is a combination of approximately $45,000 for the installation and maintenance of in-stream ponds and $20,000 for the installation and maintenance of bench ponds. Estimates are made from recent pond construction and installation in the area. The current wastewater containment and drainage control plan for the existing and proposed project are the measures to be implemented.

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.)

Underground injection was considered as an option for storing the excess water generated by the proposed project. Containing and storing the excess water on-site would require the installation of excess piping, pump stations, and cisterns. Cistern use for storing the excess water is available for $65,000 per 75,000-gallon cistern, thus bringing an additional $53,241,614 to the cost of excess water storage for the proposed project. The estimated price includes the cost of purchasing the cistern, installation, and subsequent removal after the project is finished. The existing abandoned underground mines near the proposed permit area present a high-risk level for areas of possible excess water discharge storage. In order to provide a safe alternative for subsurface disposal and/or storage of excess water discharge, the abandoned underground mines must provide an impermeable medium. To provide an impermeable medium, the underground mine must have seals in place at each opening or entrance, must be absent from any bedrock fractures to prevent re-entrance into the groundwater and surface water systems, and must have enough storage volume to accommodate potentially 61,432,631 gallons of water. The abandoned underground mines in the vicinity of the proposed permit area also pose water quality concerns due to unknown amounts of water and the possibility of compromised quality of water currently being stored by the mine. There also exists the potential for a blowout, where the water applies enough pressure to the surrounding strata to cause a breach in the mine. All the water is released at the breach point and the potential of thousands of gallons of uncontrolled water flow makes underground injection an uncertain option for water storage.

Injection into underground works or into a septic system could also adversely affect the local groundwater supply by displacing any water in the area and creating a superfluous pressure-head. Such an increase in pressure-head will create the possibility for additional discharge from these areas and increase the chances for any blowouts, which could ultimately prove to be a safety hazard as aforementioned. The injected water could possibly re-enter the ground water system and potentially the surface water system due to the likelihood of fractured geologic strata associated with the region.

The pollution prevention measures for the existing and proposed project include the use of on-site sediment control structures, or ponds. These ponds will be utilized on the bench of the active mining area and as in-stream structures placed beneath the hollow fill toe as wastewater treatment measures to ensure proper particle settling of on-site water resources prior to off-site discharge. The ponds will be constructed incrementally in conjunction with the proposed mining plan to ensure proper containment and treatment of on-site wastewater. The construction and maintenance of the pond structure associated with the existing and proposed project will cost approximately $45,000 for the life of the mine. This is a combination of approximately $45,000 for the installation and maintenance of in-stream ponds and $20,000 for the installation and maintenance of bench ponds. Estimates are made from recent pond construction and installation in the area. The current wastewater containment and drainage control plan for the proposed project are the measures to be implemented.

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.)

The nearest existing downstream wastewater treatment facility is located in Hazard, KY approximately 10 miles away from the proposed project and has a daily treatment capacity of 3,000,000 gallons of wastewater. The treatment options currently available at the existing wastewater treatment facility are limited with respect to sedimentation and one can expect significant upgrade costs to accommodate removal of said pollutant. Costs to upgrade a wastewater treatment facility for an additional 61,432,631 gallons of wastewater can range. The information required to determine the cost can include but are not limited to location, geology, and pollutants to be removed. Conservative estimates to upgrade water plants can range from $0.50 to $4.00 per gallon of water to be treated. This cost does not include the installation of piping to get the water to the treatment plant. The cost of gravity flow sewer pipe installation in the Eastern Kentucky region varies with the geology and depth of the sewer line to be installed. Recent projects have been awarded from $45 a foot to $65 a foot for installation into areas with rock, and for installation into areas with soil estimates ranges from $35 to $55 a foot. The variations in the estimates are influenced by depth. The project would require approximately 10 miles of sewer line to transport the excess water to the treatment plant. The average cost based on the estimates would be $60 a foot. That would bring the total to $2,604,144.90 to install piping to the closest downstream water treatment plant. There would also need to be an estimated three (3) lift stations to facilitate the gravity flow of the wastewater. The cost for a single lift station ranges from $45,000 to over $150,000 depending on the amount of lift needed. An average cost for the lift stations is estimated at $97,500. The three (3) estimated lift stations would cost an estimated $292,500. The total cost for the proposed project could conservatively cost an estimated $2,896,615 (not including upgrades to treatment facility).

Another option for moving the water from the proposed project area to the treatment facility would be the use of 4,000 gallon capacity tanker trucks at approximately $130,000 per truck (average cost to buy a Semi and a tanker trailer). To move the 61,432,631 gallons of excess water by truck one needs to minimize the number of trucks used and maximize water transportation efficiency in order to efficiently transport the water off site. In order to do this the number of trips made in the 24 hours of the storm event need to me maximized for the minimum amount of trucks needed. This is accomplished by calculating the round trip time for the truck to haul the water to the treatment plant, including loading and unloading time and the number of trips it takes to remove the excess water in 4,000 gallon tanker trucks. It will take 15,381 trips to haul the excess water from the site. The closest treatment plant is 37 minutes my truck, 72 minutes round trip. Assuming an hour to load and unload the water the total time of transport is over two hours. Since there are 1,440 minutes in a day then approximately ten (10) trips can be made in a day. To remove all the water from the storm event approximately 1,431 trucks are needed to transport the water. The total cost to transport water by tanker truck would be approximately $186,065,153 for one storm event. This does not include the cost of fuel and driver salary.

The pollution prevention measures for the proposed project include the use of on-site sediment control structures, or ponds. These ponds will be utilized on the bench of the active mining area and as in-stream structures placed beneath the hollow fill toe as wastewater treatment measures to ensure proper particle settling of on-site water resources prior to off-site discharge. The ponds will be constructed incrementally in conjunction with the proposed mining plan to ensure proper containment and treatment of on-site wastewater. The construction and maintenance of the pond structure associated with the proposed project will cost approximately $45,000 for the life of the mine. This is a combination of approximately $45,000 for the installation and maintenance of in-stream ponds and $20,000 for the installation and maintenance of bench ponds plus the cost of land acquisition. Estimates are made from recent pond construction and installation in the area. Utilizing the proposed wastewater treatment plan, which provides sufficient removal of pollutants at a price of approximately $45,000 is the most viable option currently available.

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:	**Joseph G. Evans, President**	**Telephone No.:**	606-878-7411
Signature:	Joseph G Evans	**Date:**	2-1-11

Kentucky Pollutant Discharge Elimination System (KPDES)
Instructions
KPDES Permit Application Supplemental Information

SECTION I – PROJECT INFORMATION

Facility Name:	Provide the name of the facility
Location:	Provide the physical location of the proposed project
County:	Indicate the county in which the facility is located
Receiving Water Name:	Indicate the water body into which the facility discharges or plans to discharge.

SECTION II – Socioeconomic Demonstration

For each factor provide a discussion of expected positive and negative impacts. Include appropriate support documentation.

SECTION III – Alternative Analysis

For each alternative compare the feasibility and costs of the alternative to the feasibility and costs of the proposed project and its treatment system. Include appropriate support documentation.

SECTION IV - CERTIFICATION

Name and Title:	Indicate the name and title of the person signing the form.
Telephone No.:	Provide the telephone number of the person signing the form.
Date:	Indicate the date which the form was signed.

This form being part of the permit application must be signed as follows:

Corporation: by a principal executive officer of at least the level of vice president
Partnership or sole proprietorship: by a general partner or the proprietor respectively